



User Guide for Windows

12.2

Contents

Preface 9

Copyright Notice	9
MPEG-2 License Requirements	9
Customer Support	10
We'd Like to Hear from You!	10
Limited Warranty and Disclaimers	10
Warranty Remedies	10
Software Updates	11
Restrictions and Conditions of Limited Warranty	11
Limitations of Warranties	11

13

Introduction	13
Topics	13
13	
Wirecast One Workflow	13
Two Ways to Use this Application	14
Presenter Is Operator	15
Presenter Plus Operator	15
Startup	16
Main Window Layout	17
Using AutoLive	19
Preview	19
Master Audio	21
Main Shot List	22
Control/Status Bar	22
To avoid decrease in video quality, Wirecast should not be used at CPU usage above 80%. See the Telestream Website for suggested configurations. You can also view streaming statistics by selecting Output > Show Statistics.	24
Layer Windows	24

Installation 27

- Introduction 27
 - Topics 27
- Installing 27
- Activating 28
- Uninstalling 28
- System Requirements 28

Tutorials 31

- Introduction 31
 - Tutorials 31
- Tutorial 1: Basic Concepts 32
 - Tutorial Prep 33
 - The Main Window 34
 - What Is a Shot? 34
 - Switching Between Shots 35
 - Transitions 36
 - Transition Speed 38
 - Go Button 38
 - Layers 39
 - Auto Live 41
 - Turn AutoLive Off 41
 - Multiple Changes 42
 - Preview 43
- Tutorial 2: Editing Shots 47
- Tutorial 3: Broadcasting 49
 - Streaming 49
 - Telestream Cloud Settings 50

Main Window 55

- Introduction 55
 - Topics 55
- Overview 55
- Control/Status Bar 56
- Preview/Live Broadcast Area 57
- Countdown Clock Display 58
- Transition Controls 59
 - Changing Transitions 59
 - Transition Speed 60
 - Go Button 60
- Add Shot Menu 61
- Shot Selection Area 64
 - Changing Shots 65
 - Moving a Shot to Another Layer 67
 - Resizing the Shot Icons 67

Layers	68
What is a Layer?	68
Changing Layers	69
Moving a Shot to Another Layer	69
AutoLive	70
Live Icons	70

Shot Editor 73

Introduction	73
Topics	73
Overview	74
Shot Layers Tab	75
Shot Layer Properties Tab	76
Audio Properties Tab	78
Chroma Key Properties Tab	80
Smooth Transition Properties Tab	81
Additional Properties Tab	82
Capture Devices Properties	82
RealTek Example	82
NDI™ Sources	83
ASIO and WASAPI Sources	84
Clock Properties	86
Image Carousel Properties	89
QR Code Generator Properties	90
Media File Properties	91
Screen Capture Properties	92
Solid Color Properties	94
Text Shot Properties	95
Web Page Properties	98
Web Stream Properties	99
Titles Properties	100
Twitter Feed Properties	104

Social Media 109

Introduction	109
Topics	109
Facebook	109
Twitter	112
Settings	112
Create Shot	113
Message Feed	115

Preferences 117

Introduction	117
Topics	117

Accessing Preferences	117
Resetting Preferences	118
General	119
Performance	121
Licenses	122
Serial Numbers	122
Manual Activation	122
Deactivate Serial Numbers	123
Demonstration Mode	123
Software Update	123
Upgrades Included	124
Hot Keys	124
Controllers	126
MIDI Control Assignments	127
MIDI Control Descriptions	128
X-keys Control Assignments	130
General Key Operations	130
Key Descriptions	130
Advanced	133

Menus and Windows 135

Introduction	135
Topics	135
136	
136	
136	
File Menu	136
Edit Menu	136
Switch Menu	138
Media Menu	139
Output Menu	139
Layout Menu	144
Social	144
Facebook	144
Twitter Menu	145
Window Menu	145
Help Menu	145

Broadcasting 147

Introduction	147
Topics	147
Canvas Size	147
Virtual Camera	149
Output Settings	150
Multiple Output Settings	151
Configuration	151

Windows Media Destinations	152
Encoder Presets	152
Windows Media Settings	155
WM-Push To Server	155
Configuration Settings	155
WM-Pull From Server	156
Configuration Settings	156
Multicast and Unicast	157
RTMP Server	158
Telestream Cloud Settings	159
CDN Partners	164
Bambuser, BoxCast, Churchstreaming.tv, Dailymotion, DaCast Streaming Services, ESE Networks, Lightcast, Livestream, Meridix Live Sports Platform, Onstream media, Pitchtime, SermonAudio, StreamingChurch.tv, StreamShark.io, StreamSpot, Streaming Media Hosting, Stretch Internet, Sunday Streams, Titled Globe, Tulix Streaming, Ustream, WebCast-TV, WorshipStream,	164
Azure Media Services, Sermon.net, Verizon Digital Media Services.	166
Brightcove, Limelight	167
Akamai	168
Twitter/Periscope	170
Twitch	172
Vimeo	174
Wowza Streaming Engine.	177
Zixi	178
Facebook Live	180
Facebook Live - With User Code	186
Microsoft Stream	193
YouTube	194
Streaming	195
Record To Disk	197

Encoder Presets 201

Introduction	201
Topics	201
The Encoder Presets Window	202
Creating New Presets	203
Profile Options	203
Windows Media Streaming	204
MainConcept H.264	206
x264	208

Making Great Broadcasts 211

Introduction	211
Topics	211
Overview	211
High Quality Audio	212

Good Lighting	212
Triangular Lighting	213
Broadcast Settings	214
Bandwidth	214
Motion	214
Encoder Settings	214

Acknowledgements 215

Acknowledgements	215
Overview	215
Steinberg VST Plug-In SDK Licensing Agreement (Version "3.6.6- 17.06.2016")	215
FFmpeg Project	217
Syphon	225
MIT	225

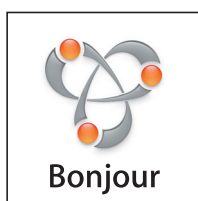
Preface

Copyright Notice

Copyright 2019 Telestream, LLC. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, altered, or translated into any languages without written permission of Telestream, LLC. Information and specifications in this document are subject to change without notice and do not represent a commitment on the part of Telestream.

Telestream, CaptionMaker, Episode, Flip4Mac, FlipFactory, Flip Player, Gameshow, GraphicsFactory, Lightspeed, MetaFlip, Post Producer, ScreenFlow, Split-and-Stitch, Switch, Tempo, TrafficManager, Vantage, VOD Producer and Wirecast, are registered trademarks and Cricket, e-Captioning, iQ, iVMS, iVMS ASM, Inspector, MacCaption, Pipeline, Vidchecker, and Surveyor are trademarks of Telestream, LLC. All other trademarks are the property of their respective owners.

QuickTime, Mac OS X, Final Cut Pro, and Safari are trademarks of Apple, Inc. Bonjour, the Bonjour logo, and the Bonjour symbol are trademarks of Apple, Inc.



x

Wirecast One supports the use of NewTek NDI™ technology; "NDI™" is a trademark of NewTek, Inc. For information about NDI™ visit <http://NDI.NewTek.com/>

All other brand, product, and company names are property of their respective owners, and are used only for identification purposes.

MPEG-2 License Requirements

Telestream has obtained a license from MPEG LA, to produce MPEG-2 video, to meet the following requirement on behalf of its FlipFactory and Pipeline licensees: The use of this

product in any manner that complies with the MPEG-2 standard is expressly prohibited without a license under applicable patents in the MPEG-2 patent portfolio, which license is available from MPEG LA, L.L.C., 250 Steele Street, Suite 300, Denver, Colorado 80206.

Customer Support

Telestream offers technical support through our Website and Email.

Email contacts:

- Sales: sales@telestream.net
- Support: desktopsupport@telestream.net

Website Links:

- How to Buy: <http://www.telestream.net/purchase/store.htm>
- Support:
 - <http://www.telestream.net/telestream-support/wire-cast/support.htm>
 - View our Library of [Tutorials & Webinars](#)
 - Browse our [Knowledge Base](#)
 - Explore our [Community Forum](#)

We'd Like to Hear from You!

Telestream welcomes comments, feedback, and suggestions about your experience with Wirecast One. You can reach us at desktopsupport@telestream.net

If you have suggestions about improving the tutorials or this guide, other Telestream documents, or our Website, please Email us at techwriter@telestream.net.

Limited Warranty and Disclaimers

Telestream, LLC. (the Company) warrants to the original registered end user that the product will perform as stated below for a period of one (1) year from the date of shipment from factory:

Hardware and Media. The Product hardware components, including equipment supplied but not manufactured by the Company but NOT including any third party equipment that has been substituted by the Distributor for such equipment (the "Hardware"), will be free from defects in materials and workmanship under normal operating conditions and use.

Software. If software is supplied as part of the product, the software will operate in substantial conformance with specifications set forth in its product user's guide. The Company does not warrant that the software will operate uninterrupted or error-free, will meet your requirements, or that software errors will be corrected.

Warranty Remedies

Your sole remedies under this limited warranty are as follows:

Hardware and Media. The Company will either repair or replace (at its option) any defective Hardware component or part, or Software Media, with new or like new Hardware components or Software Media. Components may not be necessarily the same, but will be of equivalent operation and quality.

Software. If software is supplied as part of the product and it fails to substantially conform to its specifications as stated in the product user's guide, the Company shall, at its own expense, use its best efforts to correct (with due allowance made for the nature and complexity of the problem) such defect, error or nonconformity.

Software Updates

If software is supplied as part of the product, the Company will supply the registered purchaser/licensee with maintenance releases of the Company's proprietary Software Version Release in manufacture at the time of license for a period of one year from the date of license or until such time as the Company issues a new Version Release of the Software, whichever first occurs. To clarify the difference between a Software Version Release and a maintenance release, a maintenance release generally corrects minor operational deficiencies (previously non-implemented features and software errors) contained in the Software, whereas a Software Version Release adds new features and functionality. The Company shall have no obligation to supply you with any new Software Version Release of Telestream software or third party software during the warranty period, other than maintenance releases.

Restrictions and Conditions of Limited Warranty

This Limited Warranty will be void and of no force and effect if (i) Product Hardware or Software Media, or any part thereof, is damaged due to abuse, misuse, alteration, neglect, or shipping, or as a result of service or modification by a party other than the Company, or (ii) Software is modified without the written consent of the Company.

Limitations of Warranties

THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No oral or written information or advice given by the Company, its distributors, dealers or agents, shall increase the scope of this Limited Warranty or create any new warranties.

Geographical Limitation of Warranty. This limited warranty is valid only within the country in which the Product is purchased/licensed.

Limitations on Remedies. YOUR EXCLUSIVE REMEDIES, AND THE ENTIRE LIABILITY OF TELESTREAM, LLC. WITH RESPECT TO THE PRODUCT, SHALL BE AS STATED IN THIS LIMITED WARRANTY. Your sole and exclusive remedy for any and all breaches of any Limited Warranty by the Company shall be the recovery of reasonable damages which, in the aggregate, shall not exceed the total amount of the combined license fee and purchase price paid by you for the Product.

Damages. TELESTREAM, LLC. SHALL NOT BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF YOUR USE OR INABILITY TO USE THE PRODUCT, OR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF THOSE DAMAGES, OR ANY REMEDY PROVIDED FAILS OF ITS ESSENTIAL PURPOSE.

Further information regarding this limited warranty may be obtained by writing:
Telestream, LLC.
848 Gold Flat Road
Nevada City, CA 95959

You can call Telestream, LLC. via telephone at (530) 470-1300.

Introduction

Topics

- [Main Window Layout](#)

Wirecast One Workflow

Wirecast One is an entry level version of Wirecast. It has all the essential features of Wirecast without including the features found in the Studio and Pro versions. It is the most affordable way to get streams up and running. It allows a single camera input and streaming to one selected destination.

Wirecast One features include:

Support for single camera (or NDI) input

Works with UVC, Directshow, and AVFoundation capture cards and devices (e.g. Epiphan)

Advanced integration with capture cards from Blackmagic, Magewell and AJA

NDI™ (Mac/PC) and Syphon (Mac only screen capture alternative) sources

Wi-Fi iOS sources with Wirecast Go

IP cameras and web stream input (RTMP, MMS, HTTP, RTSP, HLS, MPEG-Dash and UDP)

Add additional media: audio, video, graphics

Screen capture

Web page display and capture

ASIO Professional Windows Audio support

Multi-channel audio ingest

Three Master Mixing Layers

Unlimited Shots per Master Mixing Layer

Audio & video sync

Chromakey

Clocks, timers, and stopwatches

Image Filters (Mattes)

Integrated Facebook Polling

Integrated Text and Titles (lower thirds)

Live viewer counts (Facebook, YouTube, and Twitch)

Multi-channel audio ingest

Image carousels

Twenty-three transitions included

Integrated Twitter comments, curation, and display

GPU-accelerated encoding (requires Intel or Nvidia GPU)

RTMP, RTP multi + unicast

Built-in destinations: Periscope/Twitter, Brightcove, Facebook, YouTube, DaCast, Akamai, Wowza, Microsoft Azure, and more...

Record to disk (MP4, MOV)

Facebook Live: groups, 24/7 ambient streaming, paired encoding, geo and sponsor tagging, live cross-posting

Virtual Camera and Microphone output

Monitor output data and statistics

Basic Support. Includes free software upgrades, Online Case Submission (with a 24-hour Response Time Target), Knowledge Base, Telestream Community Forum.

Two Ways to Use this Application

There are two different ways you can use Wirecast:

- **Presenter Is Operator** The person conducting the presentation also operates Wirecast.
- **Presenter Plus Operator** The presenter concentrates on the content and someone else operates Wirecast. In this mode, the presenter never needs to know in detail how Wirecast works.

Presenter Is Operator

In this mode of operation, the person conducting the presentation simultaneously operates Wirecast.

Here are some suggestions for using Wirecast when you are both the presenter and operator:

- **Keep it simple** Set up Wirecast to make it easy for you to be the operator and the presenter. Set up your logo and titles so that you need to make very few changes during your presentation. Use a minimum number of shots so it's easy for you to see which shot to choose.
- **Keep the AutoLive feature on** This enables you to present your shots with just one click. Though this limits your ability to perform complex presentations, it is the best way when the presenter is also the operator. To turn AutoLive on or off, select it under the Switch menu.
- **Pre-configure your shots** Make sure that all the shots are created prior to your presentation. Do not try to create or modify shots while broadcasting them.
- **Use hot-keys for switching shots** Wirecast provides a hotkey editor that enables you to easily assign hotkeys to your shots.

Presenter Plus Operator

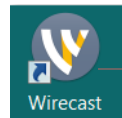
In this mode of operation, an engineer (or operator) is responsible for using Wirecast, and the presenter concentrates on the content of the presentation.

Here are some suggestions for using Wirecast when you have both an operator and a presenter:

- **Keep the AutoLive feature off** This enables you to make several changes at one time before taking the changes live. However, to quickly make a shot live, press the Shift+Ctrl keys and click the shot. The AutoLive control is located under the Switch menu
- **Open the Preview window** The operator should use Preview mode to examine everything before it becomes live. The Preview display control is located under the Layout menu.
- **Use the Layer Windows to make more shots available** Select New Layer Window from the Window menu to open additional layer windows so you can quickly flip between shots on several layers.

Startup

To start Wirecast One, double-click the Wirecast One icon that was placed on your desktop during installation.



Double-click
Wirecast One icon

When Wirecast starts up, you can (optionally) view the new features by clicking on the play button. Click *Continue* when you are finished.

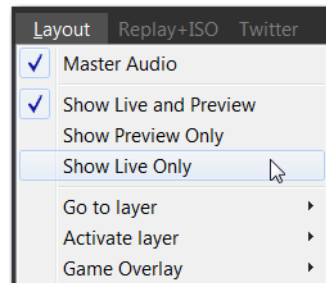


Click the play button

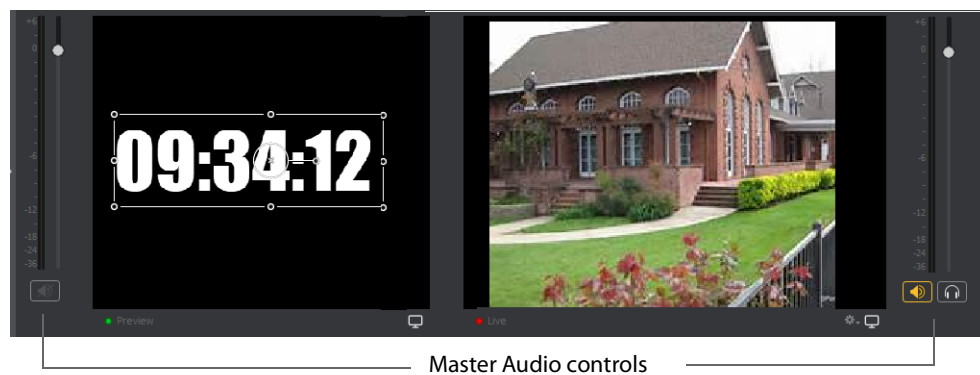
Click Continue

Main Window Layout

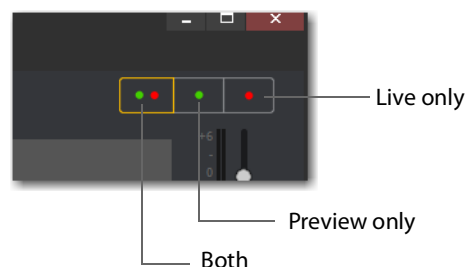
Wirecast One enables you to select which functions are displayed in the Main window. These functions are added or removed from the main window using the Layout menu.



Master Audio Displays or hides the Master Audio controls. (A check mark to the left of the menu item indicates that the audio controls are displayed.) Master Audio controls are located on the left and right sides of the Main window.



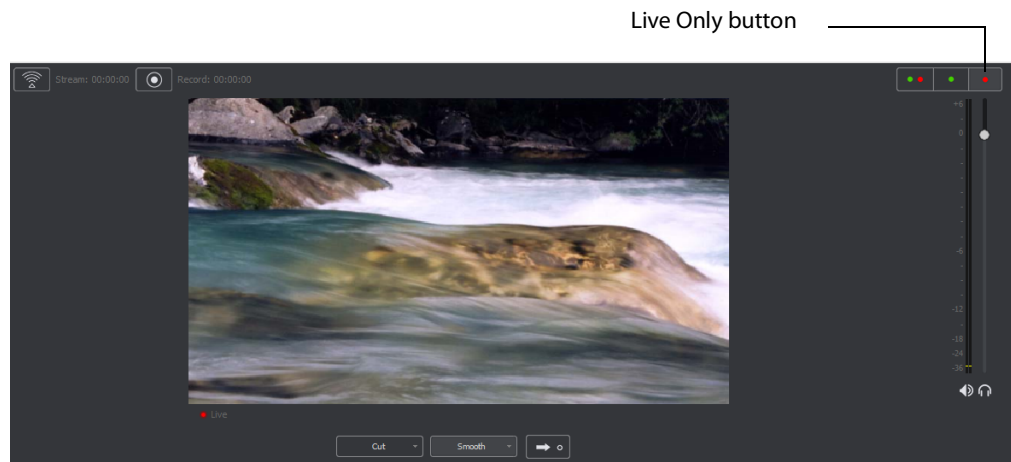
Show Live and Preview Enables you to select between displaying: the Preview Window only, the Live Window only, or both. A check mark to the left of the menu item indicates which of these three modes are active. You can also select one of these three modes by clicking on the mode selection buttons in the top right corner of the screen.



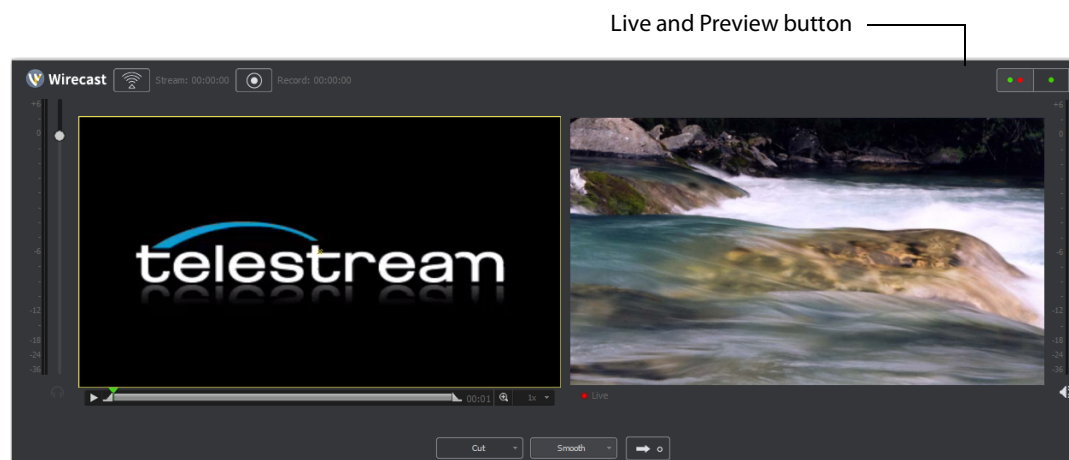
Show Preview Only selection:



Show Live Only selection:



Show Live and Preview selection:



Using AutoLive

Some users of Wirecast may want to single-click a shot to make it become live. Other users may want to make several changes to the broadcast before making them live. You can use both methods in Wirecast.

The AutoLive feature is designed to offer a single-click operation for those users who want to simply click from shot to shot. The Edit window (or other windows) is not affected by the status of AutoLive.

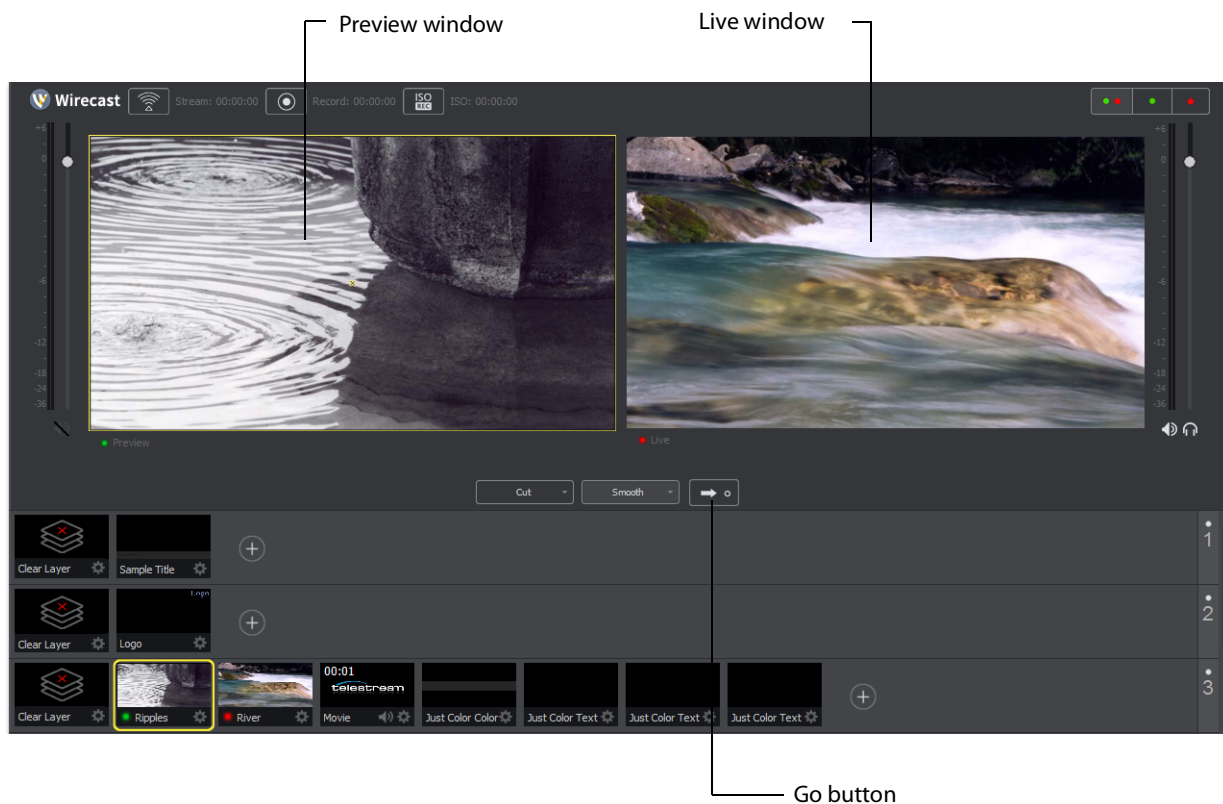
When AutoLive is on, clicking a shot in the Main window automatically places the shot in the Live window. As a result, the Go button becomes inactive.



When AutoLive is off, clicking on a shot displays it in the Preview window, then clicking the Go button is required to place the shot in the Live window.

Preview

Preview displays what the broadcast will look like when you click the Go button. (The Go button is only active when AutoLive is off.) To display the Preview window, select *Layout > Show Live and Preview*, or *Layout > Show Preview Only*.

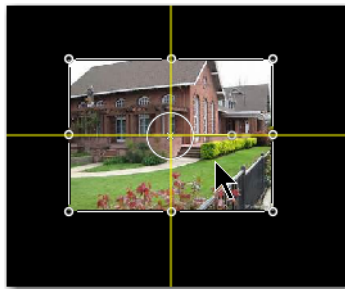


When you select an image in the Preview window, Resize and Rotate handles appear. Click and drag any of these handles to resize or rotate your image.



You can also snap an image in the Preview window to various alignments: Snap to Center, Snap to Edge, Snap to Corner, or Snap to an Image. The yellow guide lines appear when the image is ready to snap into place. To temporarily disable the snap action, hold down the Alt key while moving an image into place (the yellow snap lines

will not appear). Additionally, after selecting an image, the arrows keys can be used to nudge it into placement.



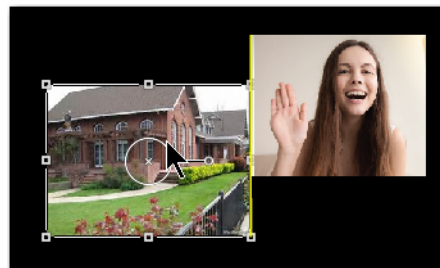
Snap to Center



Snap to Corner



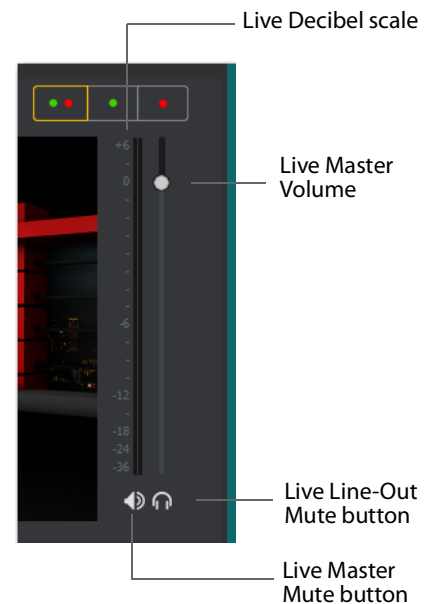
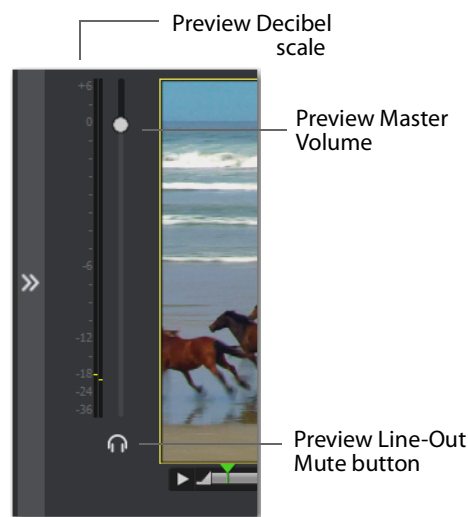
Snap to Edge



Snap to an Image

Master Audio

The Master Audio panel enables you to control the output volume level, mute audio output, and mute the line-out feed for Preview and Live windows. To display Master Audio for Preview and Live displays, click *Layout > Master Audio*. Click again to hide the Master audio controls.



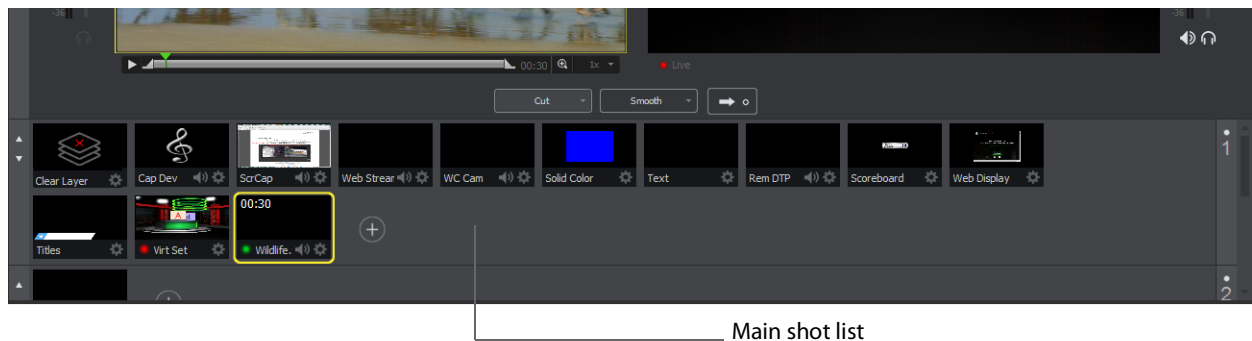
The Preview and Live Master Volume control enables you to adjust the master audio volume for Preview and Live separately. Click and drag the slider control up or down to set the volume. The decibel scale next to the slider indicates the audio level. When you take a Preview shot live, the Live audio controls are set to the levels set in Preview.

The Master Mute button mutes the Live window audio (what your viewers hear). Even when you mute the output, the encoder still generates audio but it is silent. If you do not want to broadcast audio, modify the Encoder Presets to not process audio through the encoder.

The *Preview Line-Out Mute* button and *Live Line-Out Mute* button control local volume (what you hear), not broadcast volume. When Line-Out is muted, audio is not sent to your headphones or speakers, but your viewers still hear the audio. The two controls are mutually exclusive -- you cannot have both on at the same time, but you can mute both.

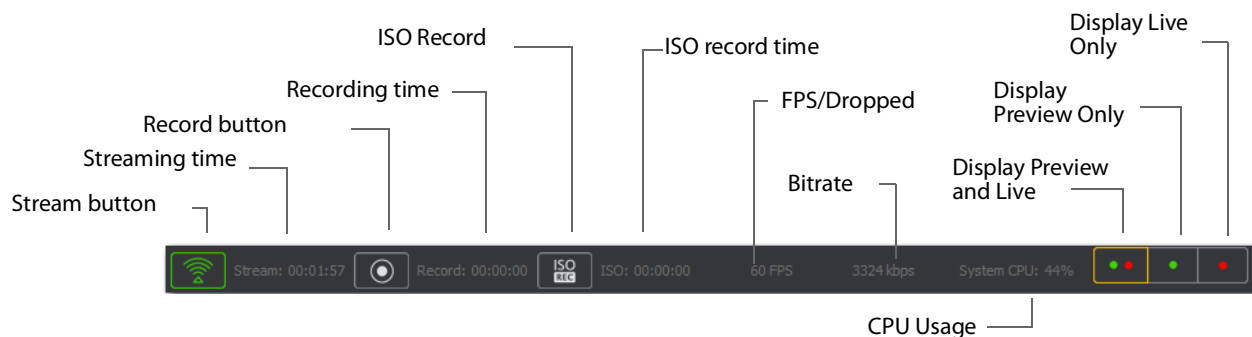
Main Shot List

The Main window displays the Shot List at the bottom of the window.



Control/Status Bar

Control buttons and status information are displayed at the top of the Main window.



Wirecast One displays the following controls and statistics:

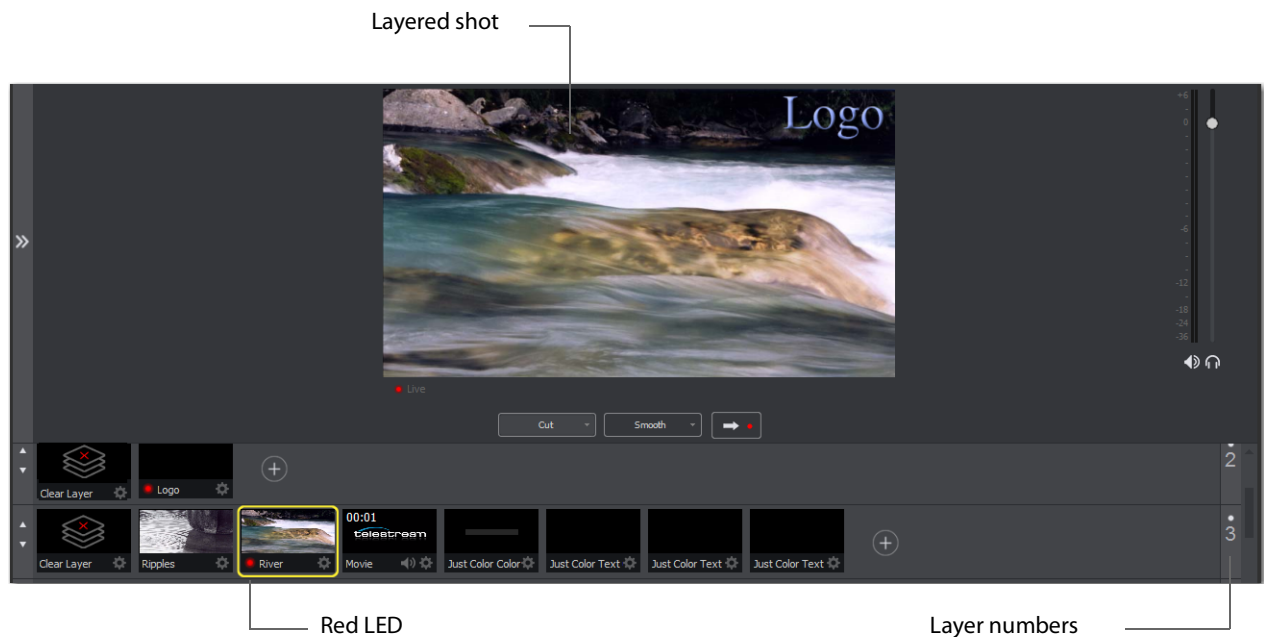
- **Stream button** Click to begin streaming.
- **Streaming time** Displays how long you have been streaming. This value does not reset when you start/stop the broadcast. It is cumulative, which enables you to save portions of a broadcast to disk and still know the total amount of time.
- **Record Button** Click to begin recording.
- **Recording Time** This displays how long you have been recording. This value does not reset when you start/stop the broadcast. It is cumulative, which enables you to save portions of a broadcast to disk and still know the total amount of time.

- **FPS/Dropped** Displays the current FPS (frames per second) rate, or the number of frames dropped while streaming. Click on display to toggle between *FPS* and *Dropped Frames* modes. (Displayed only while streaming.)
- **Bitrate** Displays the streaming bitrate. (Displayed only while streaming.)
- **CPU Usage** Displays the usage of the CPU in percent. (Displayed only while streaming.)
- **Display Buttons** These three buttons enable you to choose to display the Preview window, the Live window, or both in a divided display.

To avoid decrease in video quality, Wirecast should not be used at CPU usage above 80%. See the [Telestream Website](#) for suggested configurations. You can also view streaming statistics by selecting *Output > Show Statistics*.

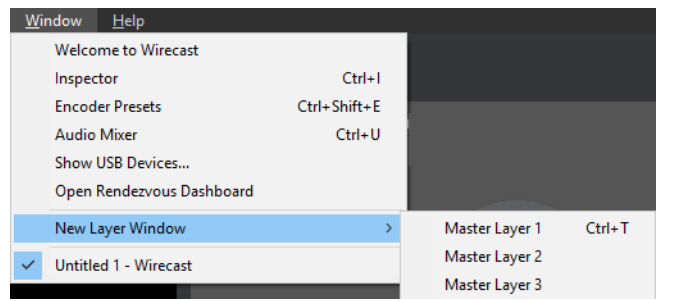
Layers

Wirecast One displays three layers in the Main Shot List window. They are numbered 1 through 3 along the right side of the window. Each layer contains multiple shots that can be selected by clicking one. A red LED indicates that a shot is Live. (If AutoLive is turned on, when a shot is selected it is displayed in the Live window.) If you select multiple shots -- by selecting shots on multiple layers -- they will all be displayed in the Live window. But the shots are displayed in a layering manner, where layer 1 is on top and layer 3 is at the bottom (and layer 2 is layered in between). In the example below, .

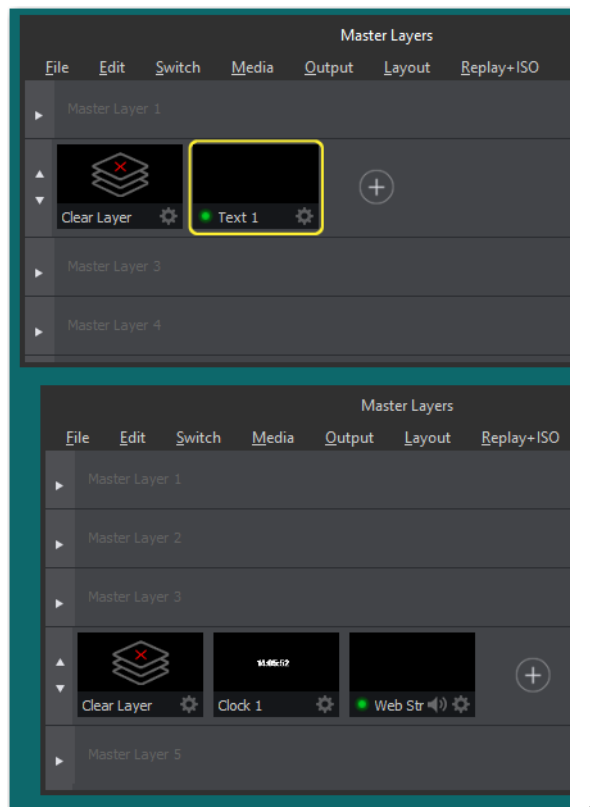


Layer Windows

You can also open the Shot List in a separate window. Select *Window > New Layer Window* to display a list of the layer windows you can open (Master Layer 1 through 3). Select the layer you want to open and a new, separate layer window is displayed.



This separate Shot List window works exactly like the Shot List panel in the Main window, except it enables you to open multiple Shot List panels.



Installation

Introduction

This topic guides you through installing (or upgrading) and activating Wirecast One.

Topics

- *Installing*
- *Uninstalling*
- *System Requirements*

Installing

To install Wirecast One, follow these steps:

1. Download the installer from the Website at: <http://www.telestream.net/Wirecast/overview.htm>.
2. Run the installer (.exe) program and follow the instructions provided

Note: During installation, you will be asked if you want to install the Virtual Microphone feature. If you do (recommended), check the displayed check box and continue the installation. Installing Virtual Microphone requires administrative rights.

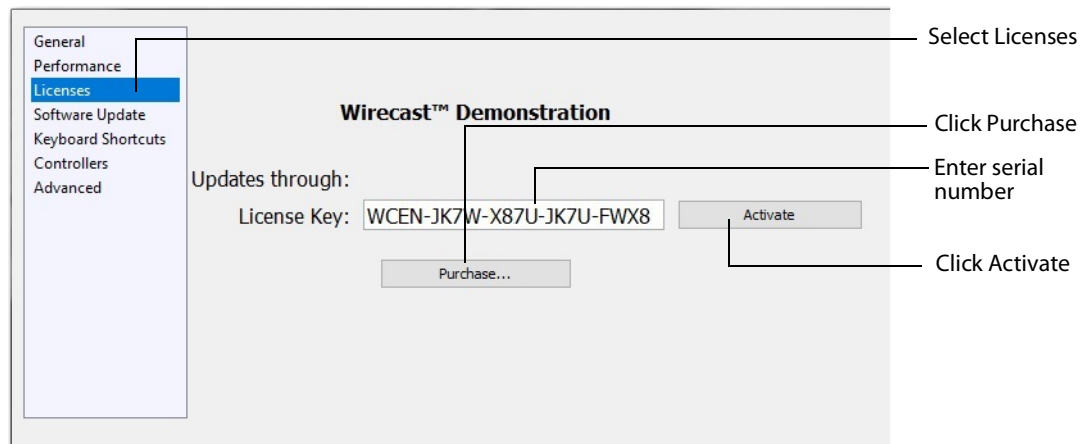
3. If you have an older version of Wirecast One already installed on your computer, the installer upgrades to the newer version. Agree to the license terms and follow the instructions displayed by the installer program.

Activating

When you purchased WirecastOne a serial number was provided. This serial number must be registered in the WirecastOne program to unlock the features of WirecastOne.

To register WirecastOne follow these steps:

1. Run the WirecastOne program.
2. Select *Preferences* from the File menu, select *Licenses*, then click *Purchase*. Once you purchase and obtain your license number, enter it into the Serial Number field and click *Activate*.



3. Close the Preferences window.

Your WirecastOne program should now be fully activated.

Uninstalling

To uninstall WirecastOne, follow these steps:

1. Run the WirecastOne installer (.exe) program.
2. The installer asks if you want to repair or remove the existing version. Select *Remove* to uninstall the existing version of WirecastOne.

System Requirements

Operating System

- Minimum: Windows 7
- Recommended: Windows 10

Processor

- Minimum: i5 dual-core @ 2.3GHz
- NOTE:** May be insufficient for 1080p+ or 60 fps workflows

- Recommended: i7 quad-core @ 2.8GHz+

Memory

- Minimum: 4GB RAM
- Recommended: 16GB+ RAM

Hard Drive

- Minimum: 2GB, 7200 RPM for record to disk
NOTE: Additional hard disk space required for record to disk
- Recommended: 500GB+, Solid State OS Drive

Graphics Card

- Minimum: Intel HD, DirectX 11 capable
NOTE: Insufficient for advanced Multi-Viewer workflows
- Recommended: Nvidia GeForce or AMD Radeon, 1GB+ video memory

Internet Connectivity

- Minimum: Open HTTP/HTTPS port 80, RTMP port 1935, port 7272 for Remote Desktop Presenter
- Recommended: If behind a firewall, check with your CDN for any sites to whitelist

Note: You are strongly advised to run WirecastOne using the Windows *Aero* Theme, which includes a hardware accelerated window manager. Problems may result if you use the Windows *Classic* Theme.

Internet Connectivity

- Requires internet connectivity with HTTP/HTTPS port 80, and RTMP port 1935 open for streaming.
- For lowest quality (240p) streaming an upload rate of at least 650Kbps is required.
- 720p streaming requires an upload rate of at least 2500 Kbps.
- 1080p streaming requires an upload rate of at least 4500 Kbps.
- Consider lowering your canvas frame rate and/or streaming resolution to lower CPU usage.
- It is recommended that an upload rate of at least double the desired rate be available.

Recommended Hardware Specifications

- Intel HD, NVIDIA GeForce, or AMD Radeon class graphics adapter that is DirectX 11 capable.
- Minimum 4GB RAM, 2GB free hard disk space. Additional hard disk space required for recording to disk.

Hardware Accelerated Encoding Requirements

- Intel Quick Sync Video encoding requires an Intel CPU with an Intel® QuickSync Video core. List of Intel CPUs supporting QuickSync.

NVIDIA NVENC encoding requires an nvidia GPU with Kepler architecture or newer. NVIDIA only maintains a general list of supported GPUs.

Tutorials

Introduction

The best way to get started using Wirecast One is to quickly work through all its main features. This tour presents a series of three tutorials, each designed to help you understand how to create and stream presentations using Wirecast One.

As you work through these tutorials, you will also become familiar with important Wirecast One concepts and how you can use them to deliver high quality broadcasts. The more you know about Wirecast One, the better it will serve your streaming objectives.

Because each tutorial builds on the skills and knowledge you learn in the previous tutorials, it is recommended that you take the tutorials in succession. Working through all the tutorials takes about thirty minutes.

As you gain hands-on experience creating video and audio presentations - which leads to a working knowledge of Wirecast One and its components and architecture - you will gain proficiency in using Wirecast One.

Tutorials

- [Tutorial 1: Basic Concepts](#)
- [Tutorial 2: Editing Shots](#)
- [Tutorial 3: Broadcasting](#)

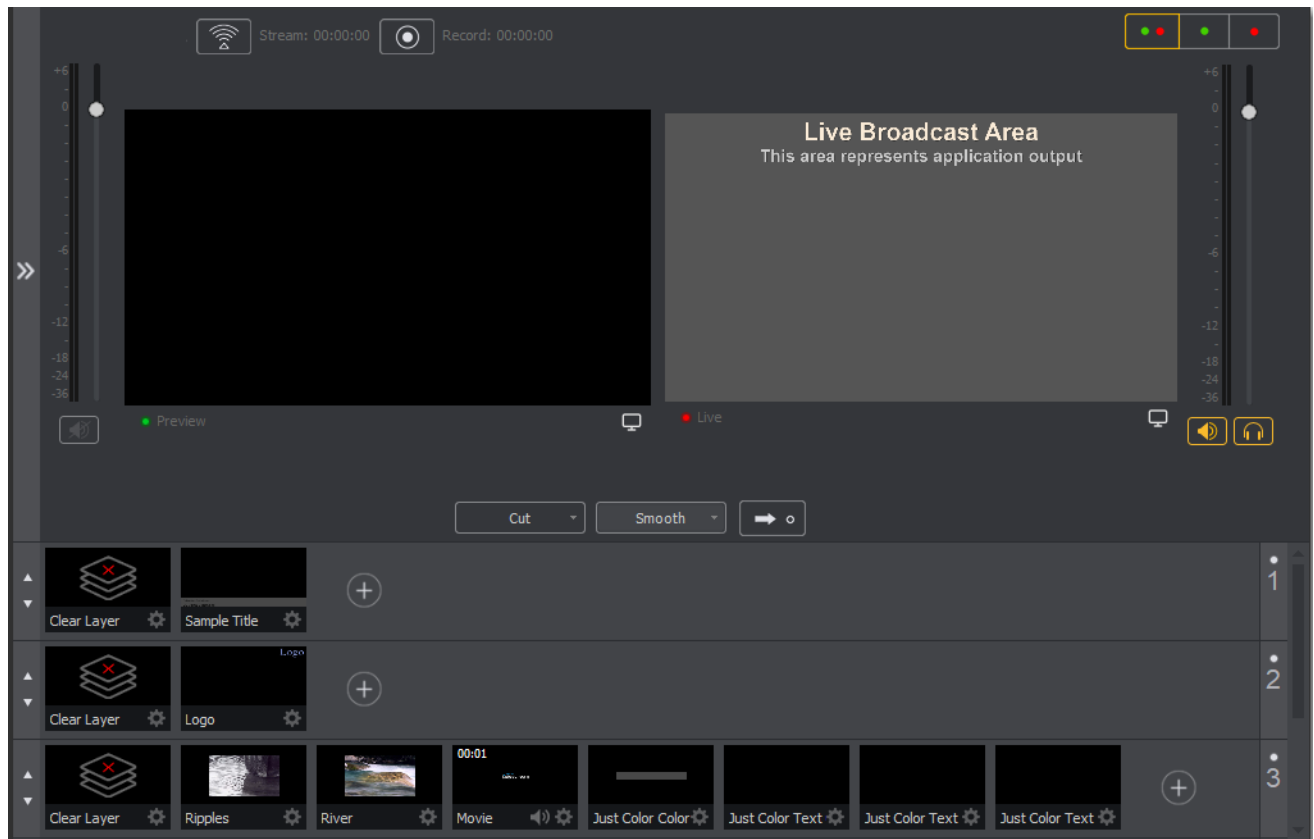
Note: You can run all of the tutorials without a license. However, a watermark on the video and an occasional voice-over on the audio are present until a valid license is activated.

Note: For licensing information, select *Preferences* from the File menu, select *License*, then click *Purchase*. Or, you can contact Telestream at: desktopsales@telestream.net.

Tutorial 1: Basic Concepts

The goal of this tutorial is to provide you with a quick but successful experience creating and streaming a presentation using Wirecast One.

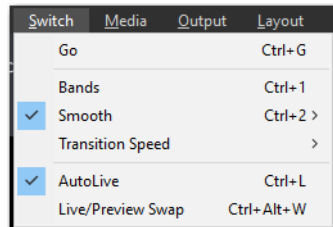
This tutorial requires that you open the tutorial document in Wirecast One. To do this, select *Create Document for Tutorial* from the Help menu in Wirecast One.



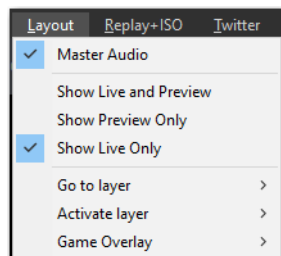
Note: If you are running the tutorial with Wirecast One in demonstration mode, the Wirecast One logo appears from time to time and audio output has a periodic voice-over.

Tutorial Prep

To prepare for this tutorial you need to make several changes. Under the Switch menu, make sure Smooth and AutoLive options are turned on (check mark displayed), and *Live/Preview Swap* is turned off (no check mark displayed).

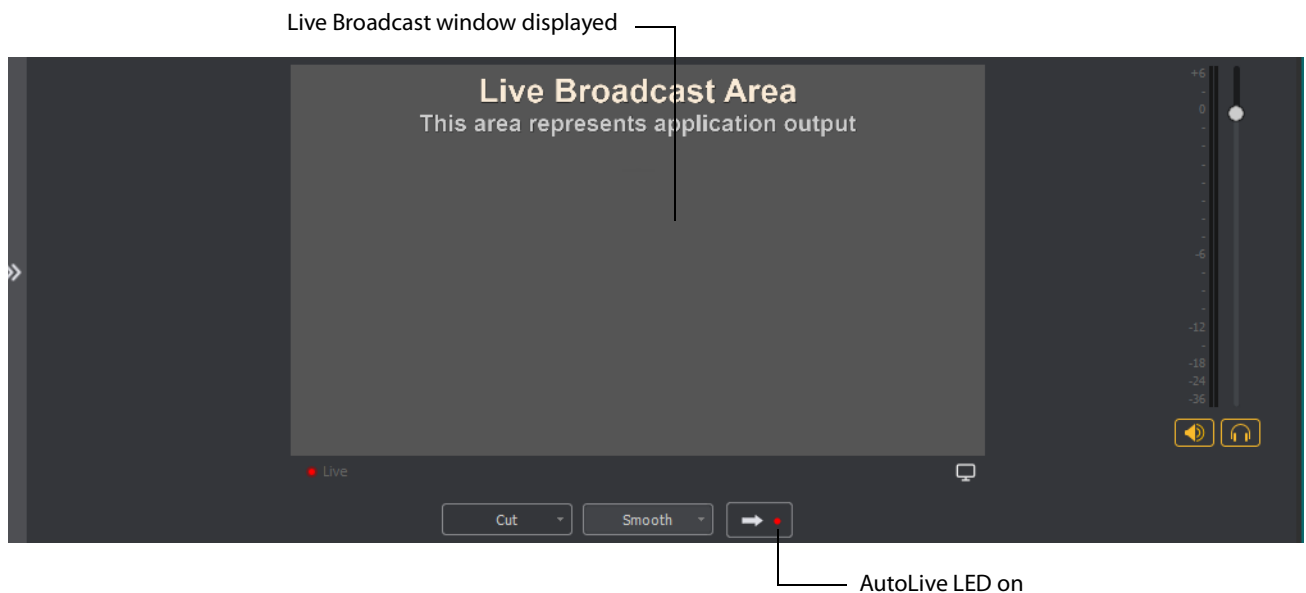


Under the Layout menu, make sure *Show Live Only* is selected (check mark displayed).



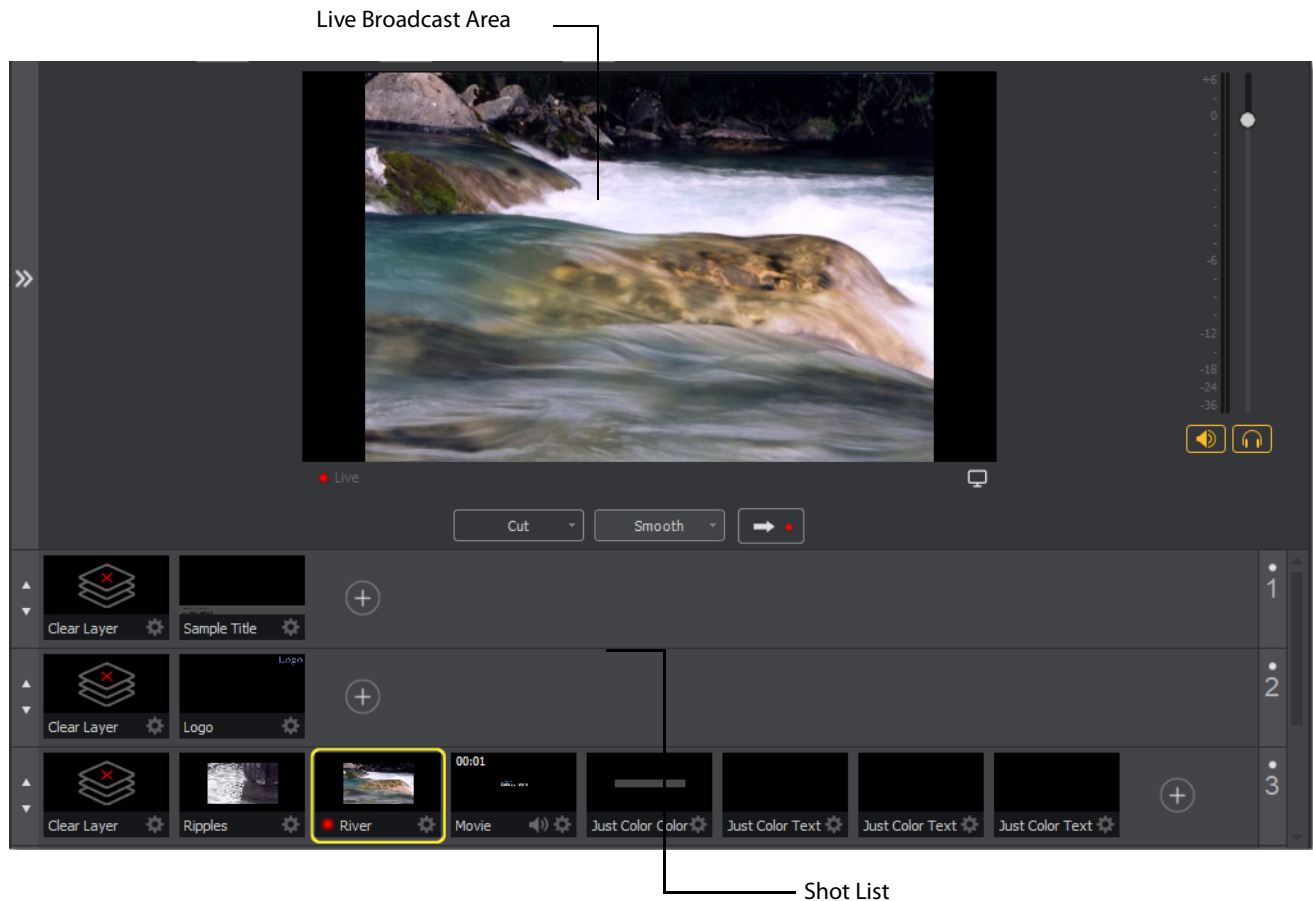
All of these options will be changed later in the tutorial.

The Wirecast One Main window shows the AutoLive LED turned on and the Live Broadcast window (only) displayed.



The Main Window

Wirecast One has two main display areas: Live Broadcast area and the Shot List. The Live Broadcast area is in the upper portion of the window displaying what Wirecast One streams to your viewers (or what it records to disk). The Shot List, in the lower half of the window, displays the shots available for streaming.



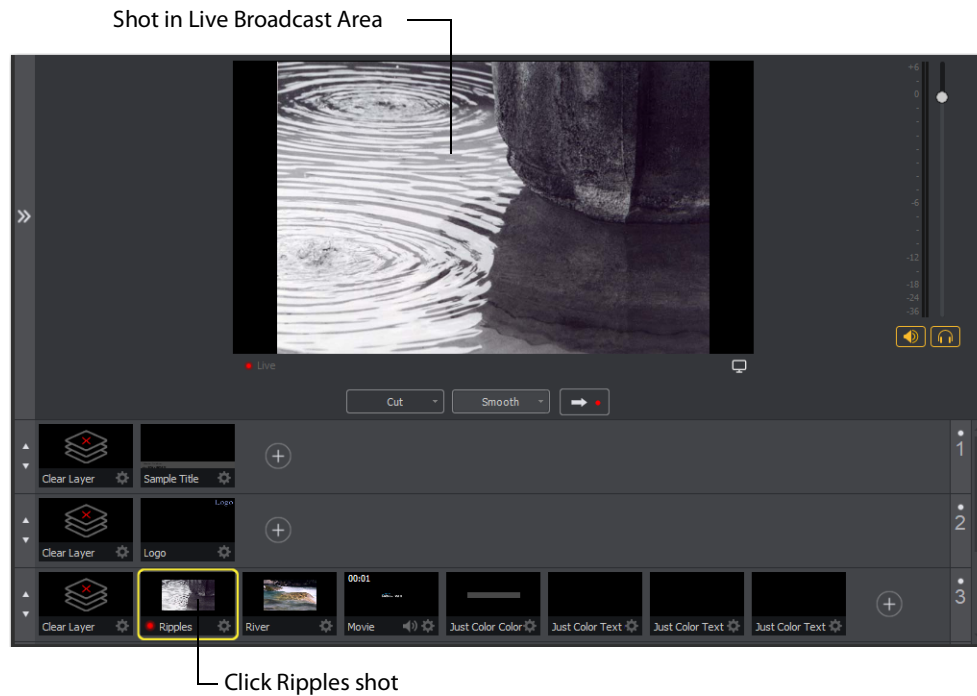
What Is a Shot?

Wirecast One uses the concept of a “shot” to construct presentations. A shot contains some form of media (pictures, video, etc.), along with any settings for that media. In its simplest form, a shot contains one piece of media such as a photo or a video clip. But it can also be something more complex, like a live camera with a title and background music. Or a shot can even be something even more complex like a Playlist of shots.

A shot can be edited and its settings can be changed (See [Tutorial 2: Editing Shots](#)). Shots are important because they enable you to configure a lot of information before you stream your presentation. This enables you to concentrate on creating a good production during your broadcast.

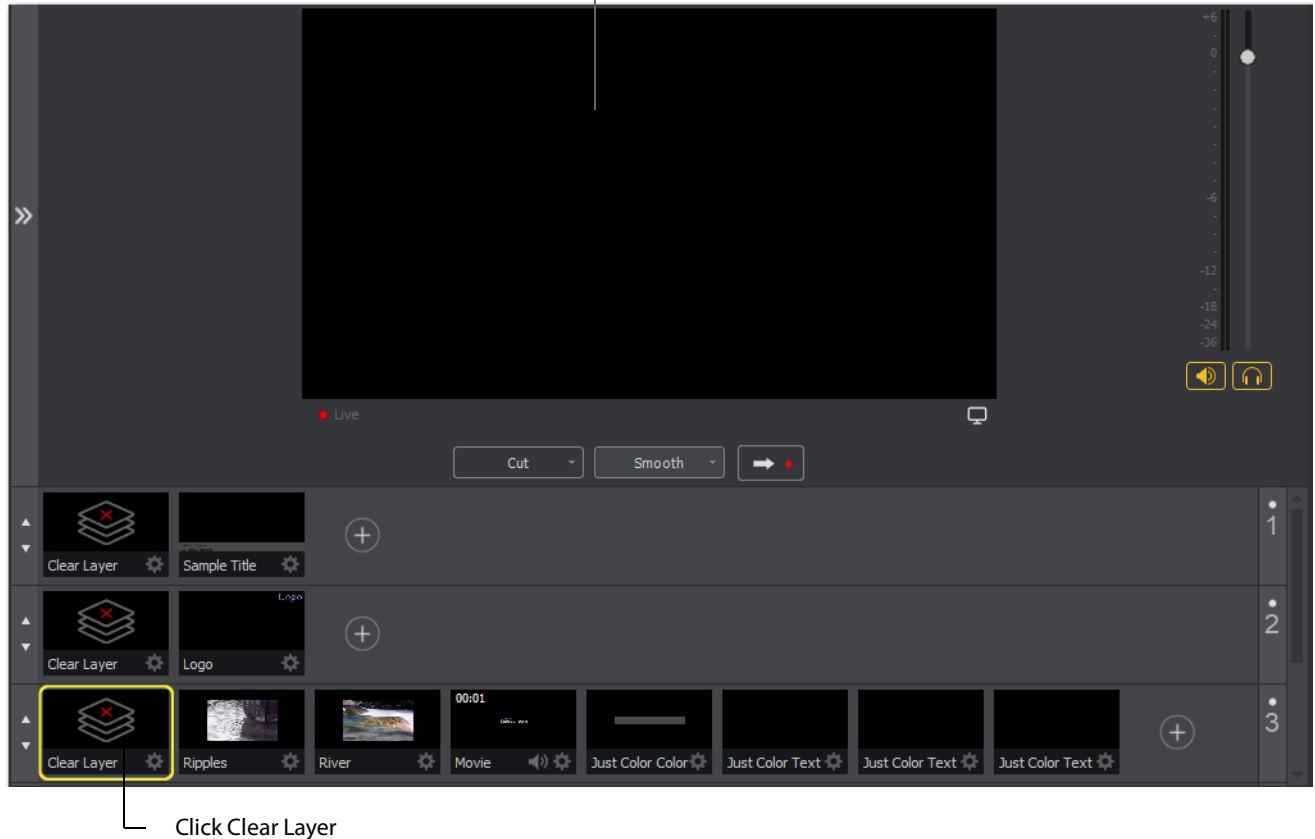
Switching Between Shots

Individual shots are displayed in the Shot List. Click the Ripples shot in the Shot List area and the image fades into the Live Broadcast Area display. This is called “taking a shot live”.



Click the shot labeled *Clear Layer* and the Ripples image fades to a blank screen. The Clear Layer shot enables you to display a blank shot, which is sometimes needed.

Blank shot in Live Broadcast Area



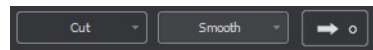
Transitions

In the previous examples, a “fade action” occurred when you clicked on a shot. This is because the *smooth* transition is the default.

Note: Wirecast One does not support a true *Dissolve* transition. The *Smooth* transition is the closest choice for dissolve. The main difference is that when Smooth is used in transitions that involve position or size changes in the images, the smooth transition migrates from one image to the other rather than dissolving out of one and into the other.

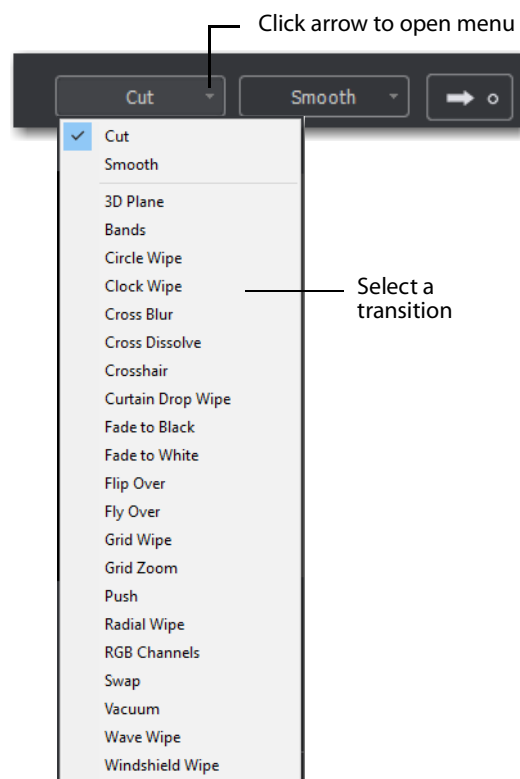
If you are transitioning from an “A to A” shot (a shot that contains a “picture in picture” effect, or a “side-by-side” shot) then Smooth will interpolate the difference between the shot elements’ position and size and will smoothly animate the changes. This will make a shot element bigger or smaller and move it on the screen as needed. However, if you are transitioning from an “A to B” shot (from one shot to an entirely different shot), then the *Smooth* transition will act like a traditional *Dissolve* and fade between the two images.

Transition controls are located just below the Live Broadcast Area where the two default transitions are shown: *Cut* and *Smooth*.

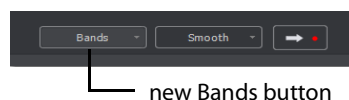


When *Cut* is selected, transitions are executed immediately. When *Smooth* is selected, transitions fade in and out (as demonstrated above).

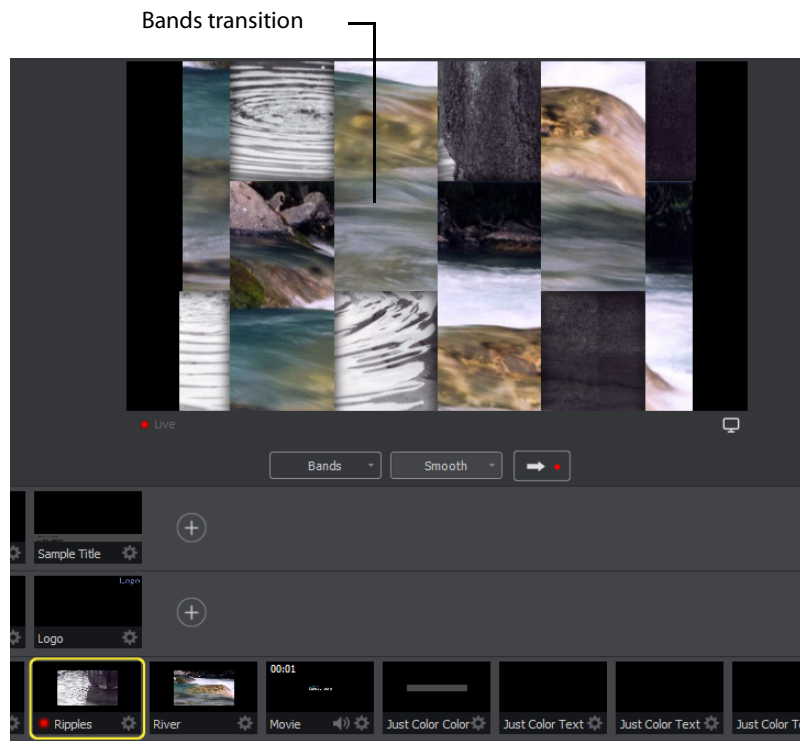
But there are more than just two kinds of transitions, and only two transitions can be assigned to the Transition Panel. To select a different transition, click the small arrow on the right side of either transition button. When the list appears, select a new transition to be assigned to that button. You can also click the transition button itself and drag the mouse downward until the menu of selections is displayed.



For example, to change the left transition button from *Cut* to *Bands*, click the *Cut* button and drag downward until the menu appears. Select *Bands* from the menu. *Bands* should now be displayed as the left button.



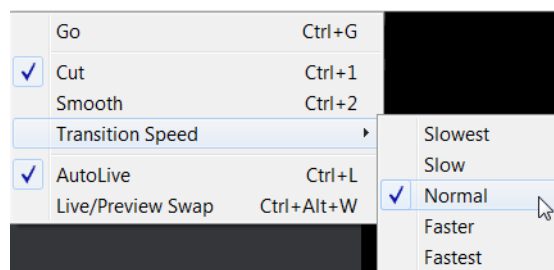
Now click back and forth between the River and Ripples shots using Bands (Bands button selected).



These two transition buttons can also be selected by using the following key combinations: Ctrl+1 and Ctrl+2.

Transition Speed

You can also control how fast a transition occurs, by selecting *Switch > Transition Speed*. Your choices range from *Slowest* to *Fastest*.



Go Button

The Go Button (or Ctrl+G) enables you to make a transition.



Clicking the Go button does nothing when Wirecast One is in AutoLive mode. The only exception is that it will update a live shot if you have made changes to it using the Shot Editor. Later in this tutorial you will discover how to use the Go button to transition between different shots when AutoLive is off.

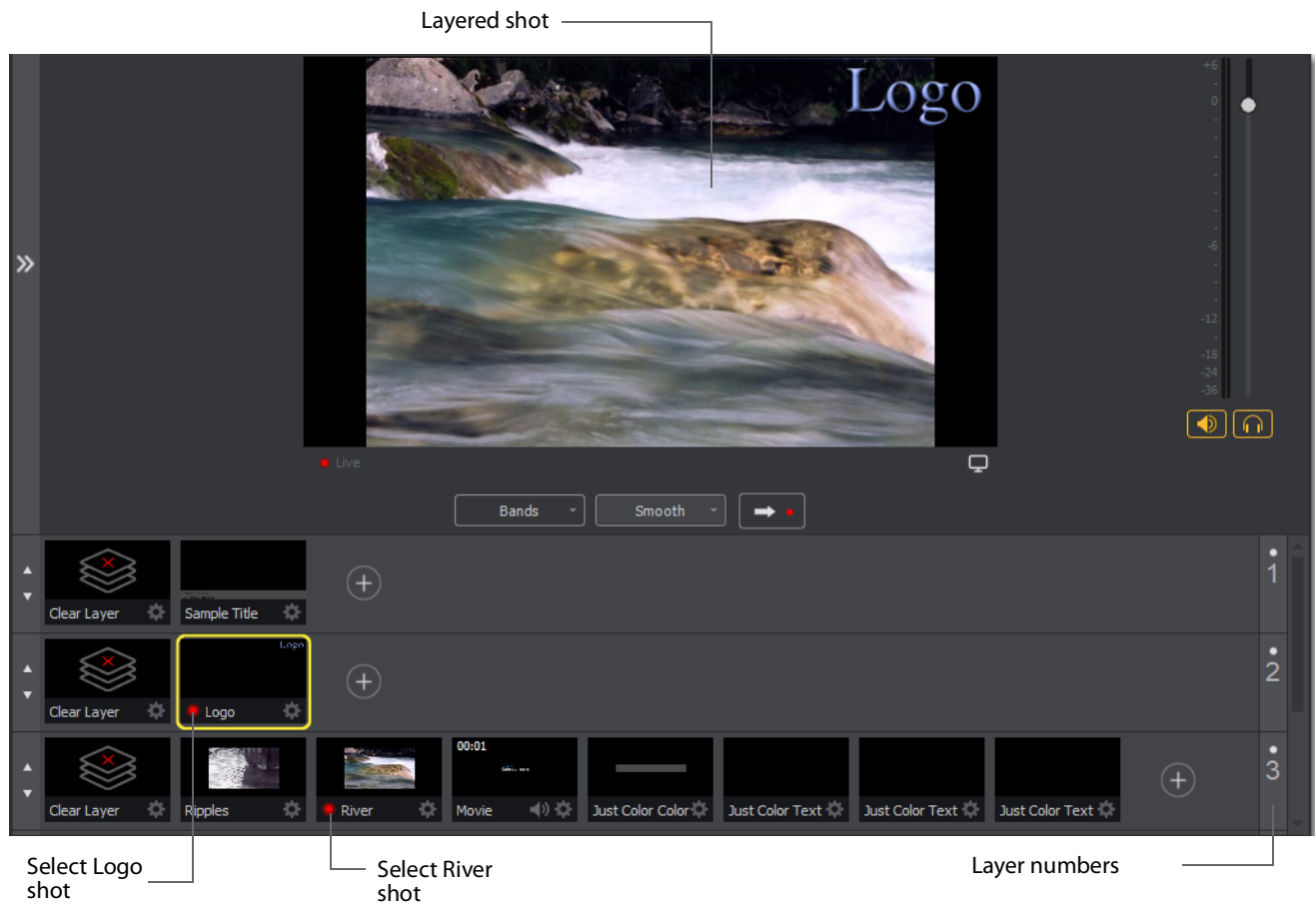
Layers

Note: Before you start this section, please select Smooth as your transition.

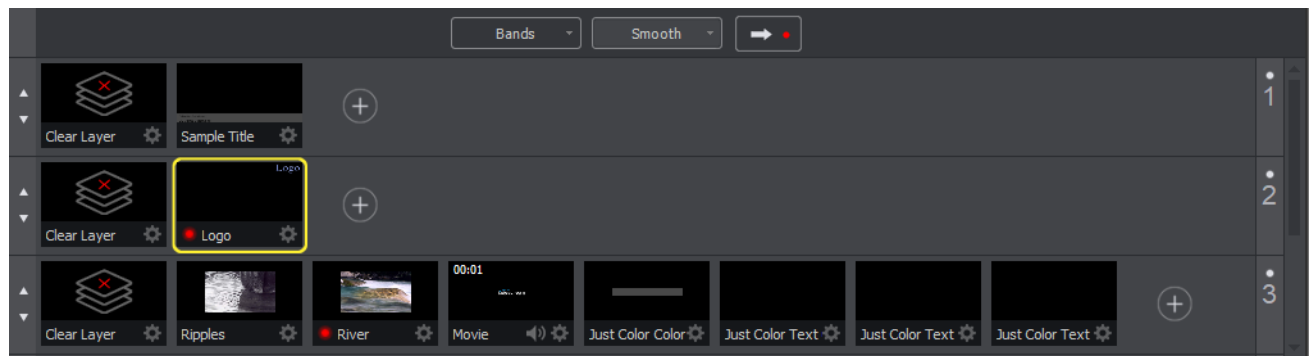
Wirecast One enables you display several shots in the Preview and Live windows at the same time by rendering them one on top of another according to Wirecast One's Layer system. This is an excellent way to add and remove objects in your broadcast.

Wirecast One displays five layers in the Main Shot List window. They are numbered 1 through 5 along the right side of the window. Each layer contains shots that can be selected by clicking a shot. A red LED indicates that a shot is selected. When a shot is selected it is displayed in the Live Broadcast window. If you select multiple shots (by selecting a shot on more than one layer) they will all be displayed in the Live Broadcast window. The shots are displayed in a layering manner, where layer 1 is on top and layer 5 is at the bottom (and layer 2 in between).

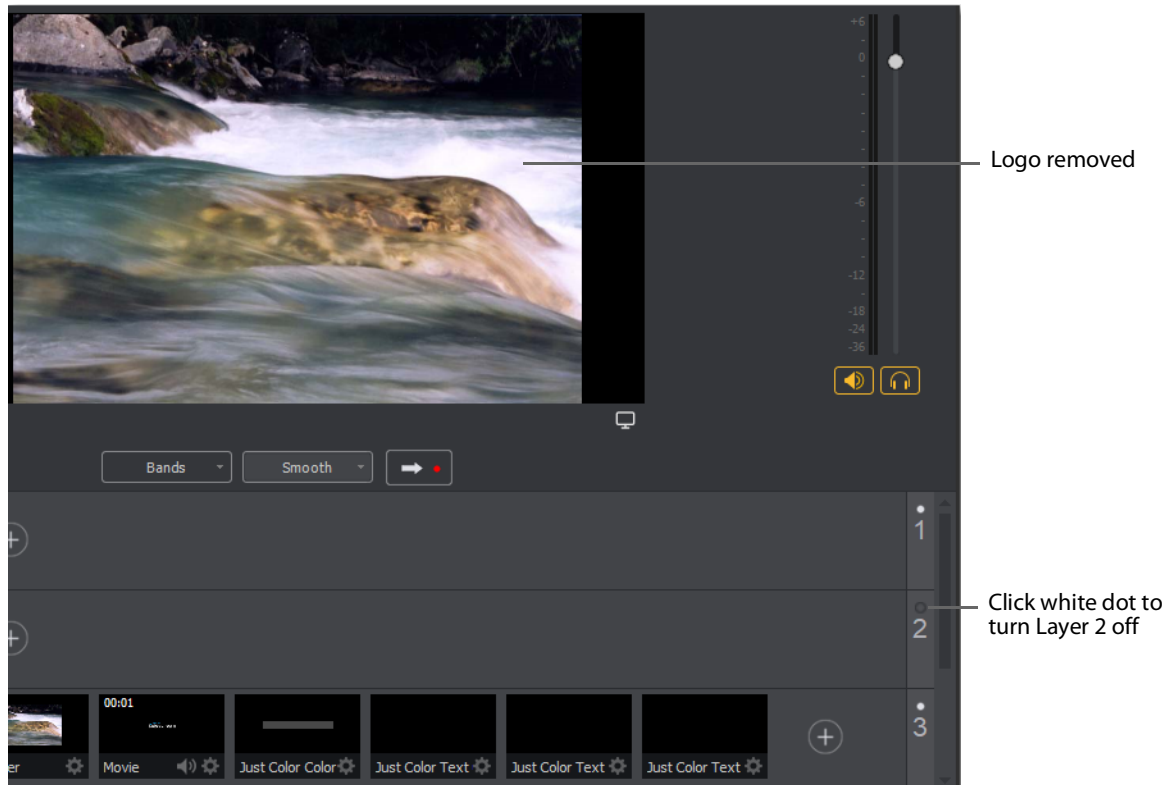
Select the Logo shot in layer 2 and the River shot in layer 3. The result is a layered shot containing both images.



Layers are displayed in a particular order: Layer 1 is on top, Layer 2 below it, Layer 3 below Layer 2, etc. This tutorial, so far, has been operating on Layers 2 and 3. Clear Layer, Ripples, River shots (and more) are on Layer 3, but Layer 2 has only a logo and a Clear Layer shot.



Each layer can be turned on or off by clicking the white LED light on the far right side of the layer window. Click the Layer 2 LED to remove the Logo shot.



Click the LED again to turn Layer 2 back on and restore the Logo image.

Auto Live

So far in this Tutorial, Wirecast One has been running in AutoLive mode. This means that any selection you make in the Shot List is automatically placed into your Live Broadcast window. This mode is very useful for those users who want to set up all of their shots at once and then single-click them as they run their presentation. But the disadvantage of this single-click method is that you can only see one shot change at a time. Once you click a shot, your viewers also see it (with no preview for you of how it looks before broadcasting the new shot).

Turn AutoLive Off

An red LED, next to the Go button is lit when you are in AutoLive mode.



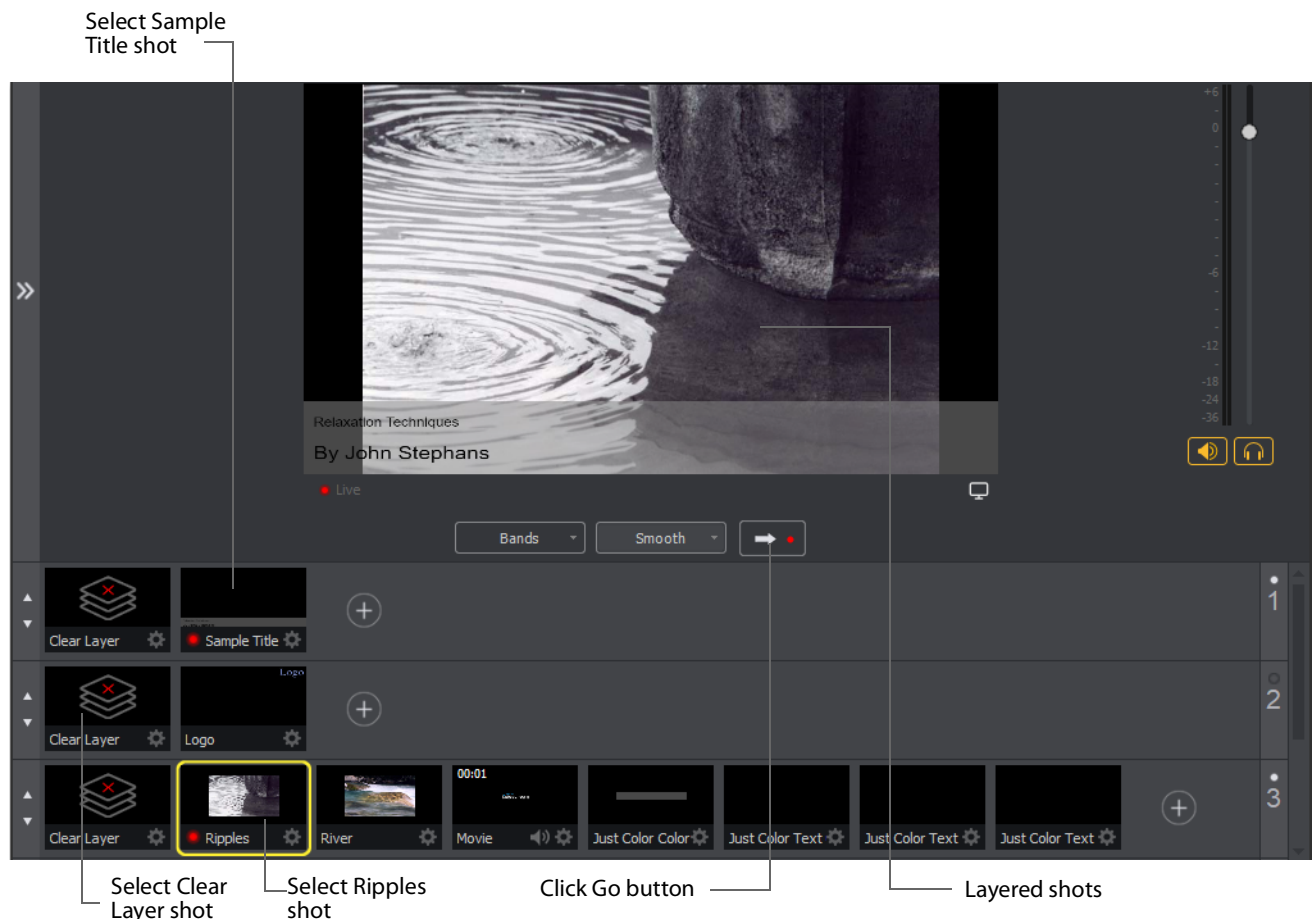
For this tutorial, make sure AutoLive is off by un-checking *AutoLive* in the Switch menu. When you do this a dialog box is displayed informing you that AutoLive is off and transitions must be made using the Go button. Click *OK* in the dialog box to continue.

Try clicking the Ripples and River shots, and notice that nothing happens in the Live Broadcast window because AutoLive is turned off. Now click the Ripples shot and then click the Go Button. The Ripples shot is immediately placed into the Live Broadcast window. Click the River shot and, as expected, nothing happens. Click the Go button and the River shot replaces the Ripples shot in the Live Broadcast window.

Note: When AutoLive is off, you must always click the Go button (or press the Ctrl+G keys) to display the selected shot in the Live Broadcast Area.

Multiple Changes

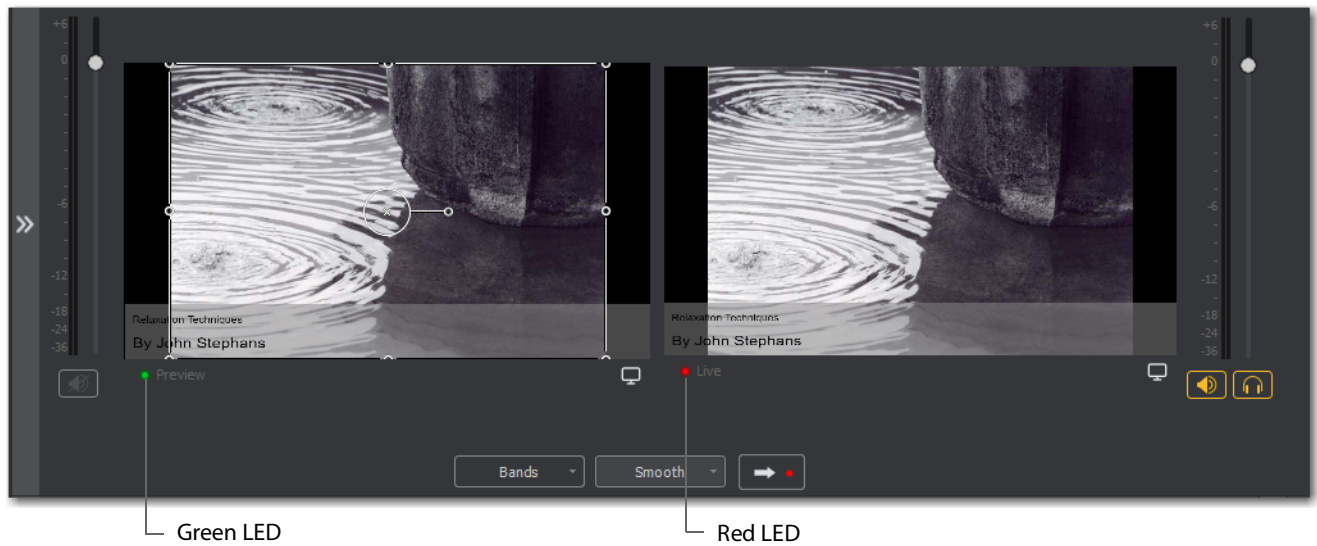
The benefit of having AutoLive off is that you can make several changes to your shot first, and then have all changes placed into the Live Broadcast window at the same time. To do this, first verify that AutoLive is off. Click *Sample Title* in layer 1, click *Clear Layer Shot* in Layer 2, and then click the *Ripples* Shot in Layer 3. Click the Go button (or Ctrl+G) to make the *Ripples* and *Sample Title* shots live at the same time.



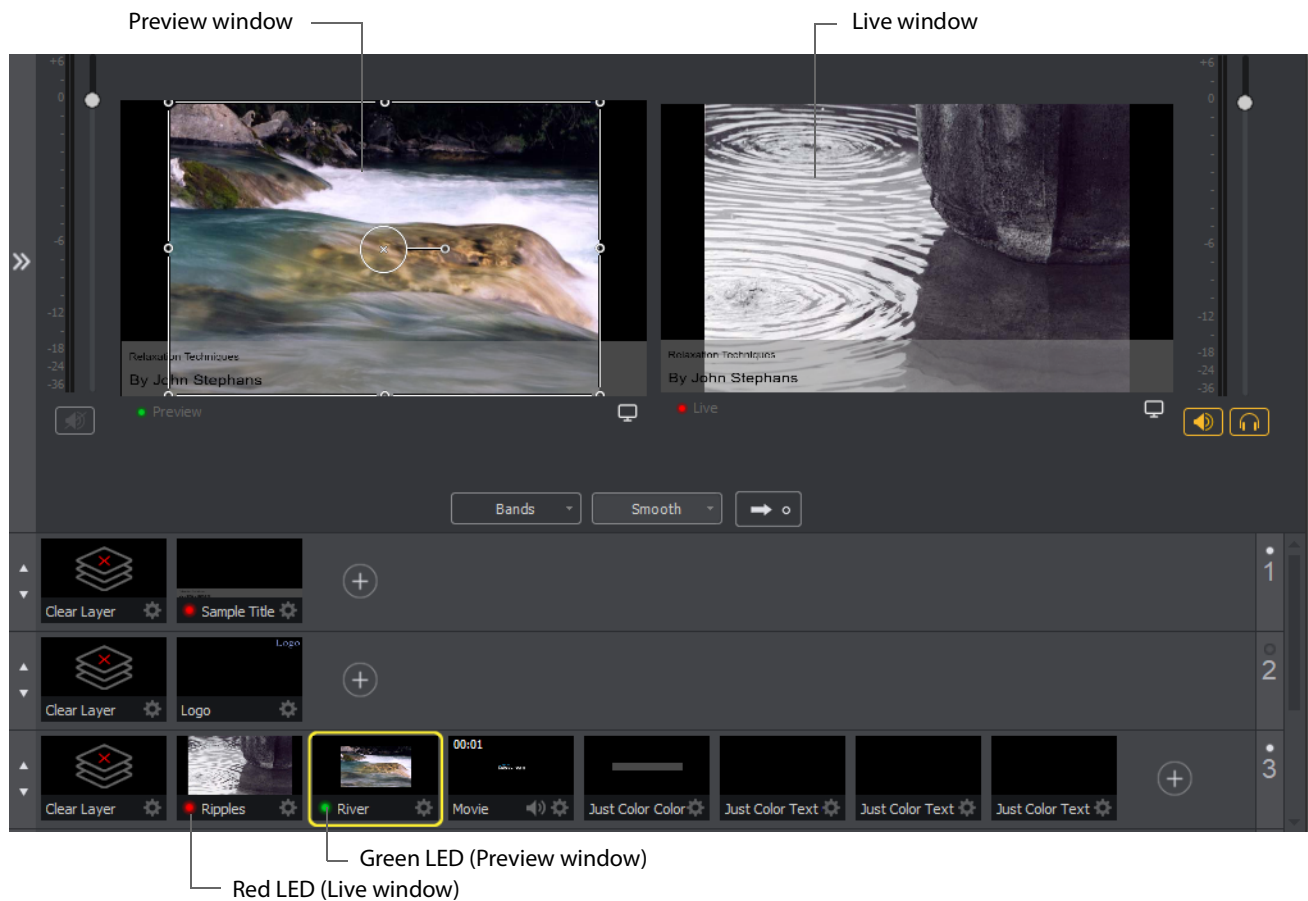
Preview

One problem you may have noticed while running this tutorial is that you cannot see the changes you are making before broadcasting them. To solve this problem, Wirecast One enables you to see a preview of what you broadcast.

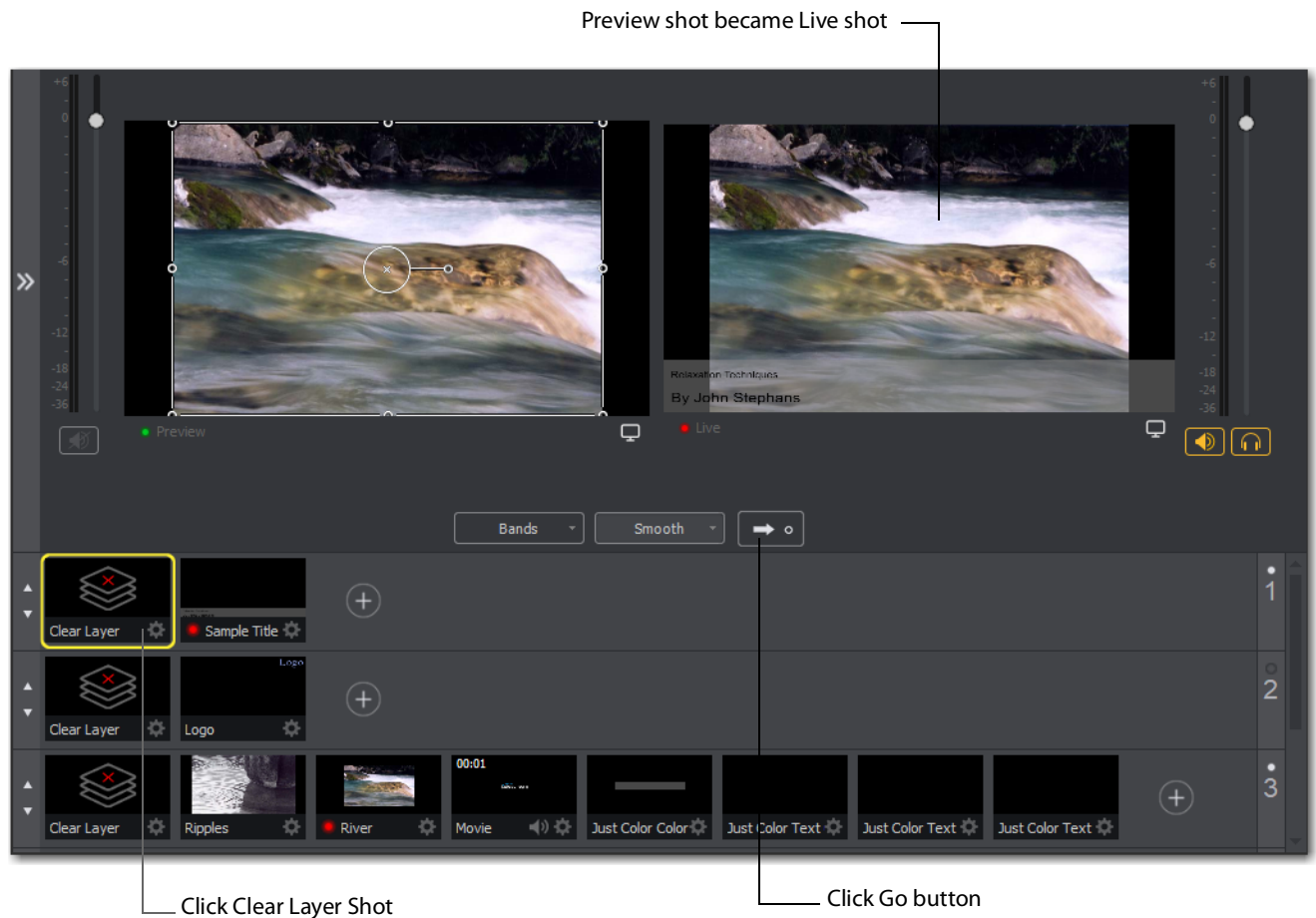
Select *Layout > Show Live and Preview* from the Main menu. A preview window is displayed to the left of the Live Broadcast window. The Preview window uses a green LED to identify it. The Live Broadcast window uses a red LED to identify it. These two colors (green and red) are also used to identify which shots are associated with the Preview or Live windows.



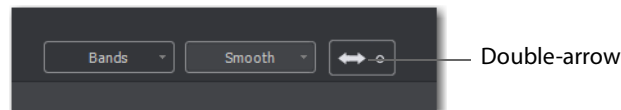
Click the River shot on Layer 3. The River shot is displayed in the Preview window. When shots are selected they display a green or red LED to indicate selection for Preview or Live windows.



Now click the Go button to place the River shot into the Live window. Click the Clear Layer shot in Layer 1 to remove the title from the River shot in the Preview window.

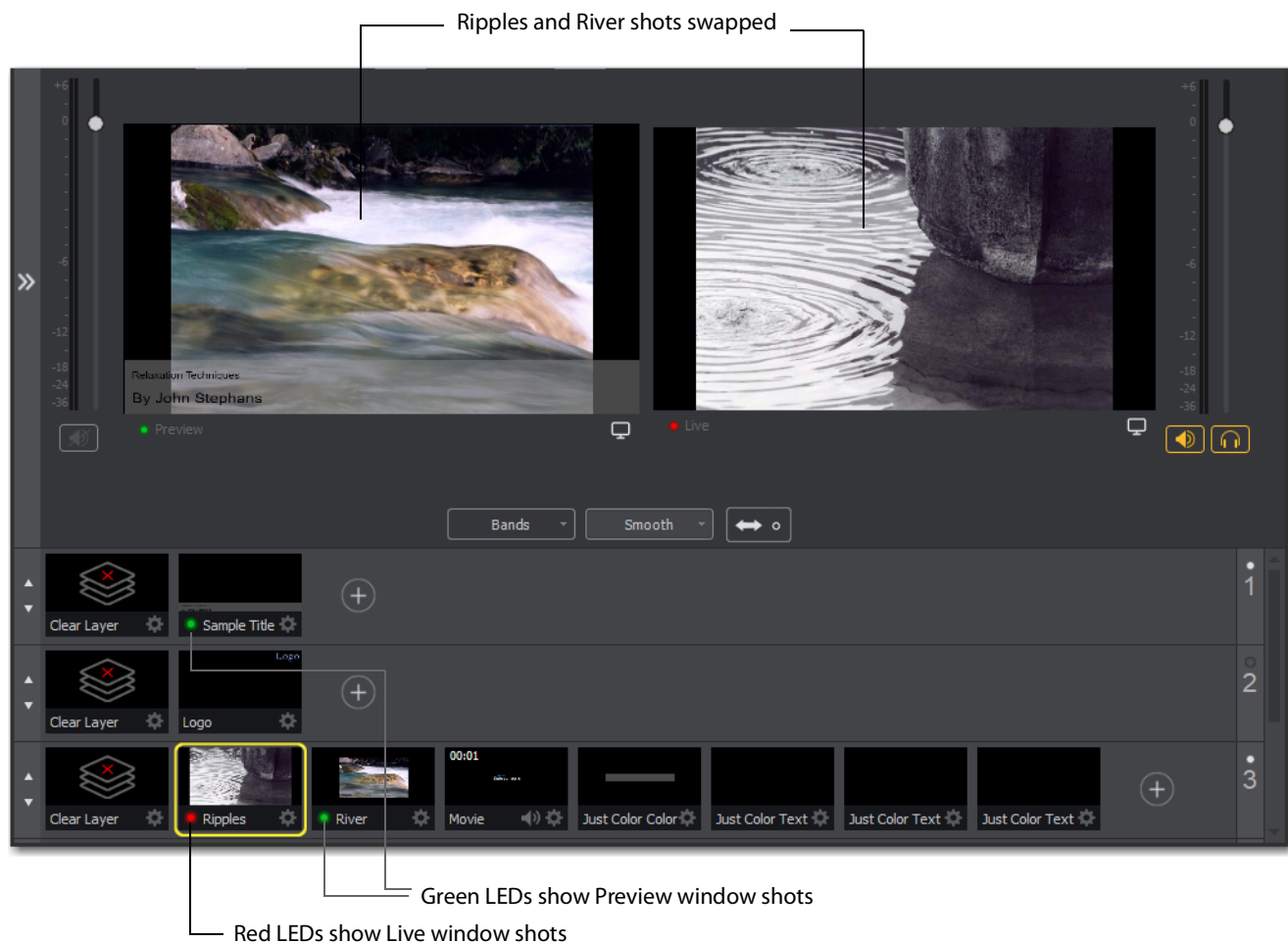


Turn on the Live/Preview Swap option by selecting Switch > Live/Preview Swap (check mark displayed). Notice that the Go Button displays a double-arrow, indicating that the Live/Preview Swap option is on.



Select the Ripples shot and click the Go button to place the Ripples Shot into the Live window. Notice that the Ripples and River shots have swapped (between Preview and Live windows). The shot LED's have also changed color. The green shot LEDs indicate all shots included in the Preview window and the red LEDs indicate the shots included in

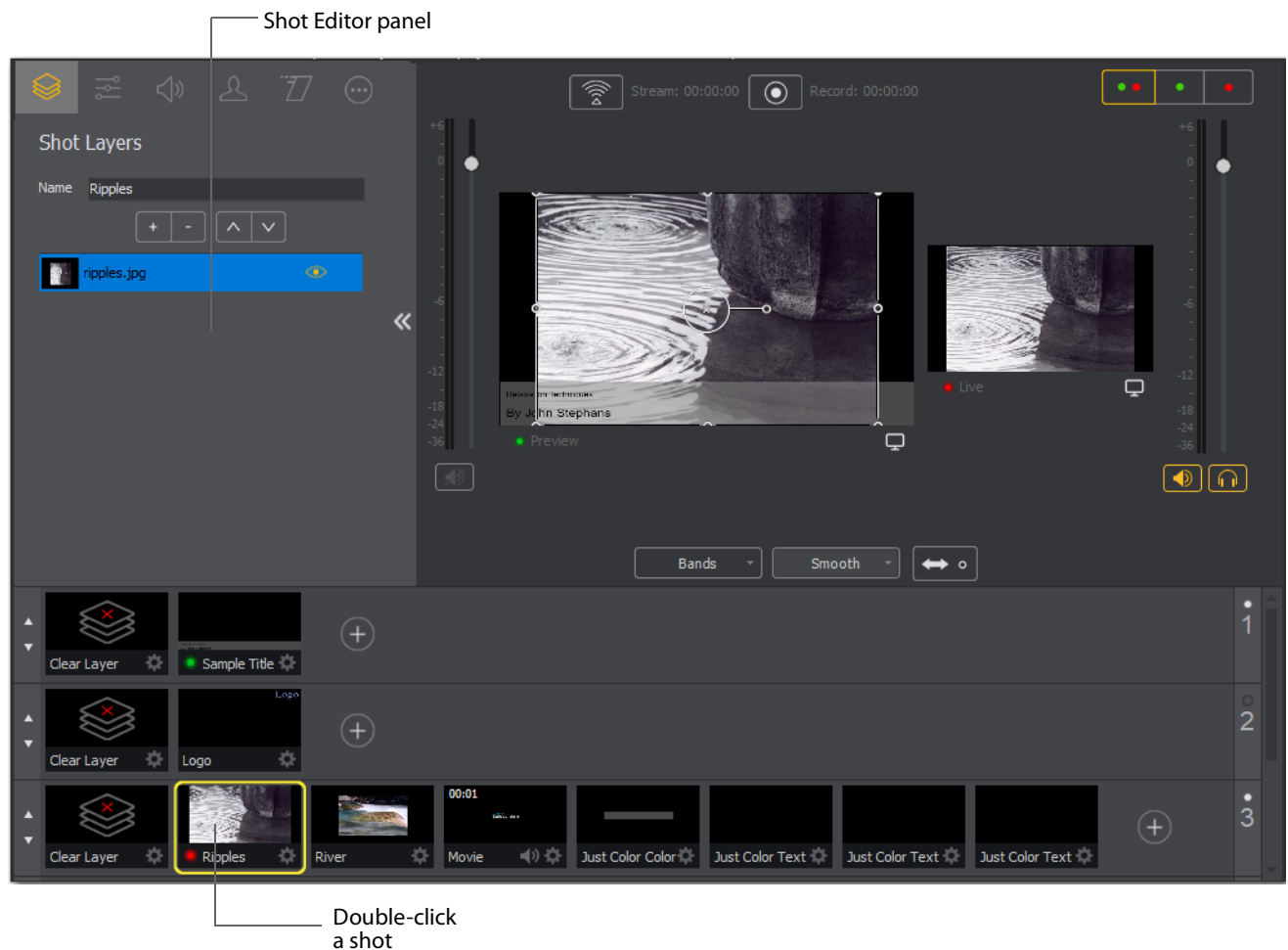
the Live window. This lets you know what your last Live window looked like as you prepare your next shot in the Preview window.



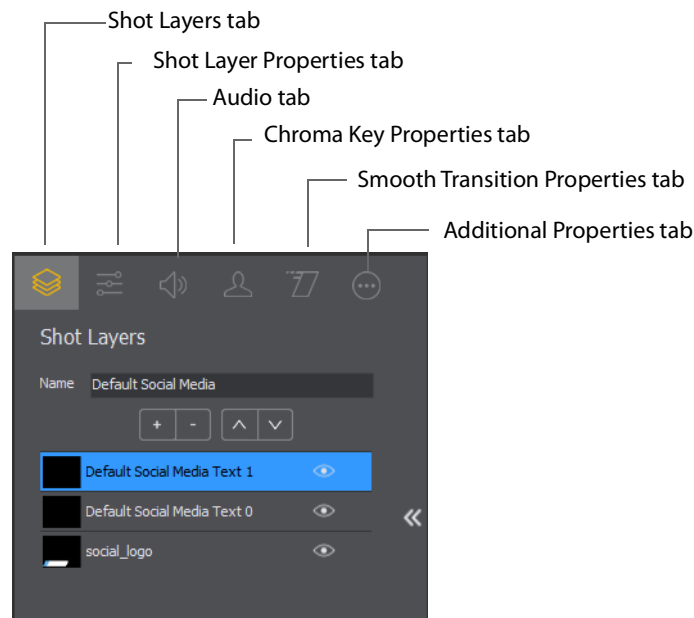
Tutorial 2: Editing Shots

The first tutorial used only the Main window, and explained various ways in which you can use an existing shot. But shots can also be created and edited. This tutorial demonstrates how to edit your shots.

To edit a shot, double-click its icon in the Shot List. This opens the Shot Editor panel.



The shot editor has six tabs: Shot Layers, Shot Layer Properties, Audio, Chroma Key Properties, Smooth Transition Properties, and Additional Properties.



Shot Properties Enables you to add and delete sources and change the display order (change layering within the shot).

Shot Layer Properties Enables you to change the size, position, and other properties of a shot source.

Audio Properties Enables you to set audio levels and other controls. You can also monitor audio levels.

Chroma Key Properties If a source in your shot uses a chroma key, this tab enables you to configure the chroma key settings. Each source in a shot can have its own chroma key settings.

Additional Properties Enables you to set any additional properties for a source in your shot: System Device properties, Screen Display properties, Twitch Widgets (Chat and Followers), etc.

See [Shot Editor](#) for details on how to use the Shot Editor.

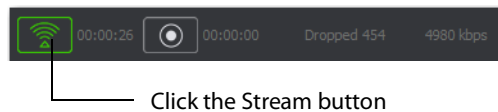
Tutorial 3: Broadcasting

This tutorial demonstrates how to setup and broadcast your Wirecast One presentations.

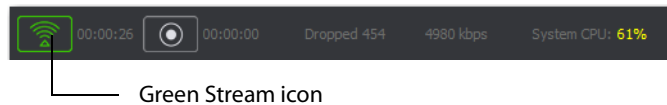
You need to decide how you are going to encode your broadcast. Encoding is the type of compression used. Wirecast One comes configured with many common encoding options. (Dee [The Encoder Presets Window](#) for details.).

Streaming

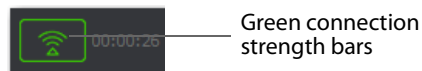
Click the *Stream* button to start streaming.



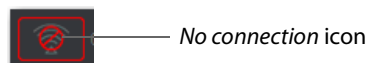
The Stream icon will blink until a connection is made. Once you are connected the Stream icon turns green. If you cannot connect an error message will display.



Connection strength is indicated by how many bars are displayed in the Stream icon. Fewer bars indicates a weaker (slower) connection.

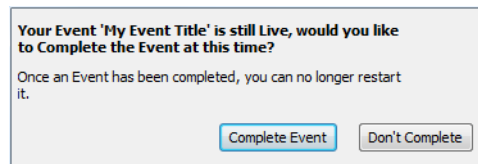


If the connection is ever broken, a *no connection* icon is displayed in place of the bars.

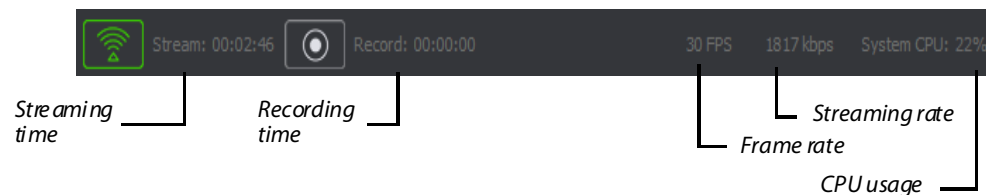


When the connection recovered, the *no connection* icon is replaced with the green bars.

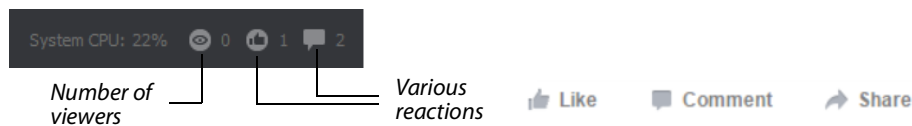
Click *Stream* again to stop streaming. You can also record your broadcast by clicking *Record*. When you stop streaming, if you.



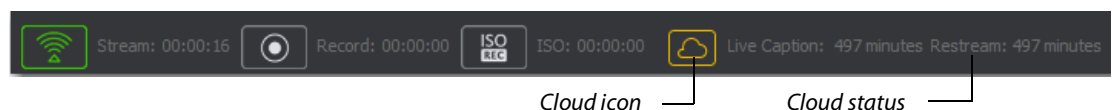
While streaming, status is displayed.



If you are streaming to Facebook, additional status is displayed on the right side of the status bar.



If you are streaming via the Cloud, additional status is displayed on the right side of the status bar.



Telestream Cloud Settings

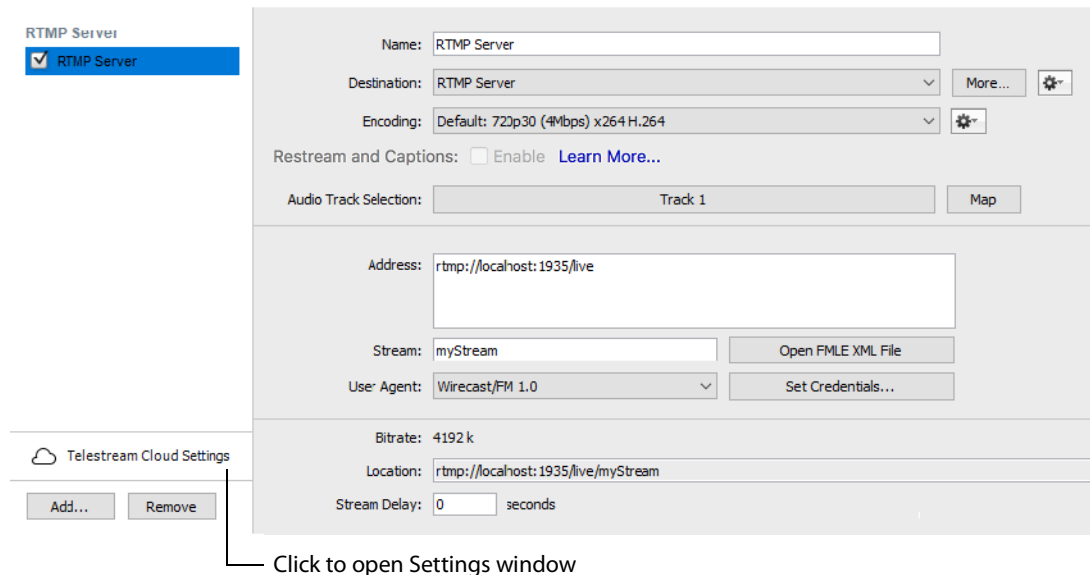
Note: Cloud-based streaming and distribution is available in Wirecast One for an additional monthly subscription. Visit the Telestream website for more information.

The Telestream Cloud enables you to add automated live captioning to your broadcast. But it also allows you to do “re-streaming” (multi-distribution of your broadcast through the Cloud).

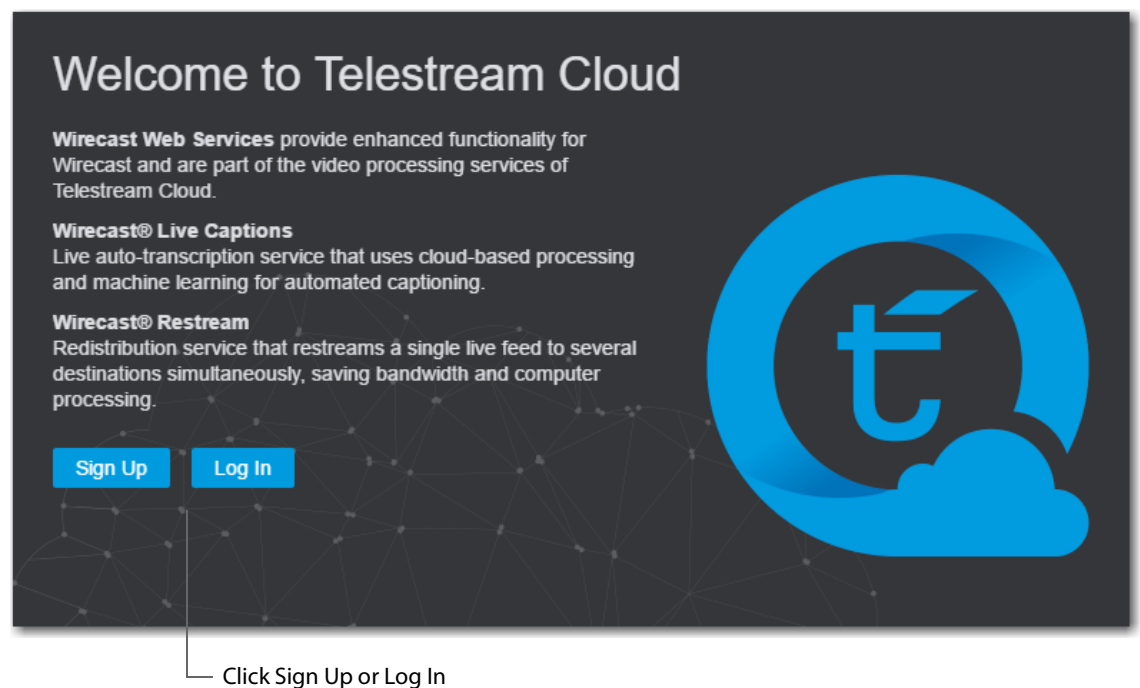
When you request automated captioning, the Cloud server will send out the audio portion of your broadcast for translation into text. When the text is received, it is embedded as 608/708 captions in the outgoing stream.

When you request stream redistribution, the Cloud takes your single stream source received from Wirecast and distributes it to multiple endpoints in a high bandwidth environment.

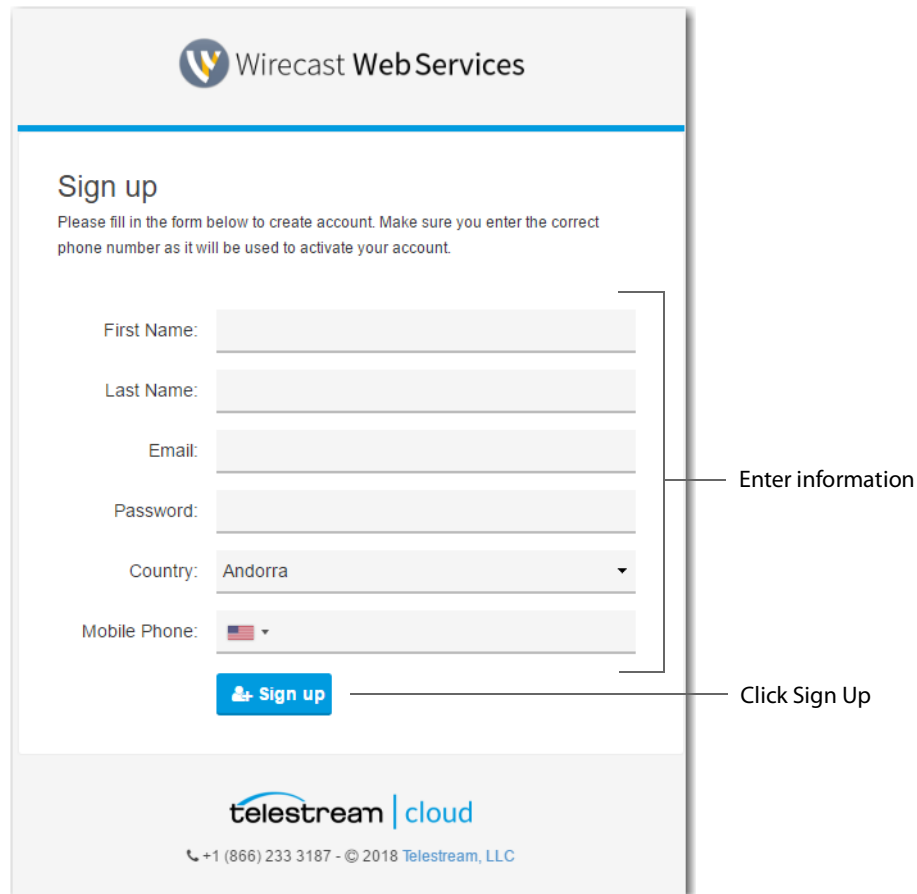
Cloud settings are accessed on the Output Settings window (*Output > Output Settings*). Click *Telestream Cloud Settings* to open the Cloud Settings window.



If you are not already Logged In to the Cloud, a Welcome window will display. Log in by clicking *Log In*. If you are not Signed Up with Telestream Cloud, you can do so by clicking *Sign up*.



If you click Sign Up, a sign up window will display. Enter all requested information and click Sign Up.



The image shows a 'Sign up' form for Wirecast Web Services. The form is titled 'Sign up' and includes a sub-instruction: 'Please fill in the form below to create account. Make sure you enter the correct phone number as it will be used to activate your account.' The form fields are: First Name, Last Name, Email, Password, Country (a dropdown menu currently showing 'Andorra'), and Mobile Phone (a dropdown menu currently showing a US flag). A blue 'Sign up' button is located at the bottom of the form. Two callout lines point to the form: one labeled 'Enter information' pointing to the input fields, and another labeled 'Click Sign Up' pointing to the 'Sign up' button. The footer of the form displays the 'telestream | cloud' logo and contact information: '+1 (866) 233 3187 - © 2018 Telestream, LLC'.

Wirecast Web Services

Sign up

Please fill in the form below to create account. Make sure you enter the correct phone number as it will be used to activate your account.

First Name:

Last Name:

Email:

Password:

Country:

Mobile Phone:

Enter information

Click Sign Up

telestream | cloud

+1 (866) 233 3187 - © 2018 Telestream, LLC

When the Activate Account window displays, wait until you receive your Activation Code via phone call or text. Enter the activation code and click *Activate my account*. If

you do not receive an activation code, or if the code does not work, request a new one by clicking *Resend Code*.

Once you are logged in, clicking the *Telestream Cloud Settings* button will open the Cloud Settings window.

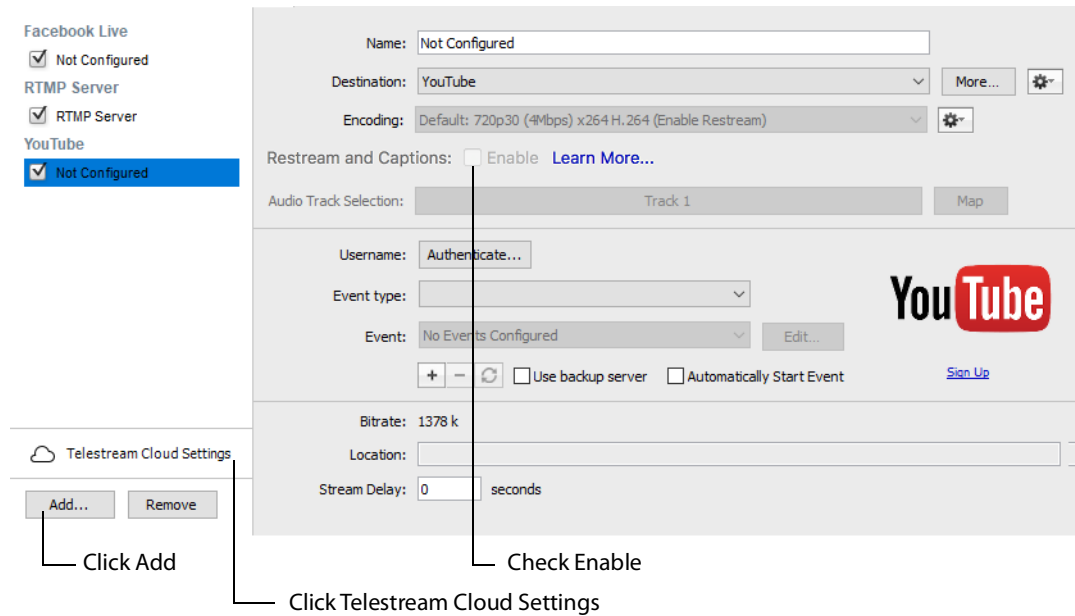
For captioning, select a language. You can, optionally, enable live captioning.

Note: When you check this option, *all* of your streaming destinations via the Cloud will include automatic live captions.

For re-streaming, select Encoding for all destinations that are re-streamed via the Cloud. Click the *Get More* or the *Manage Account* button to navigate to the Telestream Cloud Dashboard.

When you are ready to select multiple streaming destinations to be used by the Cloud, open the Output Settings window (*Output > Output Settings*) and select multiple streaming destinations by clicking the *Add* button. Check *Enable* for all destinations to

be included in the Cloud streaming distribution. Click *Telestream Cloud Settings* to open the Cloud Settings window.



Note: When *Enable* is checked, Encoding is grayed-out. This is because encoding for all distributed streams is set on the Cloud Settings page.

Main Window

Introduction

This section describes in detail how to use the Main Window in Wirecast One.

Topics

- [Overview](#)
- [Control/Status Bar](#)
- [Preview/Live Broadcast Area](#)
- [Transition Controls](#)
- [Add Shot Menu](#)
- [Shot Selection Area](#)
- [Layers](#)
- [AutoLive](#)
- [Live Icons](#)

Overview

The Main Window is comprised of these display areas:

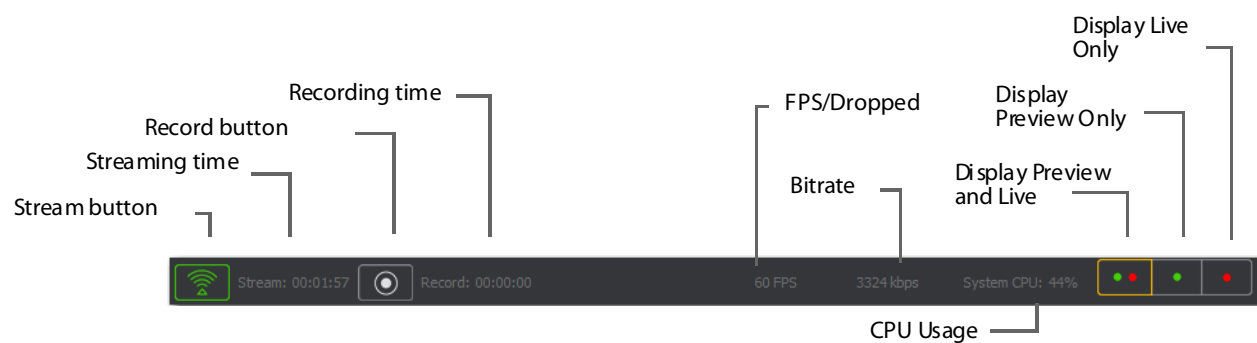
- **Controls/Status Area** The top area with the Stream and Record buttons.
- **Preview/Live Broadcast Area** The large area in the center.
- **Transition Controls** The area with the Transition (Cut and Smooth) and Go buttons.

- **Shot Selection Area** The area displaying the shot icons (available shots).



Control/Status Bar

Control buttons and status information are displayed at the top of the Main window.



Wirecast One displays the following controls and statistics:

- **Stream button** Click to begin streaming.

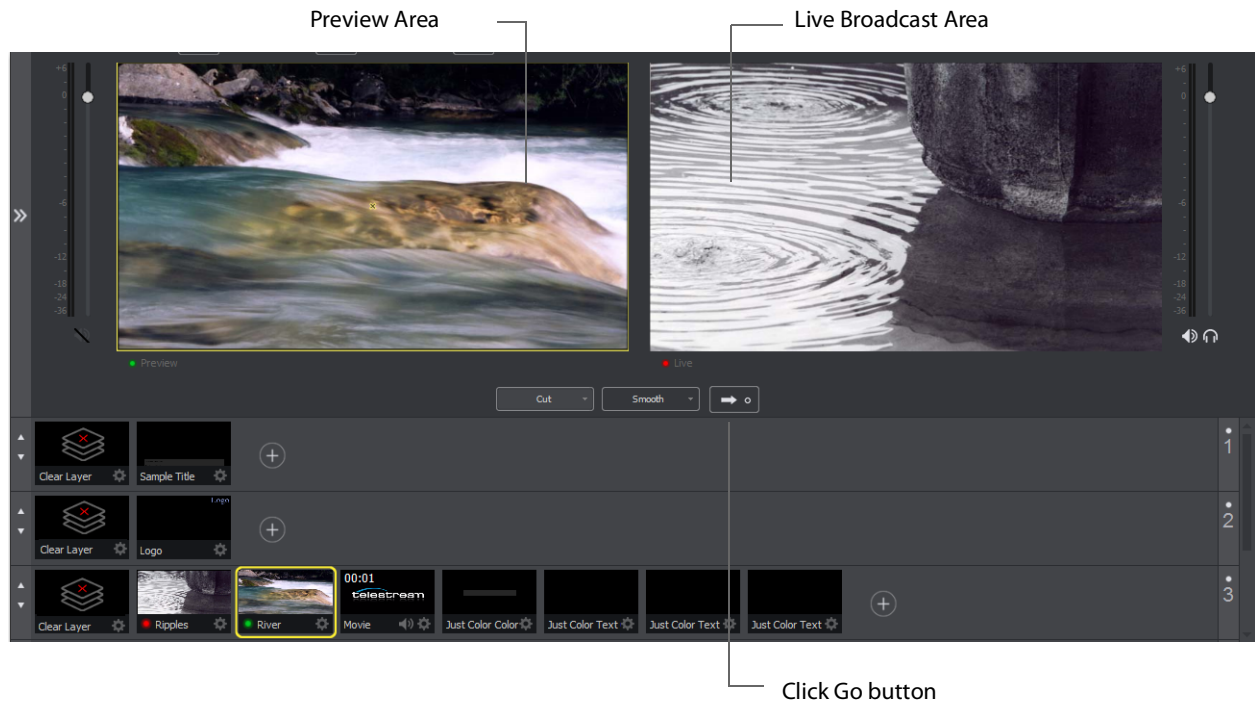
- **Streaming time** This displays how long you have been streaming. This value does not reset when you start/stop the broadcast. It is cumulative. This enables you to save portions of a broadcast to disk and still know the total amount of time.
- **Record Button** Click to begin recording.
- **Recording Time** This displays how long you have been recording. This value does not reset when you start/stop the broadcast. It is cumulative.
- **FPS/Dropped** Displays the current FPS rate or the number of frames dropped while streaming. Click on display to toggle between FPS and Dropped. (Displayed only while streaming.)
- **Bitrate** Displays the streaming bitrate. (Displayed only while streaming.)
- **CPU Usage** Displays the usage of the CPU in percent. (Displayed only while streaming.)
- **Display Buttons** These three buttons enable you to choose to display the Preview window, the Live window, or both in a divided display.

Note: To avoid decrease in video quality, Wirecast should not be used at CPU usage above 80%. See the [TelestreamWebsite](#) for suggested configurations.

Preview/Live Broadcast Area

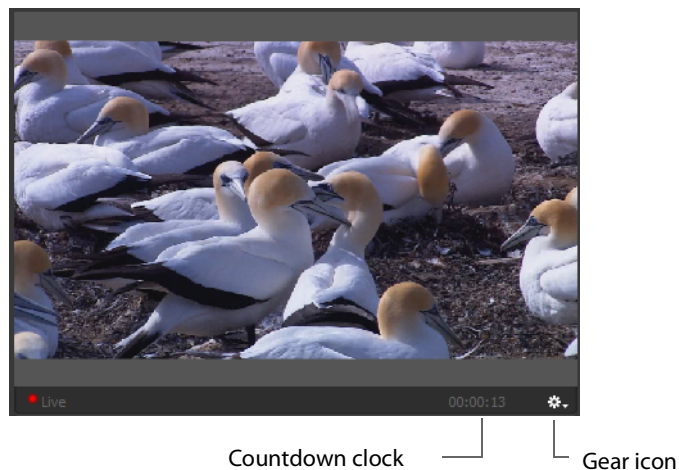
When you open a new document, the Live area shows what is broadcast to your viewers before the encoding or compression. When AutoLive is off, you can make several changes without your viewers seeing the change. This is most useful when you are using an engineer to run your broadcast. When you are making changes to your broadcast, you may want to see those changes before broadcasting them. Preview allows you to do this.

To see the preview, select *Preview* from the Layout menu. This sets up the Main Window with the Preview Area on the left and the Live Broadcast Area on the right. Clicking the Go button makes the preview shot become Live.



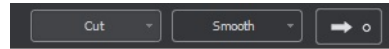
Countdown Clock Display

The Main window displays a countdown clock whenever a video shot is playing. If you have multiple video shots playing, click the gear menu icon to select which shot will be associated with the countdown clock.



Transition Controls

The transition area is in the middle of the Main Window:



There are two Transition buttons, but each can be configured to present one of many possible transition types. In the image above, the two configured transitions are: Cut and Smooth. Since Smooth is selected (button darkened), any transition executed by clicking Go is a smooth transition.

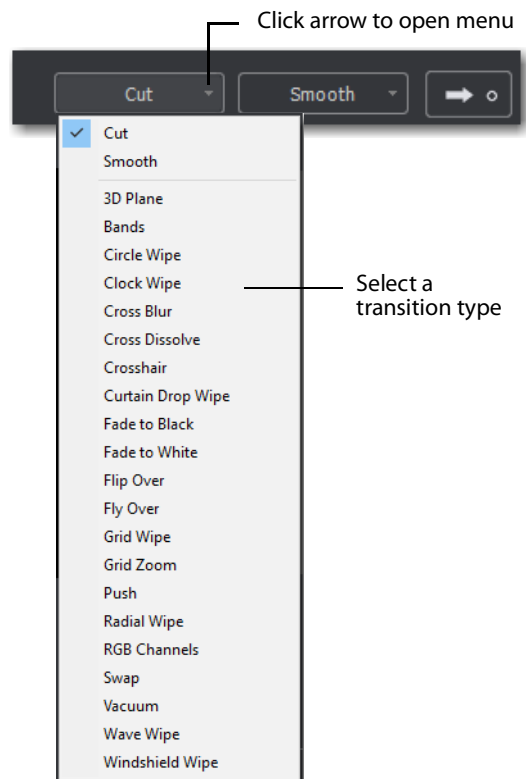
Changing Transitions

If you click the Cut button, it becomes selected and making it the current transition type:



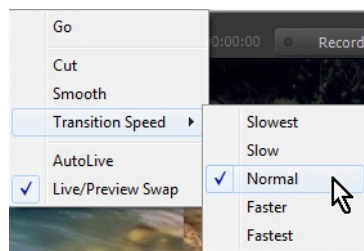
You always have two different transition types available. You can also select one of the two buttons by pressing Ctrl+1 or 2 keys for the two transition types displayed.

If you click the down-arrow on the right side of either transition button, you can select a new transition to assign to that button.



Transition Speed

The transition speed is set by selecting *Switch > Transition Speed*. There are five settings: Slowest, Slow, Normal, Faster, and Fastest.



Go Button

The Go Button (or Ctrl+G) enables you to make a transition occur at any time.



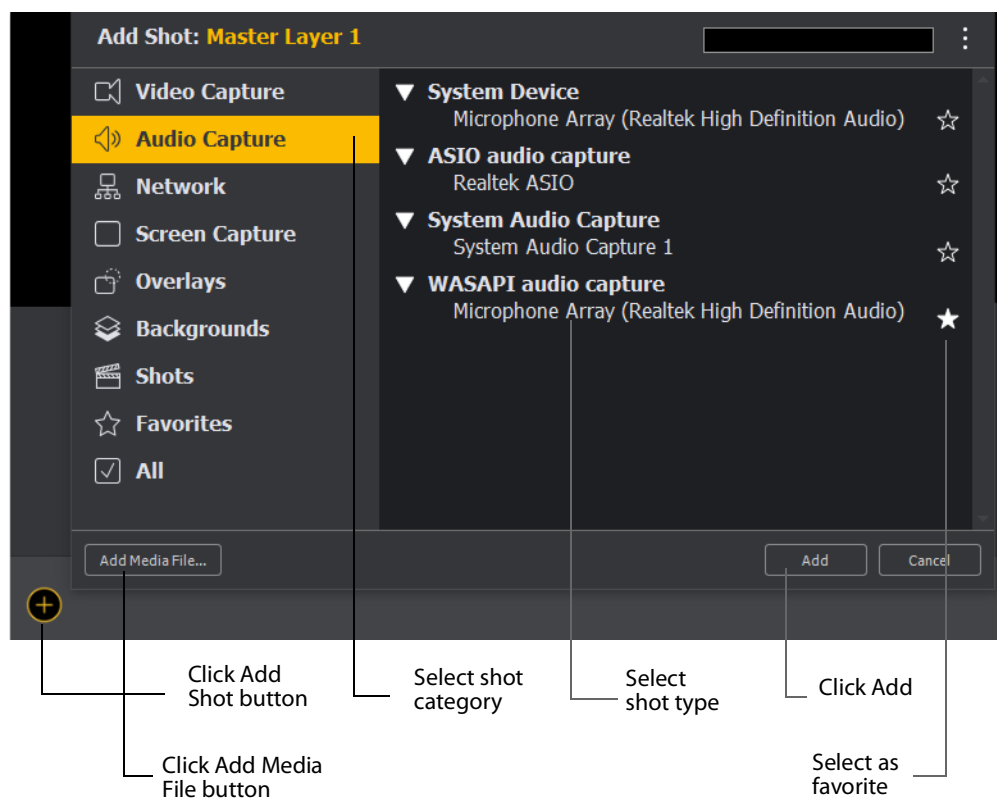
Clicking the Go button does nothing when Wirecast One is in AutoLive mode, except to update a live shot if you have made changes to it using the Shot Editor.

Add Shot Menu

The Add Shot menu provides a way to add live sources, file sources, the Desktop Presenter program, shot graphics, shot audio, and shot templates, etc. Click the Plus Button (+) to open the Add Shot menu.

When the Add Shot menu displays, select a shot category, select the type of shot to add, then click the *Add* button. To add a media file, click the *Add Media File* button., navigate to a media file, click *Open*, then click the *Add* button.

To select a source as a *Favorite* (cause it to display in the Favorites menu) click the star icon to turn it white.



Video Capture

- **System Device** Select a system device and click the *Add* button. (See [Capture Devices Properties](#)).

- **Wirecast Gear Video Inputs** If you using Wirecast Gear (and have a active license) all available video inputs will be listed.



Audio Capture

- **System Device** Select a system device and click the *Add* button. (See [Capture Devices Properties](#)).
- **ASIO Audio Capture** Select an ASIO audio capture device and click the *Add* button.
- **System Audio Capture** Select an audio capture device and click the *Add* button.
- **WASAPI Audio Capture** Select a WASAPI capture device and click the *Add* button.

Media Files

- **Browse Disk** Select to navigate to a media file.

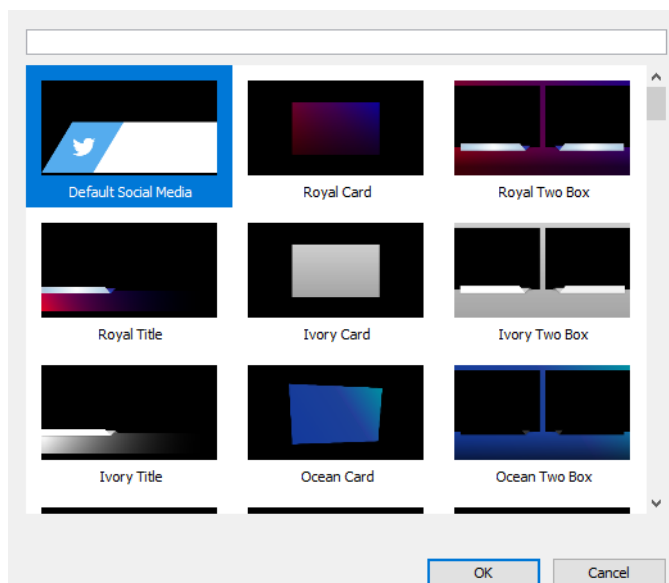
Network

- **IOS Cam** Select an ISO Camera device and click the *Add* button.
- **Web Display** Creates a new Web Display shot. Select and click the *Add* button. (See [Web Page Properties](#)).
- **Web Stream** Creates a new Web Stream shot. Select and click the *Add* button. (See [Web Stream Properties](#)).

Screen Capture

Screen Capture Creates a new Screen Capture shot of any monitor or window on your computer. Select and click the *Add* button. (See [Screen Capture Properties](#)). Some apps when screen captured, take control of your mouse and the cursor is not displayed. You can, at any time, press Alt + Tab keys to reduce the capture window size and enable you to use your mouse. **Overlays**

- **Clock** Creates a new Clock shot that displays time. Select and click the *Add* button. (See [Clock Properties](#)).
- **Image Carousel** Creates a new Image Carousel shot that shows a sequence of images. Select and click the *Add* button. (See [Image Carousel Properties](#)).
- **QR Code Generator** Creates a QR code display to present to your viewers in a live broadcast. (See [QR Code Generator Properties](#)).
- **Text** Creates a new Text shot. Select and click the *Add* button. (See [Text Shot Properties](#)).
- **Title** Creates a new Title shot. When the window of titles displays, select a title and click OK. Click the *Add* button when finished. (See [Titles Properties](#)).



- **Twitter Feed** Creates a Twitter Feed shot. Select and click the *Add* button. (See [Twitter Feed Properties](#)).

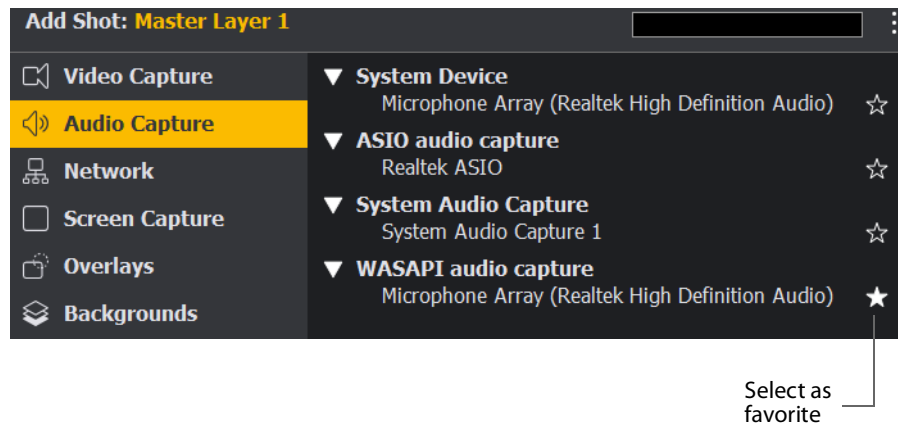
Backgrounds

- **Web Page** Creates a new Web Display shot. Select and click the *Add* button. (See [Web Page Properties](#)).
- **Solid Color** Creates a new Solid Color shot. Select and click the *Add* button. (See [Solid Color Properties](#)).

Shots

- **New Shot** Creates a new shot. Select and click the *Add* button.
- **New Shots From Clipboard** Creates a new shot that has been copied to the clipboard. This is how you duplicate a shot. Select and click the *Add* button.

Favorites Displays a list of shots that have been marked as a Favorite by clicking on the star on the right side of each shot in the Add Shot Menu.

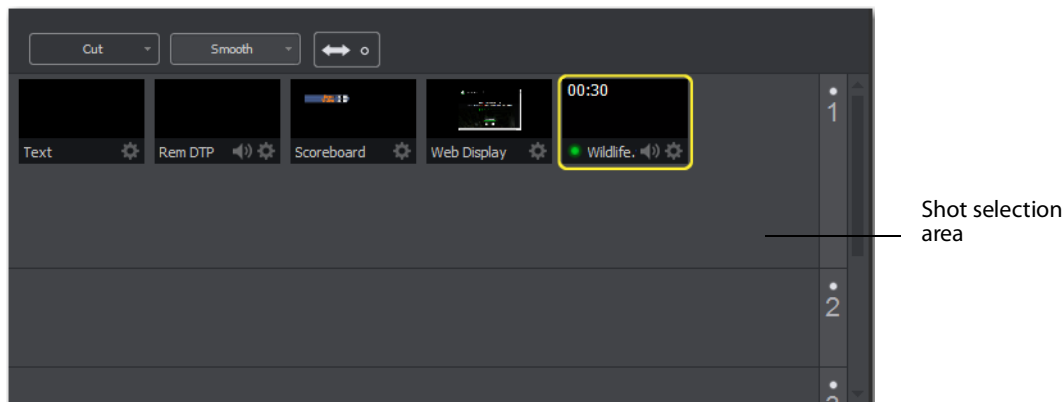


All Displays all sources in one list.

Add Media File Creates a Media File shot (video clip or picture). When selected, a navigation widow displays. Navigate to a media file location, select a media file, and click *Open*. (See [Media File Properties](#)).

Shot Selection Area

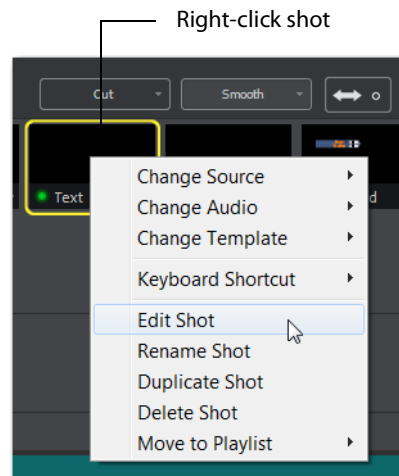
The bottom part of the Main Window contains the Shot Selection Area, also called the Shot List.



The shot icons can be made to display any live activity in the source it represents (cameras, streaming, etc.). See [Performance](#) in the Preferences section for turning on Live Icons.

Changing Shots

Right-click on any shot to display the shot menu.

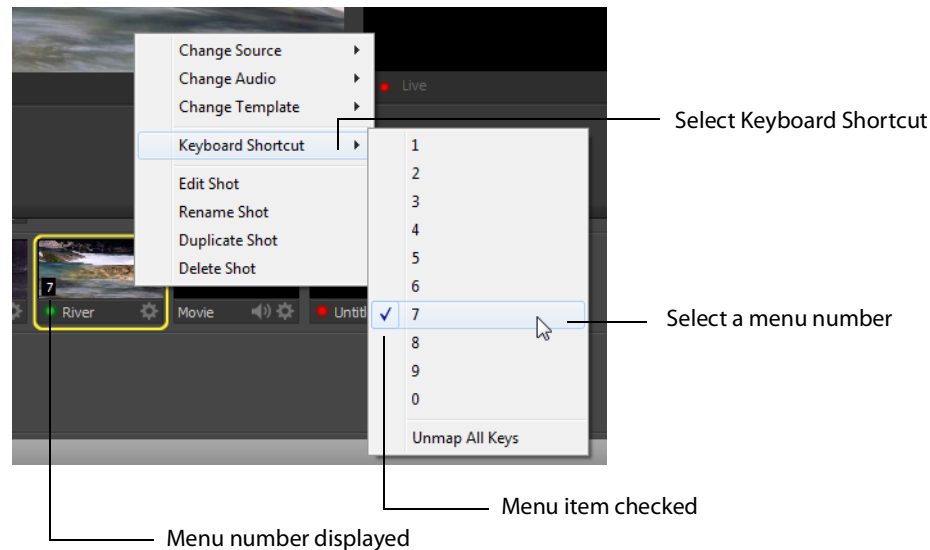


Change Source Select Change Source to change the source of your shot. Upon selection, a menu of sources will display enabling you to make a selection.

Change Audio Select Change Audio to change the audio of your shot. Upon selection, a menu of audio sources will display enabling you to make a selection.

Change Template Select Change Template to change the template of your shot. Upon selection, a menu of templates will display enabling you to make a selection.

Keyboard Shortcut You can create a keyboard shortcut to any shot. To do this, select *Keyboard Shortcut*, then select a menu number to associate with that shot. After you have selected a menu number, that menu item is checked and the number is displayed in the shot icon.



To take a shot using the assigned hotkey, press the number key assigned to that shot.

You can assign multiple shots to the same menu number as long as they are on different layers. When you use the assigned hotkey all the shots assigned to it will be taken. Selecting a checked menu item will uncheck it and unassign the shot.

Select *Unmap All Keys* to remove all hotkey assignments.

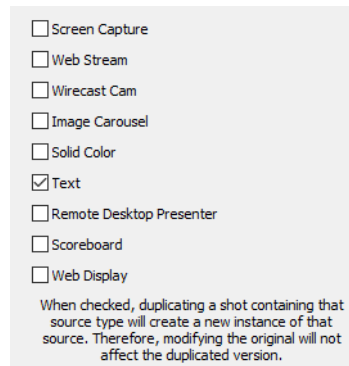
Note: See also the section on [Hot Keys](#) for Hot Key management.

Edit Shot You can edit a shot by clicking the double arrows (located on the left side of the Preview window) to the right, revealing the shot editing panel. You can also edit a shot by double-clicking on it, by right-clicking it and selecting Edit Shot, by selecting Edit Shot from the Edit menu, or by selecting it and pressing the Ctrl+E keys.

Rename Shot You can rename a shot by right-clicking it and selecting Rename Shot, or by selecting Rename Shot from the Edit menu. You can also rename a shot by selecting it and pressing the Ctrl+R keys.

Duplicate Shot You can duplicate a shot by right-clicking it and selecting Duplicate Shot, or by selecting Duplicate Shot from the Edit menu. You can also duplicate a shot by selecting it and pressing the Ctrl+D keys.

Duplicate Shot Options Check a source to create a new instance of it when duplicating the shot containing it. Multiple selection is allowed.



Delete Shot You can delete a shot by right-clicking it and selecting Delete Shot, or by selecting Delete Shot from the Edit menu. You can also delete a shot by selecting it and pressing the Ctrl+Backspace keys.

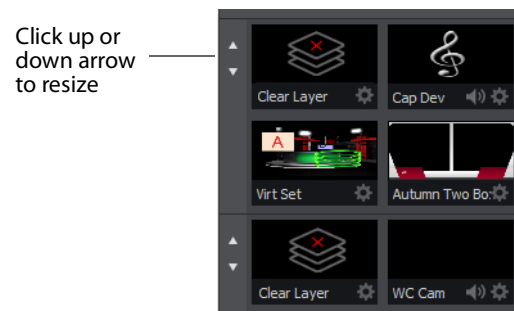
Moving a Shot to Another Layer

You can move a selected shot to another layer by selecting *Move to Layer* from the Edit menu, then selecting the target layer from the drop-down menu. You can also move the cursor to the bottom of a shot icon (until the cursor becomes a hand), and then drag the shot icon to a different layer.

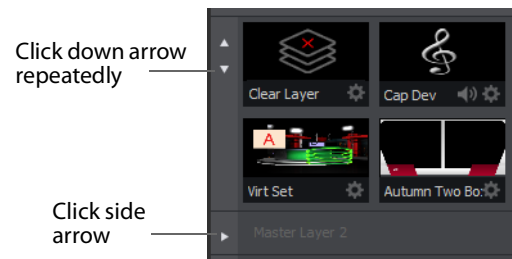
When shots are created, they are assigned to a specific layer. They exist on that layer until they are moved or deleted. (See [Layers](#).)

Resizing the Shot Icons

You can resize the shot icons on any layer by clicking the up or down arrow on the left side of the layer window. Click the up arrow to make all the icons larger; click the down arrow to make them smaller. Clicking the down arrow when the shot icons are in their smallest state causes the layer window to become hidden.



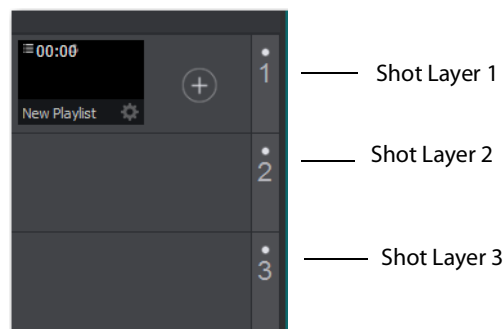
To show or hide a layer, click the down arrow until layer is hidden. To show a layer, click the side arrow that represents a hidden layer.



Layers

Wirecast One allows you to put shots on any of three different layers. Layering shots enables Wirecast One to merge them together, from back (lowest layer) to front, to form a single visual image during broadcast.

When Wirecast One first opens, all of the three layers of shots are displayed. You must scroll down (or expand the window) to see the other layers.

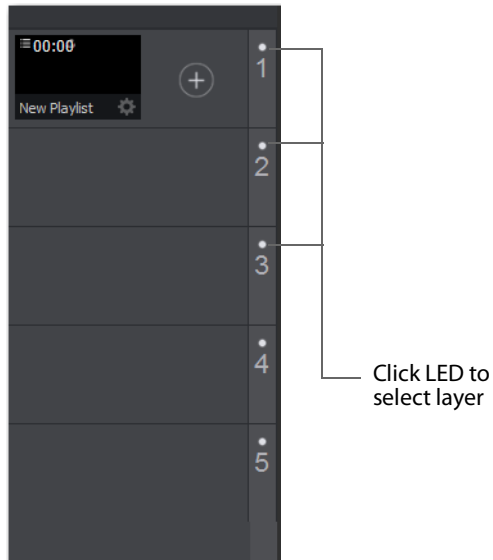


What is a Layer?

Layers are, by default, named 1 through 3. Layers determine the order when presenting images in the Live Broadcast Area. The Bottom layer (3) is drawn first, then the other layers are added, in order, up to Layer 1. Using multiple layers is a powerful way to show a company logo, a background, or a title, independent from each other.

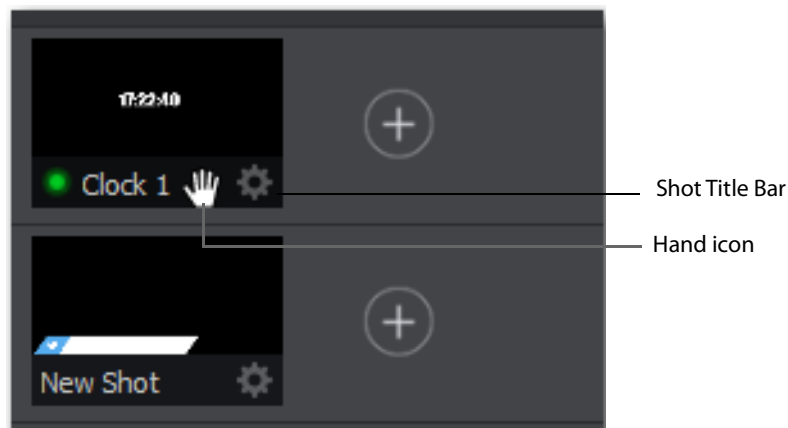
Changing Layers

To select a layer, click its LED to turn it on (click it again to turn it off). When a layer is selected, the selected shot in that layer is displayed in the Preview/Live Broadcast area. If multiple layers are selected all selected shots are displayed.



Moving a Shot to Another Layer

A shot can be moved to another layer by clicking and dragging the shot from one layer to another within the Main Shot window. To do this, hover over the shot Title Bar with the mouse until the hand icon displays, then click and drag the shot to another layer.



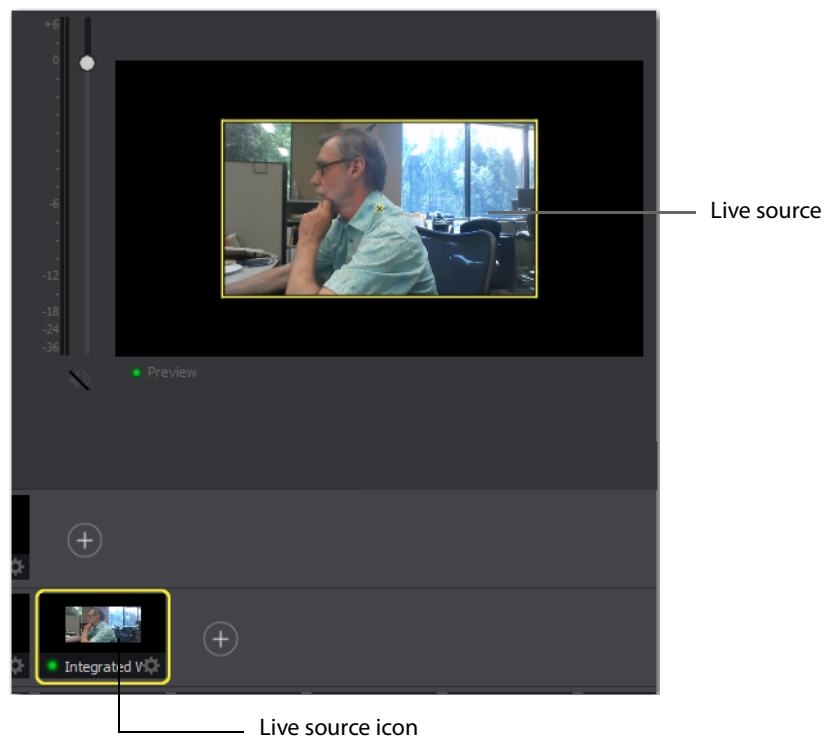
When shots are created, they are assigned to a specific layer. They exist on that layer until you move them or delete them.

AutoLive

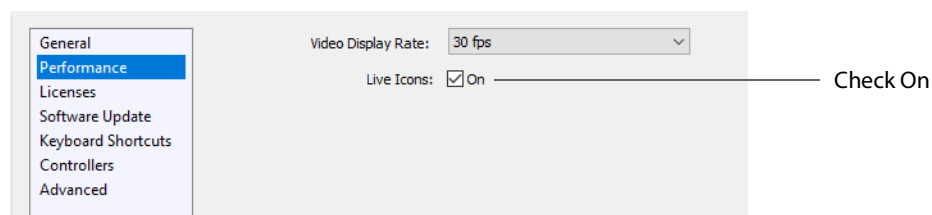
AutoLive is turned on and off by selecting *Switch > AutoLive*. When AutoLive is on, changes made in the Shot List are automatically taken Live in the broadcast (using the current transition and duration). If you click a shot when AutoLive is off, the shot is not sent to live broadcast. In this mode you take the shot live manually, by clicking the Go button, or by pressing the Ctrl+G keys.

Live Icons

You can, optionally, make your live source icon display its source (camera, Web stream, etc.) in real time. This means that inside the icon, you will see what the live source sees.



To turn on the *Live Icon* option (default is *off*), select the *Performance* tab in Preferences, then check the Live Icons checkbox.



Note: There tends to be a degrading quality when an icon is live. So, if the CPU is reaching its maximum, turn off Live Icons to reduce CPU usage.

Shot Editor

Introduction

The Shot Editor is used to view a shot, edit it, or create a new one. This section describes how to use the Shot Editor.

Topics

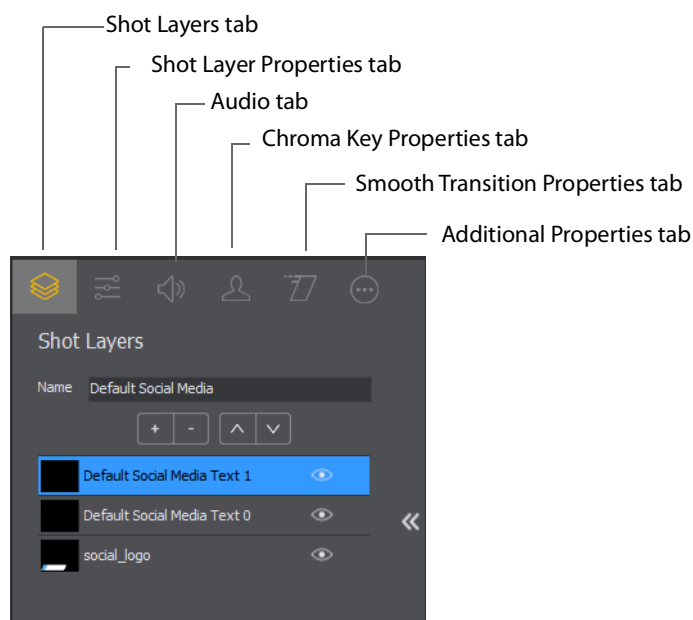
- [Overview](#)
- [Shot Layers Tab](#)
- [Shot Layer Properties Tab](#)
- [Audio Properties Tab](#)
- [Chroma Key Properties Tab](#)
- [Smooth Transition Properties Tab](#)
- [Additional Properties Tab](#)
 - [Capture Devices Properties](#)
 - [Image Carousel Properties](#)
 - [Clock Properties](#)
 - [QR Code Generator Properties](#)
 - [Media File Properties](#)
 - [Screen Capture Properties](#)
 - [Solid Color Properties](#)
 - [Text Shot Properties](#)
 - [Web Page Properties](#)
 - [Web Stream Properties](#)
 - [Titles Properties](#)

Overview

To edit a shot, double-click the shot to open the shot editor. You can also single-click the shot to select it, then click the double-arrow on the left of the Main window to open the shot editor panel.



The shot editor has six tabs: Shot Layers, Shot Layer Properties, Audio, Chroma Key Properties, Smooth Transition Properties, and Additional Properties.



Shot Layers Enables you to add and delete sources and to change the display order (layering within the shot).

Shot Layer Properties Enables you to change the size, position, and other properties of a shot.

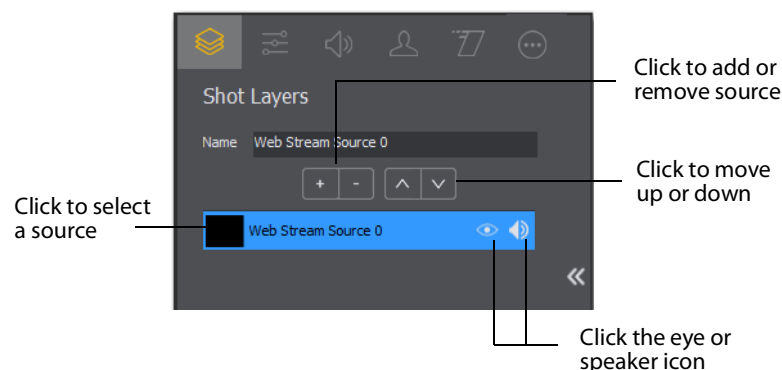
Audio Enables you to set and monitor the audio level.

Chroma Key Properties If a source in your shot uses a chroma key, this tab enables you to configure the chroma key settings. Each source in a shot can have its own chroma key settings.

Additional Properties Enables you to set any additional properties for a source in your shot: System Device properties, Screen Display properties, Twitch Widgets (Chat and Followers), Text properties, etc.

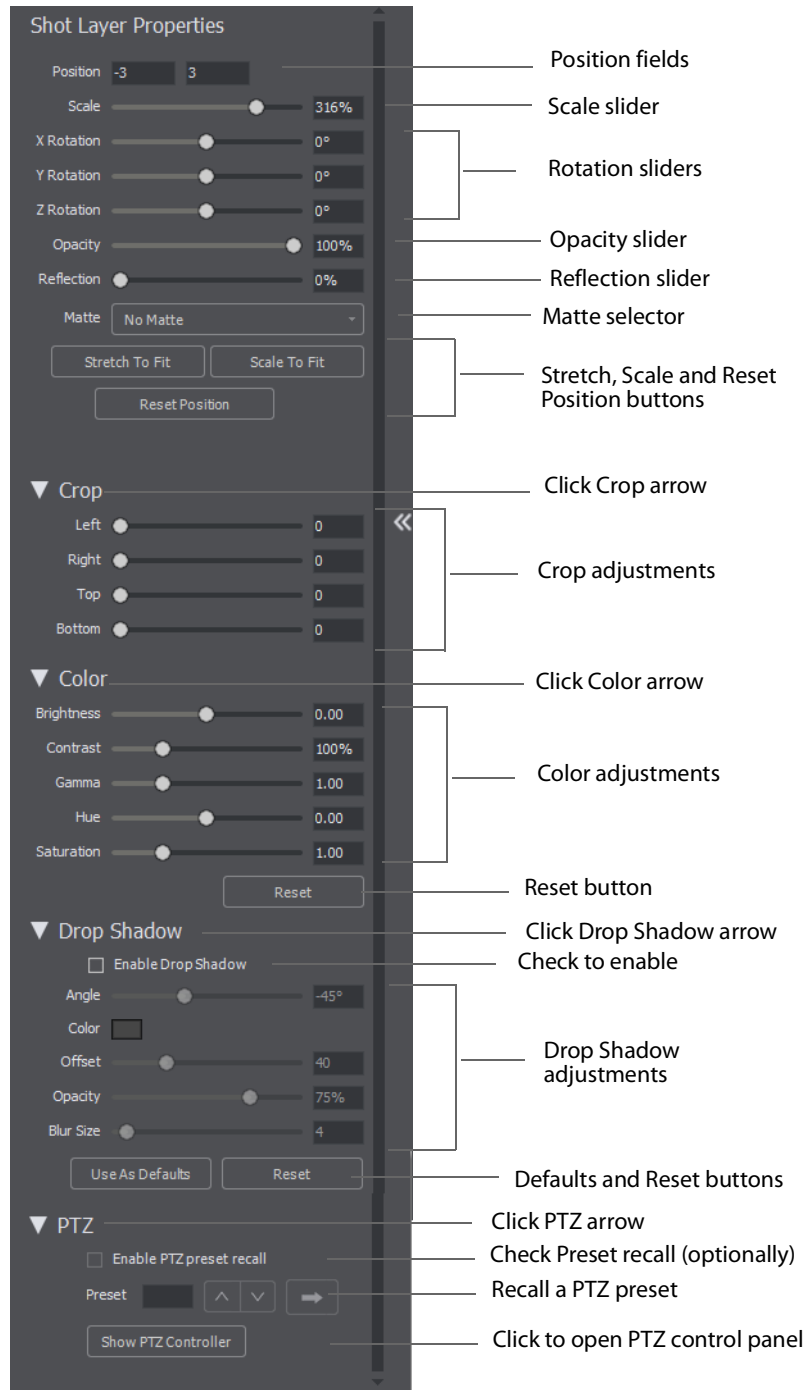
Shot Layers Tab

The Shot Layers tab lists all of the sources in the shot. You can add sources by clicking the plus (+) button, or delete a sources by select selecting it and clicking the minus (-) button. You can also reorder the sources in the list by selecting a source then clicking the up or down arrow to move it. Additionally, you can toggle (on or off) the visibility of a source by clicking the eye icon, or toggle the source audio by clicking the speaker icon.



Shot Layer Properties Tab

The Shot Layer Properties tab enables you to make adjustments to the sources in your shot.



Position Displays the position of the selected source in your shot. Position “0 0” represents the middle of the shot area. To move a source, click and drag it to a new location in the shot.

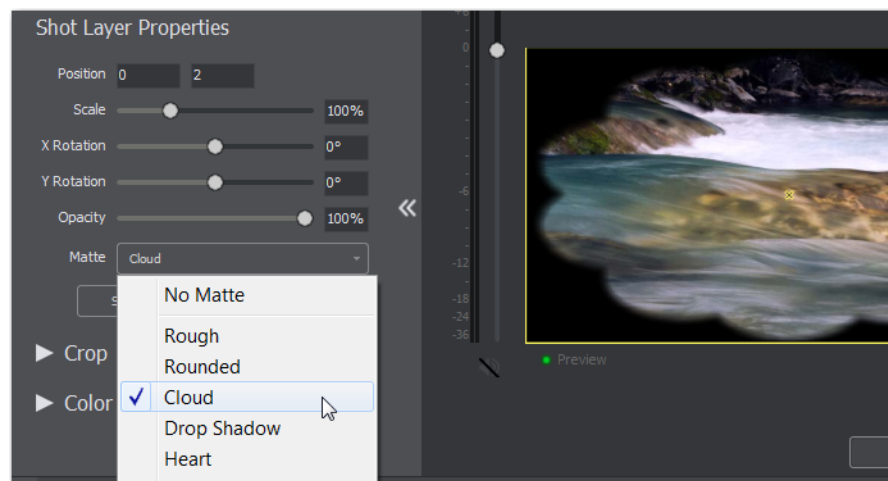
Scale Slide the *Scale* slider to change the size of your source. (See also *Scale To Fit* below).

X Y Z Rotation Slide the X (Horizontal), Y (Vertical), or Z (Straight-through) axis sliders to rotate the source. (See also *Reset Position* below).

Opacity Slide the Opacity slider to adjust the degree of transparency of your image.

Reflection Slide the Reflection slider to adjust the degree of reflection below your image.

Matte A Matte is the boarder around a shot. Select a matte to be used by clicking the down-arrow on the Matte menu. Default is *No Matte*. You can also use any media file as a *custom* matte. To do this, create a new shot of the media file you want to use as a matte. This file now appears in the Matte drop-down menu where you can select it.



Stretch to Fit Click the *Stretch to Fit* button to stretch the source to expand to its maximum size in the shot. This may distort the display of the source.

Scale to Fit Click the *Scale to Fit* button to force the source to expand to its maximum size in the shot.

Reset Position Click the *Reset Position* button to force the source to return to its original size (scale) and rotation positions.

Crop Click the Crop triangle to open the cropping adjustment pane. Slide the Left, Right, Top, and Bottom sliders to crop your source image.

Color Click the Color triangle to open the color adjustment pane. Slide the color controls to adjust the color.

Reset Click the *Reset* button to reset the color controls to their default settings.

Drop Shadow Click the Drop Shadow triangle to open the Drop Shadow adjustment pane. Check the checkbox to enable the controls.

- **Angle** Move the slider to change the angle of the Drop Shadow.
- **Color** Click in the color field to open the color palette. Select a shadow color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.
- **Offset** Move the Offset slider to adjust the direction (0 to 360 degrees) the shadow text is offset from the actual text.
- **Opacity** Slide the Opacity slider to adjust the degree of transparency of your source.
- **Blur Size** Move the slider to adjust the amount of blur in the drop shadow.

Use As Defaults Click to set the current drop shadow configuration as the default setting. All future enabled drop shadows will be set this by default. Clicking this button does not retroactively update previously created shots. Drop shadow settings on individual shots can still be changed.

Reset Click to restore the drop shadow settings back to the default values. You can also restore the drop shadow settings to Wirecast One application defaults by holding the Shift key down and clicking *Reset*.

PTZ Click the PTZ triangle to open the PTZ control panel.

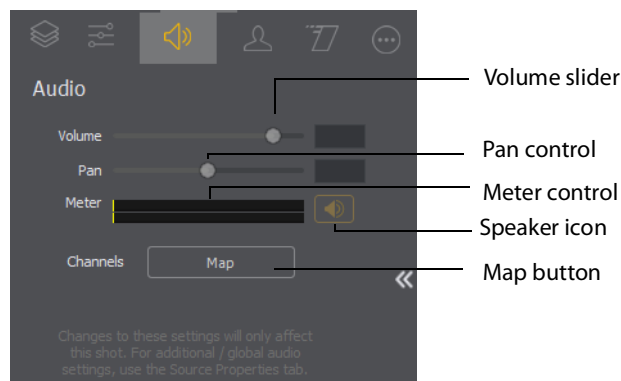
Enable PTZ Preset Recall Check the checkbox to enable the PTZ recall controls.

Preset Click the up and down arrows to find a PTZ preset to recall, then click the Right Pointing Arrow button to recall the preset.

Show PTZ Controller Click to display the PTZ Controller panel. (See [PTZ Controller](#)).

Audio Properties Tab

The Audio Properties tab enables you to control and monitor audio. You can set the audio level, mute and monitor the audio, and map channel outputs.



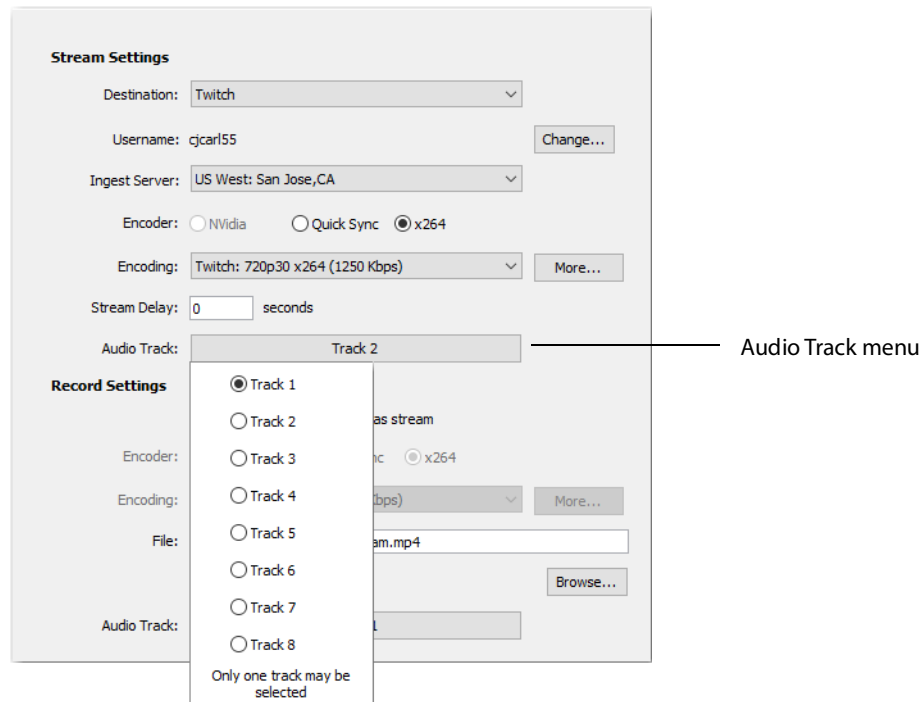
Volume Adjust the slider to set the audio volume level.

Pan Adjust the slider to pan between left and right audio.

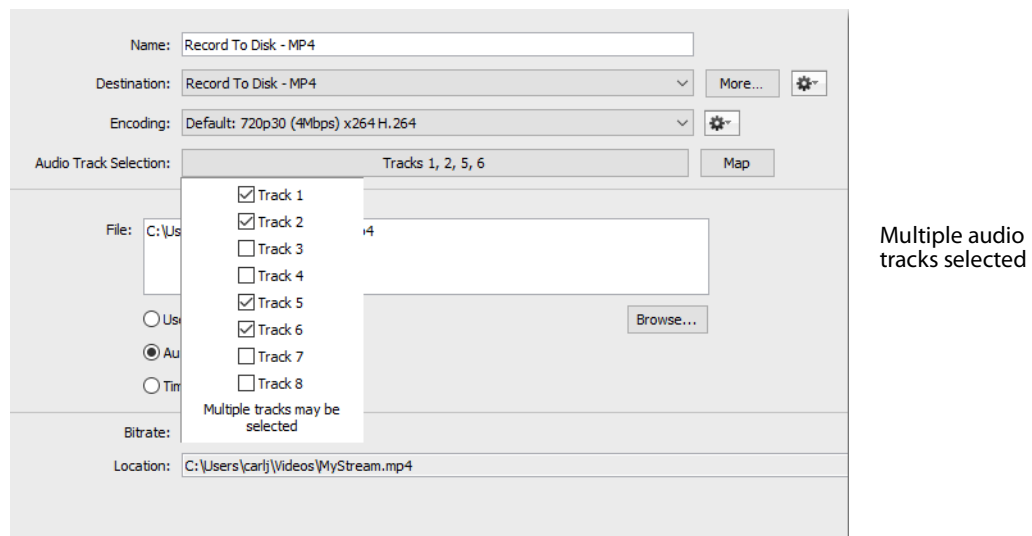
Meter Monitors the audio level. You can also mute the audio by clicking the audio icon.

Speaker Click to mute the audio output. Icon turns gray when muted. Click the icon again to un-mute the audio.

The audio track that is actually used is selected from the Audio Track menu in the Output Settings window. Unlike recording (below), only one track can be selected.



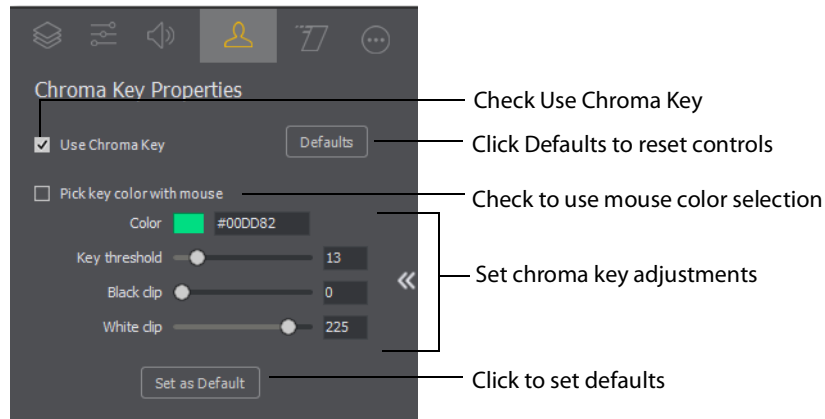
If you are recording, you can select multiple audio tracks.



Chroma Key Properties Tab

Chroma Key (also called “green screen”) enables you to replace all green areas of your display (or any other color you choose) with a background image. For example, if you are in front of the traditional green screen, by “keying out” the green and leaving the background transparent, you will appear to be in front of your background.

The Chroma Key Properties tab enables you to turn on/off chroma keying and make chroma key adjustments.



Use Chroma Key Check to turn on chroma keying. Uncheck to turn it off. Click the Defaults button to reset all Chroma Key controls.

Pick key color with mouse Check to use your mouse to select a chroma key color. Hover over the a desired color in the selected source, and click the left mouse button to select that color. All adjustments will be made using the selected color as the key.

Color Click the color square to open the Color Pallet. Select a color to use as the chroma key color and click OK.

Key Threshold Slide the *Key Threshold* slider to adjust the amount of keying in your source.

Black Clip Slide the *Black Clip* slider to adjust the black threshold level (how much black is used in keying).

White Clip Slide the *White Clip* slider to adjust the white threshold level (how much white is used in keying).

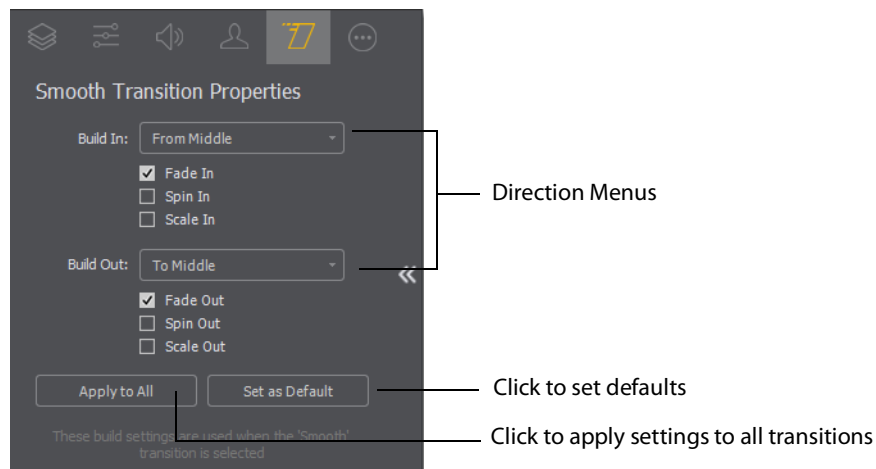
Set As Default Click to set the current Chroma Key configuration as the default setting. All future Chroma Keys will be set this by default. Clicking this button does not retroactively update previously created shots. Chroma Key settings on individual shots can still be changed.

Smooth Transition Properties Tab

The Smooth Transition Properties tab provides control over how objects (image, movie, title, etc.) are added or removed in the Live Broadcast window. Wirecast One only performs motion during a Smooth transition. If you are using any other transition, the motion settings are ignored.

There are two types of motion. When an object is added to your broadcast it is called *Build In*; When it is removed it is called *Build Out*. Motion only occurs when an object enters or leaves the Live Broadcast window. For example, if you have two shots, each with a foreground and the media in the foreground is the same, then a Smooth transition is performed between the foregrounds. However, no motion is performed. Or, if a logo is positioned in the top left corner in an existing shot, and it is in the bottom right corner in a new shot, when you make the new shot Live the logo smoothly transitions from the top left corner to the bottom right corner. But the Build In and Build Out settings are ignored.

However, if you have two shots with a Foreground, but the media in each is different, the Build Out is performed for the existing shot, and the Build In is performed for the new shot.



Direction Menus These provide selections of where the Build In comes from (top, bottom, right, etc.) when it is added, and where the Build Out goes when it is removed.

Fade In / Fade Out Checking these checkboxes causes an object to be added or removed gradually. If unchecked, the object is instantly added or removed, much like a cut transition.

Spin In / Spin Out Checking these checkboxes causes an object to be added or removed in a spinning fashion.

Scale In / Scale Out Checking these checkboxes causes an object to be added or removed in a scaled fashion.

Apply To All Click this button to make the Transition Settings the same for all sources in a shot. This is useful if you want to make all of your motion the same for all of the elements in the shot.

Set As Default Click this button to make these Transition Settings the default settings for all new shots. These default settings will be applied in all future WC documents.

Additional Properties Tab

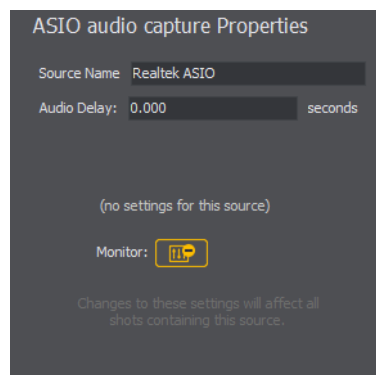
The Additional Properties tab provides various adjustments to your selected source, depending on the kind of source selected. There are many kinds of sources: System Devices, Screen Captures, Web Displays, , etc.

Capture Devices Properties

Capture Device enables you to capture just the audio of the output. Capture Devices have a variety of settings. To open a Capture Device source, select *Capture Devices* from the source menu in the shot window.

RealTek Example

Here is an example of a Realtek High microphone array.



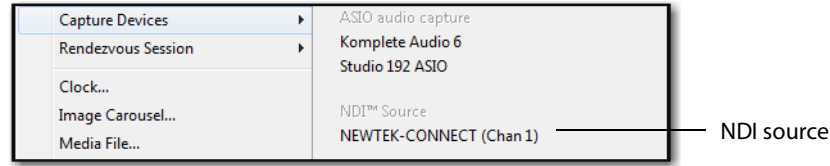
Source Name Displays the name of the source. To change the source name, enter a new one.

Audio Delay Enter the amount of time (in seconds, as short as 1 ms) to delay the audio signal to sync it up with a video source.

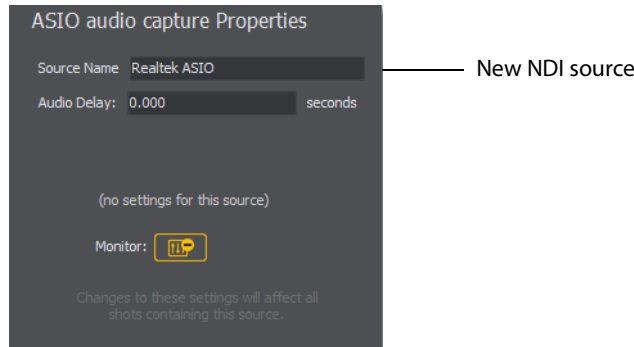
Monitor Click the *Monitor* icon to cause audio to play through your monitor output. The icon is gold when selected (turned on). If unselected, audio will not play through the monitor output for this source. Selected is the default.

NDI™ Sources

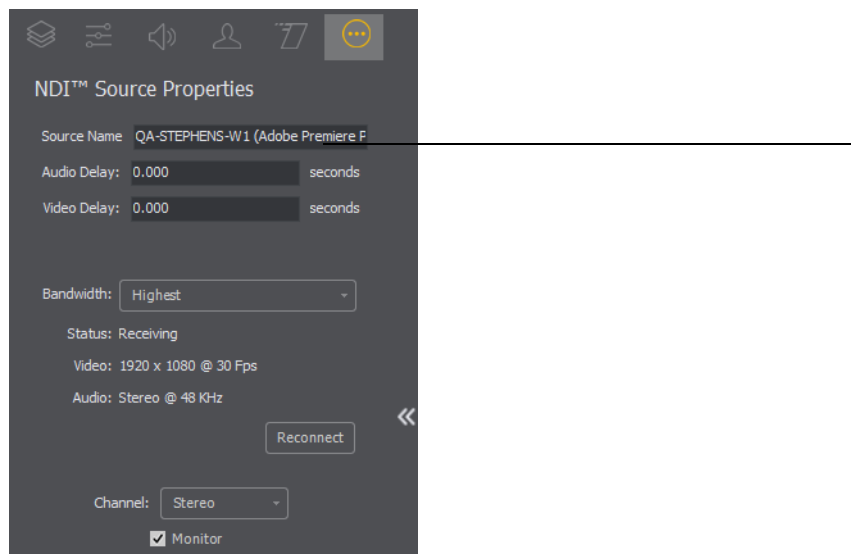
Any NewTek NDI™ sources on your local network will be discovered by Wirecast One and listed as an NDI™ Source under Capture Devices in the Source Input Menu.



Adding an NDI™ source will create a new shot for that source.



If you have selected an NDI™ source, the NDI™ Source Properties tab will display. In addition to the controls above, an NDI™ source has the following controls.



Video Delay Enter the amount of time (in seconds, as short as 1 ms) to delay video.

Bandwidth Select the bandwidth to use: *Highest* (max quality), *Lowest* (max efficiency), or *Audio Only* (video bandwidth not applicable).

Reconnect Click to reconnect the NDI™ source.

Channel Select *Stereo*, *Left*, or *Right* to determine the audio source for both channels. *Stereo* sends the left audio source to the left channel and the right audio source to the right channel. *Left* sends the left audio source to the both channels (left and right). *Right* sends the right audio source to the both channels (left and right).

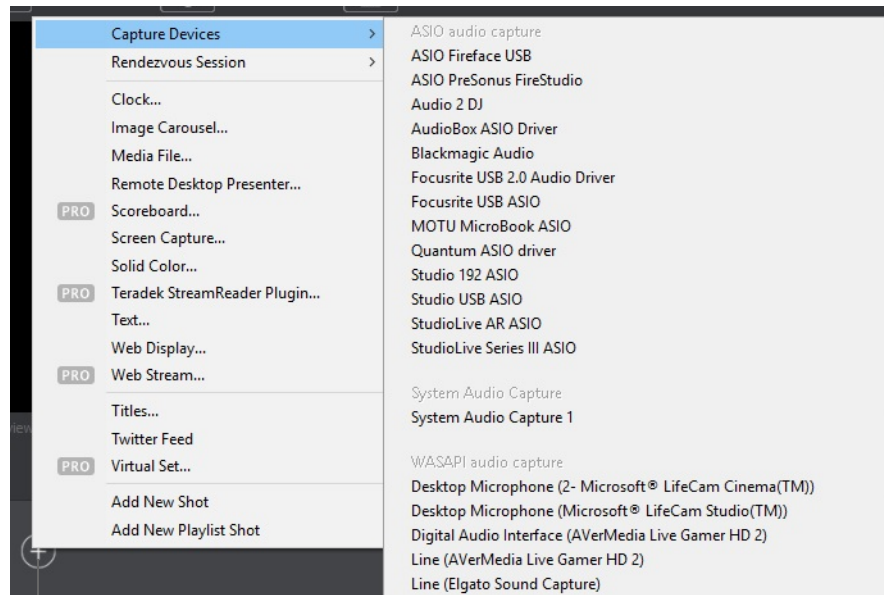
Monitor Check the *Monitor* check box to cause audio to play through your monitor output. If the check box is unchecked, audio will not play through the monitor output for this source. Checked is the default.

Note: NDI™ networking requires that your network has port 5353 open for mDNS device discovery, as well as one port per video channel (starting from port 5960 and onward) transmitted by an NDI™ source, plus one additional port for messaging.

ASIO and WASAPI Sources

Any ASIO or WASAPI source on your local network will be discovered by Wirecast One and listed under Capture Devices in the Source Input Menu. These devices are generally used with multi-track audio outputs. ASIO Audio Capture is a very low latency professional audio capture API. It is used to connect to professional audio interfaces.

WASAPI Audio Capture is also a low latency audio capture API. It replaces the old DirectShow-based audio capturing.



Source Input Menu icon.

Clock Properties

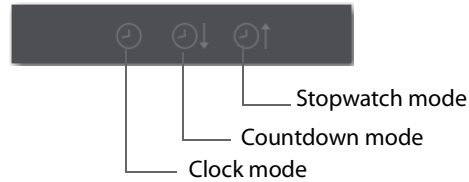
A Clock shot displays time. Clock Properties have the following settings.

The screenshot shows the 'Clock Properties' panel in a dark-themed software interface. At the top, there's a 'Source Name' field with the value 'Clock 1'. Below it is a checkbox labeled 'Shutdown when not live' which is currently unchecked. There are three clock icons: a standard clock, a clock with a downward arrow, and a clock with an upward arrow. The 'Clock' section has two radio buttons: 'Basic Format' (selected) and 'Advanced Format'. Under 'Basic Format', there are dropdowns for 'Date' (set to 'None') and 'Time' (set to '19:29:13'). Under 'Advanced Format', there is a 'Display Format' dropdown set to 'HH:mm:ss'. Below this is a 'Background' section with three radio buttons: 'None' (selected), 'Solid', and 'Gradient'. The 'Solid' option is expanded, showing an 'rgba(0, 0, 0, 0)' color picker and a gradient section with a color field set to '#ffffff' and a gradient color field set to '#000000'. There is also an 'Angle' slider set to '0' and radio buttons for 'Linear' and 'Radial'. The 'Text' section includes a 'Text Color' field set to '#ffffff', a 'Font' dropdown set to 'Impact, Charcoal', and dropdowns for 'Font Size' (set to 'In Points' with a value of '72'), 'Font Weight' (set to '400'), 'Font Style' (set to 'normal'), and 'Font Variant' (set to 'normal'). There is also a 'Shadow' checkbox which is unchecked. If checked, it would show a 'Color' field set to '#000000' and sliders for 'Offset' (set to '0°'), 'Radius' (set to '0px'), and 'Blur' (set to '0px'). At the bottom, a small note states: 'Changes to these settings will affect all shots containing this source.'

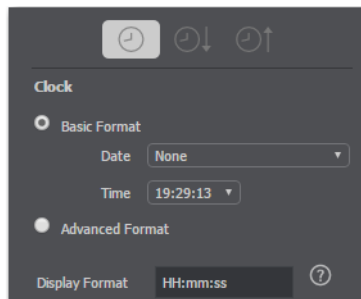
Source Name Displays the name of the source. To change the source name, enter a new one.

Shutdown Check to force the clock to shutdown when not live.

Clock Modes Select Clock, Countdown, or Stopwatch.

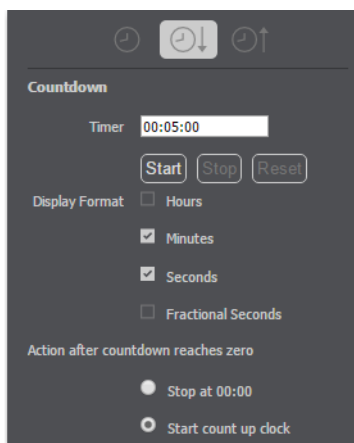


Clock Mode:



- **Basic** Select *Basic* for basic clock functionality. Select Date and Time display formats from the drop-down menus. (Display Format window is disabled).
- **Advanced** Select *Advanced* to enter a custom hour-minute-second format. Enter custom time format into Display Format window. Click question mark ("?) icon to display custom format types.

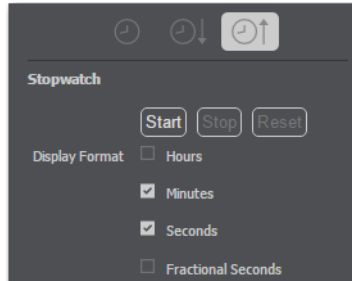
Countdown Mode:



- **Timer** Enter the time value from which to start counting.
- **Start, Stop, Reset** Click *Start* to begin counting down. Click *Stop* to end counting down. Click *Reset* to reset clock to Timer value.
- **Display Format** Select time elements to display: Hours, Minutes, Seconds, and Fractional Seconds.

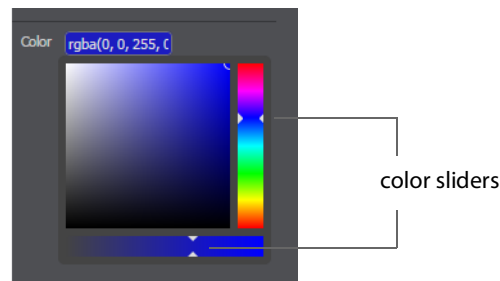
- **Action After** Select *Stop at 00:00* to prohibit count up mode. Select *Start count up clock* to cause clock to start counting up after count down is finished.

Stopwatch Mode:



- **Start, Stop, Reset** Click *Start* to begin counting. Click *Stop* to end counting. Click *Reset* to reset stopwatch to zero.
- **Display Format** Select time elements to display: Hours, Minutes, Seconds, and Fractional Seconds.

Background Select *Solid* and click in the color field to open the color palette. Select a color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



Select *Gradient* and click in the color field to select a new background gradient color from the palette.

Angle When Gradient is selected, the Angle slider is activated. Move the slider to change the angle of the gradient display. Select also *Linear* (line) or *Radial* (circle) to change the shape of the gradient display.

Text Color Click the box to open the color selection panel. Select a new text color from the palette.

Font Select the desired font used for your messages. If you select Web Font, a Web Font field will display below. You can also select any of the fonts installed on your computer.

Font Size Select the type of font size: points, small, medium, large, etc. If *In Points* is selected, a box to enter font size (in points) is displayed.

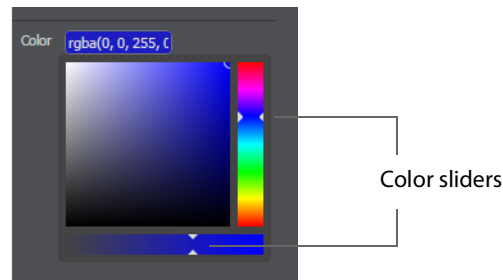
Font Weight Select the font weight: 100 to 900.

Font Style Enter the font style: Normal, Italic, or Oblique.

Font Variant Select a font variant: *Normal* (capital and small characters displayed normally), or *Small-caps* (Capitals with small letters displayed as small capital letters).

Shadow Check to activate the text shadow slider controls.

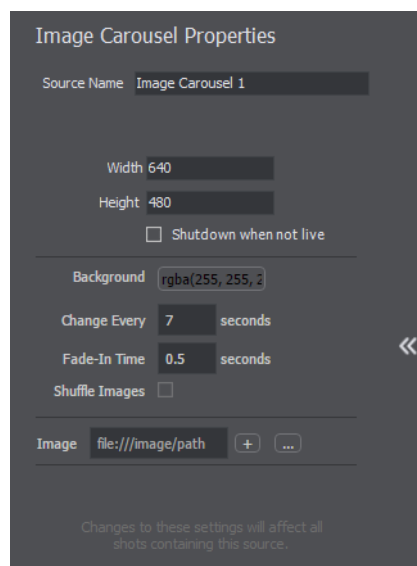
- **Color** Click in the color field to open the color palette. Select a shadow color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



- **Offset** Move the Offset slider to adjust the direction (0 to 360 degrees) the shadow text is offset from the actual text.
- **Radius** Move the Radial slider to adjust the distance the shadow text is offset away from the actual text.
- **Blur** Move the Blur slider to adjust the amount of blur in the shadow text

Image Carousel Properties

An Image Carousel shot shows a sequence of images. Image Carousel Properties have the following settings.



Source Name Displays the name of the source. To change the source name, enter a new one.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Change Every Sets how often the images are changed, in seconds.

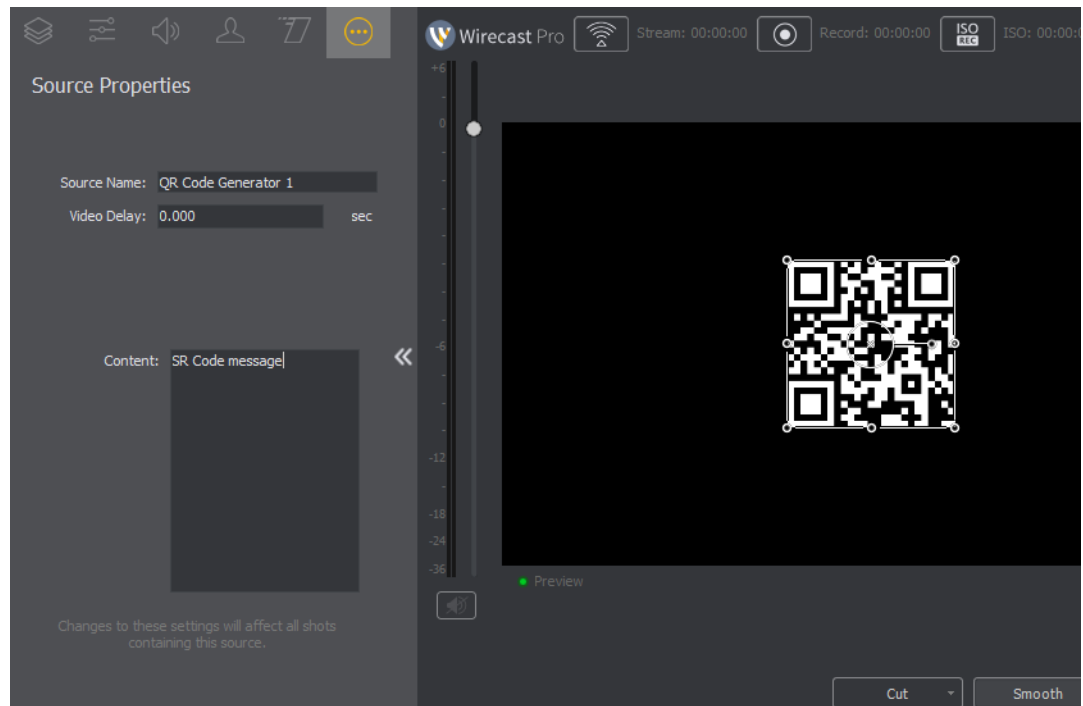
Fade-In Time Sets how long it takes for each image to fade in, in seconds. Enter zero for instantaneous display of images.

Shuffle Images Check to shuffle the display order of the images. When unchecked, images are displayed as they are ordered in the image list.

Image Displays Carousel images in a list. Click the plus (+) icon to add an image to the list. To remove an image, click the "X" to the right of the image on the list. You can also click the browse button (...) to navigate to an image to add.

QR Code Generator Properties

QR Code Generation has the following settings.



Source Name Displays the name of the source. To change the source name, enter a new one.

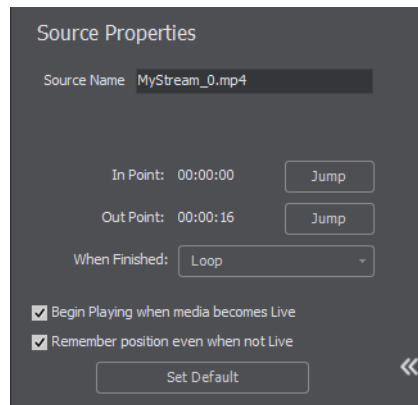
Video Delay Enter the amount of time (in seconds, as short as 1 ms) to delay video.

Content Enter the message you want to be embedded in the QR code displayed in your broadcast.

Media File Properties

A Media File is a video clip or a picture. To open a Media File source, select *Media Files* from the source menu in the shot window, and then navigate to your file. You can also click the *Add Media File* button at the bottom of the Add Shot window.

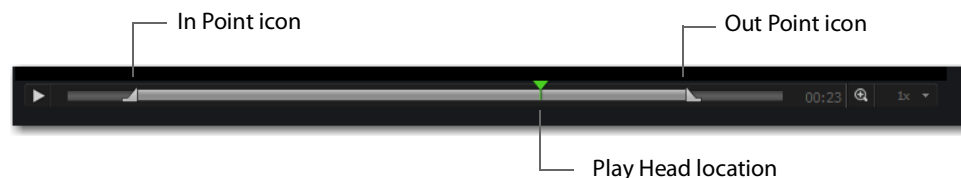
Media Files have the following settings.



Source Name Displays the name of the source. To change the source name, enter a new one.

In Point Click *Jump* to move the play head to the In Point in the media file. The In Point is set by dragging the In Point icon to the desired beginning position on the play bar.

Out Point Click *Jump* to move the play head to the Out Point in the media file. The Out Point is set by dragging the Out Point icon to the desired ending position on the play bar. The green triangle is the current location of the Play Head.



When Finished Select what happens when the media finishes playing. *Loop* causes the media to begin playing again. *Hold* cause the media to stop and hold the last frame in the Live window. *Remove* causes the media to be removed from the Live window when it finishes playing.

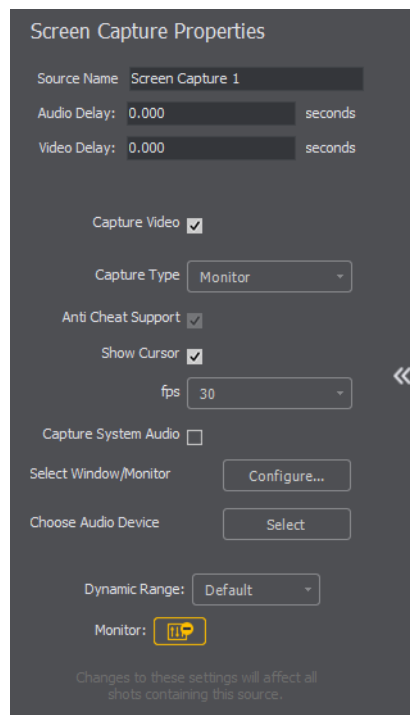
Begin playing when media becomes Live When checked, the media begins playing as soon as it is made Live.

Remember position even when not Live When checked, the media will always start playing where ever it was playing when it was stopped, even if it was removed from the Live window and made Live again. When unchecked, the media will start from the beginning every time it is taken Live.

Set Default Click to set the media display to default settings.

Screen Capture Properties

A Screen Capture displays any monitor or window on your computer. To open a Screen Capture source, select *Screen Capture* from the source menu in the shot window. Screen Captures have the following settings.

The image shows a 'Screen Capture Properties' dialog box with a dark grey background. At the top, the title 'Screen Capture Properties' is in a light grey font. Below the title, there are several settings: 'Source Name' with a text field containing 'Screen Capture 1'; 'Audio Delay' with a numeric field set to '0.000' and a unit dropdown set to 'seconds'; 'Video Delay' with a numeric field set to '0.000' and a unit dropdown set to 'seconds'. A section of settings is preceded by a checked checkbox labeled 'Capture Video'. This section includes a 'Capture Type' dropdown menu currently set to 'Monitor', a checked checkbox for 'Anti Cheat Support', a checked checkbox for 'Show Cursor', and an 'fps' dropdown menu set to '30'. To the right of these settings is a double-left arrow icon. Below this section is an unchecked checkbox for 'Capture System Audio'. Further down are two buttons: 'Select Window/Monitor' and 'Configure...', and 'Choose Audio Device' and 'Select'. At the bottom, there is a 'Dynamic Range' dropdown set to 'Default' and a 'Monitor' button with a monitor icon. A small note at the very bottom states: 'Changes to these settings will affect all shots containing this source.'

Source Name Displays the name of the source. To change the source name, enter a new one.

Audio Delay Enter the amount of time (in seconds, as short as 1 ms) to delay audio.

Video Delay Enter the amount of time (in seconds, as short as 1 ms) to delay video.

Capture Video Check to enable Capture Type, Show Cursor, and fps settings (described below).

Capture Type Select *Monitor* (captures your entire monitor), *Window* (captures the currently selected window), or *Game* (captures the game currently played on your PC). If you select *Game*, you can also configure how your game is captured by selecting options offered under Select Window/Monitor (described below).

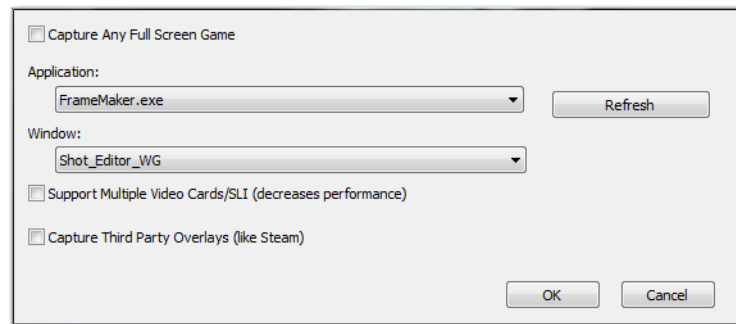
Anti Cheat Support Enables anti-cheating support for game capture.

Show Cursor Check to show the cursor in your streaming. Uncheck to hide it.

fps Select the FPS, from 10 to 60 frames per second as the capture rate. An FPS of 60 is the best frame rate, but it requires greater streaming bandwidth.

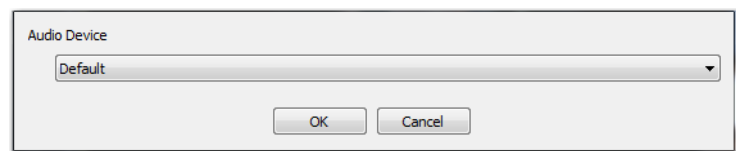
Capture System Audio Check to capture system audio when streaming. Uncheck to mute the audio.

Select Window/Monitor Click the *Configure* button to display the *Select Window* dialog. If you selected *Game* for your Capture Type (described above), then the following configuration window displays



- **Capture Any Full Screen Game** Check this box to automatically capture a game running in a full monitor screen, or running in a full screen of a window.
- **Support Multiple Video Cards/SLI** Check this box if you have a Windows system with multiple discrete GPUs and are experiencing problems capturing a game. (Performance of the capture may be slower than when running on a single GPU.)
- **Capture Third Party Overlays** Check this box to capture overlays rendered on top of a game that are generated by applications external to the game. (For example, the Steam in-game overlay.)

Choose Audio Device Click the *Configure* button to display the *Select Audio Device* dialog, then select an audio device from the drop-down menu.



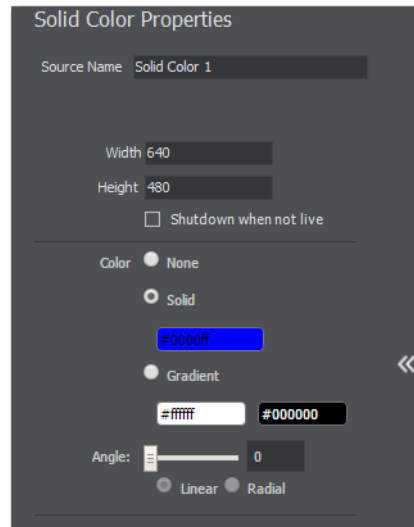
Note: Some apps, when screen captured, take control of your mouse and the cursor is not displayed. You can, at any time, press Alt + Tab keys to reduce the capture window size and enable you to use your mouse.

Dynamic Range Select dynamic range setting: Default, Full or Limited.

Monitor Click the *Monitor* icon to cause audio to play through your monitor output. The icon is gold when selected (turned on). If unselected, audio will not play through the monitor output for this source. Selected is the default.

Solid Color Properties

Solid Color displays a solid color background. To open a Solid Color source, select *Solid Color* from the source menu in the shot window. Solid Color Properties have the following settings.

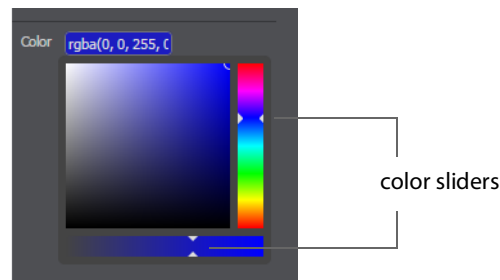


Source Name Displays the name of the source. To change the Source Name, enter a new one.

Video Delay Enter the amount of time (in seconds, as short as 1 ms) to delay video.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Color Select *Solid* and click in the color field to open the color palette. Select a color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.

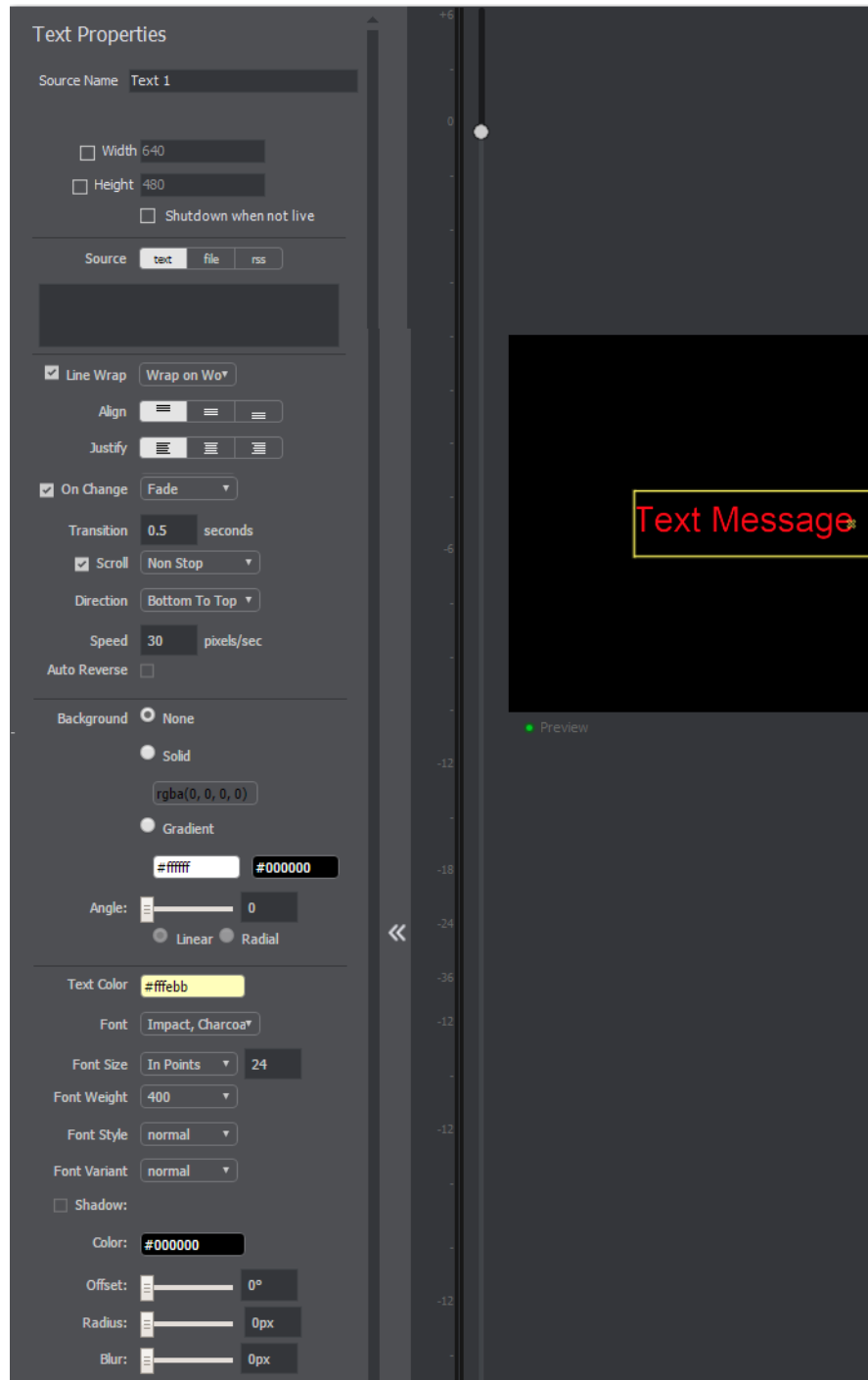


Select *Gradient* and click in the color field to select a new background gradient color from the palette.

Angle When Gradient is selected, the Angle slider is activated. Move the slider to change the angle of the gradient display. Select also *Linear* (line) or *Radial* (circle) to change the shape of the gradient display.

Text Shot Properties

Text displays a text phrase. To open a Text source, select *Text* from the source menu in the shot window. Text Properties have the following settings.



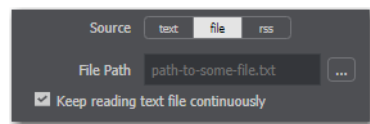
Source Name Displays the name of the source. To change the Source Name, enter a new one.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Shutdown Check to cause the text to not be displayed until the shot is placed into the Live window.

Source Select the source of your text: *Text* (directly entered) or *File* (navigate to a text file), or *RSS* (ticker tape RSS feed).

- If you select *Text*, enter your text in the text box below the source selector.
- If you select *File*, enter a file name in the File Path box displayed, or click the navigation button (three dots) and find your text file. The text from your file will be automatically displayed. The file has to contain UTF-8 encoded text in order for it to be rendered correctly. Only the first 64KB of the text file will be loaded and displayed. You can also check the Keep reading text file continuously to keep the text display in your broadcast up to date with file changes.



- If you select *RSS*, enter a URL in the URL box displayed.

Line Wrap When checked, the displayed text wraps around to the next line to fit into the window as it is resized. Select wrap mode from the drop-down menu: *Wrap on Word* or *Break Word*.

Align Enables you to align the text at the top, middle, or bottom of the display.

Justify Enables you to justify the text along the left, center, or right side of the display.

On Change When checked, a transition menu is displayed offering a choice of transition types: Fade, Drop In, Drop Out, and Slide. Transitions occur when text is changed.

Transition Enter the length (in seconds) of the transition time. (This field is displayed only when the *On Change* box is checked.)

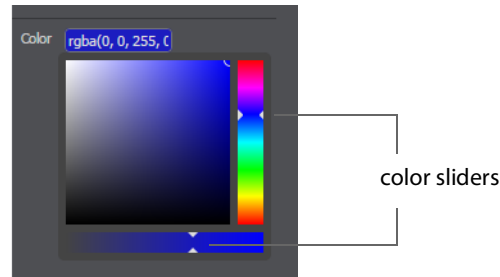
Scroll When Scroll is checked, you can enter both a scroll mode and a direction. There are two scroll modes: *Non Stop* and *If it Does Not Fit*.

Direction Select the direction of the scrolling: Top to Bottom, Bottom to Top, Left to Right, or Right to Left. This field is displayed only when the *Scroll* box is checked

Speed When Scroll is checked, enter the speed (in pixels per second) that you want your message to scroll through the display.

Auto Reverse When checked, the display reverses the scrolling direction when it reaches the top or bottom of the list.

Background Select *Solid* and click in the color field to open the color palette. Select a color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



Select *Gradient* and click in the color field to select a new background gradient color from the palette.

Angle When Gradient is selected, the Angle slider is activated. Move the slider to change the angle of the gradient display. Select also *Linear* (line) or *Radial* (circle) to change the shape of the gradient display.

Text Color Click the box to open the color selection panel. Select a new text color from the palette.

Font Select the desired font used for your messages. If you select Web Font, a Web Font field will display below. You can also select any of the fonts installed on your computer.

Font Size Select the type of font size: points, small, medium, large, etc. If *In Points* is selected, a box to enter font size (in points) is displayed.

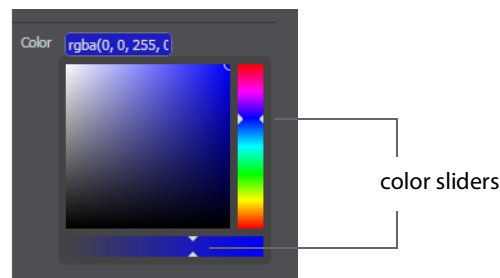
Font Weight Select the font weight: 100 to 900.

Font Style Enter the font style: Normal, Italic, or Oblique.

Font Variant Select a font variant: *Normal* (capital and small characters displayed normally), or *Small-caps* (Capitals with small letters displayed as small capital letters).

Shadow Check to activate the text shadow slider controls.

Color Click in the color field to open the color palette. Select a shadow color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



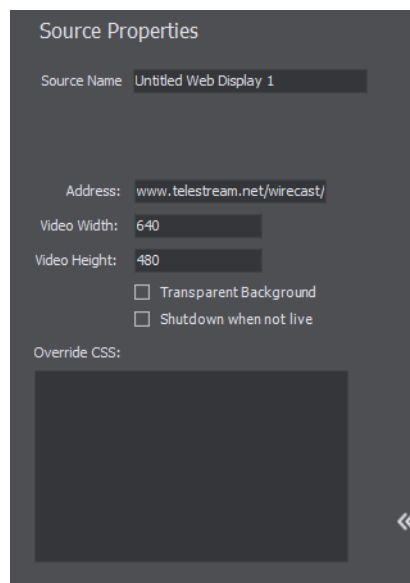
Offset Move the Offset slider to adjust the direction (0 to 360 degrees) the shadow text is offset from the actual text.

Radius Move the Radial slider to adjust the distance the shadow text is offset away from the actual text.

Blur Move the Blur slider to adjust the amount of blur in the shadow text

Web Page Properties

Web Page shows a web source defined by a web address (URL). To open a Web Page source, select *Web Page* from the source menu in the shot window. Web Page Properties have the following settings.



Source Name Displays the name of the source. To change the source name, enter a new one.

Address Displays the web address (URL) of the source. To change the address, enter a new one.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Transparent Background Check to make the background transparent in your shot.

Shutdown when inactive Check to turn off the audio and disable it from the shot when playing videos.

Override CSS Enter Cascading Style Sheet code to override the default code for this web display.

Web Stream Properties

The Web Stream option allows RTMP, RTSP, MMS, or HTTP streams to be taken directly into Wirecast This is useful for incorporating remote IP Cameras or other network streams into a broadcast. Sources are automatically detected and are also identified by *IP Camera Profile*. To open a Web Stream source, select *Web Stream* from the source menu in the shot window.

Web Stream Properties have the following settings.

Source Name Displays the name of the source. To change the Source Name, enter a new one.

Audio Delay Enter the amount of time (in seconds, as short as 1 ms) to delay audio.

Video Delay Enter the amount of time (in seconds, as short as 1 ms) to delay video.

URI Enter the address of your input stream. (For example: *rtsp://127.0.0.1:8080/my_stream.sdp*, or *http://10.0.0.1/my_stream*, or *rtmp://hades.telestream.net:1935/live/myStream*).

Username Enter your username for your URI stream.

Password Enter your password for your URI stream.

Buffer Enter a buffer time in seconds.

Reconnect Click to reconnect the Web Stream source.

Apply Click the Apply button to update any changes.

Monitor Click the *Monitor* icon to cause audio to play through your monitor output. The icon is gold when selected (turned on). If unselected, audio will not play through the monitor output for this source. Selected is the default.

Titles Properties

A Title is a text displayed in a banner window. Wirecast offers a wide variety of title banner templates to use in your streaming. To open a Title source, select *Titles* from the source menu in the shot window.

Titles have the following settings.

Source Properties

Source Name
Default Social Media Text 1

☒ Width 828
☒ Height 125
☐ Shutdown when not live

Source
text file rss

```

${social_media_message}

```

☒ Line Wrap
Wrap on Wo

Align

Justify

☒ On Change
Fade

Transition
0.5 seconds

☒ Scroll
Non Stop

Direction
Bottom To Top

Speed
30 pixels/sec

Auto Reverse
☒

Background
☐ None
☐ Solid

rgba(0, 0, 0, 0)

☐ Gradient

#ffffff
#000000

Angle:
0

☐ Linear
☐ Radial

Text Color

Font
System Font

Font Family
Arial

Font Size
In Points 24

Font Weight
400

Font Style
normal

Font Variant
normal

☐ Shadow:

Color:
#000000

Offset:
0°

Radius:
0px

Blur:
0px

Source Name Displays the name of the source. To change the source name, enter a new one.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Shutdown Check to cause the text to not be displayed until the shot is placed into the Live window.

Source Select the source of your text: *Text* (directly entered) or *File* (navigate to a text file), or *RSS* (ticker tape RSS feed). If you select *Text*, enter your text in the text box below the source selector. If you select *File*, enter a file name in the File Path box displayed, or click the navigation button (three dots) and find your text file. The text from your file will be automatically displayed. The file has to contain UTF-8 encoded text in order for it to be rendered correctly. Only the first 64KB of the text file will be loaded and displayed. If you select *RSS*, enter a URL in the URL box displayed.

Line Wrap When checked, the displayed text wraps around to the next line to fit into the window as it is resized. Select wrap mode from the drop-down menu: *Wrap on Word* or *Break Word*.

Align Enables you to align the text at the top, middle, or bottom of the display.

Justify Enables you to justify the text along the left, center, or right side of the display.

On Change When checked, a transition menu is displayed offering a choice of transition types: Fade, Drop In, Drop Out, and Slide. Transitions occur when text is changed.

Transition Enter the length (in seconds) of the transition time. This field is displayed only when the *On Change* box is checked.

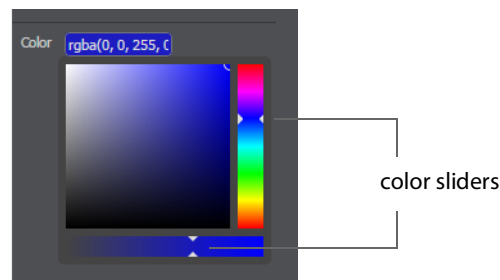
Scroll When Scroll is checked, you can enter both a scroll mode and a direction. There are two scroll modes: *Non Stop* and *If it Does Not Fit*.

Direction Select the direction of the scrolling: Top to Bottom, Bottom to Top, Left to Right, or Right to Left. This field is displayed only when the *Scroll* box is checked

Speed When Scroll is checked, enter the speed (in pixels per second) that you want your message to scroll through the display.

Auto Reverse When checked, the display reverses the scrolling direction when it reaches the top or bottom of the list.

Background Select *Solid* and click in the color field to open the color palette. Select a color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



Select *Gradient* and click in the color field to select a new background gradient color from the palette.

Angle When Gradient is selected, the Angle slider is activated. Move the slider to change the angle of the gradient display. Select also *Linear* (line) or *Radial* (circle) to change the shape of the gradient display.

Text Color Click the box to open the color selection panel. Select a new text color from the palette.

Font Select the desired font used for your messages. If you select Web Font, a Web Font field will display below. You can also select any of the fonts installed on your computer.

Font Family Select the style of the font: Arial, Bookman, etc.

Font Size Select the type of font size: points, small, medium, large, etc. If *In Points* is selected, a box to enter font size (in points) is displayed.

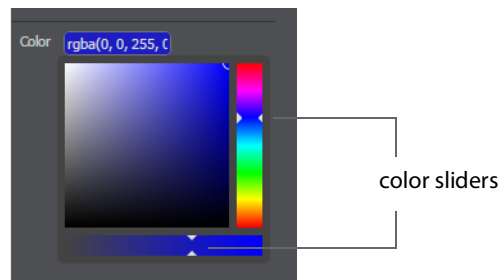
Font Weight Select the font weight: 100 to 900.

Font Style Enter the font style: Normal, Italic, or Oblique.

Font Variant Select a font variant: *Normal* (capital and small characters displayed normally), or *Small-caps* (Capitals with small letters displayed as small capital letters).

Shadow Check to activate the text shadow slider controls.

Color Click in the color field to open the color palette. Select a shadow color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



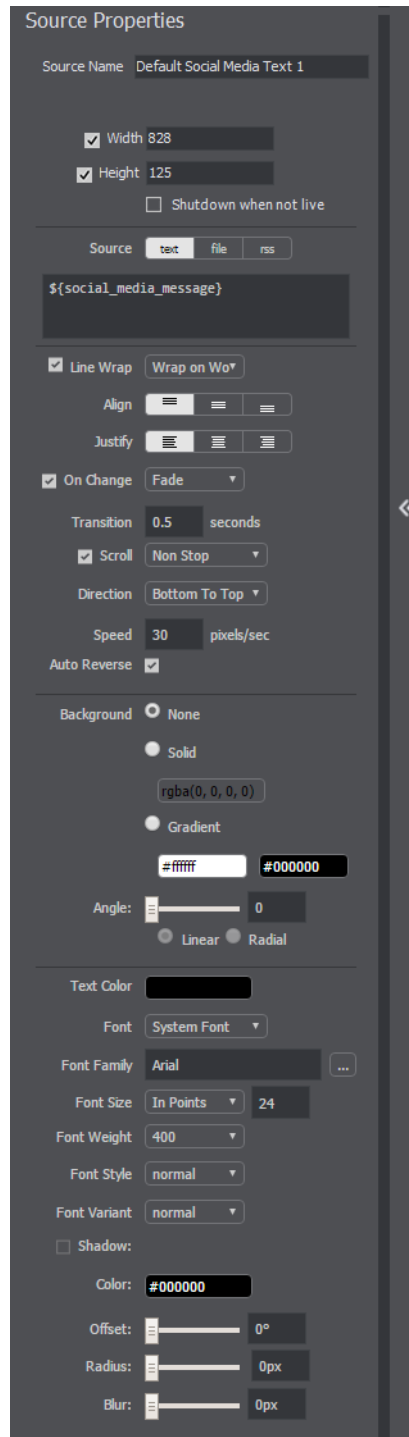
Offset Move the Offset slider to adjust the direction (0 to 360 degrees) the shadow text is offset from the actual text.

Radius Move the Radial slider to adjust the distance the shadow text is offset away from the actual text.

Blur Move the Blur slider to adjust the amount of blur in the shadow text

Twitter Feed Properties

Twitter Feed displays a list of Twitter messages. Twitter Feed Properties have the following settings.



The screenshot shows the 'Source Properties' panel for a Twitter Feed. The 'Source Name' is 'Default Social Media Text 1'. Dimensions are set to Width 828 and Height 125, with a 'Shutdown when not live' checkbox. The 'Source' is set to 'text' with a data binding of `$(social_media_message)`. Text formatting includes 'Line Wrap' (Wrap on Wo), 'Align' (left), 'Justify' (left), 'On Change' (Fade), 'Transition' (0.5 seconds), 'Scroll' (Non Stop), 'Direction' (Bottom To Top), 'Speed' (30 pixels/sec), and 'Auto Reverse' (checked). Background options include 'None', 'Solid' (with an `rgba(0, 0, 0, 0)` input), and 'Gradient' (with color inputs `#ffffff` and `#000000`, an 'Angle' slider at 0, and 'Linear'/'Radial' radio buttons). Text styling includes 'Text Color' (black), 'Font' (System Font), 'Font Family' (Arial), 'Font Size' (24 In Points), 'Font Weight' (400), 'Font Style' (normal), and 'Font Variant' (normal). A 'Shadow' section includes 'Color' (`#000000`), 'Offset' (0°), 'Radius' (0px), and 'Blur' (0px).

Source Properties

Source Name: Default Social Media Text 1

☒ Width: 828

☒ Height: 125

☐ Shutdown when not live

Source: text file rss

`$(social_media_message)`

☒ Line Wrap: Wrap on Wo

Align: [Left] [Center] [Right]

Justify: [Left] [Center] [Right]

☒ On Change: Fade

Transition: 0.5 seconds

☒ Scroll: Non Stop

Direction: Bottom To Top

Speed: 30 pixels/sec

Auto Reverse: ☒

Background: ☒ None

☐ Solid

`rgba(0, 0, 0, 0)`

☐ Gradient

`#ffffff` `#000000`

Angle: [0] [180]

☒ Linear ☐ Radial

Text Color: [Black]

Font: System Font

Font Family: Arial

Font Size: 24 In Points

Font Weight: 400

Font Style: normal

Font Variant: normal

☐ Shadow:

Color: `#000000`

Offset: [0] [0°]

Radius: [0] [0px]

Blur: [0] [0px]

Source Name Displays the name of the source. To change the source name, enter a new one.

Width/Height Displays the width and height of the display source. To change the width or height, enter a new value.

Shutdown Check to cause the text to not be displayed until the shot is placed into the Live window.

Source Select the source of your text: *Text* (directly entered) or *File* (navigate to a text file), or *RSS* (ticker tape RSS feed). If you select *Text*, enter your text in the text box below the source selector. If you select *File*, enter a file name in the File Path box displayed, or click the navigation button (three dots) and find your text file. The text from your file will be automatically displayed. The file has to contain UTF-8 encoded text in order for it to be rendered correctly. Only the first 64KB of the text file will be loaded and displayed. If you select *RSS*, enter a URL in the URL box displayed.

Line Wrap When checked, the displayed text wraps around to the next line to fit into the window as it is resized. Select wrap mode from the drop-down menu: *Wrap on Word* or *Break Word*.

Align Enables you to align the text at the top, middle, or bottom of the display.

Justify Enables you to justify the text along the left, center, or right side of the display.

On Change When checked, a transition menu is displayed offering a choice of transition types: Fade, Drop In, Drop Out, and Slide. Transitions occur when text is changed.

Transition Enter the length (in seconds) of the transition time. This field is displayed only when the *On Change* box is checked.

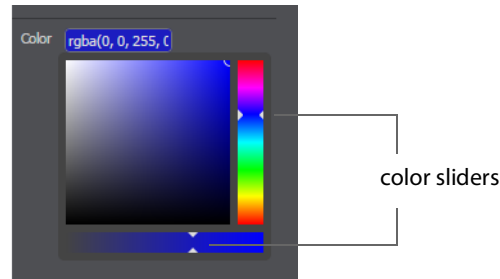
Scroll When Scroll is checked, you can enter both a scroll mode and a direction. There are two scroll modes: *Non Stop* and *If it Does Not Fit*.

Direction Select the direction of the scrolling: Top to Bottom, Bottom to Top, Left to Right, or Right to Left. This field is displayed only when the *Scroll* box is checked

Speed When Scroll is checked, enter the speed (in pixels per second) that you want your message to scroll through the display.

Auto Reverse When checked, the display reverses the scrolling direction when it reaches the top or bottom of the list.

Background Select *Solid* and click in the color field to open the color palette. Select a color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



Select *Gradient* and click in the color field to select a new background gradient color from the palette.

Angle When Gradient is selected, the Angle slider is activated. Move the slider to change the angle of the gradient display. Select also *Linear* (line) or *Radial* (circle) to change the shape of the gradient display.

Text Color Click the box to open the color selection panel. Select a new text color from the palette.

Font Select the desired font used for your messages. If you select Web Font, a Web Font field will display below. You can also select any of the fonts installed on your computer.

Font Family Select the style of the font: Arial, Bookman, etc.

Font Size Select the type of font size: points, small, medium, large, etc. If *In Points* is selected, a box to enter font size (in points) is displayed.

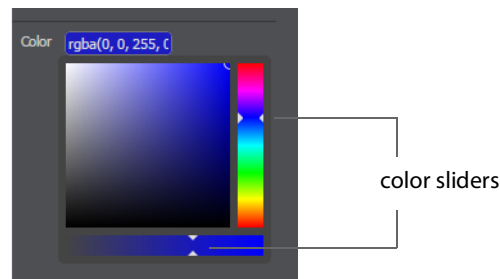
Font Weight Select the font weight: 100 to 900.

Font Style Enter the font style: Normal, Italic, or Oblique.

Font Variant Select a font variant: *Normal* (capital and small characters displayed normally), or *Small-caps* (Capitals with small letters displayed as small capital letters).

Shadow Check to activate the text shadow slider controls.

Color Click in the color field to open the color palette. Select a shadow color and luminance by sliding the vertical and horizontal sliders. Click outside the color edit box to close the palette.



Offset Move the Offset slider to adjust the direction (0 to 360 degrees) the shadow text is offset from the actual text.

Radius Move the Radial slider to adjust the distance the shadow text is offset away from the actual text.

Blur Move the Blur slider to adjust the amount of blur in the shadow text.

Social Media

Introduction

Two social media options are provided: Facebook and Twitter. Facebook enables you to receive polling data from viewers. Twitter enables you to add Twitter messages to your broadcast along with filtering what messages are displayed.

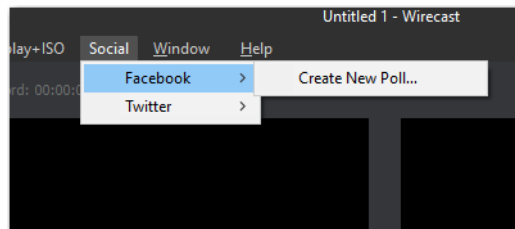
Topics

- [Facebook](#)
- [Twitter](#)

Facebook

Note: Facebook Polls are only shown in the Facebook UI when the Facebook Video is playing, and fully open.

Facebook polls are controlled through the Social menu in Wirecast One. Select *Social > Facebook > Create New Poll* to create a new poll.

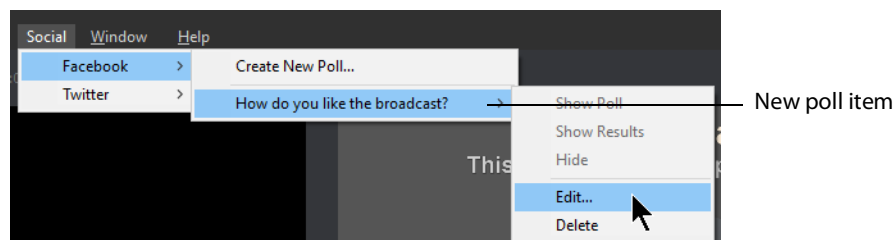


The *Social > Facebook* menu contains the *Create New Poll* option as well as any previously created polls. Polls are not saved with the document. They are saved with the WC application, the same as preferences are.

Note: Wirecast One can only use Facebook Polls created within the WC application itself. Facebook Polls created within the Facebook Live User Interface cannot be imported to Wirecast One.

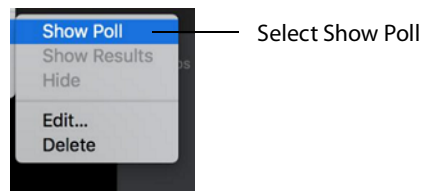
When a new pole is created, a dialog for specifying the poll options is displayed. You may enter a question, select whether there are 2, 3, or 4 answer options, and you can specify each option. You must enter a question and the correct number of options for the poll to be created. There are also four optional check boxes to aid you in how your poling is implemented. Click *OK* to create your new poll.

Once the poll has been created, it is listed in the menu. When you select a poll, you see additional options to edit the poll, or delete the poll.

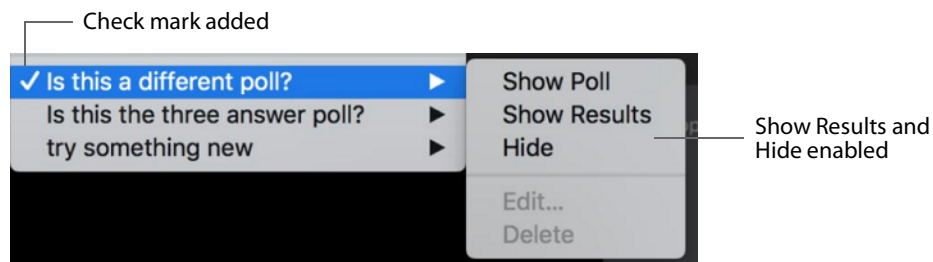


Note: Facebook does not allow you to edit a poll that is being shown, so this option is not enabled while streaming to Facebook and using a poll.

The options to Show Poll, Show Results and Hide are available when streaming to Facebook. As soon as you start streaming, the *Show Poll* option is enabled. Select *Show Poll* to show a poll in your stream.

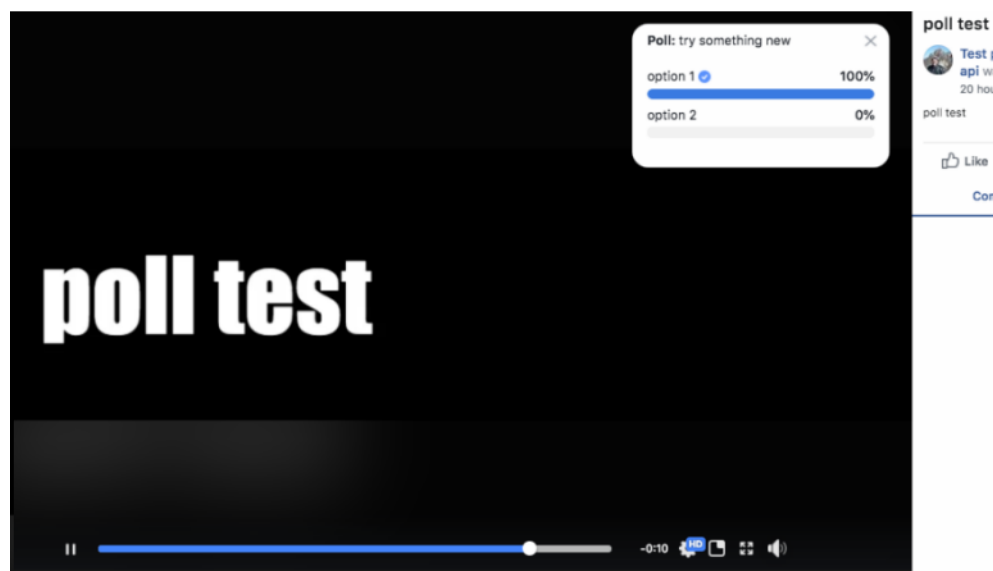


There is a lag of 5 to 15 seconds between selecting a poll and having it shown in your stream. When a poll is actually shown in your stream, a check mark is added to its menu item and the *Show Results* and *Hide* options are enabled.



You may show a poll or show its results (which closes voting) at any time while streaming to Facebook once the poll has been activated. You may only hide it if it is the active poll. Showing a different poll, or showing a different poll's results, will hide any other polls being shown. This allows you to decide if you want to show a poll, or show the results of the poll, and then hide it.

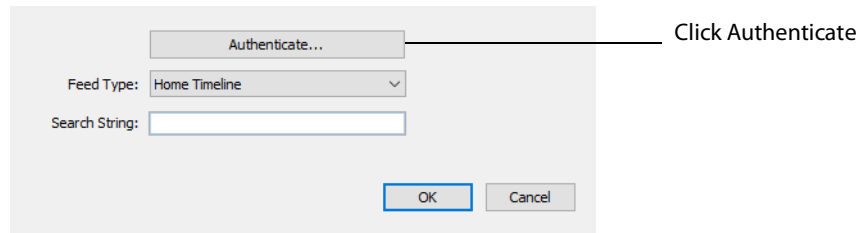
On Facebook, polls are not automatically shown. The viewer must click on the video to see or vote on a poll.



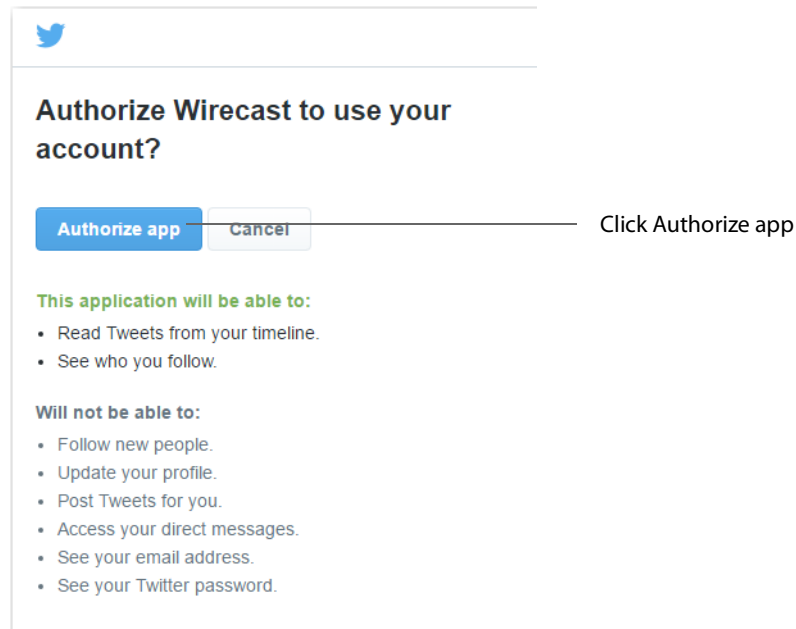
Twitter

Settings

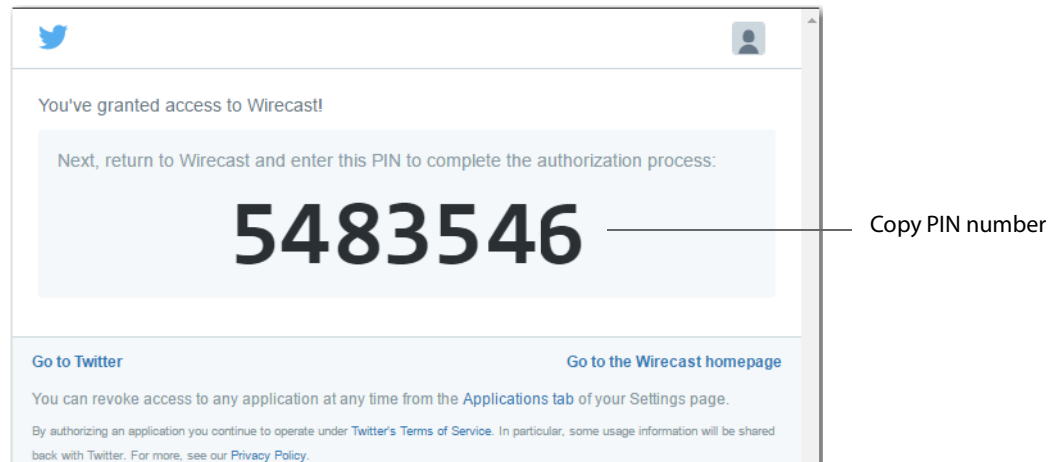
The first thing you need to do is Authenticate your account with Twitter. To do this select *Social > Twitter > Settings*, then click the *Authenticate* button. Enter your pin when the PIN field displays. Select a Feed Type: Home Timeline, User Timeline, Favorites, Search. If you select Search, the Search String field becomes active. Click *OK* when you are finished.



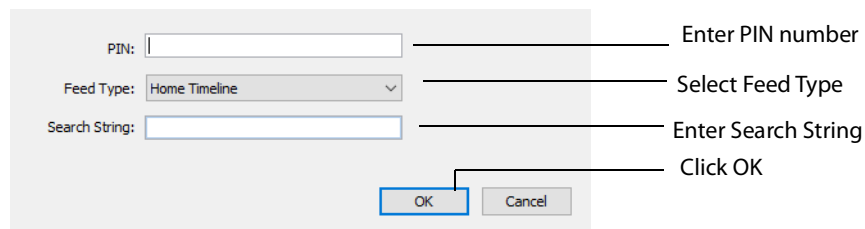
When the Twitter window displays, click *Authorize app*.



When the PIN window displays copy the PIN number. and close the window.



In the Twitter Settings window, enter (or paste) the newly copied PIN number, select the Feed Type, enter a Search String, then click *OK*.



Feed Types:

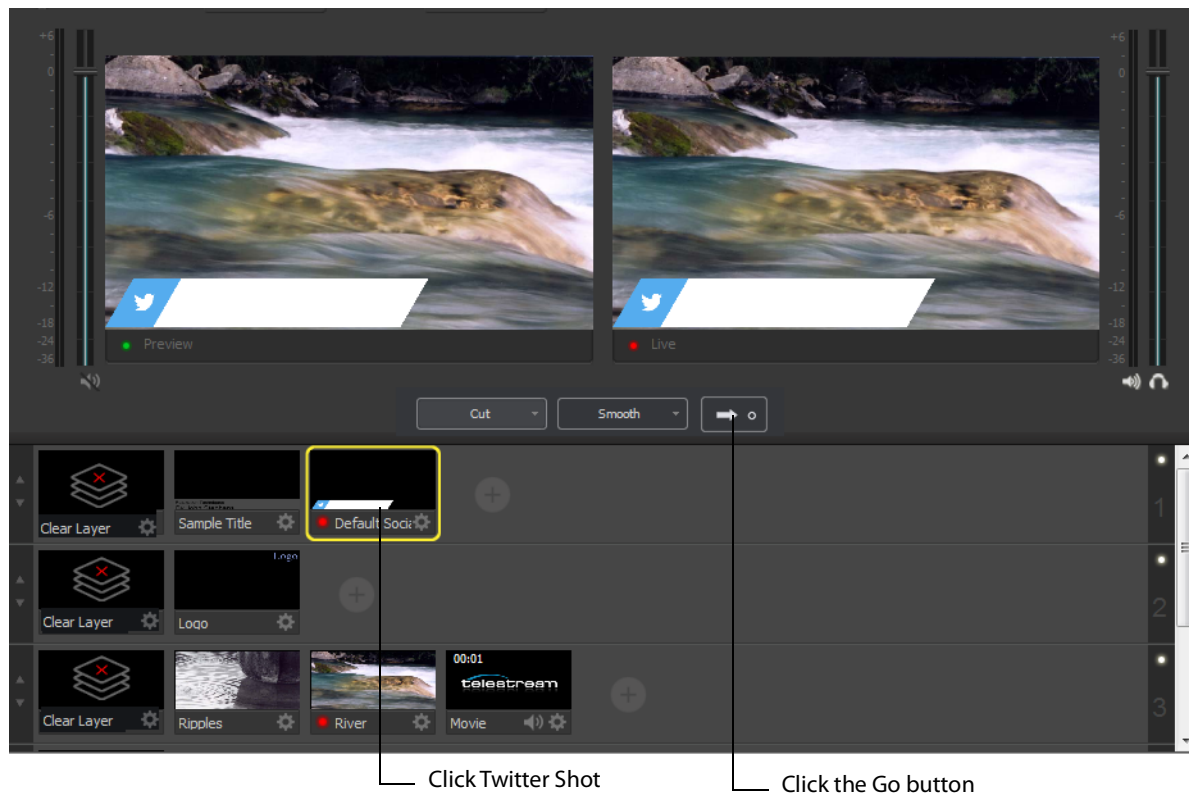
- **Home Timeline**
- **User Timeline**
- **Favorites**
- **Search** Displays Twitter feeds that contain a search string.

The Search String field is only active when you select Search as the Feed Type. Enter any word or phrase to use in searching for Twitter feeds that contain your selected words

Create Shot

To create a new Twitter shot, select *Twitter > Create Shot*. When the new shot icon is displayed in the Sot List, click it to place it in the Preview window. You can click and

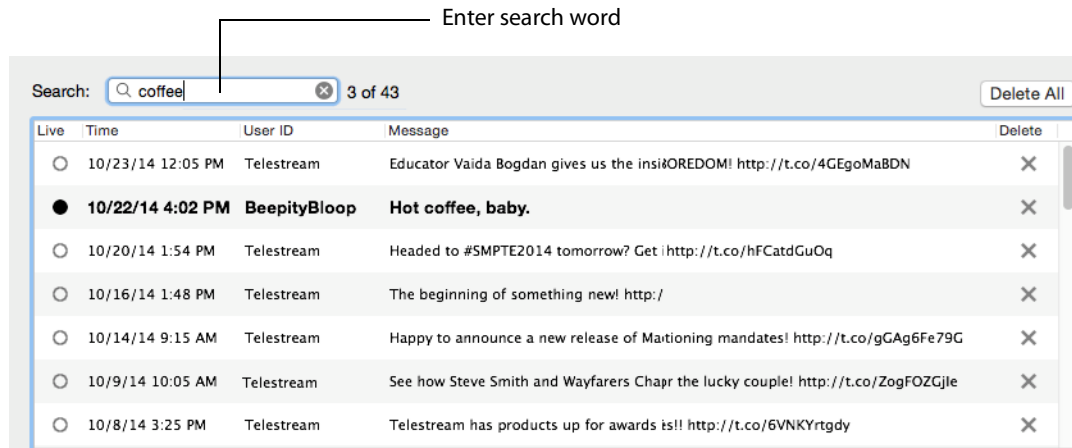
drag the Twitter message box to any location in the shot. Click the Go button to take it live.



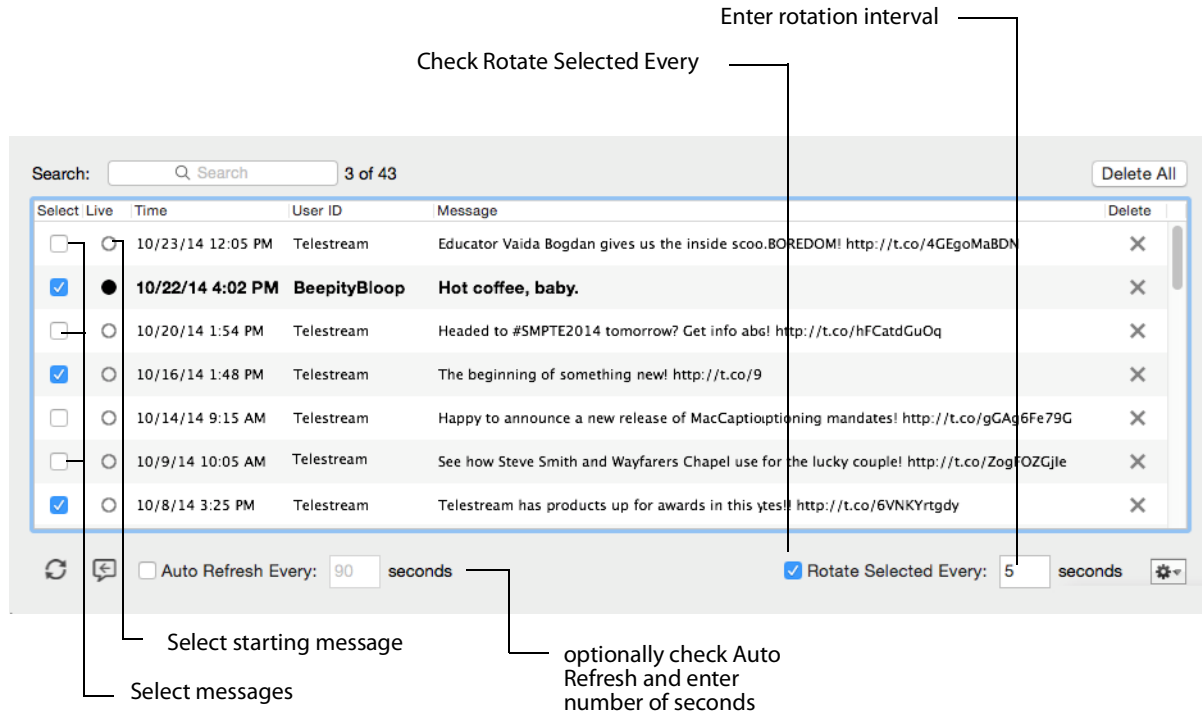
Note: when a message feed is selected (see the *Message Feed* section below), the message will be automatically filled in.

Message Feed

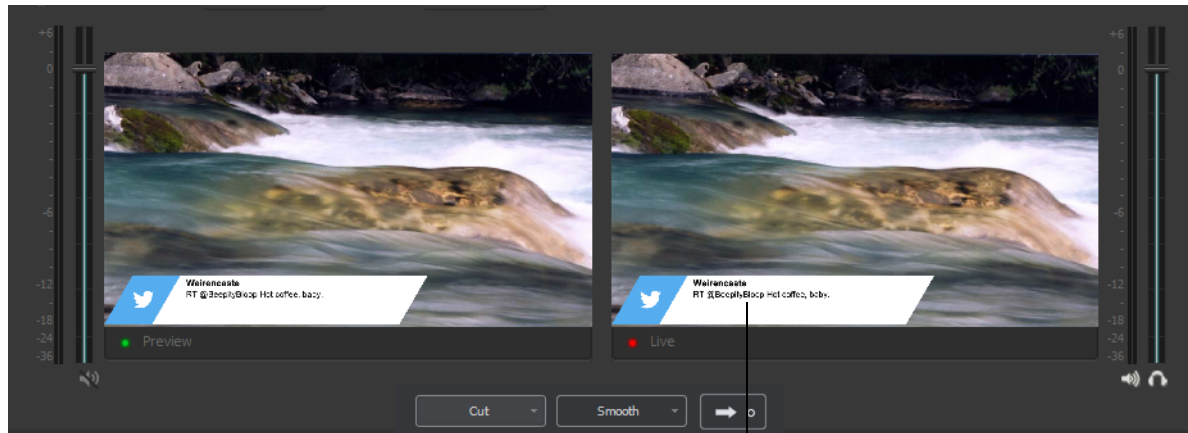
Click *Twitter > Message Feed* to add some Twitter messages to your broadcast. When the message window displays, search (optionally) for the messages you want to broadcast.



To select messages to be rotated in your broadcast, first check *Rotate Selected Every*, and enter the number of seconds of the rotation interval. Select the messages you want rotated by checking the box at the left of each message. Select a starting message.



You can also (optionally) check *Auto Refresh* and enter number of seconds. The gear icon allows you to select or unselect all messages. Once you have selected your messages, close the Message Feed window.



Twitter message

Preferences

Introduction

Wirecast One is designed so that you can configure most of your options directly in your Wirecast One document or the Shot Editor. The Preferences window enables you to set up Wirecast One, set Screen Capture options, manage your licenses, update your software, and set advanced video options.

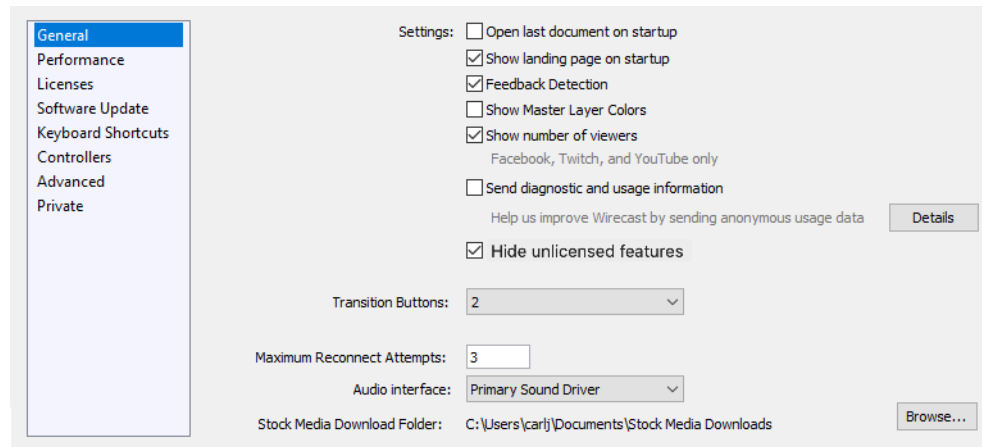
Topics

- [Accessing Preferences](#)
- [General](#)
- [Performance](#)
- [Licenses](#)
- [Software Update](#)
- [Hot Keys](#)
- [Controllers](#)
- [Advanced](#)

Accessing Preferences

To open the Preferences window, select Preferences from the File menu (or press the Ctrl+ Comma (",") keys). Preferences are grouped under five topics: General,

Performance, Licenses, Software Update, and Advanced. Click one of these topics to view and change its preferences.



Wirecast One automatically saves your preferences every time you make a change. The changes are immediately applied.

Resetting Preferences

To reset your preferences, quit Wirecast and then delete the files located at:

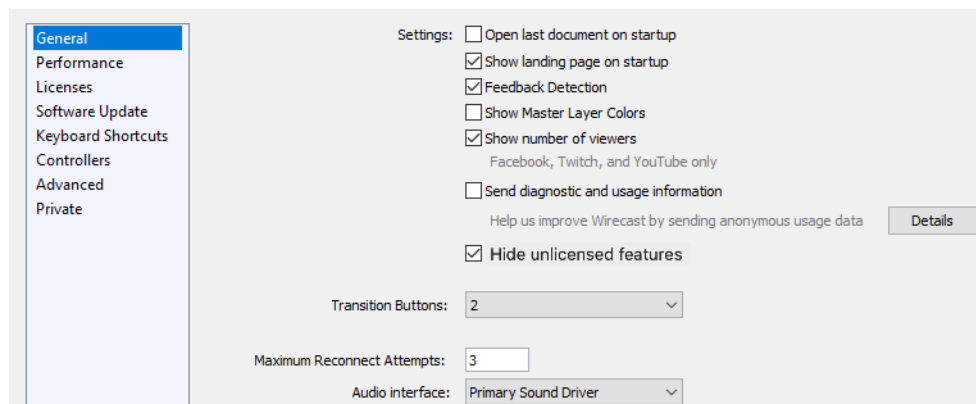
Windows 7 `C:\Users\USERNAME\AppData\Roaming\net.telestream.Wirecast.xml`.

Or, you can use Support Assistant to reset preferences (see *Send Support Information* under [Help Menu](#)).

Note: You should match the output to the canvas size as close as possible to preserve video resolution and quality. For example, a 800x600 source results in significant loss of quality if an aspect ratio of 640x480 is selected. Using 720x576, which is much closer in size, helps preserve video quality.

General

General preferences enable you to setup the Wirecast One environment.



Open last document on startup When checked, the last document you used is opened when Wirecast One starts up.

Show landing page on startup When checked, the Welcome screen is always displayed when Wirecast starts up. You can disable this automatic display by unchecking this option, or by unchecking the box in the corner of the Welcome display. But you can only turn this automatic display back on by checking this box in the *Preferences > Advanced* window.

Feedback Detection When checked, the computer audio is disabled (live feed is unaffected) whenever feedback is detected. Checked is the default. When feedback is detected, a warning is displayed with an option to turn off feedback detection.

Show Number of Viewers When checked, enables the viewership indicator while streaming.



Show Master Layer Colors Check to display colors associated with each Master Layer.

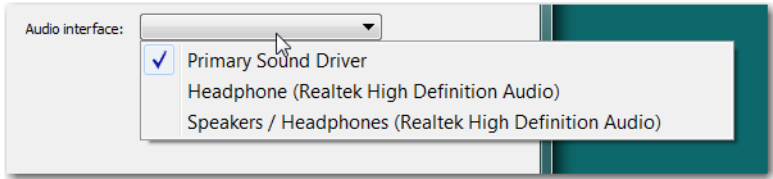


Hide Unlicensed Features When checked, unlicensed features (Studio and Pro) are hidden from display in the menus.

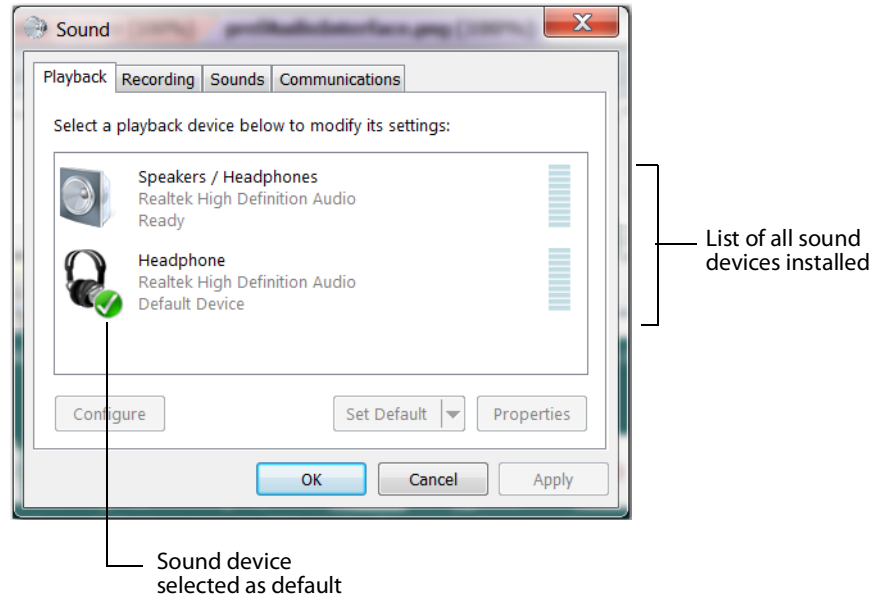
Transition Buttons Select the number of transition buttons (one to three) displayed in the main window.

Maximum Reconnect Attempts Enter the number of times you want Wirecast One to try to reconnect to a host provider. The default is three.

Audio Interface Select the audio playback driver used.



The *Primary Sound Device* is whatever device is selected as the default in the Sound Playback settings window (which is accessed by right-clicking the speaker icon in the Windows task bar). The other selections are a list of all sound devices installed.

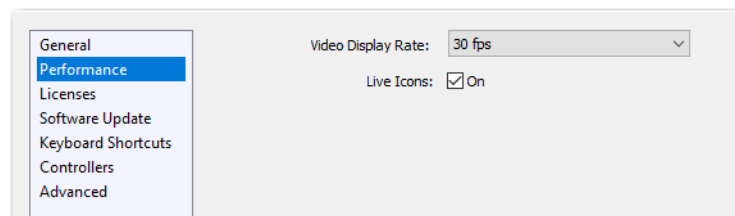


Performance

Performance preferences enable you to select the display rate used for all internal video rendering.

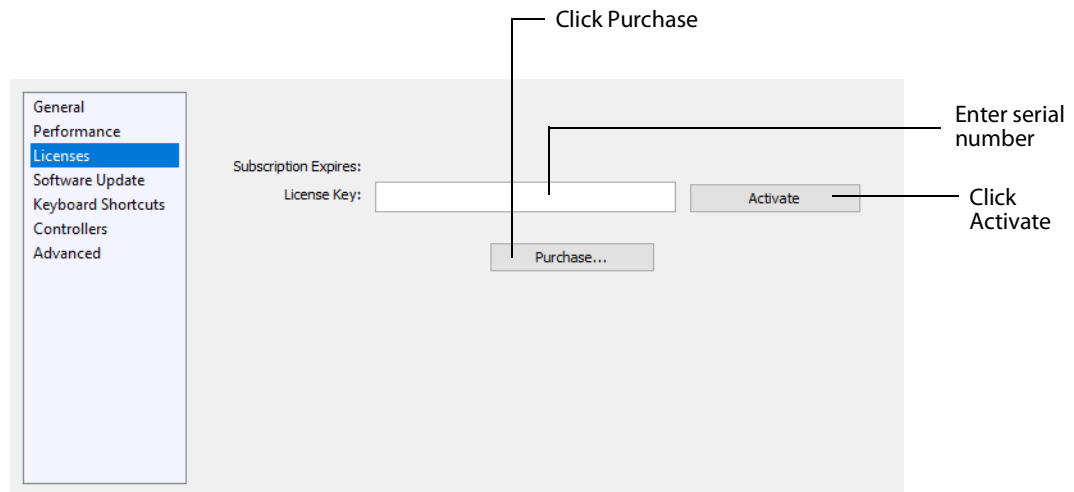
You can set the Video Display Rate to 24, 25, 30, 50 or 60 fps. If using PAL sources, choosing 25 may eliminate dropped or duplicate frames. It is recommended that you set this frame rate to match the frame rate of your output video encoder.

You can turn on the Live Icons feature, which makes all icons in the Shot Area display any live activity in the device it represents (cameras, streaming, etc.). You can also set the fps of the Live Icon display using the slide bar control.



Licenses

The licenses preferences enable you to register and license Wirecast One. To purchase a license, click *Purchase*. To activate a license, enter your serial number and click *Activate*.



Serial Numbers

The Licenses Preference window displays the products and serial numbers that you have received for Wirecast One.

Note: The serial number is always composed of numbers and upper case letters (excluding upper case letter O), but it never contains quotation marks. When you receive a serial number, it may be enclosed in quotation marks (e.g., "123-456-789").

If you wish to purchase a serial number from the web store, click *Buy*. When Wirecast One displays the Enter Serial Number window, enter the serial number and click *Activate*. Wirecast One validates the serial number and unlocks Wirecast One. If you previously purchased a copy of Wirecast One and want to use that serial number, enter that serial number to unlock Wirecast One

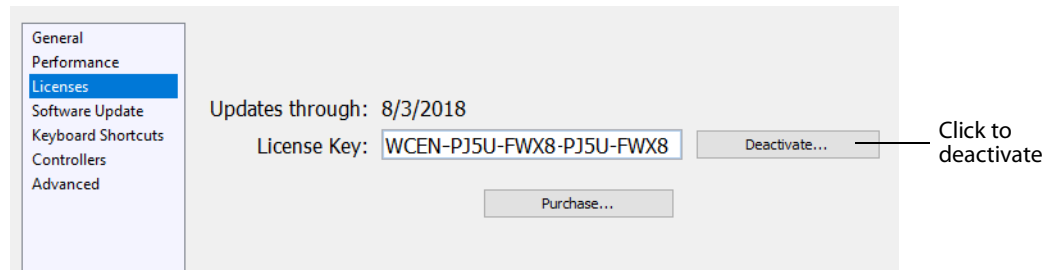
Note: If you do not want to purchase a serial number directly in Wirecast, you can also purchase a serial number at www.teletstream.net.

Manual Activation

If your computer is not on the Internet, you can use another computer to activate your license and unlock Wirecast. To manually activate your license, download the Manual Activation Guide at: <http://www.teletstream.net/teletstream-support/wire-cast/training.htm> and follow the steps in the guide to unlock Wirecast.

Deactivate Serial Numbers

Deactivating a serial number allows you to re-activate it on another computer. You can always reactivate a serial number by re-entering it. To deactivate a serial number, click the *Deactivate* button on the Licenses tab in Preferences. Wirecast One deactivates the serial number and adds water-marking to the video and audio whenever licensed features are used. When you deactivate a serial number, it is removed from the table.

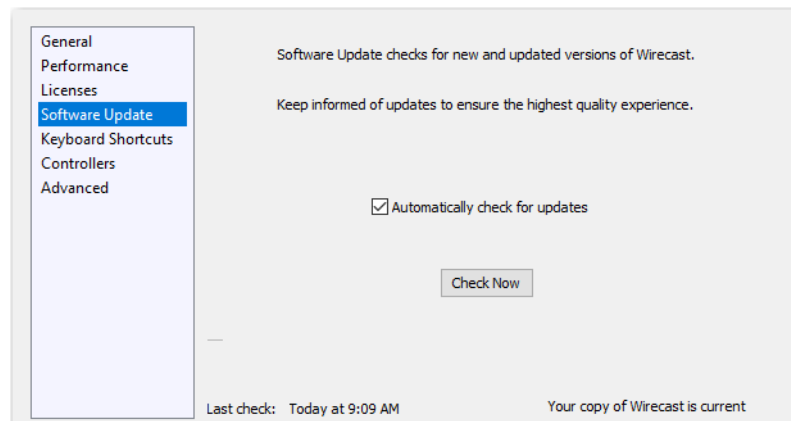


Demonstration Mode

When no serial number is entered or activated, Wirecast One water-marks all output (both to disk and network). The video water-mark is a periodic overlay of the Wirecast One logo. Audio water-mark is a periodic voice over. If you have a Wirecast One serial number and are using a Wirecast One Pro feature without a Pro license, that output is also water-marked.

Software Update

Software update preferences enable you to obtain Wirecast One updates.



Automatically Check Updates Check the Automatically Check For Updates checkbox to cause Wirecast One to check for updates on the Telestream Website each time Wirecast One is launched. No personal information is transferred to Telestream during this action.

Check Now Click *Check Now* to immediately check for updates on the Telestream Website (www.telestream.net). No personal information is transferred to Telestream during this action.

Upgrades Included

With each purchase of Wirecast One – whether it is an upgrade purchase or full license – you receive a Standard Support subscription for 1 year from the date of purchase. This subscription can be renewed annually.

Optionally, customers can choose to upgrade this Standard Support subscription to a Premium Support subscription at any time, for an additional fee. Premium Support subscriptions can also be renewed annually.

Your support subscription is tied to your Wirecast One license. As long as your license is entered into the software and your Premium or Standard support subscription is active, you will be allowed to upgrade to the latest unlocked version of Wirecast One for free. To do this, download and install the latest version of Wirecast One and you will automatically have access to all the new features (depending on your license level).

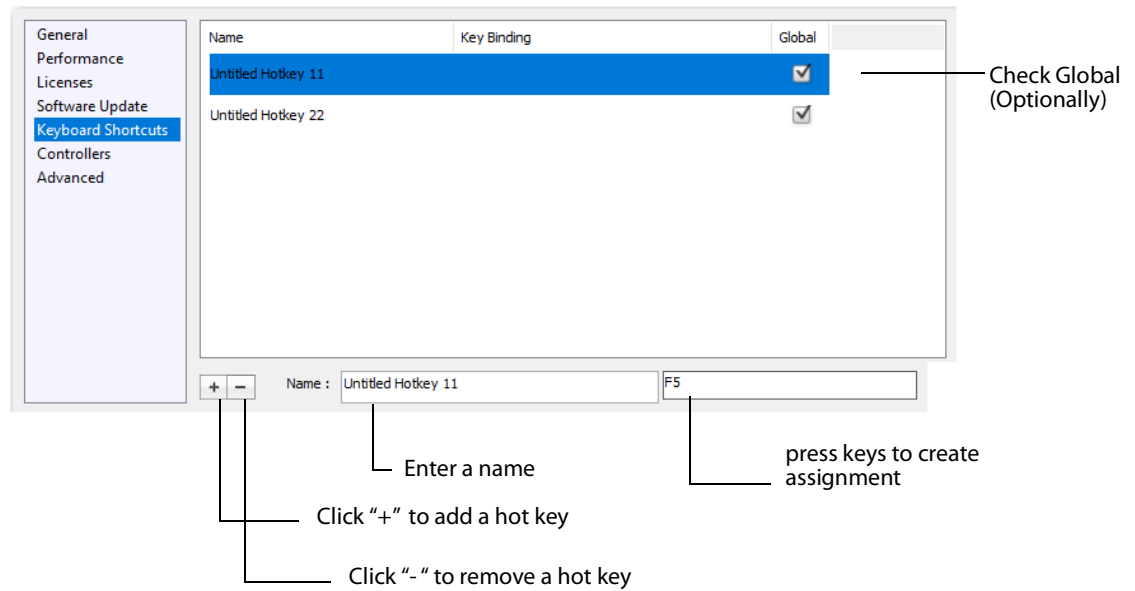
If your support subscription is expired, or you have not entered your license into the software, you will not be able to upgrade to an unlocked version and the software will revert to *demo* mode. However, you may continue to use the last valid version of the software released during your support subscription coverage.

If your support subscription is about to expire (12 months from the date of purchase), Wirecast One will prompt you to renew it. If you do not renew it before it expires, you may re-subscribe at any time for an additional fee.

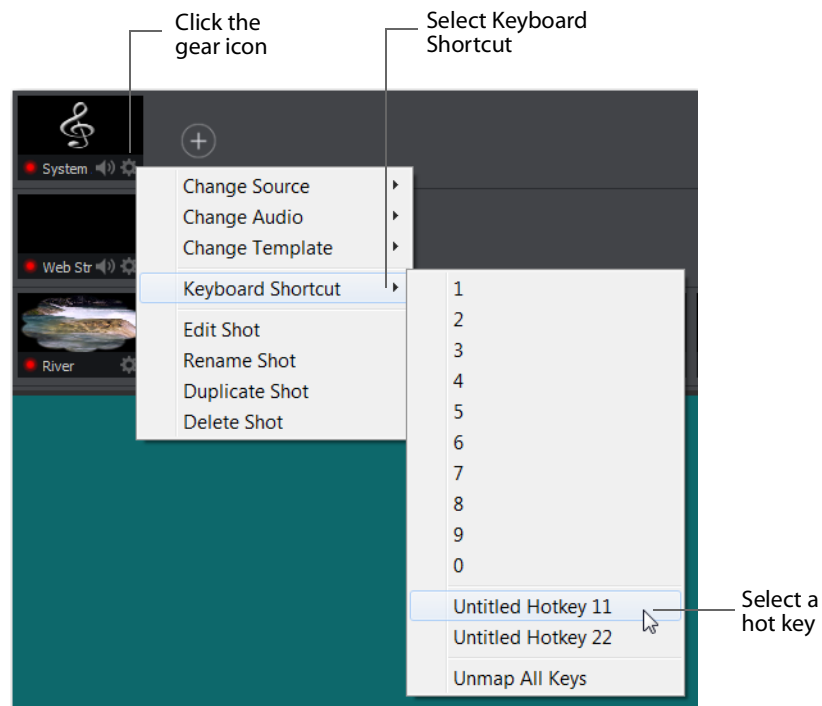
Hot Keys

Hot Key preferences enable you to create custom hot key assignments. To add a new hot key, click the add (+) button. Press the keys you want to define that hot key and enter a name for your hot key. To remove a hot key, select it in the hot key list and click the remove (-) button. Additionally, you check the Global check box to make your hotkey “global”. This means that even if the Wirecast One window is not the active

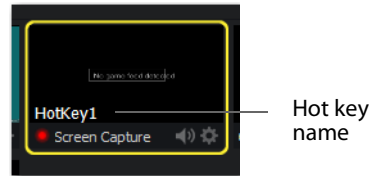
window, the hot key will still work. Otherwise (if Global is not checked) the window must be selected in order for the hot key to work.



Hot keys are associated with a shot by selecting the Keyboard Shortcuts menu (by clicking the shot gear icon), then selecting a hotkey. This selection binds the hot key to the shot.



Once a hot key is assigned to a shot, the name of the hot key displays in the shot icon.

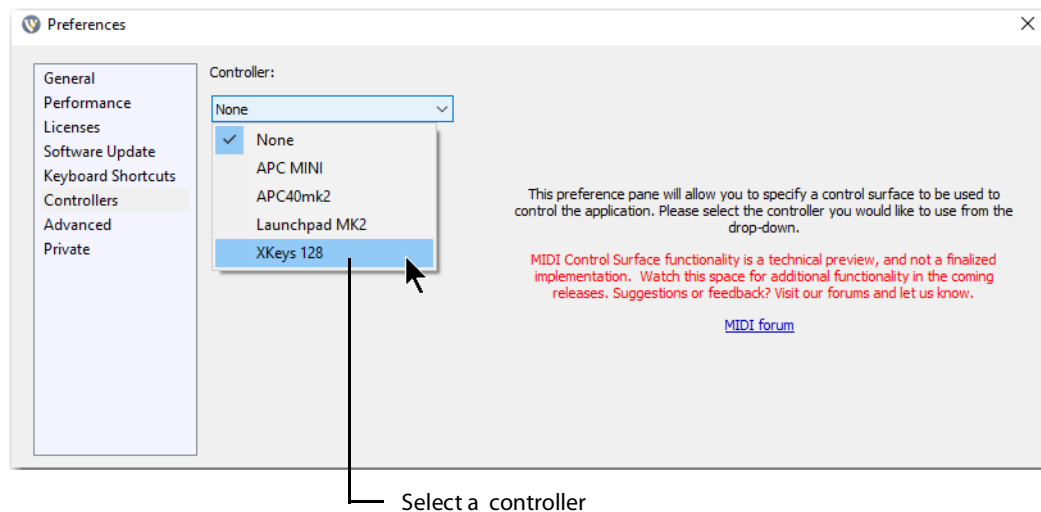


You can assign multiple shots to the same hot key. This is useful when you want different shots on different layers to be activated at the same time using one hot key. To do this, assign the hot key to the first shot (as described above), then assign the same hot key to a second shot on another layer. The shot name will display in both shot icons.

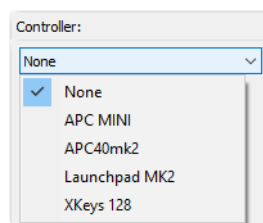
Controllers

STUDIO

Controllers preferences enable you to adjust MIDI and X-keys controller settings for Wirecast One. Select the *Controllers* tab in the Preferences window, then select a controller from the drop-down menu.



Wirecast One provides control of three MIDI controllers: APC MINI, APC40mk2, Launchpad MK2, and one X-keys controller: XKeys 128.



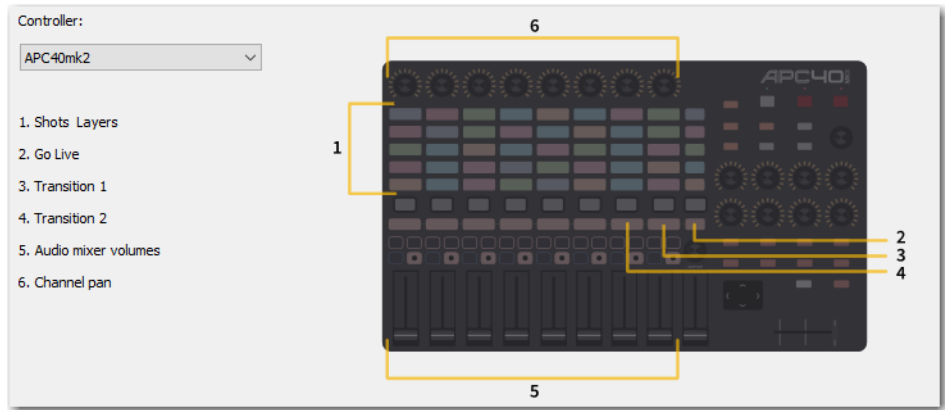
MIDI Control Assignments

Each MIDI controller has up to six controls assigned to it. The locations of each of these controls are shown below for the three midi controllers supported.

The locations of *APC MINI* controls are shown below:



The locations of *APC40mk2* controls are shown below:



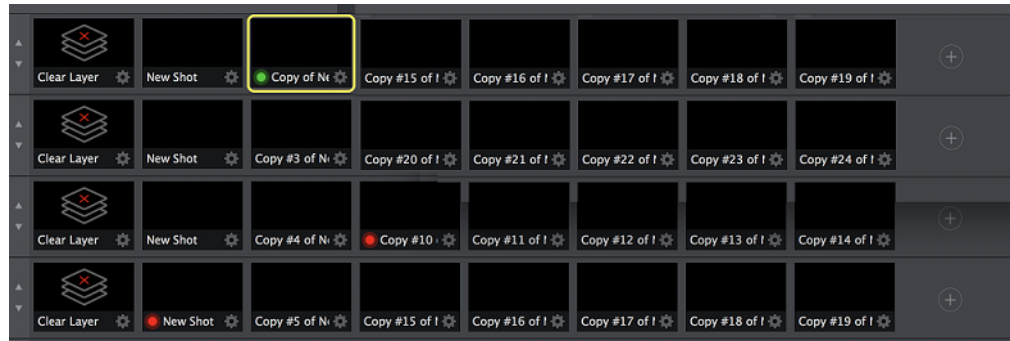
The locations of *Launchpad MK2* controls are shown below:



Each MIDI controller has up to six controls assigned to it. The locations of each of these controls are shown below for the three midi controllers supported.

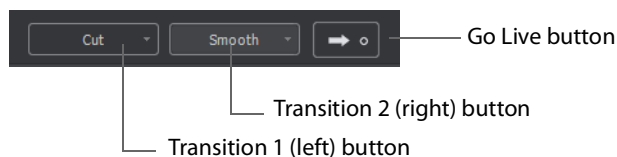
MIDI Control Descriptions

- 1. Shot Layers** The matrix of buttons on the MIDI controller (five rows of eight buttons) automatically correspond to the five layers in the Wirecast One shot list window. Up to eight shots in each layer are controlled by the MIDI controller buttons. Shots are automatically assigned to MIDI controller buttons as they are created. If less than eight shots exist on a layer, the corresponding buttons (to the right) are inactive.

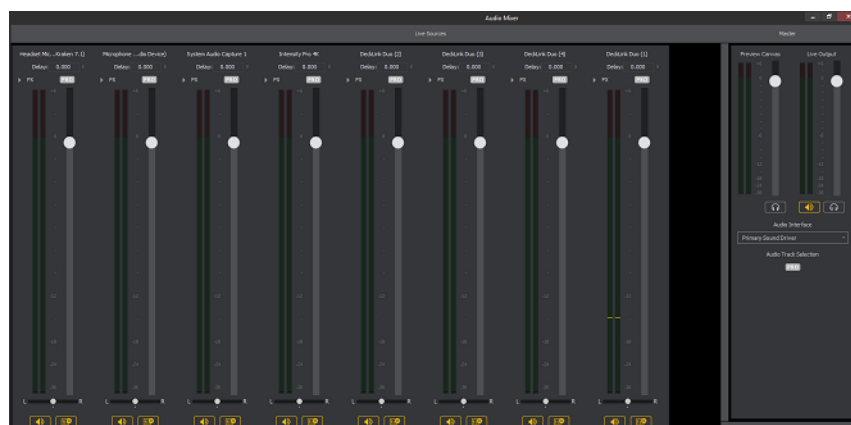


- 2. Go Live** Pressing this MIDI controller button is the same as clicking the *Go Live* button in the Wirecast One Main window.
- 3. Transition 1** Pressing this MIDI controller button is the same as clicking the *Left Transition* button in the Wirecast One Main window.

4. Transition 2 Pressing this MIDI controller button is the same as clicking the *Left Transition* button in the Wirecast One Main window.



5. Audio Mixer Volumes Sliding these MIDI controls adjusts up to eight volume controls in the Wirecast One Audio Panel. Each MIDI slider corresponds (left to right) to a volume control in the Audio Panel. Volume controls are automatically assigned to MIDI controller sliders as they are created. If less than eight volume controls exist in the Audio Panel, the corresponding MIDI sliders (to the right) are inactive.



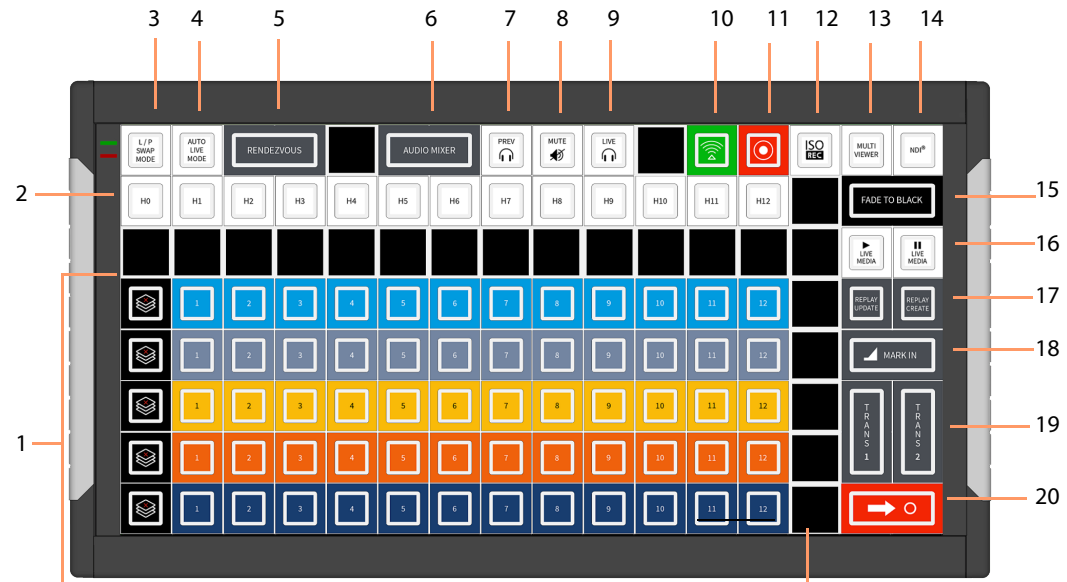
6. Channel Pan Adjusting these MIDI controls sets up to eight Channel Pan controls in the Wirecast One Audio Panel (located just below the volume controls). Each MIDI control corresponds (left to right) to a Channel Pan control in the Audio Panel. Channel Pan controls are automatically assigned to MIDI controls as they are created. If less than eight Channel Pan controls exist in the Audio Panel, the corresponding MIDI controls (to the right) are inactive.



X-keys Control Assignments

STUDIO

The X-keys controller has multiple controls assigned to it. All of the assigned controls are shown below.



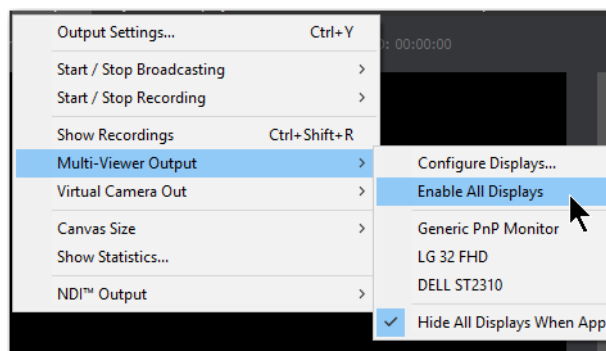
General Key Operations

- Key lamps turn red when a function is on, and turn blue when off (except for keys that do not have dual states, like the Hot Keys).
 - Function lamps turn red when a function is on, and turn blue when off (except for keys that do not have dual states, like the Hot Keys).
 - Shot switching key lamps turn Blue when shot is in Preview and Red when in Live. Otherwise they are off.
- The Wirecast One software and the X-keys panel stay in sync when keys are pressed or changes are made in Wirecast One.
- Some keys are interactive. In such a case, pressing one key affects the status of another (like the PREV and LIVE keys).

Key Descriptions

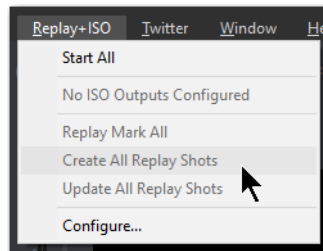
- 1. Five Layers keys** Controls the first twelve shots (plus the Clear Layer shot) on each of the five layers.
- 2. Hot Keys** The twelve keys represent the twelve Hot Keys that have been assigned in Wirecast One. Pressing a key executes the matching numbered Hot Key (1 through 13). The key lamps momentarily turn red, then turn back to blue.

- 3. Live/Preview Swap Mode** Toggles the Live/Preview Swap mode. When in this mode, the Live and Preview shots are swapped.
- 4. Auto Live Mode** Toggles the Live Auto mode. When in this mode, selected shots are displayed in the Live Output window immediately.
- 5. Rendezvous** Toggles (show/hide) the display of the Rendezvous window.
- 6. Audio Mixer** Toggles (show/hide) the display of the Audio Mixer window.
- 7. Preview Monitor Audio** Toggles the Preview monitor audio (what you hear locally) on and off. (It is mutually exclusive with Live Monitor audio).
- 8. Mute Live Streaming audio** Toggles the Live Streaming audio (what your viewers hear) on and off.
- 9. Live Monitor Audio** Toggles the Live monitor audio (what you hear locally) on and off. (It is mutually exclusive with Preview Monitor audio).
- 10. Streaming** Toggles streaming on and off.
- 11. Recording** Toggles recording on and off.
- 12. ISO Recording** Toggles ISO recording on and off.
- 13. Multi Viewer** Enables all displays. Pressing this key is the same as selecting *Output > Multi-Viewer Output > Enable All Displays*.

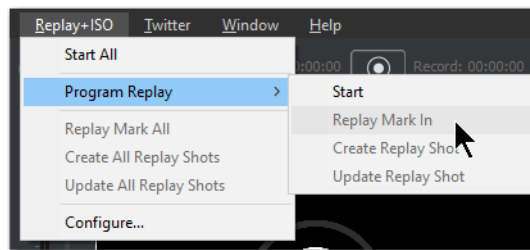


- 14. NDI** Enables/Disable NDI output.
- 15. Fade to Black** Pressing this key acts as a “master transition-to-black”. The transition used is the one currently selected. It is very helpful when needed to make the Live Output black in an emergency. If Wirecast One is in Live/Preview Swap mode, the live shot is moved to Preview and the pre-fade condition can be restored by pressing the Go key.
- 16. Live Media Play and Pause** Press the Play button to play a selected media file, and press the Pause key to pause it. These keys are interactive. Pressing one changes the lamp status of the other.

- 17. Replay Create and Update** These keys execute *Replay+ISO > Create All Replay Shots* and *Replay+ISO > Update All Replay Shots*.



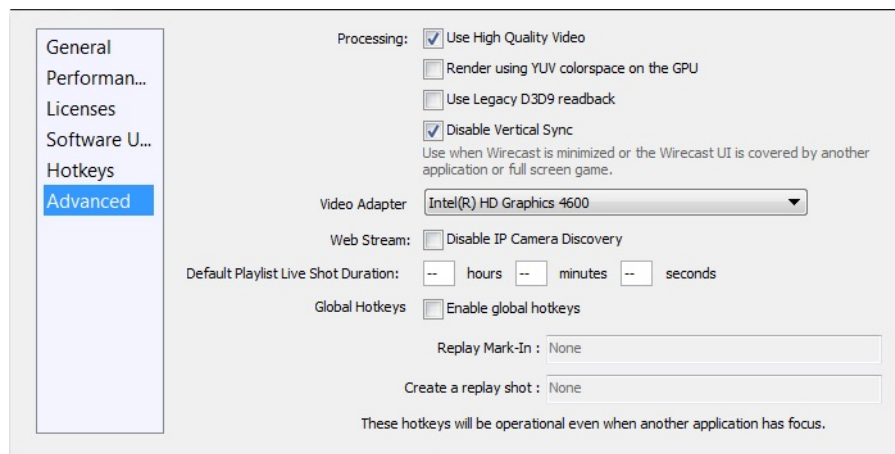
- 18. Mark In** Pressing this key executes *Replay+ISO > Program Replay > Replay Mark In*.



- 19. Transitions 1 and 2** These keys select Transition 1 or Transition 2 so that when the Go key is pressed, the selected transition will occur.
- 20. Go** Press this key to execute a transition of the shot from the Preview window to the Live Output window. If Wirecast One is in the Live/Preview mode, the Live output shot will be moved to the Preview window when the Go key is pressed

Advanced

Advanced preferences enable you adjust advanced settings for Wirecast One.



Wirecast One usually synchronizes its video display with the refresh rate of your display. However, this degrades performance when the Wirecast One program window is not visible (due to the screen being locked, Wirecast One minimized, or the Wirecast One covered by another application). In order to avoid frame drop in these situations, check *Disable Vertical Sync*. However, the disadvantage of using this option is that disabling the synchronization can interfere with the smooth display of video in the Wirecast One UI. It will not, however, have any negative effect on your broadcast.

Use High Quality Video

Check the *Use High Quality Video* checkbox to increase the quality of decoding performed on your source media files. If CPU usage is near 95%, or if the frames per second (fps) is consistently well below your target, uncheck *Use High Quality Video* to remedy this. Checked is the default.

Render using YUV Colorspace

If *Render using YUV colorspace* is checked, video frames will be rendered on the GPU using YUV rather than RGB. This will typically provide a performance advantage and save on memory. However, with some graphics cards this can result in very noticeable degradation of video quality. Performance will improve when streaming to most destinations (including Virtual Camera Out), except in combination with some graphics cards on Windows systems. The best way to know if this option is advantageous to use on your system is by trial and error, and observe the results.

Use Legacy D3D9 readback

If you experience rendering issues or incompatibilities on older graphics hardware, try enabling this preference.

Disable Vertical Sync

Check *Disable Vertical Sync* to receive frames as fast as possible when playing games, etc. This is useful when the application window is minimized or covered by another application.

Disable IP Camera Discovery

Check *Disable IP Camera Discovery* to turn off automatic discovery of IP Cameras.

Video Adapter

Select the video adapter that Wirecast One uses for rendering and compositing. If you are using a discrete GPU, select the same GPU on which your application is running. This feature is designed for users with multiple graphics cards (NVIDIA/AMD/Intel), and it enables them to identify which video card Wirecast One uses.

Note: *Video Adapter* defaults to the first discrete card that is discovered by Wirecast One. If you have multiple GPUs, it is best to configure Wirecast One to use the same card as used for your application (for optimal performance), otherwise a slower capture path will be used. Also, best performance is achieved by setting the Video Adapter to use the NVidia card.

Default Playlist Live Shot Duration

Enter a duration time you want as a default value used by Playlist live shots when they are created. If no values are entered, there is no default duration time for the newly created shot.

Global Hot Keys

Check *Enable global hotkeys* to define hotkeys for “Replay Mark-In” and “Create a Replay Shot” functionality. To assign a hot key, first select one of the functions by clicking in its edit box, then press a key stroke sequence to be used as the hot key (i.e. Ctrl + 8).

Global Hotkeys ☒ Enable global hotkeys

Replay Mark-In : Ctrl + 8

Create a replay shot : Ctrl + 9

These hotkeys will be operational even when another application has focus.

Note: These Global Hot Key settings are specifically for Replay. This is so you can activate Replay functions when the application window is not in focus while playing games, etc.

Menus and Windows

Introduction

These topics describe the menus, menu items, and keyboard shortcuts in Wirecast One.

Topics

-
- *File Menu*
- *Edit Menu*
- *Switch Menu*
- *Media Menu*
- *Output Menu*
- *Layout Menu*
- *Social*
- *Window Menu*
- *Help Menu*

File Menu

New Creates a new, empty Wirecast One document.

Open Displays the Open dialog window for opening a Wirecast One document.

Open Recent Displays up to fifteen of the most recently accessed documents. Every time a document is opened or saved it is entered into this list.

Import Media Enables you to import media into Wirecast One. A new shot is automatically created using the new media.

Save Saves the document. If the document has not already been saved, the Save As... dialog window is displayed.

Note: Wirecast One auto-saves your Stream/recording. All formats (WMV, MOV, MP4) will be recoverable in increments of 20 seconds. Any recording less than 20 seconds is corrupted. ISO also recovers. In the case of an unexpected shutdown, the recoverable video is available in increments of one minute.

Save As Displays the Save As... dialog window so that the document can be saved using a new file name.

Close Window Closes the currently active Wirecast One window. If the window is a document, all of its Shot Editor windows are closed as well. If Wirecast One is still broadcasting, you are asked to stop the broadcast. If the document has not been saved, you are asked to save the document before closing.

Preferences Opens the Preferences window. If the Preferences window is already open, it is made active.

Exit Closes all documents and then exits. If the broadcast is playing, you are asked to stop the broadcast. If a document has not been saved, you are asked to save the document before exiting.

Edit Menu

Undo Reverses your last change in Wirecast One. Undo is only available in some windows (such as the Preview window). Wirecast One offers an unlimited number of undo actions (within computer memory limitations). Undo information is stored on a

per-window basis. Also, if you close a window then reopen it, your undo information is lost.

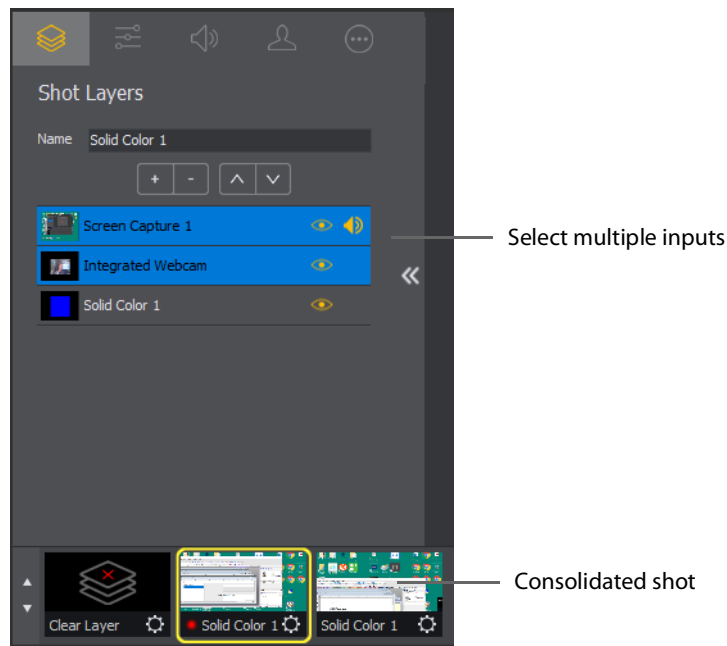
Redo Reverses your last undo action. Redo is only available in some windows (such as the Preview window). Wirecast One offers an unlimited number of redo actions (within your computer's memory limitations). Redo information is stored on a per-window basis. Also, if you close a window then reopen it, your redo information is lost.

Cut Cuts selected text.

Copy Copies selected text to clipboard.

Paste Pastes selected text from clipboard to location of cursor.

Paste as new Consolidated Shot A *consolidated shot* is a shot created by selecting multiple sources in the Shot Layers tab of the Shot Editor and then creating a new shot using these selected sources. To do this, select multiple inputs, select *Edit > Copy*, then selecting *Edit > Paste as new Consolidated Shot* to create a new shot in the selected layer.



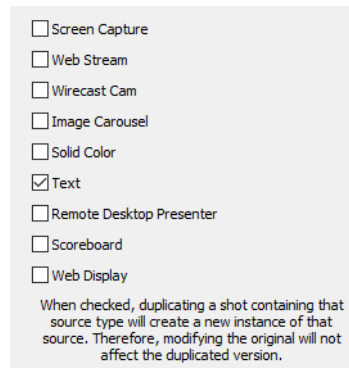
Select All Selects all text in the active window.

Edit Shot Opens the Shot Editor. (See [Shot Editor](#)). You can also double-click a shot, or right-click and select Edit Shot, to open the Shot Editor.

Rename Shot Enables you to rename a shot. You can also right-click a shot and select Rename Shot.

Duplicate Shot Duplicates the currently selected shot. You can also right-click a shot and select Duplicate Shot.

Duplicate Shot Options Check a source to create a new instance of it when duplicating the shot containing it. Multiple selection is allowed.



☐ Screen Capture
☐ Web Stream
☐ Wirecast Cam
☐ Image Carousel
☐ Solid Color
☒ Text
☐ Remote Desktop Presenter
☐ Scoreboard
☐ Web Display

When checked, duplicating a shot containing that source type will create a new instance of that source. Therefore, modifying the original will not affect the duplicated version.

Add Shot Creates a new empty shot. You can also right-click a shot and select Add Shot.

STUDIO

Add Playlist Shot Creates a new Playlist shot. You can also select *New Playlist Shot* from the shot menu in the layer window.

Delete Shot Deletes the currently selected shot. You can also right-click a shot and select Delete Shot.

Move To Layer Moves a shot to the selected layer. When shots are created, they are assigned to a specific layer. They exist on that layer until they are moved or deleted. You can also click and drag a shot to another layer.

Switch Menu

Go Performs a transition (same action as clicking the Go button).

Transitions Wirecast One has two transition buttons that can be assigned any transitions (cut, smooth, etc.) that Wirecast One supports. The Switch menu lists the currently assigned transitions by name. These two transitions can also be selected by pressing the control key and either the 1 or 2 key. (See [Transition Controls](#) to modify which transitions appear in this menu.)

Transition Speed Enables you to select one of five transition speeds ranging from Slowest to Fastest.

AutoLive Toggles (turns on and off) the AutoLive feature. AutoLive is a fundamental feature of Wirecast One which enables you to control how you make shots become part of the live broadcast. (See [AutoLive](#).)

Live/Preview Swap Toggles (turns on and off) the Live/Preview Swap feature. When on, the Live Broadcast and Preview windows trade panes (swap) when the Go button is clicked.

Disable PTZ Preset Recall Enables/Disables PTZ preset recall. (See [PTZ Controller](#)).

Media Menu

Start Playing All Movies Starts playing any movies that are not currently playing.

Pause All Movies Pauses all movies that are currently playing.

Show Asset Manager Displays devices that can be configured. Some devices (cameras, etc.) may be configurable. For example, you can configure a USB camera to manually change its focus, contrast, brightness, etc. Other devices have multiple inputs you can choose (AlchemyTV Card, etc.). (See [Asset Manager](#).)

Note: The Configure Devices menu selection is present only if a device is connected to Wirecast One. The configuration user interface is provided by the device maker. It is beyond the scope of this document to describe all of the features available for all devices. See the documentation provided with your device on how to configure it.

Output Menu

Output Settings Opens the Output Settings window.

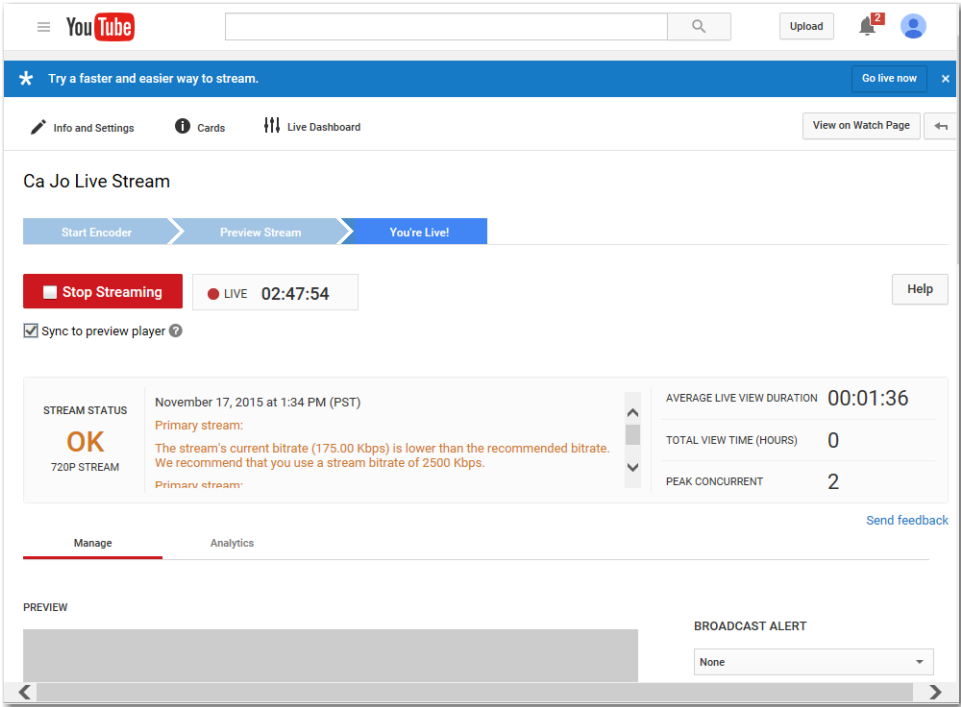
Start/Stop Broadcasting Starts (or stops) broadcasting to the network.

Start/Stop Recording Starts (or stops) recording to disk. If you have not yet configured the Output Settings for this document, you are prompted to do so.

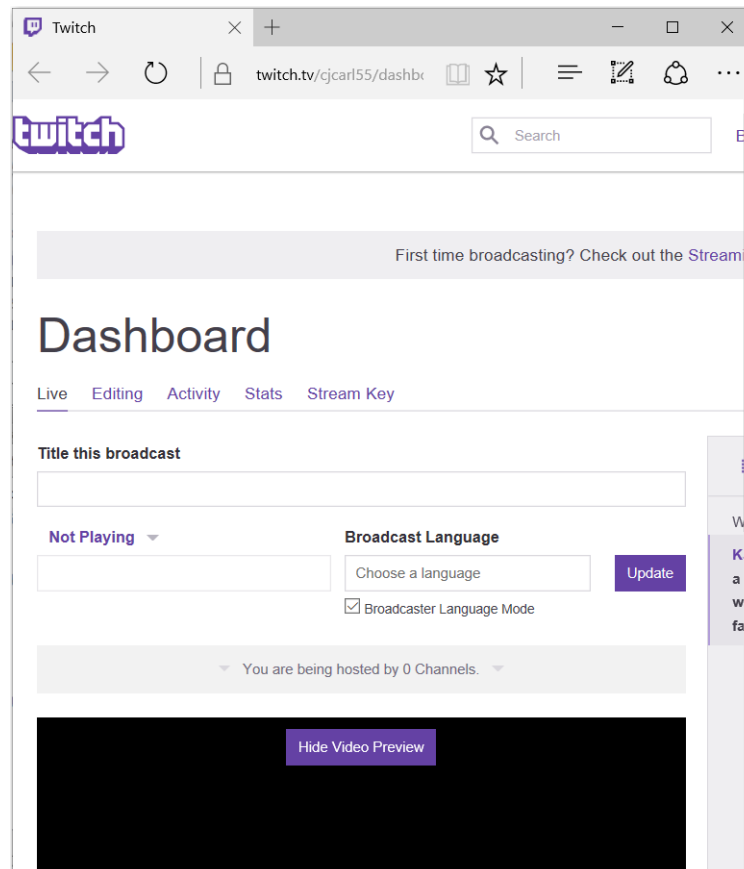
Show Recordings Opens all the folders of all the file directories in the Output Settings.

Active Broadcast Once you have logged into your YouTube or Twitch account and you start streaming, you can select *Active Broadcast* to display the YouTube broadcast window in a browser.

Control Room (YouTube only) Once you have logged into your YouTube account, you can select *Control Room* to display the YouTube control room window in a browser.



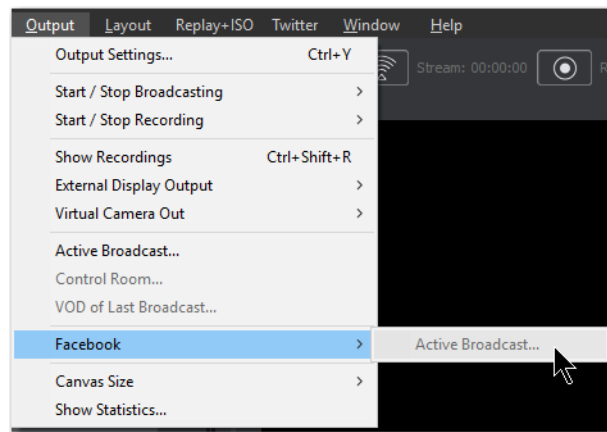
Dashboard (Twitch Only) Once you have logged into your Twitch account, you can select *Dashboard* to display the Twitch dashboard window in a browser.



VOD of Last Broadcast Enables you to view the most recent completed broadcast.

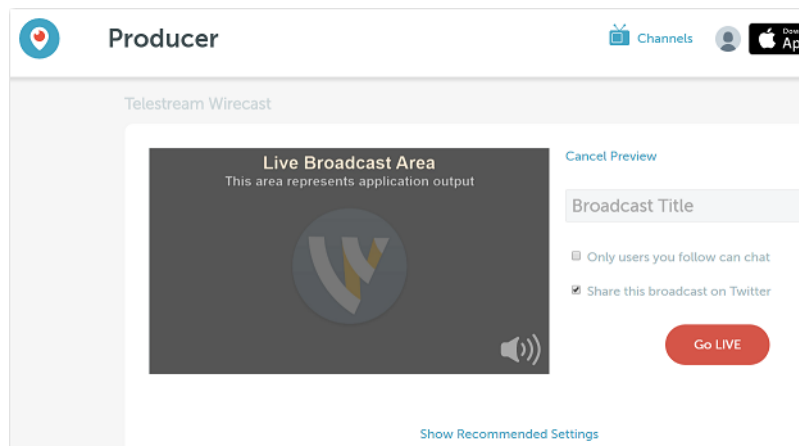
Note: *Active Broadcast* is enabled only for Periscope/Twitter and YouTube., *Control Room* and *VOD of Last Broadcast* are enabled only when you are logged into YouTube.

Facebook (Facebook Live Only) Select *Active Broadcast* to display your Facebook Live event.

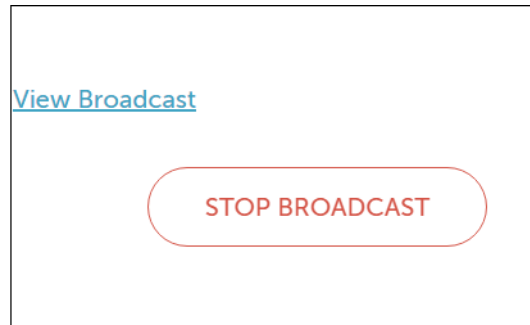


Periscope/Twitter Opens menu to monitor your Periscope/Twitter broadcast.

- **Active Broadcast** Once you have logged into your Periscope/Twitter account and you start streaming, you can select *Active Broadcast* to display the your broadcast window in a browser.
- **Producer Dashboard** Once you have logged into your Periscope/Twitter account, you can select *Producer Dashboard* to display the Periscope/Twitter dashboard window in a browser. In the dashboard you can start your broadcast by clicking the *Go Live* button.



To stop your broadcast click the *Stop Broadcast* button.

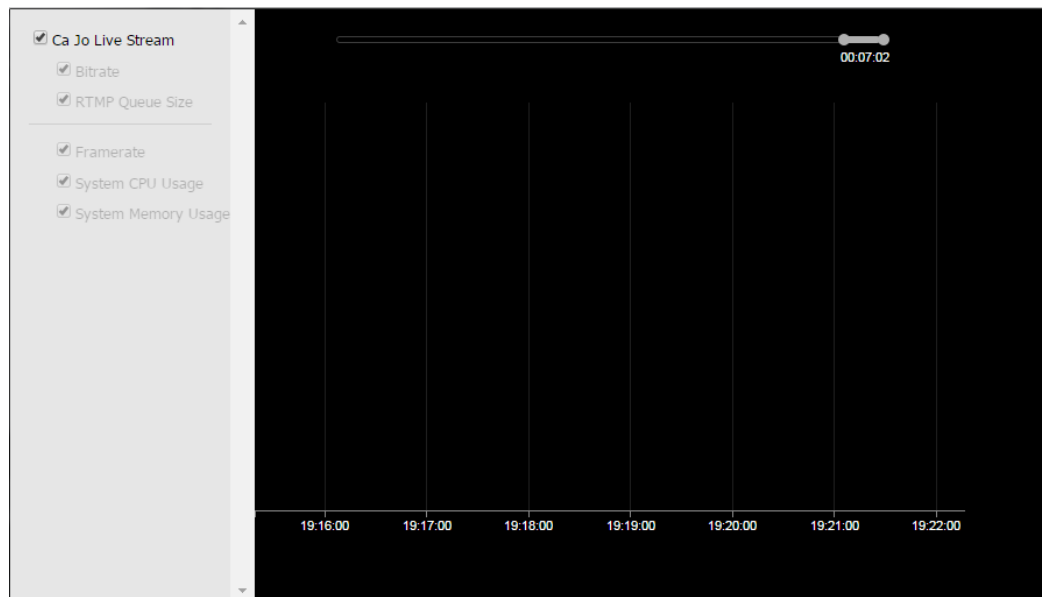


- **Toggle Broadcast** Click to toggle between *Go Live* and *Stop Broadcast* on the Producer Dashboard.

Canvas Size Sets the canvas size resolution used when broadcasting a Wirecast One document.

Note: You should match the output to the canvas size as close as possible to preserve video resolution and quality. For example, a 800x600 source results in significant loss of quality if a resolution of 640x480 is selected. Using 720x576, which is much closer in size, helps preserve video quality.

Show Statistics Displays the statistics window for your broadcast. You can select (for display): Bitrate, RTMP Queue Size, Framerate, System CPU Usage, and System Memory Usage.



Layout Menu

Master Audio Shows (or hides) the Master Audio controls.

Show Live and Preview Displays the Live and Preview windows.

Show Preview Only Displays the Preview window only.

Show Live Only Displays the Live window only.

Note: The above three controls are the same as the Live/Preview Control buttons at the top of the main window.



Go to Layer Displays the selected layer. You can also press Ctrl + Shift keys with the T, F, N, B, or A keys to select a layer. Each of these letter keys represents a layer name: Title, Foreground, Normal, Background, and Audio.

Activate layer Activate (checked) or deactivate (unchecked) a layer. You can also click the LED on the right side of each layer window.

Game Overlay Shows or hides an overlay that displays streaming statistics.

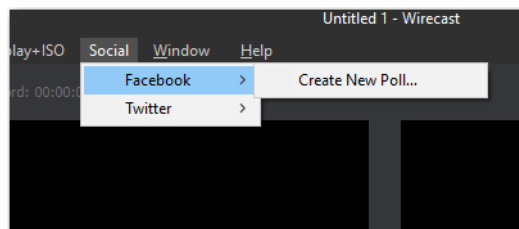
Social

Two social media options are provided: Facebook and Twitter. Facebook enables you to receive polling data from viewers. Twitter enables you to add Twitter messages to your broadcast along with filtering what messages are displayed.

Facebook

Note: Facebook Polls are only shown in the Facebook UI when the Facebook Video is playing, and fully open.

Facebook polls are controlled through the Social menu in Wirecast One. Select *Social > Facebook > Create New Poll* to create a new poll.



The *Social > Facebook* menu contains the *Create New Poll* option as well as any previously created polls. Polls are not saved with the document. They are saved with the WC application, the same as preferences are.

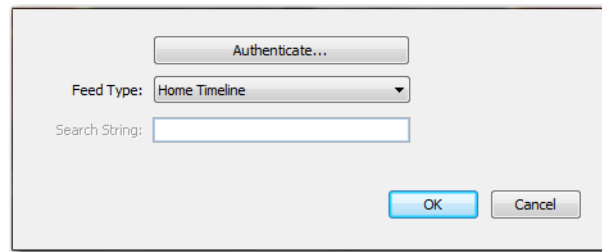
(See [Facebook](#) in the Social Media section of this user guide for more detailed information).

Twitter Menu

Message Feed Brings up your Twitter feed.

Create Shot Creates a shot with a social media title in Master Layer 1.

Settings Brings up the Social Media Settings dialog.



- **Authenticate** Click to authenticate your account with Twitter. Enter your pin when the PIN field displays.
- **Feed Type** Select a Feed Type: Home Timeline, User Timeline, Favorites, Search. If you select Search, the Search String field becomes active.
- **Search String** Enter a search string. (Active only when Search is selected in Feed Type above.)

(See [Twitter](#) in the Social Media section of this user guide for more detailed information).

Window Menu

Welcome to Wirecast One Displays the Welcome screen.

Encoder Presets Opens the Encoder Presets window.

Show USB Devices Opens a list of all USB devices.

Document Windows All open document windows are listed at the bottom of this menu.

Help Menu

Wirecast One Help Opens the online help version of the User Guide.

Open Wirecast One PDF User Guide Opens the PDF version of the User Guide.

Open Tutorial HTML Opens the Wirecast One Tutorial in your browser. To follow the tutorial, you'll need to Create a Document for the Tutorial as well.

Create Document for Tutorial Creates a new Wirecast One Document which contains the media necessary for following the Tutorial.

Buy/Upgrade Opens *Licenses* in the Preferences window. This window allows you to purchase licenses and to activate or deactivate them.

Provide Feedback Opens the Telestream Website feedback page where you can enter any feedback you may have about our product or company.

Send Support Information Opens a Support Assistant dialog window. To create a new support ticket, select *Create a support ticket*. The information is sent to the Telestream support team for evaluation. If you have been previously issued a case number, select *Link with existing support case #* and enter your case number. You can also select *Do not receive follow-up from Telestream*. This enables you to send support information to Telestream without receiving a response. Click *Save Report* to save the information to a file on your computer. Click *Send Report* to send the information to Telestream.

Note: You must click *Send Report* to create a ticket. If you click *Save Report*, a ticket will not be created.

Contact Information

☐ Create support ticket and receive followup from Telestream support
Do not check if you receive your support directly from a dealer.

☐ Link with existing support case #

☒ Do not receive followup from Telestream

E-Mail Address: * Required

First Name: Last Name:

Company:

Description and/or steps to reproduce

Reset Preferences Save Report Send Report

Open Scripting Documentation Opens the Wirecast One Scripting Help document.

Show Scripting Examples Opens the directory where the Wirecast One Scripting examples are located.

Visit Telestream Website Opens the Telestream Website home page.

Telestream Acknowledgments Opens an on-line help to Acknowledgments.

About Wirecast One Displays version and copyright information about Wirecast One.

Broadcasting

Introduction

Note: Wirecast One will not prevent your computer from entering sleep mode. Therefore, to ensure uninterrupted streaming, you should disable sleep mode on your computer while using Wirecast One.

Note: To avoid a decrease in video quality, Wirecast One should not be used at CPU usage above 80%. See the Telestream Website for suggested configurations.

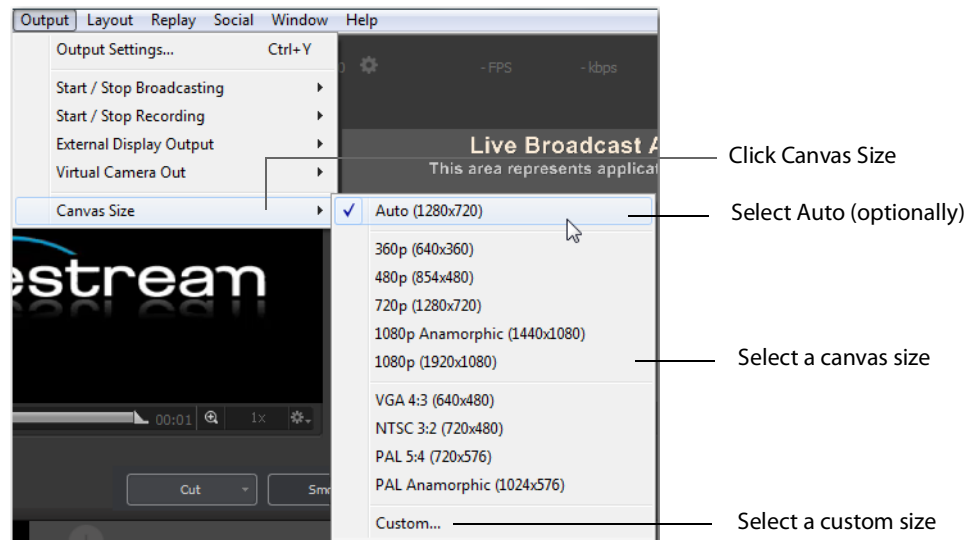
Topics

- [Canvas Size](#)
- [Virtual Camera](#)
- [Output Settings](#)
- [Streaming](#)

Canvas Size

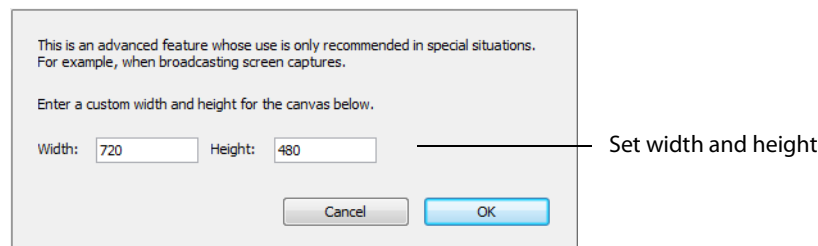
When *Output > Canvas Size* is selected, a drop-down menu with various canvas sizes is displayed allowing you to select the canvas size you want. You can also select *Auto*. This

automatically sets the canvas size to the highest resolution that was selected when the encoder was chosen.



Note: Canvas size selection *1080p Anamorphic (1440x1080)* is a narrower (1440) display stretched to display as 1080.

There is also a *Custom* option that enables you to set the canvas width and height.

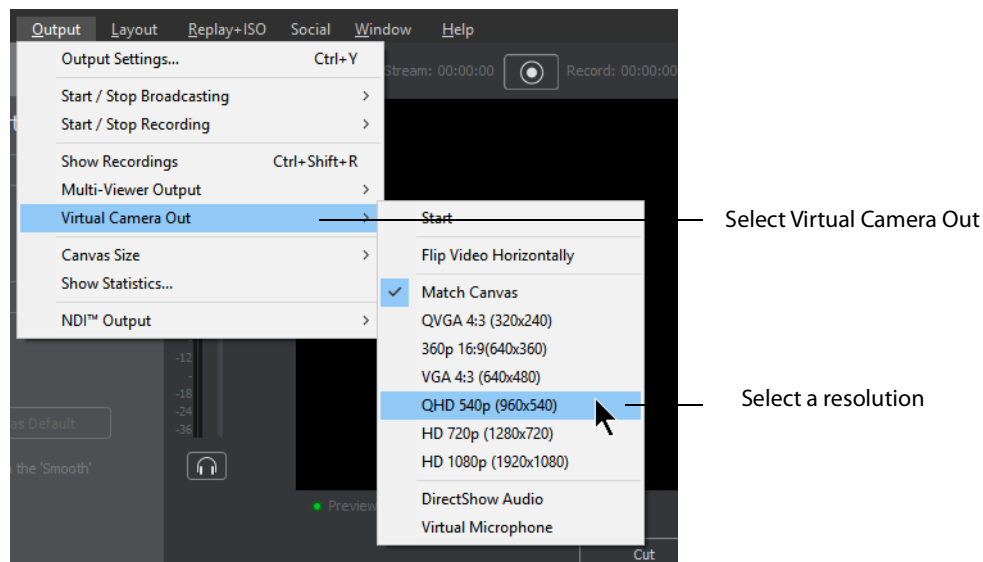


Wirecast One can manage a wide variety of input sources, enabling you to have several live camera sources. However, really high-quality video sources can cause more harm than good. For example, an HD camera feed into a Wirecast One canvas that is set to HD resolution and then broadcast out in HD, requires a lot of work for the graphics processor. If the frame rate starts to drop but the CPU usage stays steady, it creates a bottleneck. The solution is to reduce the frame size going through Wirecast One. Therefore, there is no need to bring input video in at HD resolution if Wirecast One is streaming out a lower resolution.

Keep in mind that resizing down is good but resizing up reduces quality. As a rule, you should try to keep your resolution as constant as possible from source to output. There is no benefit from using an HD camera if you're only broadcasting a low resolution stream. This only increases the work your computer must do without any increase in output quality.

Virtual Camera

Wirecast enables you to present the output of Wirecast as if it were a camera (a virtual camera), allowing it to be automatically detected by other applications when they are launched. To setup Wirecast as a virtual camera, select *Output > Virtual Camera Out*, then select the output resolution to use. You can also select *Match Canvas* to cause the resolution to be the same as the current canvas size.



Start Once you have selected an output resolution, select *Start* to make Wirecast output available to other applications on your computer.

Some of the applications Wirecast can work with using virtual camera are:

- Google+ Hangouts
- Skype
- GoToMeeting

Flip Video Horizontally When checked (selected) the Virtual Camera video is flipped horizontally.

DirectShow Audio When selected, outputs DirectShow audio.

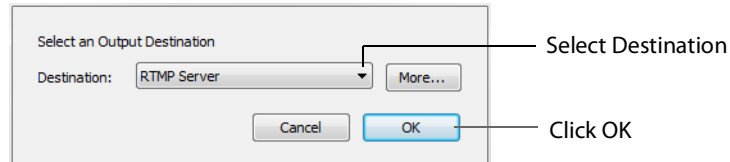
Virtual Microphone When selected, enables you to present the audio output of Wirecast as if it were a microphone (a virtual microphone), allowing it to be automatically detected by other applications when they are launched.

Note: Virtual Microphone can only be installed during Wirecast installation.

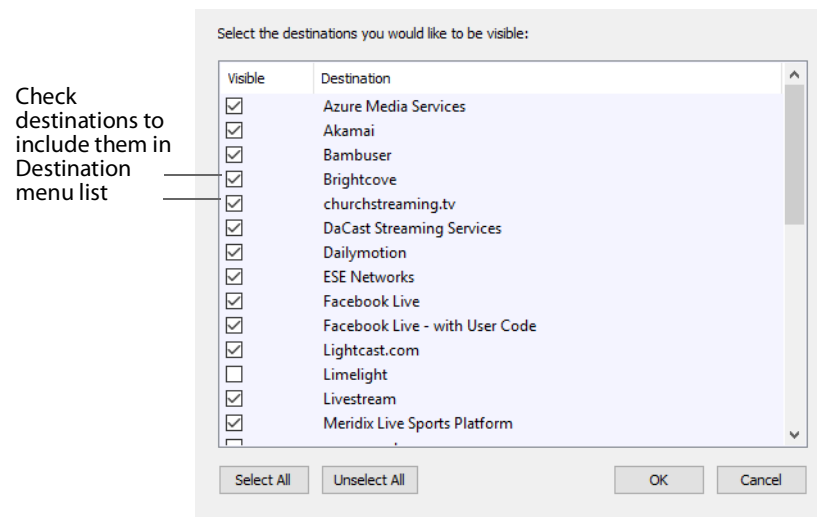
Output Settings

To configure output settings select *Output > Output Settings* to open the Output Settings window.

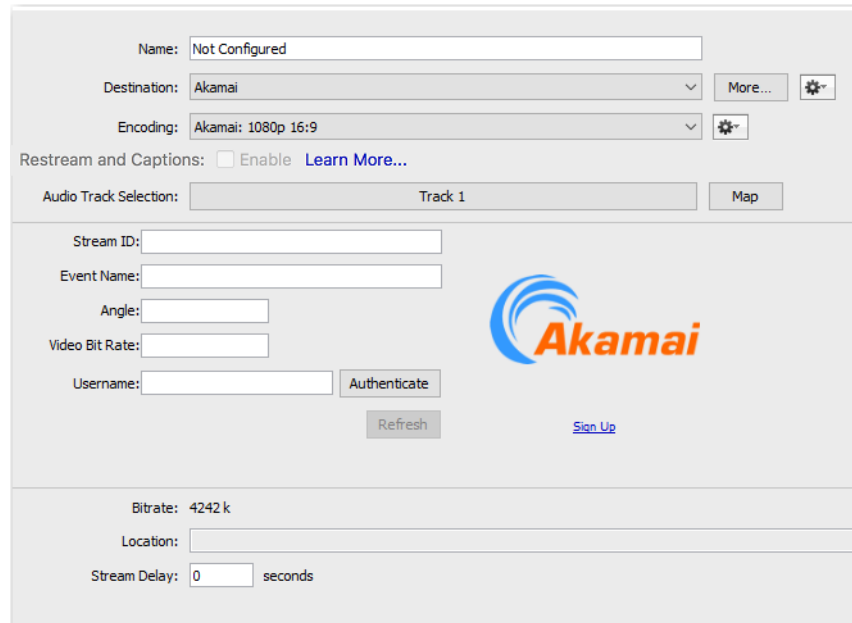
When the dialog box displays, select a destination, then click OK.



You can also click *More* to display a list of all available destinations. Check the checkbox for each destination you want to include in the destination menu list.



The Output Settings window displays the destination you selected. Each destination window has a unique set of controls including a way to authenticate your connection.



The screenshot shows the 'Output Settings' window for Akamai. At the top, there's a 'Name' field set to 'Not Configured'. Below it, 'Destination' is set to 'Akamai' with a 'More...' button and a gear icon. 'Encoding' is set to 'Akamai: 1080p 16:9' with a gear icon. A 'Restream and Captions' section has an 'Enable' checkbox (unchecked) and a 'Learn More...' link. 'Audio Track Selection' is set to 'Track 1' with a 'Map' button. The main section contains input fields for 'Stream ID', 'Event Name', 'Angle', and 'Video Bit Rate'. Below these is a 'Username' field, an 'Authenticate' button, a 'Refresh' button, and a 'Sign Up' link. The Akamai logo is displayed in the center. At the bottom, there's a 'Bitrate' field set to '4242 k', a 'Location' field, and a 'Stream Delay' field set to '0 seconds'.

Multiple Output Settings

Wirecast One enables you to specify many output settings for your presentation. This means you may configure Wirecast One to broadcast multiple data rates simultaneously, or even broadcast and record with different encoders at the same time. You can also broadcast to multiple RTMP Server destinations while recording to disk.

At the top of the Output Settings window is a list of the current settings. Uncheck the checkbox of any setting you want removed from your broadcast. You can add as many output settings as you need, but keep in mind that each additional destination will require more system resources.

Click the Gear icon to access actions that enable you to create reference movies you can distribute to your viewers. Each destination type provides a unique set of actions.

Configuration

There are two items to configure before broadcasting: Destination and Encoding.

When you broadcast with Wirecast One, you must pre-configure at least one destination. A destination can be a broadcast server, content distribution network or local disk recording.

Each encoding preset uses a different broadcast technology (RTMP, Windows Media, etc.). The destinations described below depend on the Encoder Presets you have chosen.

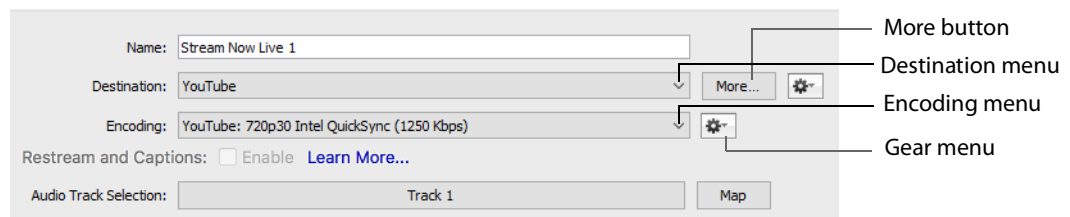
The *Encoder* determines how your presentation is encoded (or compressed). There are many options available. Wirecast One simplifies this process by providing several simple presets to choose from. (See also [The Encoder Presets Window](#)).

Windows Media Destinations

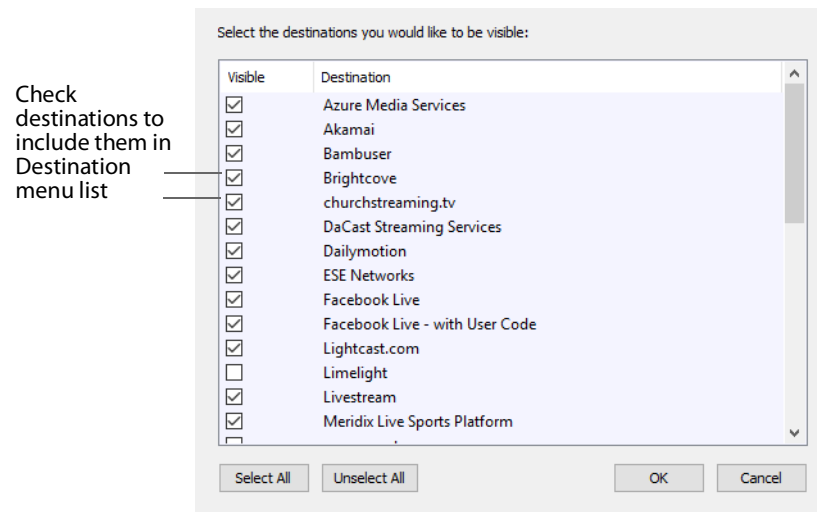
Windows Media enables you to record your presentation to disk. You can do this whether or not you are broadcasting to a server.

Encoder Presets

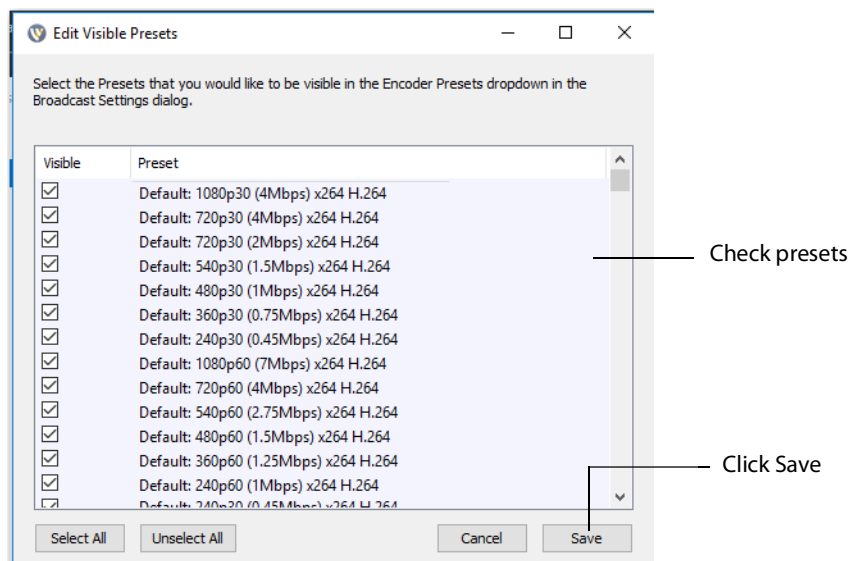
The Encoder menu is located near the top of the Output Settings window. The Destination menu is located above the Encoder menu. The More button and Gear menu provide optional settings.



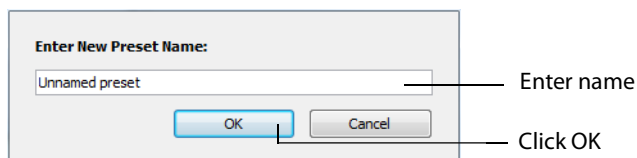
More Click *More* to display a list of all available destinations. Check the checkbox for each destination you want to include in the destination menu list.



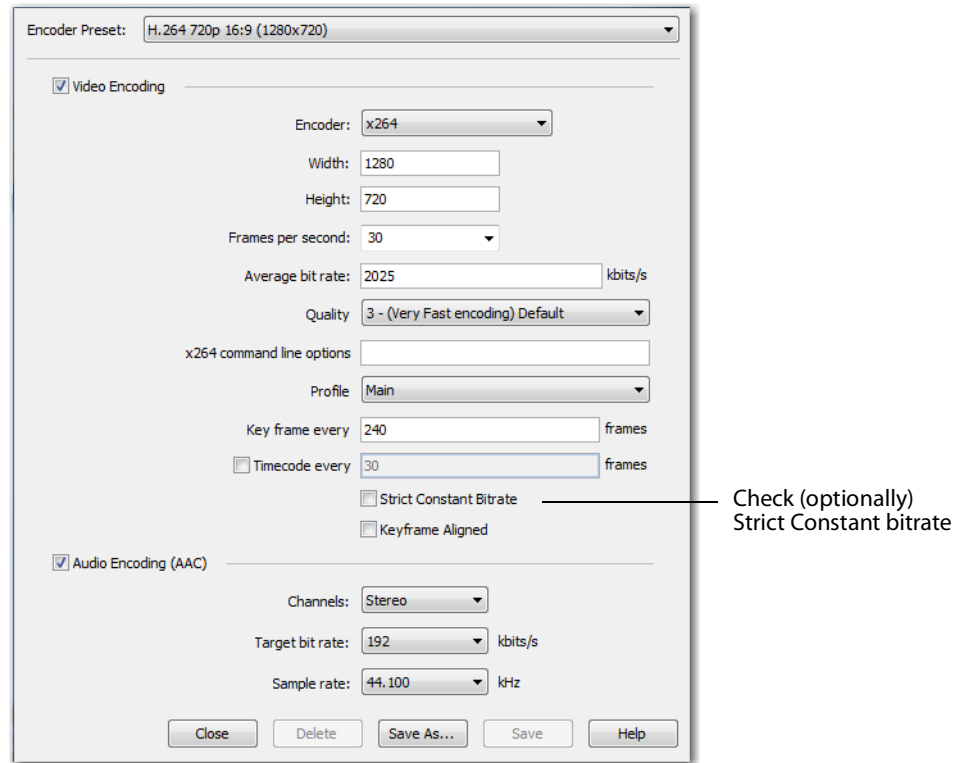
Filter Select *Filter* from the Gear menu to display a check list of encoder presets. Check the presets you want to display in the Encoder presets menu. Click *Save* when finished.



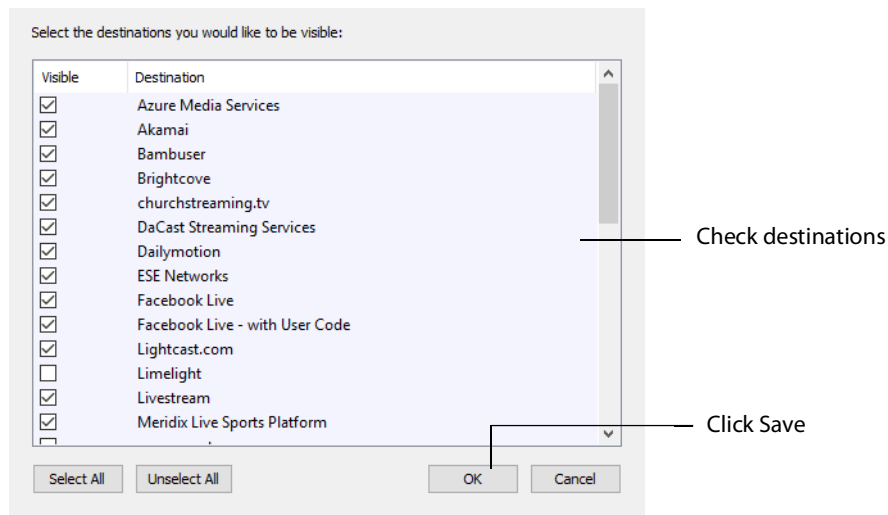
New Preset Select *New Preset* from the Gear menu to create a new encoder preset. Enter a name for your new preset and click OK. (See [Creating New Presets](#)).



View Details Select *View Details* from the Gear menu to modify an encoder preset. (See [Creating New Presets](#)). One important option is Strict Constant Bitrate. When checked, the bitrate is strictly held at the bitrate entered in *Average bit rate*.



More Click the *More* button to display a check list of destinations. Check the destinations you want to display in the Destination menu. Click *Save* when finished.



Windows Media Settings

Wirecast One offers several default presets. The first choice you need to make is whether you'll be using RTMP Server, Windows Media, or some combination as the broadcast technology. This decision depends on what you expect your viewers to use. Given enough bandwidth, you can stream to combinations of RTMP Server, and Windows Media by adding new destinations to the output settings. Windows Media can be used to broadcast WMV8, WMV9 and WMV9 Advanced.

WM-Push To Server

To access the WM-Push To Server window, select Output > Output Settings (or press the Ctrl+Y keys). From the encoder presets drop-down menu, select the Windows Media presets, and check the *Push to Server* checkbox.

To use Push To Server, you must have access to a Windows Media Server, either in your organization or hosted by an ISP (search the Internet for Streaming Windows Media Server to find one). This is the professional way of creating a stream because it places the bandwidth strain on the remote server. All you need is a good local connection to the internet to push to the Windows Media Server.

The screenshot shows the 'Windows Media Streaming' configuration window. It includes fields for Name, Destination, Encoding, Restream and Captions, Audio Track Selection, and Push/Pull from Server options. Annotations highlight the 'More...' button for selecting a Windows Media preset and the 'Push to Server' checkbox.

Name: Windows Media Streaming

Destination: Windows Media Streaming (More...)

Encoding: WM9 Multibitrate 16:9 (1280x720, 640x360, 426x240)

Restream and Captions: ☐ Enable [Learn More...](#)

Audio Track Selection: Track 1 (Map)

☐ Push to Server

Address: 10.0.7.57

Publish Point: my_stream.asx ☐ Auto Remove

Username: Password:

☒ Pull from Server

Port number: 1755 Maximum Connections: 5

Bitrate: 5373 k

Location: mms://10.0.7.57:1755

Configuration Settings

Address Enter the Internet address of the Windows Media Server you use to broadcast.

Publish Point Enter the name of the file that is put on the server, and that is used as part of the URL that your users use. Wirecast One cannot know the resulting URL that your users use, as this may vary depending on the installation of the Windows Media Server. Contact your Windows Media Server administrator to understand how to build a proper URL for your viewers, based on the Publish Point.

Auto Remove Check Auto Remove to remove the file used as the publish point when the broadcast is over.

Username/Password Enter the user name and password for the Windows Media Server. Contact your Windows Media Server administrator to obtain these. If there is no user name or password required, leave these fields empty.

WM-Pull From Server

To access the WM-Pull From Server window, select Output > Output Settings (or press the Ctrl+Y keys). From the encoder presets drop-down menu, select any of the Windows Media based presets, and check the *Pull From Server* checkbox.

This option turns your local computer into a mini Windows Media Server, enabling you to broadcast immediately. There are, however, some limitations:

- 1. User Requirement** You cannot have more than 50 users connected at any one time.
- 2. Bandwidth Requirement** You must have enough bandwidth on your Wirecast One computer to supply all of your viewers.
- 3. CPU Requirement** Since the Wirecast One computer is acting as a server the CPU must be fast enough to handle all of the user connections.

The greatest issue with this method is bandwidth. If, for example, all of your viewers are on a local network (a business or school), then you should be able to use this method. However, if you have a DSL connection to the internet and you want to broadcast a 200k stream to 20 viewers, you may not have enough upload bandwidth to accommodate this.

Note: Be aware that when you use Wirecast One with an internet connection what matters is your upload bandwidth. Most ISP businesses offer packages that have a higher download than upload bandwidth (e.g., a 512k DSL package is often only 256k upload).

Configuration Settings

To use the Network-Pull from Server option, set the port number that your users use to connect to your computer. They connect by using the Open URL option in Windows

Media Player, and enter a URL. For example, if your computer IP address is 10.0.5.55 and your port is 1755, use *mms://10.0.5.55:1755*.

Name: Windows Media Streaming

Destination: Windows Media Streaming

Encoding: WM9 Multibitrate 16:9 (1280x720, 640x360, 426x240)

Restream and Captions: ☐ Enable [Learn More...](#)

Audio Track Selection: Track 1

☐ Push to Server

Address: 10.0.7.57

Publish Point: my_stream.asx ☐ Auto Remove

Username: Password:

☒ Pull from Server

Port number: 1755 Maximum Connections: 5

Bitrate: 5373 k

Location: mms://10.0.7.57:1755

Check Pull
from Server

Port Number Enter the port on your computer to use as the broadcast port. This can be, effectively, any port number as long as it doesn't conflict with any existing ports on your computer. Be aware that if you have any firewall software installed, you need to enable the port entered here.

Maximum Connections The maximum number of connections your server accepts is 50 users. Your CPU is affected by the number of users you have connected, therefore you may need to limit the number of connections.

Multicast and Unicast

You can select Multicast or unicast from the Destination menu. Multicast lets you broadcast to multiple computers simultaneously. Unicast lets you broadcast to a specific computer.

Name: Multicast

Destination: Multicast

Encoding: RTP H.264 720p 16:9 (1280x720)

Restream and Captions: ☐ Enable [Learn More...](#)

Audio Track Selection: Track 1

Video Address: Video Port: 5434

Audio Address: Audio Port: 5432

Generate TTL: 15

Bitrate: 2563 k

Location: multicast://

Select Multi
or Unicast

Select Save
SDP file

You need to create an SDP File, and you must do so every time you change any option on this page (including the encoder preset). To create an SDP file click the gear icon and select *Save SDP File*, navigate to the desired location, and click *Save* in the Save File dialog window. The SDP file must be given to the user to place on the computer that receives your broadcast.

During multicast, your broadcasting computer sends data across your local network, identifying it as a broadcast that it has no specific destination. Since many applications could be doing the same thing, the broadcasting computer must have a unique way of defining the data that is being multicast. This enables clients to choose between the available multicast streams.

The multicast protocol uses unique addresses, one for video and one for audio. Although these unique addresses look like TCP/IP addresses, they are not. Instead, they provide a way to define uniqueness among all multicast data flowing over the network. Once the broadcasting computer is streaming this data through the local network, any computer on the network can receive it.

The SDP file becomes the glue between your broadcast computer and the viewer computers. The SDP file contains multicast addresses, encoding format, and other important information.

RTMP Server

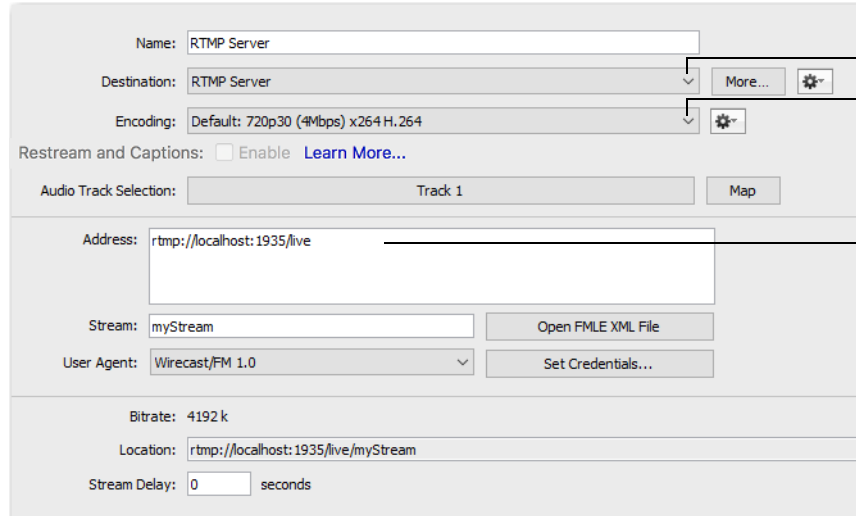
Wirecast One can stream to an RTMP/ H.264-compatible streaming server (RTMP Server Media Server, Wowza Media Server, etc.).

To configure RTMP Server Streaming, follow these steps:

1. Select *Destination > RTMP Server*.
2. Select an encoder.
3. Enter the Address to the RTMP server. The default RTMP port is 1935, but you may need to configure your firewall to allow connections on this port.
4. Wirecast One can import a RTMP Server Encoder configuration file (XML file). Click *Open FMLE XML File*, and navigate to the configuration file and select either version 2.5 or version 3.0. Wirecast One reads the Address and Stream information from that file. Many online streaming services offer FMLE configuration files which Wirecast One can use.

Note: Only the Address and Stream information from the XML configuration file is used. No Encoding information is imported.

5. Click OK to save your settings:



The screenshot shows the 'Telestream Cloud Settings' dialog box. It has several sections:

- Name:** A text field containing 'RTMP Server'.
- Destination:** A dropdown menu showing 'RTMP Server'. To its right is a 'More...' button and a gear icon. An annotation 'Select a Destination' points to the dropdown.
- Encoding:** A dropdown menu showing 'Default: 720p30 (4Mbps) x264 H.264'. To its right is a gear icon. An annotation 'Select an encoder' points to the dropdown.
- Restream and Captions:** A checkbox labeled 'Enable' (which is unchecked) and a link 'Learn More...'.
- Audio Track Selection:** A dropdown menu showing 'Track 1' and a 'Map' button.
- Address:** A large text field containing 'rtmp://localhost:1935/live'. An annotation 'Enter the Address to the RTMP server' points to this field.
- Stream:** A text field containing 'myStream' and an 'Open FMLE XML File' button.
- User Agent:** A dropdown menu showing 'Wirecast/FM 1.0' and a 'Set Credentials...' button.
- Bitrate:** A label '4192 k'.
- Location:** A text field containing 'rtmp://localhost:1935/live/myStream'.
- Stream Delay:** A text field containing '0' followed by the word 'seconds'.

Telestream Cloud Settings

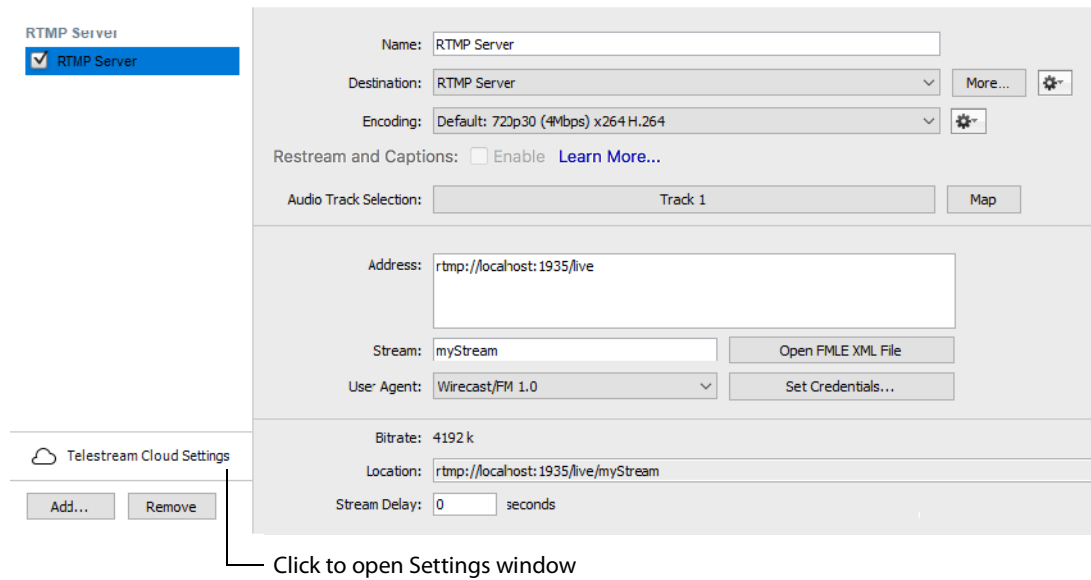
Note: Cloud-based streaming and distribution is available in Wirecast One for an additional monthly subscription. Visit the Telestream website for more information.

The Telestream Cloud enables you to add automated live captioning to your broadcast. But it also allows you to do “re-streaming” (multi-distribution of your broadcast through the Cloud).

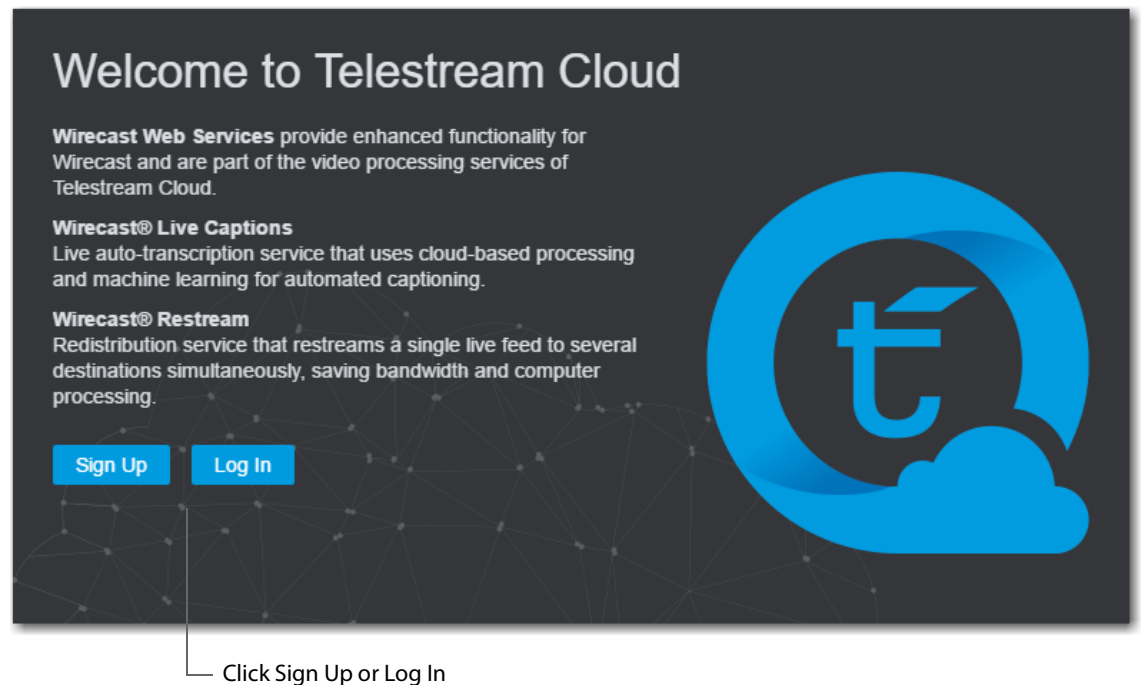
When you request automated captioning, the Cloud server will send out the audio portion of your broadcast for translation into text. When the text is received, it is embedded as 608/708 captions in the outgoing stream.

When you request stream redistribution, the Cloud takes your single stream source received from Wirecast One and distributes it to multiple endpoints in a high bandwidth environment.

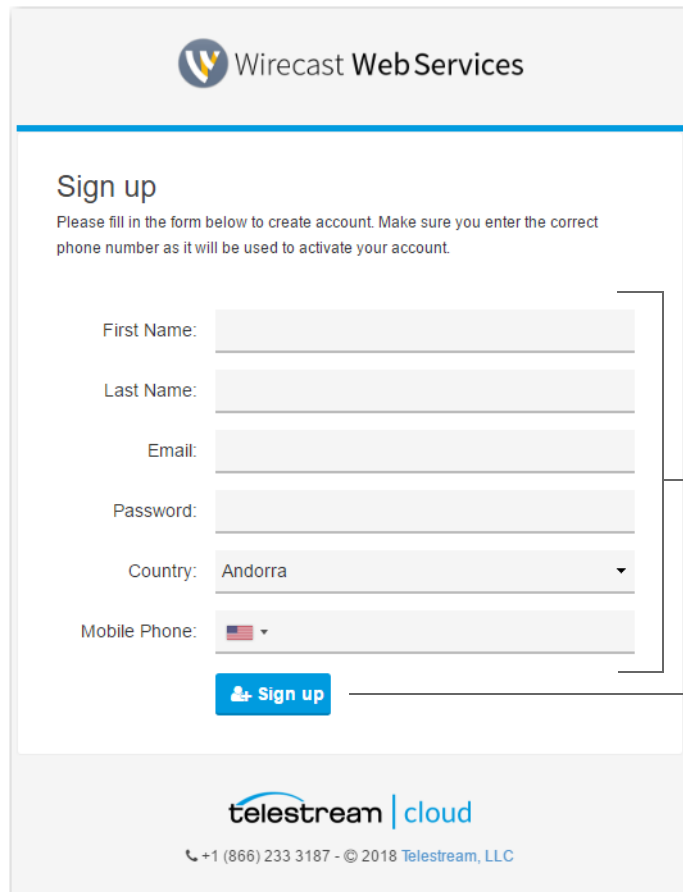
Cloud settings are accessed on the Output Settings window (*Output > Output Settings*). Click *Telestream Cloud Settings* to open the Cloud Settings window.



If you are not already Logged In to the Cloud, a Welcome window will display. Log in by clicking *Log In*. If you are not Signed Up with Telestream Cloud, you can do so by clicking *Sign up*.



If you click Sign Up, a sign up window will display. Enter all requested information and click Sign Up.



The image shows a 'Sign up' form for Wirecast Web Services. The form is titled 'Sign up' and includes a sub-header: 'Please fill in the form below to create account. Make sure you enter the correct phone number as it will be used to activate your account.' The form fields are: First Name, Last Name, Email, Password, Country (a dropdown menu currently showing 'Andorra'), and Mobile Phone (a dropdown menu currently showing a US flag). Below the fields is a blue 'Sign up' button with a user icon. Two callout lines point to the form: one labeled 'Enter information' pointing to the input fields, and another labeled 'Click Sign Up' pointing to the 'Sign up' button. The footer of the form displays the 'telestream | cloud' logo and contact information: '+1 (866) 233 3187 - © 2018 Telestream, LLC'.

When the Activate Account window displays, wait until you receive your Activation Code via phone call or text. Enter the activation code and click *Activate my account*. If

you do not receive an activation code, or if the code does not work, request a new one by clicking *Resend Code*.

telestream | cloud

Account Activation

Please enter the activation code you received on your phone

Activation code:

[Activate my account](#) [Resend code](#) [Call me with a code](#)

Enter activation code received

Click Activate

Once you are logged in, clicking the *Telestream Cloud Settings* button will open the Cloud Settings window.

For captioning, select a language. You can, optionally, enable live captioning.

Note: When you check this option, *all* of your streaming destinations via the Cloud will include automatic live captions.

For re-streaming, select Encoding for all destinations that are re-streamed via the Cloud. Click the *Get More* or the *Manage Account* button to navigate to the Telestream Cloud Dashboard.

Wirecast Live Captions

☒ Live Captions

Language: English (US)

Time Remaining: 303 minutes [Get More...](#)

Wirecast Restream

Encoding: Default: 720p30 (4Mbps) x264 H.264

Currently Configured: 0 configured

-4644 minutes [Get More...](#)

Your livestream will end after your remaining minutes run out unless you have approved overage charges.

[Manage Account...](#) [Log Out](#)

Check Live Captions

Select a language

Click Get More (optionally)

Select Encoding

Click Manage account

Click Log Out

When you are ready to select multiple streaming destinations to be used by the Cloud, open the Output Settings window (*Output > Output Settings*) and select multiple streaming destinations by clicking the *Add* button. Check *Enable* for all destinations to

be included in the Cloud streaming distribution. Click *Telestream Cloud Settings* to open the Cloud Settings window.

The screenshot shows the Telestream Cloud Settings window. On the left, a sidebar lists 'Facebook Live', 'RTMP Server', and 'YouTube'. The 'YouTube' option is selected and highlighted in blue. Below the sidebar, there are 'Add...' and 'Remove' buttons. The main panel displays the configuration for the selected 'YouTube' destination. It includes fields for 'Name' (set to 'Not Configured'), 'Destination' (set to 'YouTube'), and 'Encoding' (set to 'Default: 720p30 (4Mbps) x264 H.264 (Enable Restream)'). The 'Restream and Captions' section has an 'Enable' checkbox, which is currently unchecked. Below this, there are options for 'Audio Track Selection' (set to 'Track 1') and 'Map'. The 'Username' field is set to 'Authenticate...'. The 'Event type' is set to 'No Events Configured'. There are also checkboxes for 'Use backup server' and 'Automatically Start Event'. The 'Bitrate' is set to '1378 k'. The 'Location' field is empty. The 'Stream Delay' is set to '0 seconds'. Annotations with arrows point to the 'Add...' button, the 'Enable' checkbox, and the 'Telestream Cloud Settings' link in the sidebar.

Facebook Live
☒ Not Configured
 RTMP Server
☒ RTMP Server
 YouTube
☒ Not Configured

Telestream Cloud Settings

Add... Remove

Click Add

Click Telestream Cloud Settings

Check Enable

Name: Not Configured

Destination: YouTube

Encoding: Default: 720p30 (4Mbps) x264 H.264 (Enable Restream)

Restream and Captions: ☐ Enable [Learn More...](#)

Audio Track Selection: Track 1

Map

Username: Authenticate...

Event type: No Events Configured

Event: No Events Configured

Use backup server

Automatically Start Event

Bitrate: 1378 k

Location:

Stream Delay: 0 seconds

Note: When *Enable* is checked, Encoding is grayed-out. This is because encoding for all distributed streams is set on the Cloud Settings page.

CDN Partners

Listed below are the Content Distribution Network (CDN) partner destinations available in Wirecast One. Most destinations share a common user interface and only require a user name and password. Destinations that do not conform to this paradigm, or require additional parameters, are presented separately.

Note: The list of CDN partners in Wirecast One is subject to change at any time.

Bambuser, BoxCast, Churchstreaming.tv, Dailymotion, DaCast Streaming Services, ESE Networks, Lightcast, Livestream, Meridix Live Sports Platform, Onstream media, Pitchtime, SermonAudio, StreamingChurch.tv, StreamShark.io, StreamSpot, Streaming Media Hosting, Stretch Internet, Sunday Streams, Titled Globe, Tulix Streaming, Ustream, WebCast-TV, WorshipStream,

To stream to one of these CDN partners, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select a CDN partner from the Destination menu.

Annotations for the configuration interface:

- Select Destination (points to the Destination dropdown menu)
- Select an encoder (points to the Encoding dropdown menu)
- Click Map (optionally) (points to the Map button)

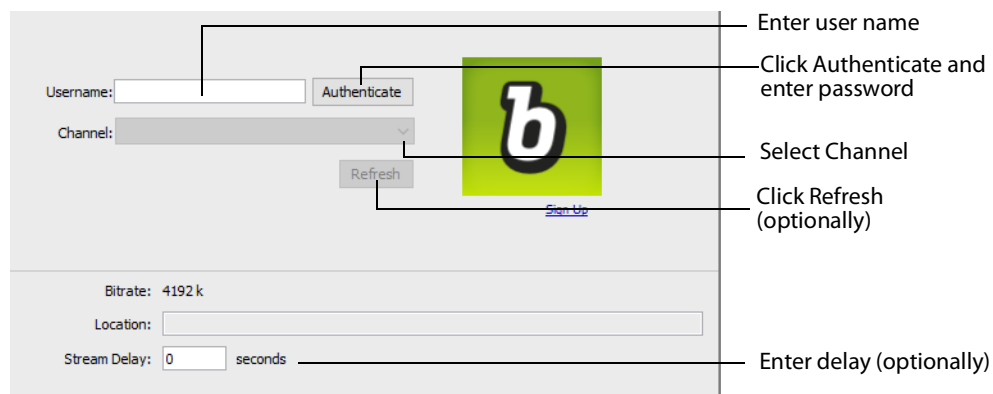
3. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Enter your username or email.
5. Click *Authenticate* to enter your password and generate the RTMP URL. You only need to do this one time because Wirecast One stores the channel information for future streams. The default RTMP port is 1935. You may need to configure your firewall to enable connections on this port.

Note: If you do not have a username and password, you can sign up with a CDN partner by clicking *Sign Up*.

6. Select your channel.
7. Optionally, you can refresh your connection by clicking *Refresh*.
8. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.
9. Click OK when finished.



The screenshot shows the Wirecast One interface with the following elements and annotations:

- Username:** A text input field with an annotation: "Enter user name".
- Authenticate:** A button with an annotation: "Click Authenticate and enter password".
- Channel:** A dropdown menu with an annotation: "Select Channel".
- Refresh:** A button with an annotation: "Click Refresh (optionally)".
- Sign Up:** A blue link with an annotation: "Click Refresh (optionally)".
- Bitrate:** Displayed as "4192 k".
- Location:** A text input field.
- Stream Delay:** A text input field with "0" and "seconds" next to it, with an annotation: "Enter delay (optionally)".

Azure Media Services, Sermon.net, Verizon Digital Media Services.

To stream to one of these CDN partners, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select a CDN partner from the Destination menu.
3. Select an encoder.

This screenshot shows the configuration interface for selecting a destination and encoder. Annotations point to the following elements:

- Select Destination:** Points to the 'Destination' dropdown menu, which currently shows 'Azure Media Services'.
- Select an encoder:** Points to the 'Encoding' dropdown menu, which currently shows 'Azure: H.264 720p 16:9 (1280x720)'.
- Click Map (optionally):** Points to the 'Map' button located next to the 'Audio Track Selection' field.

Other visible fields include 'Name' (set to 'Azure Media Services'), 'Restream and Captions' (with an 'Enable' checkbox and a 'Learn More...' link), and 'Audio Track Selection' (set to 'Track 1').

4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter the domain name or IP address (this is provided by the CDN partner).
6. Enter the stream name of your broadcast (this is provided by the CDN partner).

Note: If you do not have a stream name and password, you can sign up with the CDN partner by clicking *Learn More*.

7. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.
8. Click *OK* when finished.

This screenshot shows the stream configuration interface. Annotations point to the following elements:

- Enter Address:** Points to the 'Address' text field, which contains 'rtmp://localhost:1935/live'.
- Enter Stream name:** Points to the 'Stream' text field, which contains 'myStream'.
- Enter delay (optionally):** Points to the 'Stream Delay' field, which shows '0' seconds.

Other visible information includes 'Bitrate: 2153 k', 'Location: rtmp://localhost:1935/live/myStream', and a 'Learn More...' link.

Brightcove, Limelight

To stream to one of these CDN partners, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select a CDN partner from the Destination menu.
3. Select an encoder.

This screenshot shows the configuration interface for a CDN destination. It includes fields for Name, Destination, Encoding, and Audio Track Selection. Annotations point to specific elements:

- Select CDN:** Points to the Destination dropdown menu.
- Select an encoder:** Points to the Encoding dropdown menu.
- Click Map (optionally):** Points to the Map button.

4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter the domain name or IP address (this is provided by the CDN partner).
6. Enter the stream name of your broadcast (this is provided by the CDN partner).
7. Click *Set Credentials* to enter your Username and Password.

Note: If you do not have a stream name and password, you can sign up with the CDN partner by clicking *Learn More*.

8. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.
9. Click *OK* when finished.

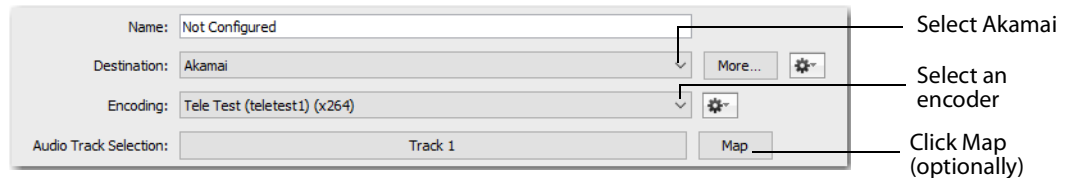
This screenshot shows the stream configuration interface. It includes fields for Address, Stream, and Stream Delay. Annotations point to specific elements:

- Enter Address:** Points to the Address input field.
- Enter Stream name:** Points to the Stream input field.
- Click Set Credentials:** Points to the Set Credentials... button.
- Enter delay (optionally):** Points to the Stream Delay input field.

Akamai

To stream to Akamai, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select *Akamai* from the Destination menu.
3. Select an encoder.



4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

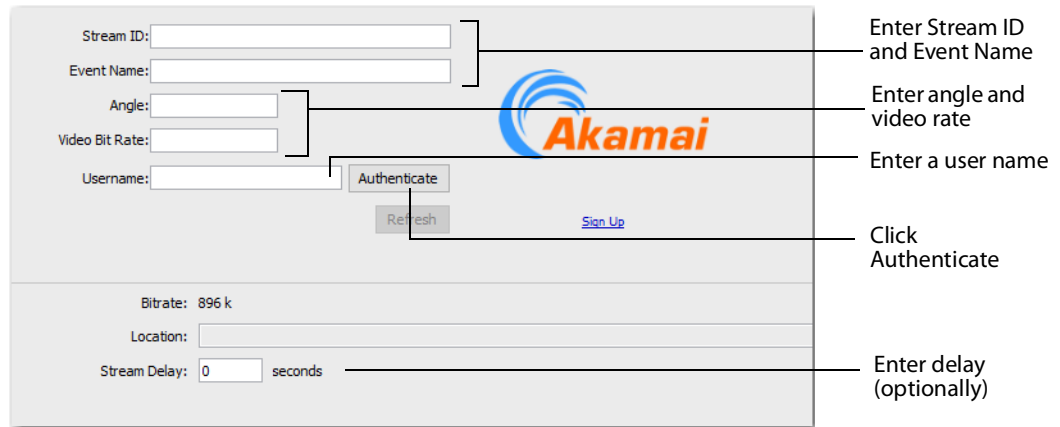
Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter your Akamai Stream ID and Event Name.
6. Enter your Akamai Angle and Video Rate.
7. Enter your user name and click *Authenticate* to enter your log in information.

Note: If you do not have a username and password, you can sign up with Akamai by clicking the Akamai icon, or by clicking *Sign Up*.

8. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.

9. Click OK.



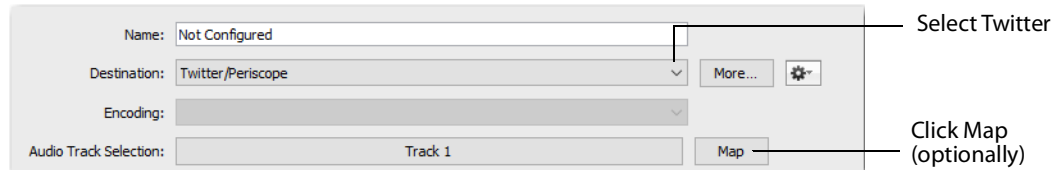
The screenshot shows the Akamai streaming configuration interface. It includes input fields for Stream ID, Event Name, Angle, Video Bit Rate, and Username. There are buttons for Authenticate, Refresh, and a Sign Up link. The interface also displays the Bitrate (896 k), Location, and Stream Delay (0 seconds). The Akamai logo is visible in the center. Annotations with lines pointing to specific elements provide instructions:

- Enter Stream ID and Event Name (points to Stream ID and Event Name fields)
- Enter angle and video rate (points to Angle and Video Bit Rate fields)
- Enter a user name (points to Username field)
- Click Authenticate (points to Authenticate button)
- Enter delay (optionally) (points to Stream Delay field)

Twitter/Periscope

To stream to Twitter/Periscope follow these steps:

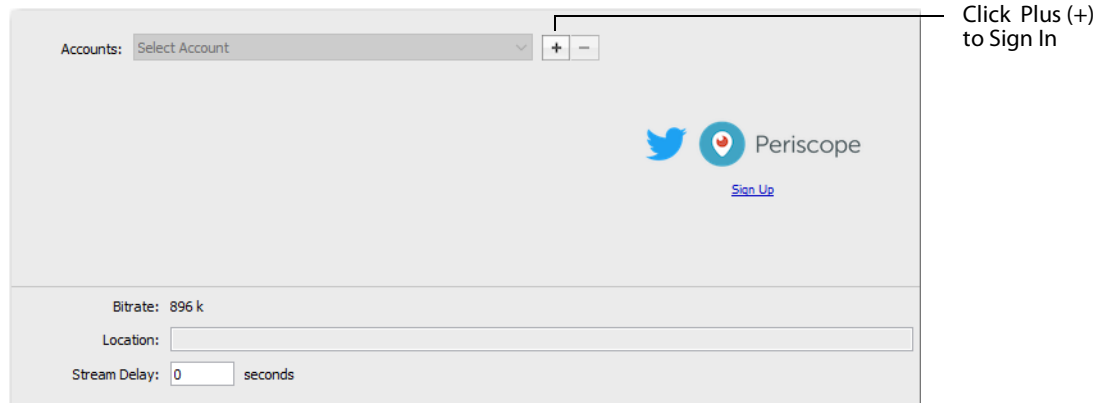
1. Optionally, enter a Name for your destination.
2. Select *Twitter/Periscope* from the Destination menu.



3. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

		Multi-Track Input Mapper							
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Click *Plus (+)* to enter your username and password.



5. Copy the Authorization Code and click on the link below it.

ints: Select Account

Copy the user code below

H9QCRC83

and Paste it at the following url:

<https://pscp.tv/auth>

Sign Up

Periscope

Bitrate: 896 k

Location:

Stream Delay: 0 seconds

Copy Authorization Code

Click on link

Enter delay (optionally)

6. When the Authorization Code window displays, paste in the code and click *Authorize*.

Authorization Code

Authorize

Paste in code

Click Authorize

Note: If the Authorization Code window does not display, or if an error window displays, try clearing your browser history or try using a different browser, and then sign in again.

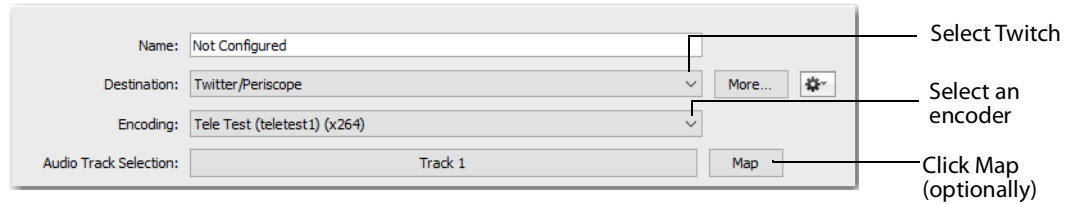
7. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.

8. Click OK.

Twitch

To stream to Twitch, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select *Twitch* from the Destination menu.
3. Select an encoder.

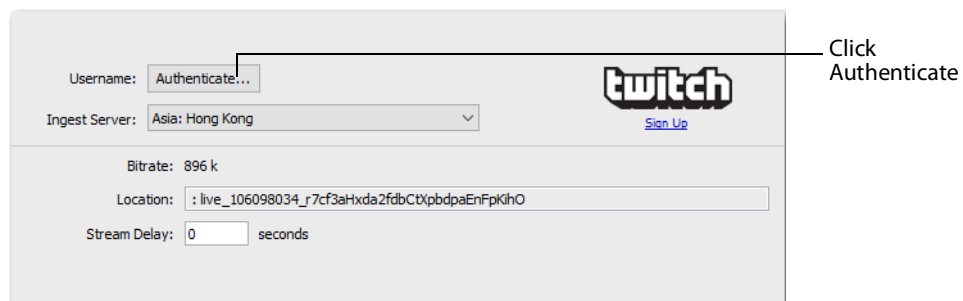


4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter your Twitch username.
6. Click *Authenticate* to open the Twitch Log In window.

Note: If you do not have a username and password, you can sign up with Twitch by clicking the Twitch icon or by clicking *Sign Up*.



7. When the Twitch Login window displays, enter your username and password and click *Log In*.

Enter Username and Password

Click Log In

8. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.

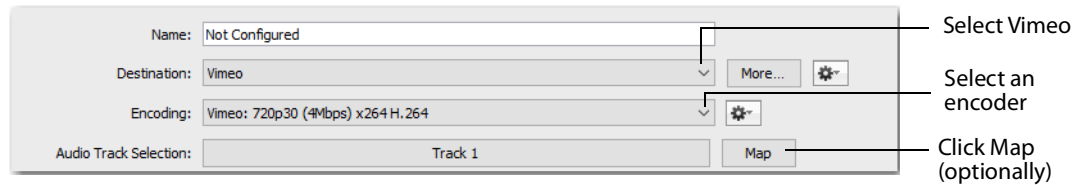
9. Click *OK* when finished

Enter delay (optionally)

Vimeo

To stream to Vimeo, follow these steps:

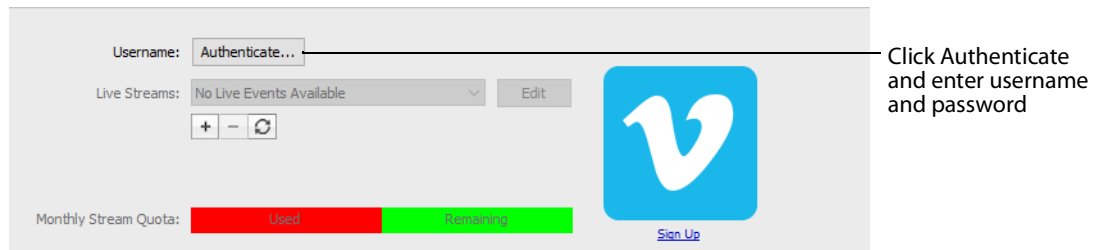
1. Optionally, enter a Name for your destination.
2. Select *Vimeo* from the Destination menu.
3. Select an encoder.



4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

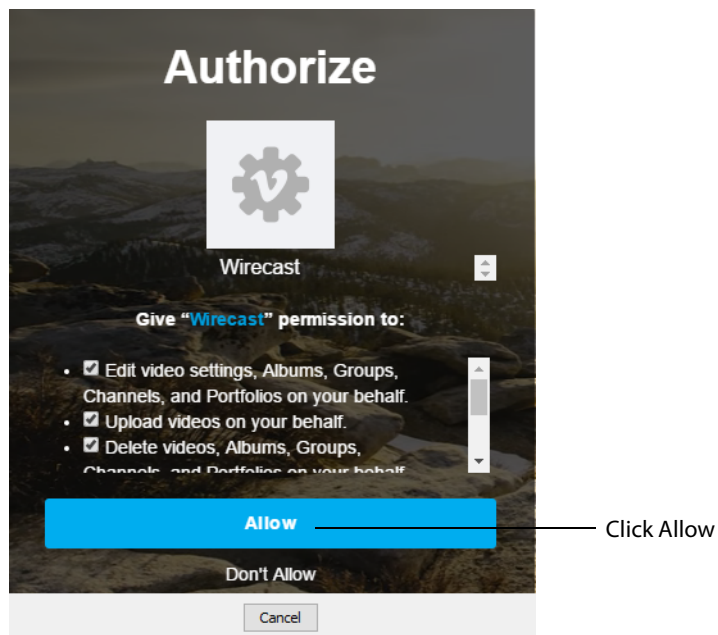
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Click *Authenticate* to enter your username and password.

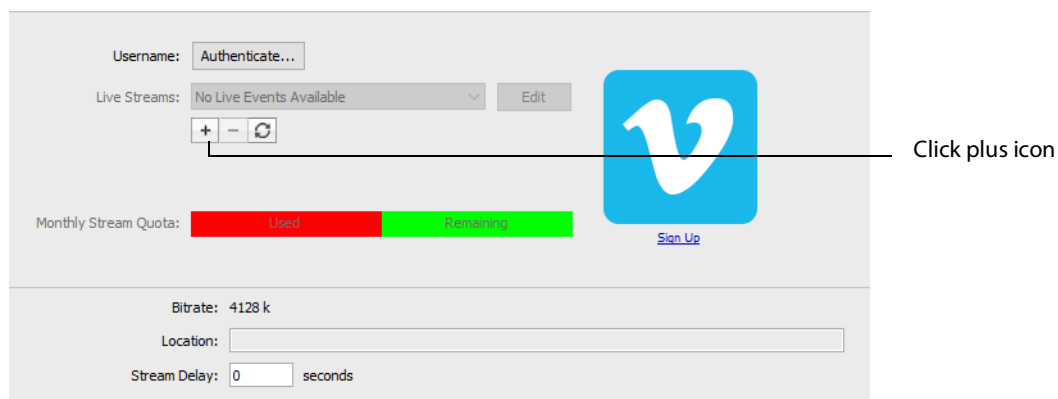


Note: If you do not have a username and password, you can sign up with Vimeo by clicking *Sign Up*.

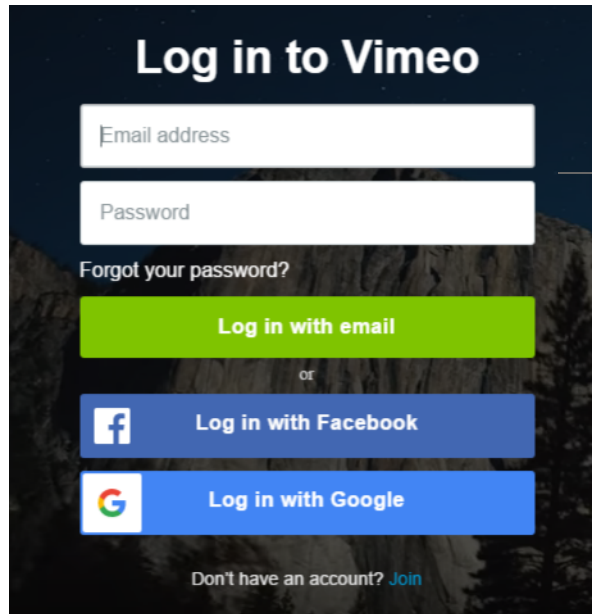
6. When the Authorization window displays, click *Allow*.



7. Click the plus (+) icon to add a new event.



8. Enter your email and password, then press *Enter*.

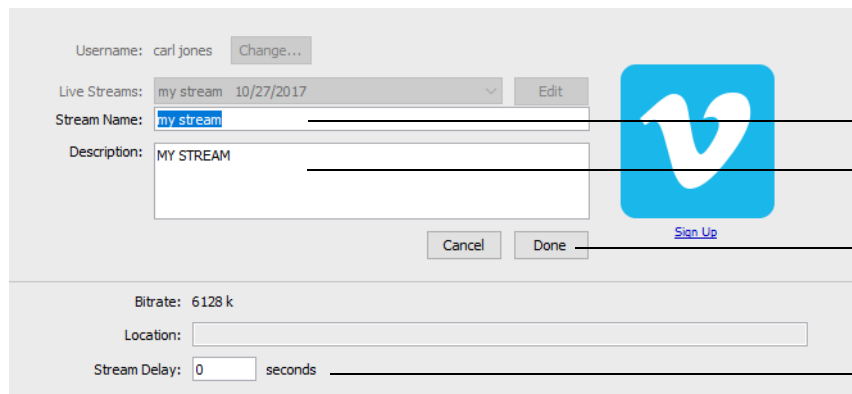


The image shows the Vimeo login page. It has a dark background with a mountain scene. The title "Log in to Vimeo" is at the top. Below it are two input fields: "Email address" and "Password". A link "Forgot your password?" is below the password field. There are three buttons: a green "Log in with email" button, a blue "Log in with Facebook" button with the Facebook logo, and a blue "Log in with Google" button with the Google logo. At the bottom, it says "Don't have an account? [Join](#)".

Enter your email and password, press Enter

9. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.

10. Click *OK* when finished



The image shows the Vimeo stream setup page. It has a light gray background. At the top, it says "Username: carl jones" with a "Change..." button. Below that is a "Live Streams:" section with a dropdown menu showing "my stream" and the date "10/27/2017", and an "Edit" button. The "Stream Name:" field contains "my stream". The "Description:" field contains "MY STREAM". There are "Cancel" and "Done" buttons. To the right is the Vimeo logo and a "Sign Up" link. Below the "Stream Name" and "Description" fields, there is a "Bitrate: 6128 k" label, a "Location:" field, and a "Stream Delay: 0 seconds" field. The "Stream Delay" field has a small input box with "0" and a "seconds" label.

Enter Stream Name

Enter Description

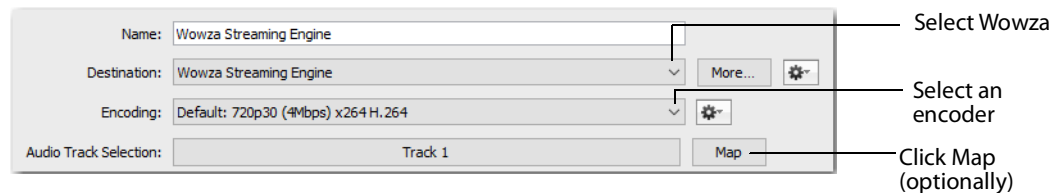
Click Done

Enter delay (optionally)

Wowza Streaming Engine.

To stream to Wowza Streaming Engine, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select *Wowza* from the Destination menu.
3. Select an encoder.



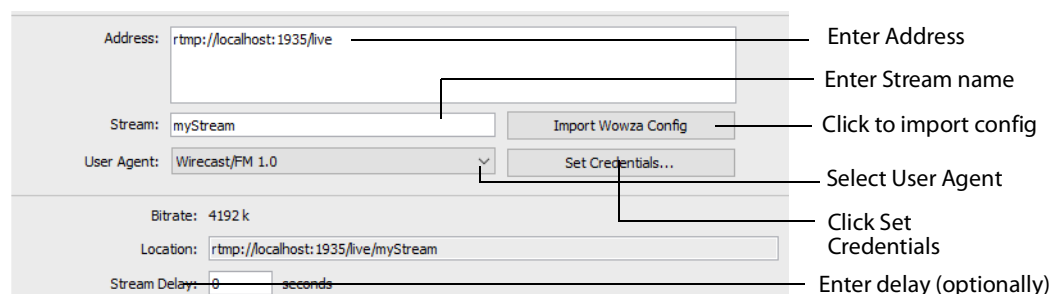
4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter the domain name or IP address (this is provided by the CDN partner).
6. Enter the stream name of your broadcast (this may be provided by the CDN partner).
7. Click Import Wowza Config to import a Wowza configuration to use.
8. Select User Agent. Default is Wirecast One/FM1.0.
9. Click *Set Credentials* to enter your Username and Password.

Note: If you do not have a stream name and password, you can sign up Wowza.

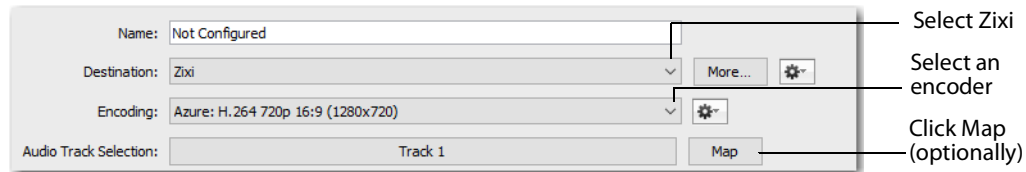
10. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.
11. Click OK when finished.



Zixi

To stream to Zixi, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select *Zixi* from the Destination menu.
3. Select an encoder.



4. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

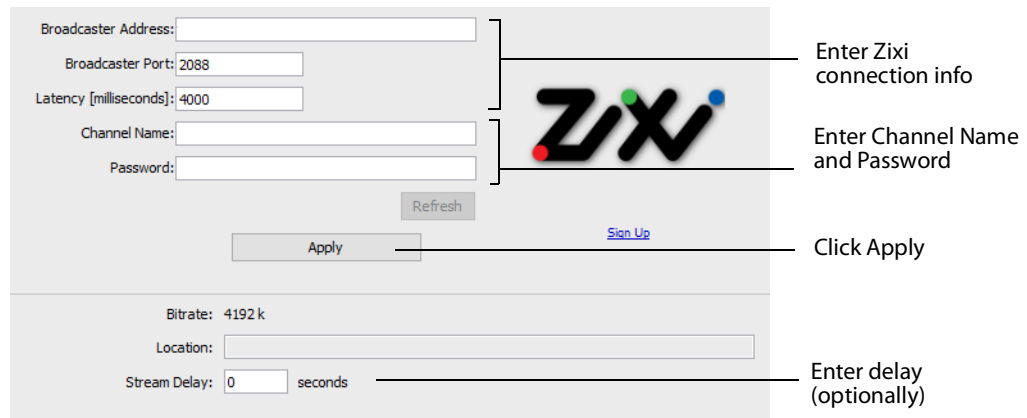
Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Enter Zixi connection information.
6. Enter your Zixi channel name and password.
7. Click *Apply* to generate the RTMP URL. You only need to do this one time because Wirecast One stores the channel information for future streams. The default RTMP port is 1935. You may need to configure your firewall to enable connections on this port.

Note: If you do not have a username and password, you can sign up with Zixi by clicking the Zixi icon, or by clicking *Sign Up*.

8. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast One and the actual broadcast itself. You can set the delay from 0 to 999 seconds. However, greater delays require greater memory use. The amount of memory used is displayed when you enter the amount of delay.

9. Click OK.



The screenshot shows a web-based configuration interface for Zixi. It includes several input fields and buttons. Annotations with lines pointing to specific elements provide instructions:

- Broadcaster Address:** An empty text input field.
- Broadcaster Port:** A text input field containing the value "2088".
- Latency [milliseconds]:** A text input field containing the value "4000".
- Channel Name:** An empty text input field.
- Password:** An empty text input field.
- Refresh:** A small button located below the Channel Name and Password fields.
- Apply:** A button located below the Refresh button.
- Sign Up:** A blue hyperlink located to the right of the Apply button.
- Bitrate:** A label showing "4192 k".
- Location:** An empty text input field.
- Stream Delay:** A text input field containing "0", followed by the word "seconds".

Annotations on the right side of the interface:

- A bracket groups the Broadcaster Address, Broadcaster Port, and Latency fields with the instruction: "Enter Zixi connection info".
- A bracket groups the Channel Name and Password fields with the instruction: "Enter Channel Name and Password".
- A line points from the Apply button to the instruction: "Click Apply".
- A line points from the Stream Delay field to the instruction: "Enter delay (optionally)".

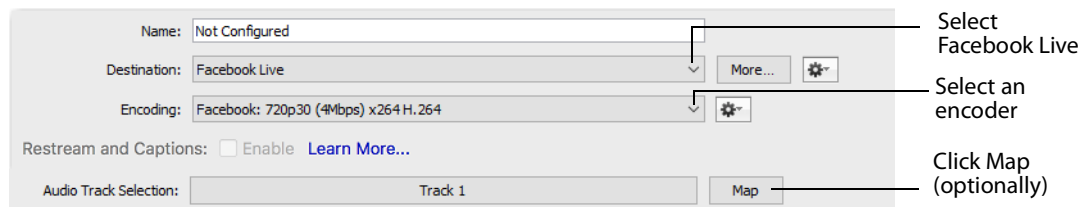
The Zixi logo is displayed in the center of the interface.

Facebook Live

Note: You cannot stream to any other destination when Facebook is active.

To stream to Facebook, follow these steps:

1. Optionally, enter a Name for your destination.
2. Select *Facebook Live* from the Destination menu (if not already selected).
3. Select an encoder from the *Encoding* menu.
4. Choose the audio track to be used by selecting it from the *Audio Track Selection* menu.

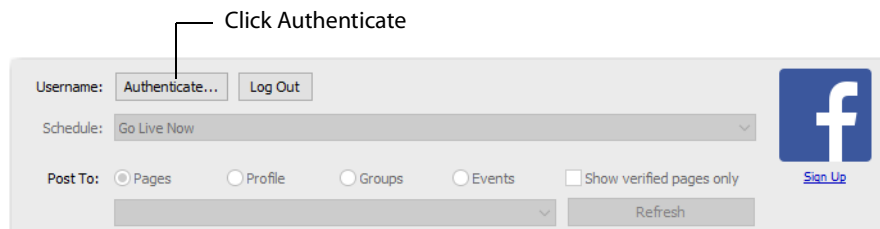


5. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

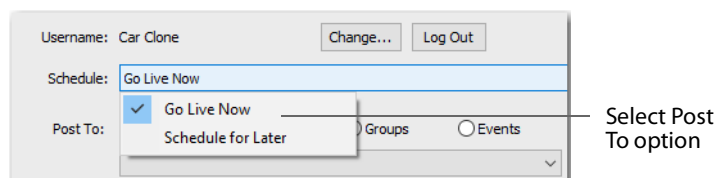
Note: If you change the encoding settings while streaming to Facebook, an error will occur. The encoder settings are set by Facebook.

6. Click *Authenticate* and Login to Facebook. If you are already logged into Facebook, you can click the *Change* button to login to a different Facebook account.

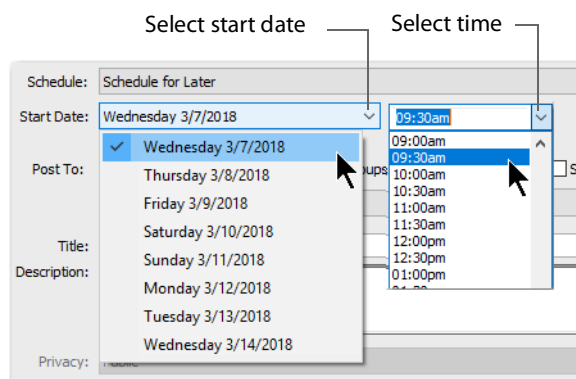


Note: If you do not have a username and password, you can sign up with Facebook by clicking the Facebook icon, or by clicking *Sign Up*.

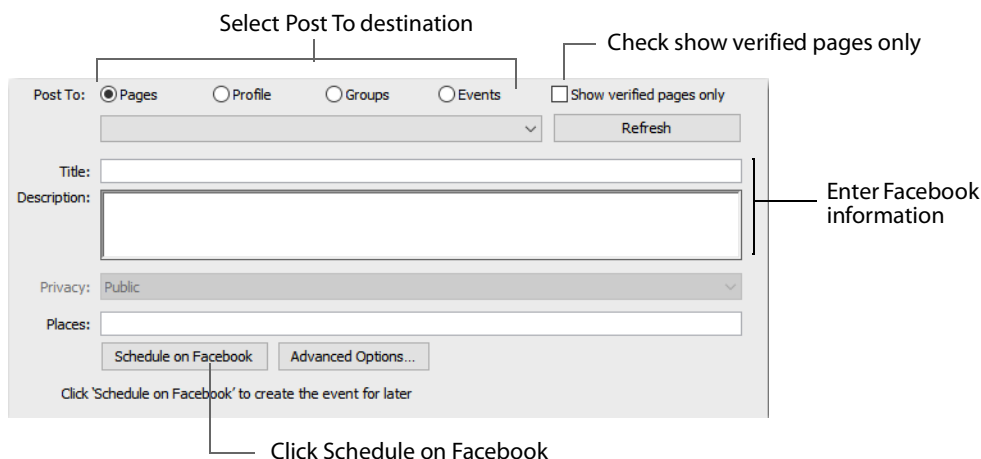
7. Select *Go Live Now* or *Schedule for Later* from the Post To menu.



8. If you selected *Schedule for Later*, select also a start date and a time.

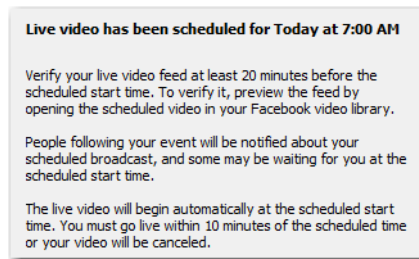


9. Select *Pages*, *Profile*, *Groups*, or *Events* from the Post To destination menu. Click *Refresh* to refresh the page list. If planning to use co-branded content, check the *Show verified pages only* checkbox to filter out all non-verified pages. Enter a Title and a Description. Click *Schedule of Facebook* to refresh after changing any settings.

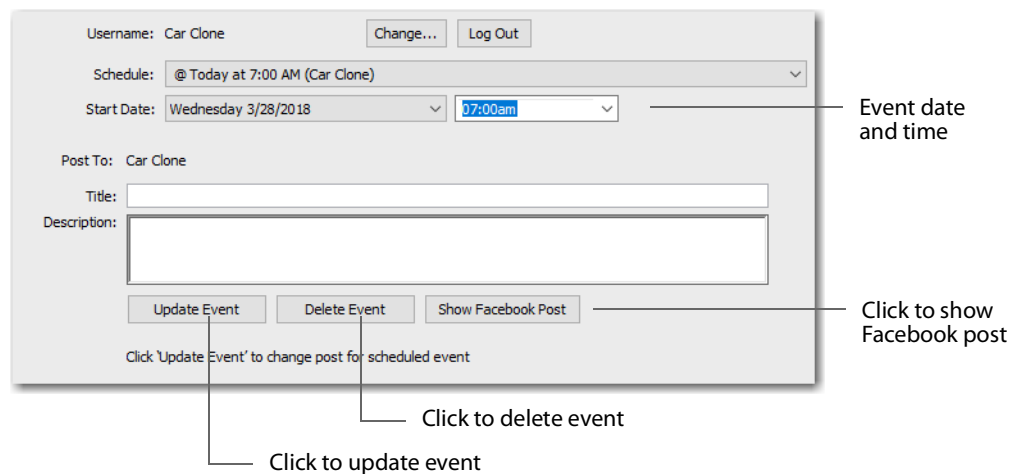


Note: When Scheduling events on Facebook you must start the broadcast within ten minutes after the designated start time. Otherwise, the event will be ended by Facebook.

10. After you request Facebook to schedule your event, Wirecast One will display a notice verifying the day and time of the event.



11. Once your event is scheduled, the event date and time are displayed and you can update or delete the event. You can also click *Show Facebook Post* to display your event in a browser.



- **Update Event** If you selected a previously scheduled event from the Schedule menu, you change the Date, Time, Title, and Description and click *Update Event*.
- **Delete Event** If you wish to delete a previously scheduled event, select that event from the Schedule menu and click *Delete Event*.

12. If you selected *Go Live Now*, select also *Pages*, *Profile*, *Groups*, or *Events* and enter a Title and Description (as described in step 9 above). Optionally, click Advanced Options.

Username: Car Clone Change... Log Out

Schedule: Go Live Now

Post To: ☒ Pages ☐ Profile ☐ Groups ☐ Events ☐ Show verified pages only

Refresh

Title:

Description:

Privacy: Public

Places:

Create Advanced Options...

Click 'Create' to refresh RTMP URL after editing any field

Click to show Facebook post

13. When the Advanced Settings window displays, setup co-branding details and Stream Type.

Branded content settings (output destination must be a verified page) Details

With: (Branded Content Sponsor)

☐ Search for verified sponsors only

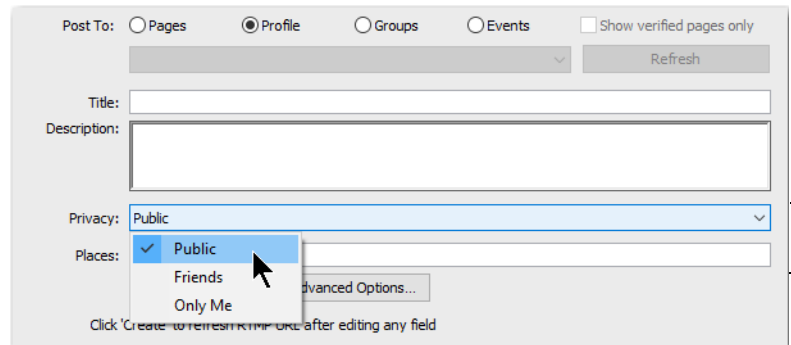
Stream Type: ☒ Regular ☐ Ambient Details

Ambient will generate a continuous live stream of unlimited duration. Please note ambient will not generate VOD or send notifications to followers. Use cases include live feeds of aquariums, museums, and zoos.

OK Cancel

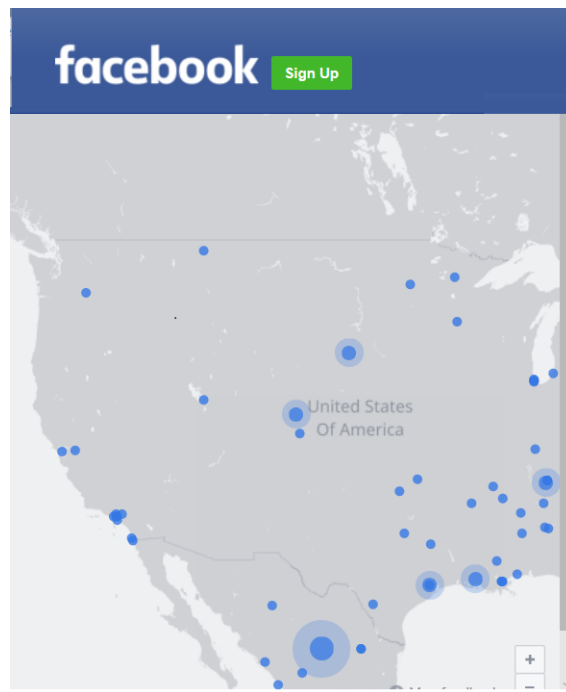
- **With** Facebook permits users with a verified page (blue check mark) to select a sponsor for branded content within their posts. When the user selects a verified page, they will see a blue check mark badge next to the page selection menu and gain access to the With field. Typing in the With field brings up the same results as you might see when following a normal browser based workflow. Branded content is only supported for *Pages* and is disabled for *Groups* and *Events*. Additional information about Branded content restrictions can be found at: <https://developers.facebook.com/docs/graph-api/advanced/branded-content>.
- **Stream Type** Select a stream type: *Regular* or *Ambient*. Ambient generates a continuous live stream of unlimited duration.

14. If you selected to post to a *Profile*, select also a level of Privacy: *Public*, *Friends*, or *Only Me*. Enter also any *Places* information to put the live stream on the *Facebook Live Map* and enable everyone to see where people are streaming from.

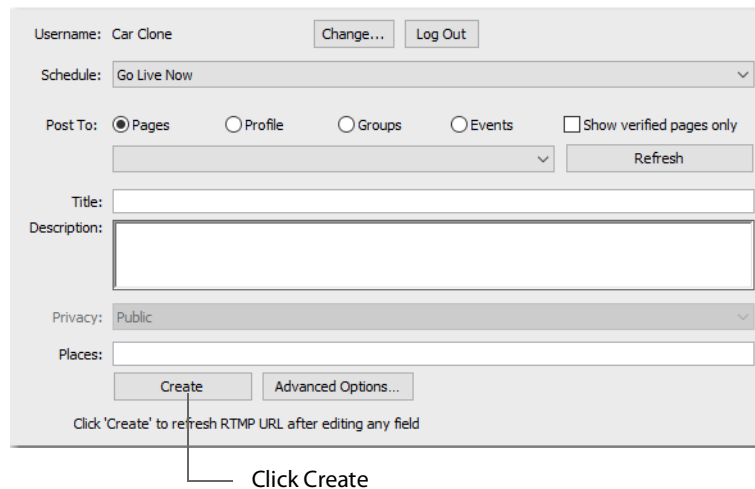


The screenshot shows the Facebook Live creation interface. At the top, there are radio buttons for 'Post To': Pages, Profile (selected), Groups, and Events. There is also a checkbox for 'Show verified pages only' and a 'Refresh' button. Below these are fields for 'Title:' and 'Description:'. The 'Privacy:' dropdown menu is open, showing options: Public (checked), Friends, and Only Me. A mouse cursor is pointing at the 'Public' option. To the right of the 'Places:' field, there is a text label 'Select Privacy and Places' with a line pointing to the 'Public' option in the dropdown menu. Below the 'Places:' field, there is a button labeled 'Advanced Options...'. At the bottom, there is a small text note: 'Click "Create" to post your live video after editing any field'.

15. The places map looks like this:



16. Click *Create* to start an event on Facebook.



The screenshot shows the Facebook Live creation interface. At the top, the username 'Car Clone' is displayed with 'Change...' and 'Log Out' buttons. Below this is a 'Schedule:' dropdown menu set to 'Go Live Now'. The 'Post To:' section has radio buttons for 'Pages' (selected), 'Profile', 'Groups', and 'Events', along with a checkbox for 'Show verified pages only'. A dropdown menu for selecting a specific page is visible next to the 'Pages' radio button, with a 'Refresh' button. Below these are text input fields for 'Title:' and 'Description:'. The 'Privacy:' dropdown is set to 'Public'. At the bottom, there is a 'Places:' input field, a 'Create' button, and an 'Advanced Options...' button. A line points from the text 'Click Create' to the 'Create' button. At the very bottom, a small note reads: 'Click 'Create' to refresh RTMP URL after editing any field'.

17. Click *OK* when finished.

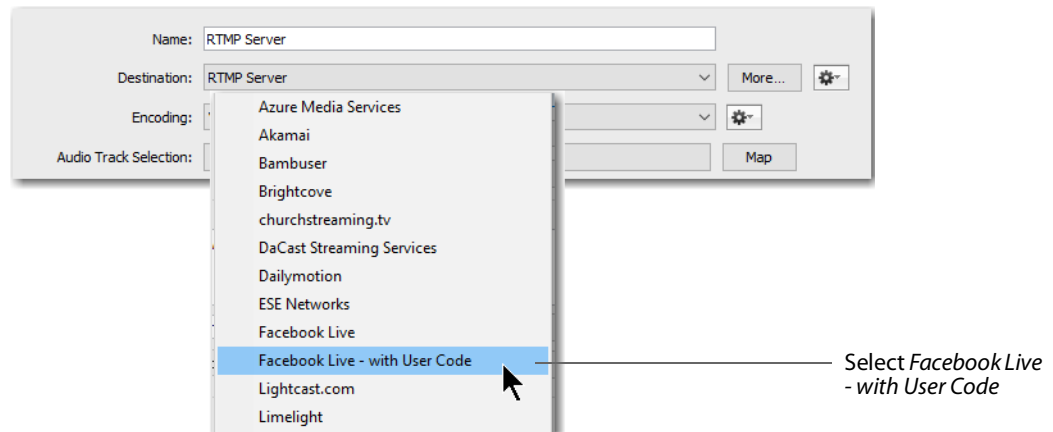
Facebook Live - With User Code

Facebook Live - With User Code enables you to stream to Facebook without needing to know the account password to log in to Facebook. The only interaction (after output settings is set up) is to begin the streaming in Wirecast One, at which point Facebook detects the Wirecast One stream and enters the preview mode.

This is a "set and forget" process. Once you have setup and established connection with a Facebook Encoder, the output settings never need to be re-entered. Each time a stream is initiated, the authentication from the account is retrieved and saved in the Wirecast One settings, and a new broadcast is searched sought.

To stream to *Facebook with User Code*, follow these steps:

1. Sign In to the Facebook account you want to access.
2. In Wirecast One, select *Output > Output Settings*. Then select *Facebook Live - with User Code*.



3. Optionally, enter a Name for your destination.
4. Select *Facebook Live - with User Code* from the Destination menu (if not already selected).
5. Select Automatic in the *Encoding* menu.

Note: Selecting *Automatic* sets the target bitrate and encoding size based on your canvas. Wirecast One sends your canvas size to Facebook which responds with the preferred width, height and bandwidth to use for that size canvas.

Also, in restricted bandwidth situations it is recommended that you choose a preset with the desired bitrate for your actual bandwidth.

6. Choose the audio track to be used by selecting it from the *Audio Track Selection* menu.

The screenshot shows the configuration interface for Facebook Live. Annotations point to the following elements:

- Select Facebook:** Points to the 'Destination' dropdown menu which is set to 'Facebook Live - with User Code'.
- Select Automatic:** Points to the 'Encoding' dropdown menu which is set to 'Automatic'.
- Click Map (optionally):** Points to the 'Map' button located next to the 'Audio Track Selection' dropdown.

Other visible elements include 'Name: Not Configured', 'More...' and 'Settings' icons, 'Restream and Captions: ☐ Enable [Learn More...](#)', and 'Audio Track Selection: Track 1'.

7. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

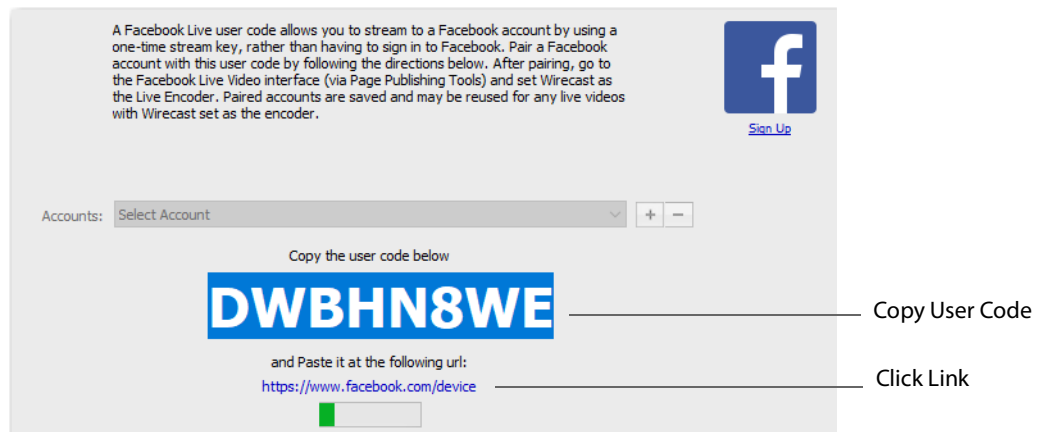
8. Select your Facebook account from the drop-down menu, then click the Plus button (+) to start the pairing process with a Facebook user.

The screenshot shows the account selection section of the configuration interface. Annotations point to the following elements:

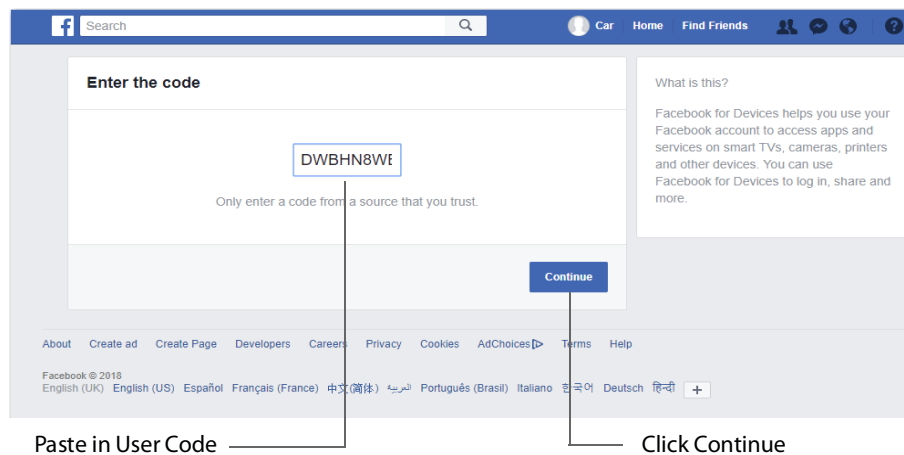
- Select FB account:** Points to the 'Accounts' dropdown menu which currently shows 'Car Clone'.
- Click the Plus button:** Points to the '+' button next to the 'Accounts' dropdown.

Other visible elements include a 'Sign Up' link with a Facebook logo, and a text block explaining the Facebook Live user code process.

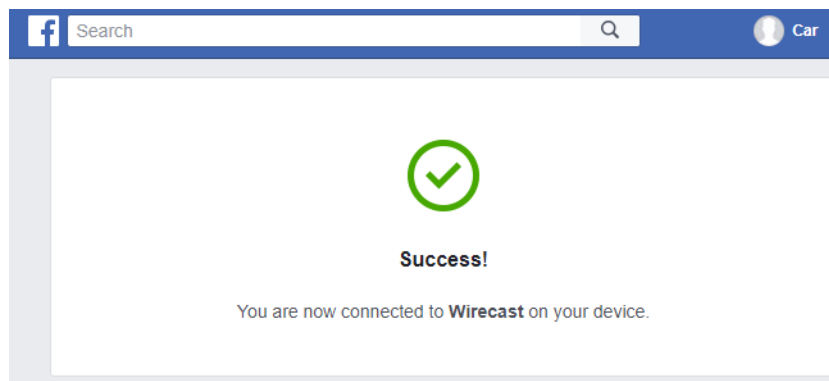
9. Copy the user code obtained from Facebook, and click on the link provided.



10. When the Facebook window displays, paste in the User Code and click *Continue*.

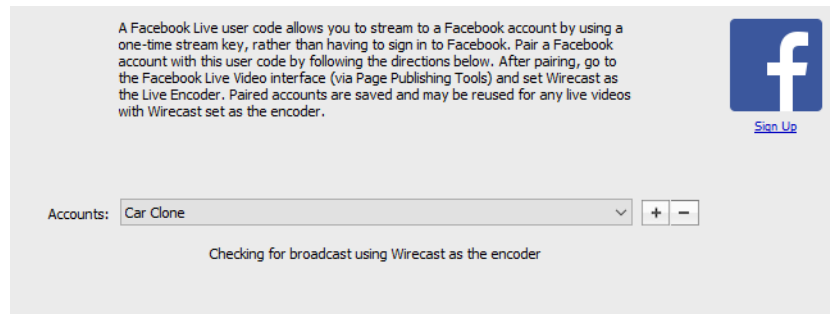


11. Facebook will display a Success window when the code is accepted.

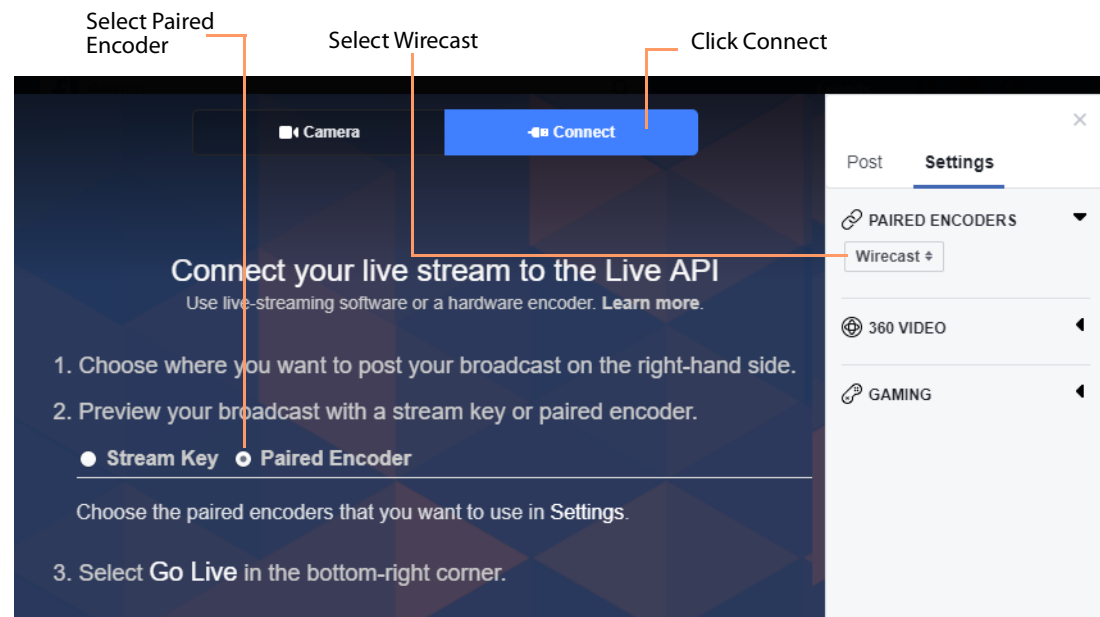


12. Wirecast One displays a "Loading" paired encoders message while it searches to see if it is registered as an encoder with Facebook. Once Wirecast One is properly

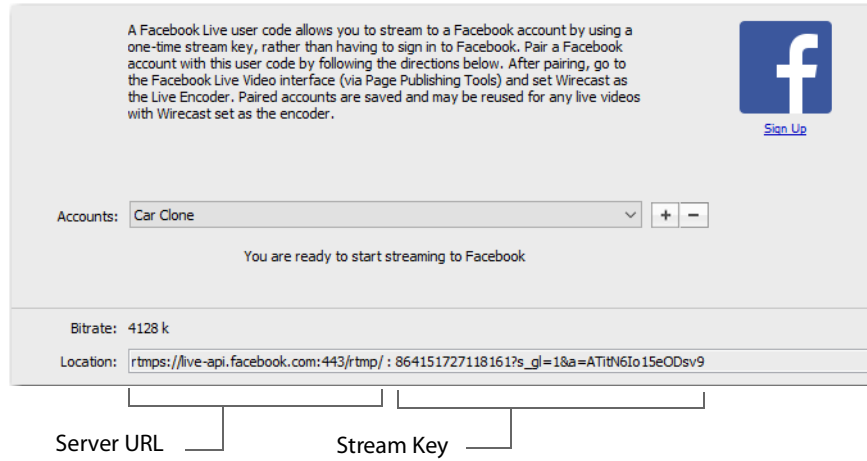
registered as an encoder for the account, it starts “Checking” to find the broadcast (live video) where it is set as the encoder.



13. On Facebook, select *Paired Encoder*, set the Live Encoder to Wirecast One, and then click *Connect*.

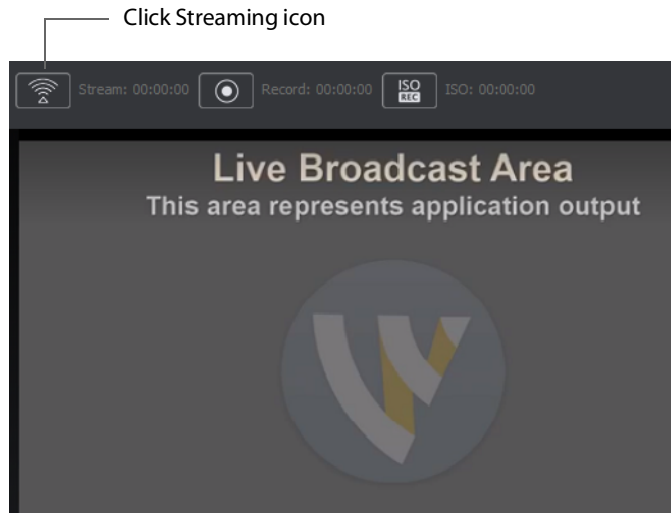


- 14.** If Encoding is set to *Automatic*, Wirecast One searches for the live video broadcast from Facebook. When found, Wirecast One displays the server URL along with the stream key of the paired account. Click *OK* to close the Output Settings window.

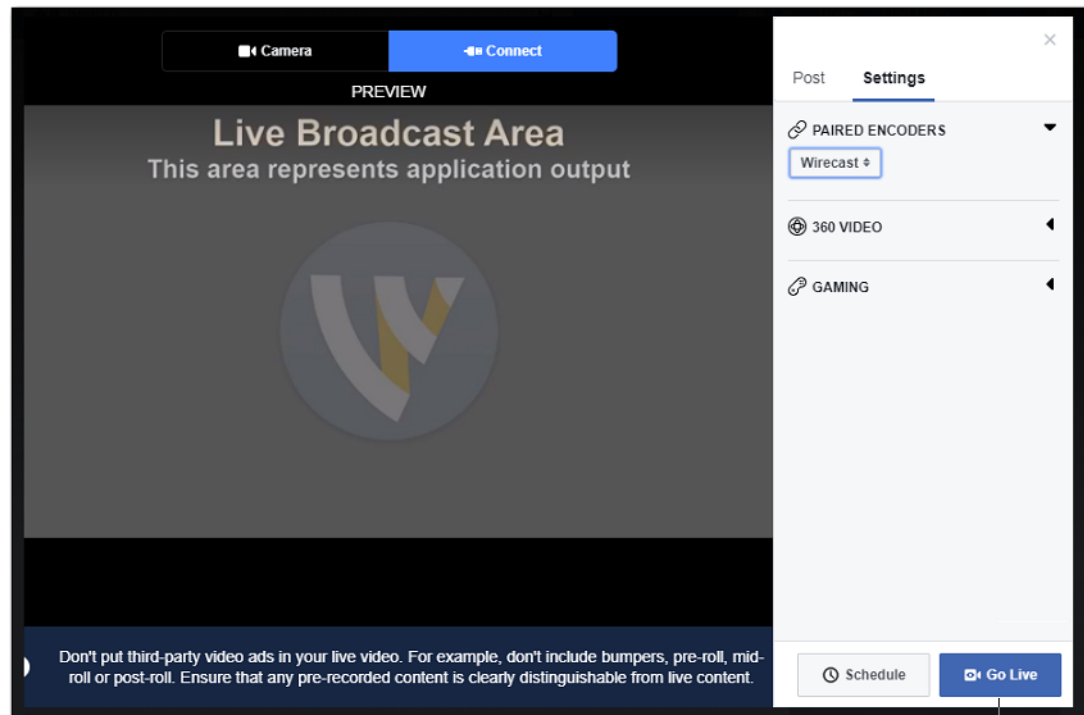


Note: In low bandwidth situations, you may choose an Encoding Preset other than *Automatic*. The stream URL will still be automatically determined, but the specified encoder preset is used instead of *Automatic*.

- 15.** In Wirecast One, begin streaming to Facebook by clicking the *Streaming icon*.



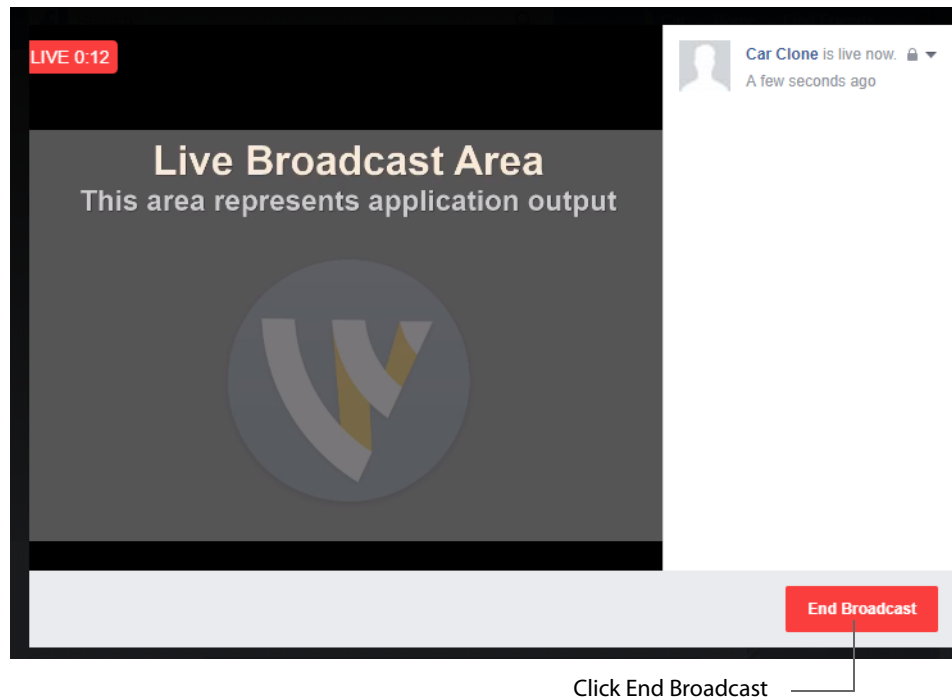
16. When Facebook displays the Preview screen, click *Go Live*.



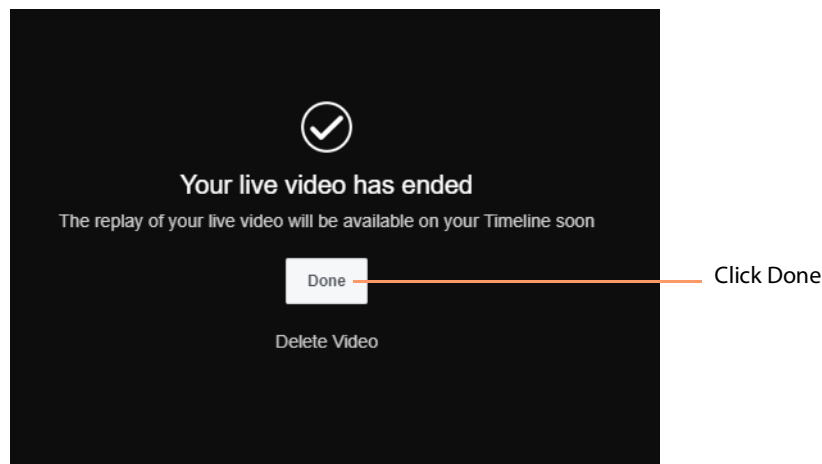
Click Go Live

Note: Expect a 5-20 second lag between Wirecast One output and what is seen on Facebook.

17. When *Go Live* is clicked, Wirecast One detects this and automatically sends an *OnGoLive* message back to Facebook. This is what actually publishes the live video over Facebook. Facebook then displays the live broadcast with the elapsed time. Click *End Broadcast* to end the Facebook broadcast.



18. When Facebook displays the "video has ended" window, click *Done*. Wirecast One will detect this automatically and will stop streaming.



If you stop streaming from Wirecast One by re-clicking the *Streaming icon*, the Facebook broadcast remains live and keeps looking for the feed from Wirecast One. If you re-start streaming from Wire cast (by re-clicking the *Streaming icon* again),

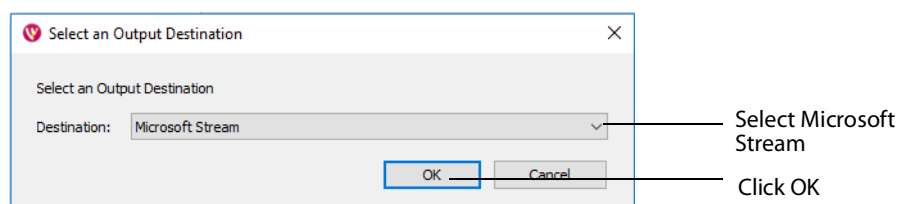
Facebook will restart its streaming. However, if you do not re-start streaming from Wirecast One, Facebook will eventual time out and end its broadcast.

Microsoft Stream

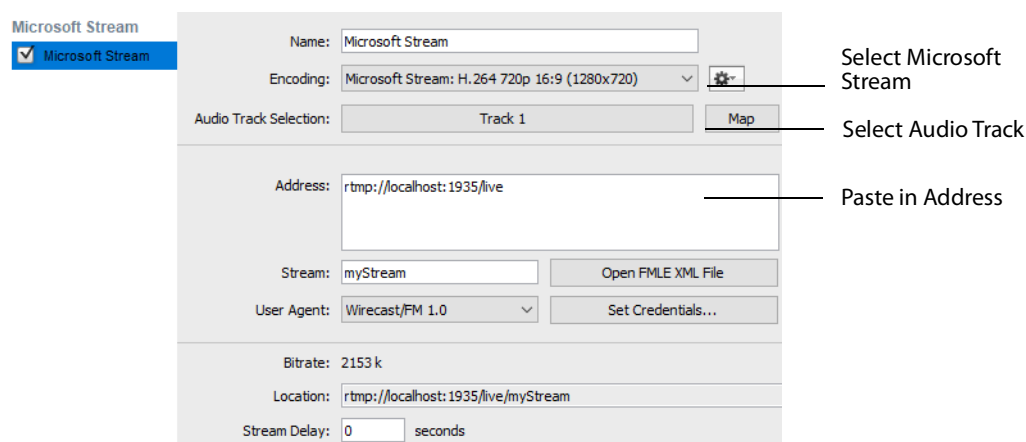
In order to broadcast using Microsoft Stream, you must first configure your streaming using Office 365. For a detailed procedure on how to do this visit the Telestream website at:

<https://support.telestream.net/s/article/Wirecast-10-Publish-to-Microsoft-Stream>

When the Output Settings window displays, select *Microsoft Stream* as your Destination and click *OK*.



When the Output window displays, select an Encoder and Audio Track for you stream. Paste in the address copied from Office 365 where streaming was initiated. Optionally, enter a Stream Delay if needed. Click *Ok* when finished.



You can also click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

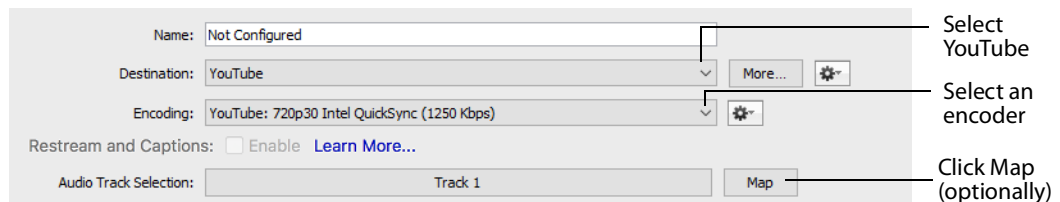
Click *OK* when finished.

YouTube

Note: Custom encoders cannot be used to stream to YouTube. They may only be used to encode a recording to disk.

To stream to YouTube, follow these steps:

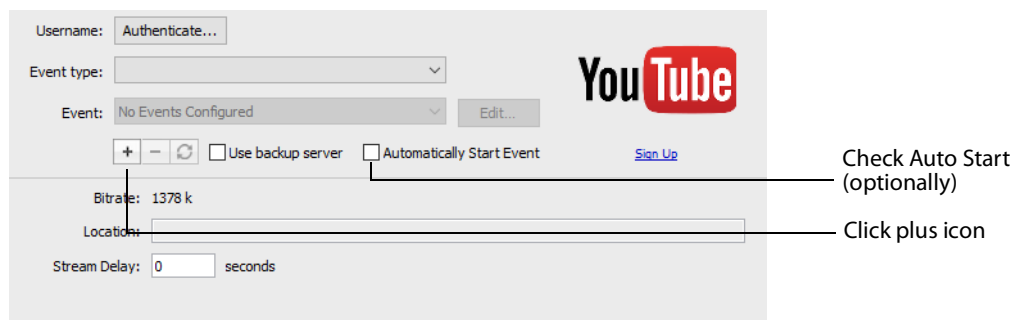
1. Log into your YouTube account using your browser.
2. Optionally, enter a Name for your destination.
3. Select *YouTube* from the Destination menu.
4. Select an encoder.



5. You can (optionally) click the Map button to open the Multi-Track Input Mapper. For each Channel, select (by checking the box) one or more inputs.

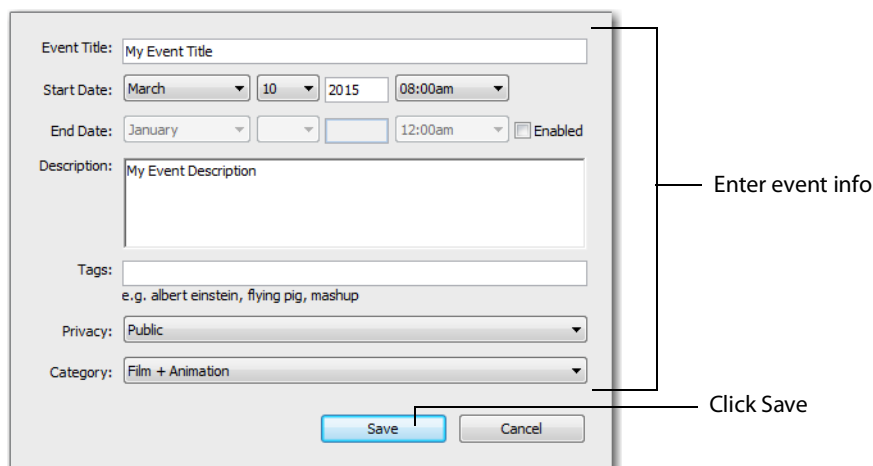
Multi-Track Input Mapper									
Source	Channel	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8
Microphone Array (Realtek High Definition Audio)	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Check (optionally) *Automatically Start Event* to automatically start your event on YouTube when you start streaming. Click the plus (+) icon to add a new event.



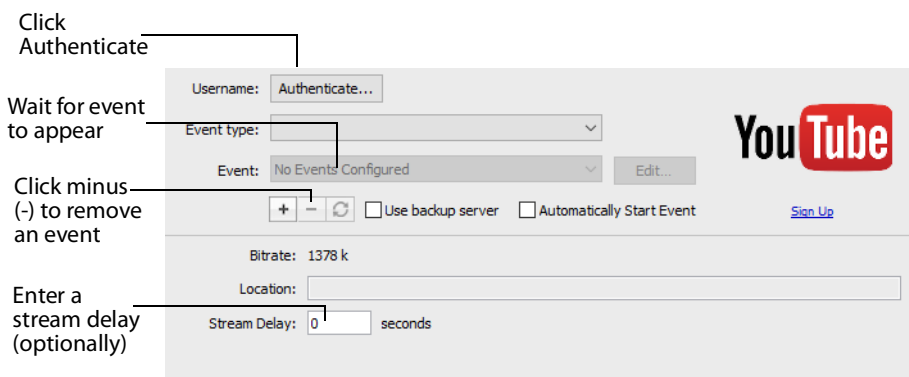
Note: If you do not have a YouTube account, click *Sign Up* (or go to www.youtube.com).

7. Enter all of your event information and click *Save*.



The screenshot shows a form for creating an event. The fields are: Event Title (My Event Title), Start Date (March 10, 2015, 08:00am), End Date (January, 12:00am), Description (My Event Description), Tags (e.g. albert einstein, flying pig, mashup), Privacy (Public), and Category (Film + Animation). There are Save and Cancel buttons at the bottom. Annotations include: 'Enter event info' pointing to the description and tags fields, and 'Click Save' pointing to the Save button.

8. Click *Authenticate*, enter your login information, and wait for your event to appear in the Event menu box. Click the minus icon (-) to remove a selected event. Optionally, enter a Stream Delay value. This provides a time buffer between your live stream from Wirecast and the actual broadcast itself. You can set the delay from 0 to 999 seconds. Click *OK* when finished.

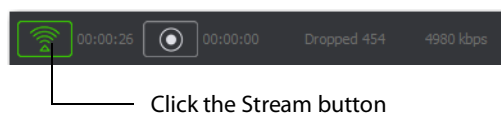


The screenshot shows the authentication and event management interface. The Username field is set to 'Authenticate...'. The Event type is set to 'Event'. The Event list shows 'No Events Configured'. There are plus (+) and minus (-) icons for managing events. The Stream Delay is set to 0 seconds. Annotations include: 'Click Authenticate' pointing to the Username field, 'Wait for event to appear' pointing to the Event list, 'Click minus (-) to remove an event' pointing to the minus icon, and 'Enter a stream delay (optionally)' pointing to the Stream Delay field.

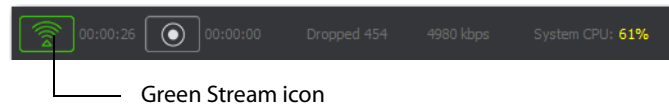
Note: If you are not already signed in, a browser window is launched enabling you to sign into your YouTube account. Enter your account information and click *Sign In*.

Streaming

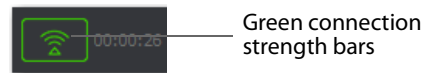
Click the *Stream* button to start streaming.



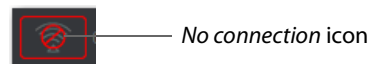
The Stream icon will blink until a connection is made. Once you are connected the Stream icon turns green. If you cannot connect an error message will display.



Connection strength is indicated by how many bars are displayed in the Stream icon. Fewer bars indicates a weaker (slower) connection.

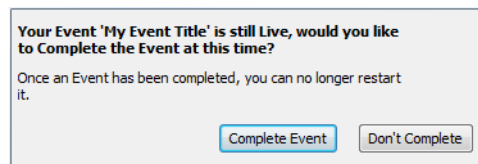


If the connection is ever broken, a *no connection* icon is displayed in place of the bars.

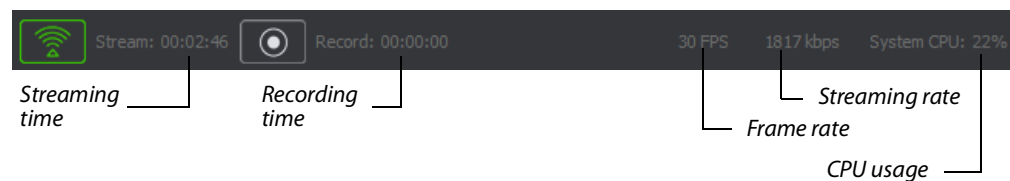


When the connection recovered, the *no connection* icon is replaced with the green bars.

Click *Stream* again to stop streaming. You can also record your broadcast by clicking *Record*.



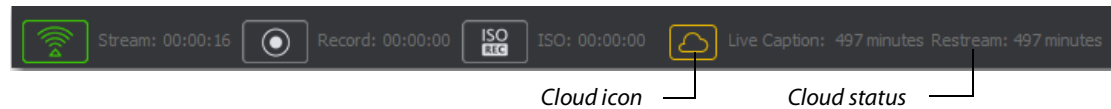
While streaming, status is displayed.



If you are streaming to Facebook, additional status is displayed on the right side of the status bar.

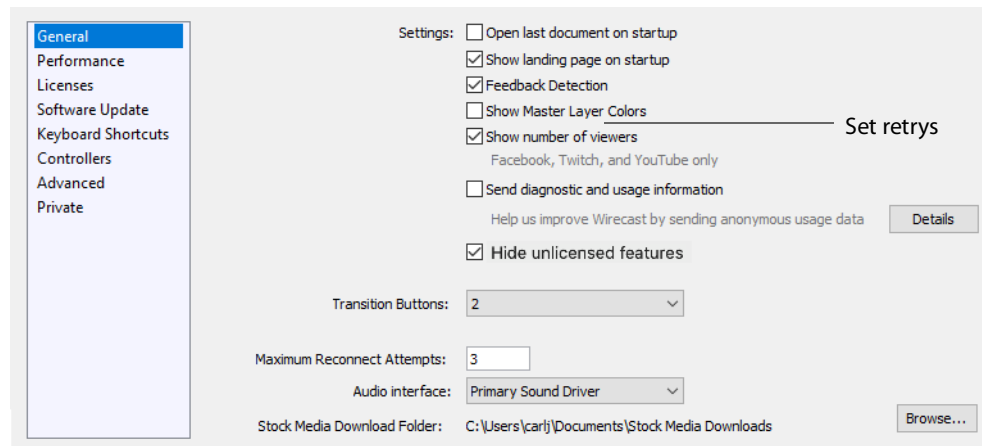


If you are streaming via the Cloud, additional status is displayed on the right side of the status bar.



Note: Cloud-based streaming and distribution is available in Wirecast One for an additional monthly subscription. Visit the Telestream website for more information.

Wirecast One attempts to reconnect. Each time reconnection is attempted, the stream icon will blink. The number of reconnection tries is set in the General Preferences (Select *File>Preferences*, then click the *General* tab).



Record To Disk

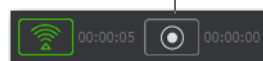
If you want to archive your stream, you can use the Record To Disk destination.

Note: Wirecast auto-saves your Stream/recording. All formats (WMV, MOV, MP4) will be recoverable in increments of 20 seconds. Any recording less than 20 seconds is corrupted. ISO also recovers. In the case of an unexpected shutdown, the recoverable video is available in increments of one minute.

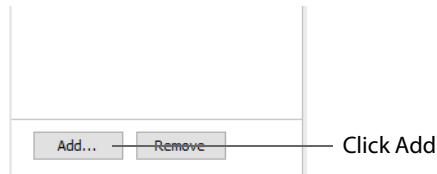
To record to disk, follow these steps:

1. Click the Record button at the top of the Wirecast Main window.

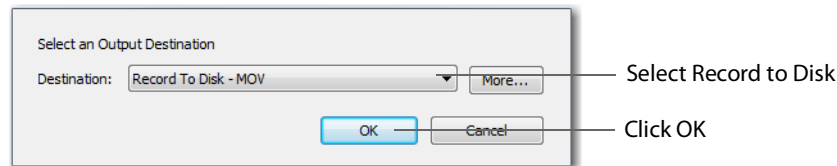
Click Record



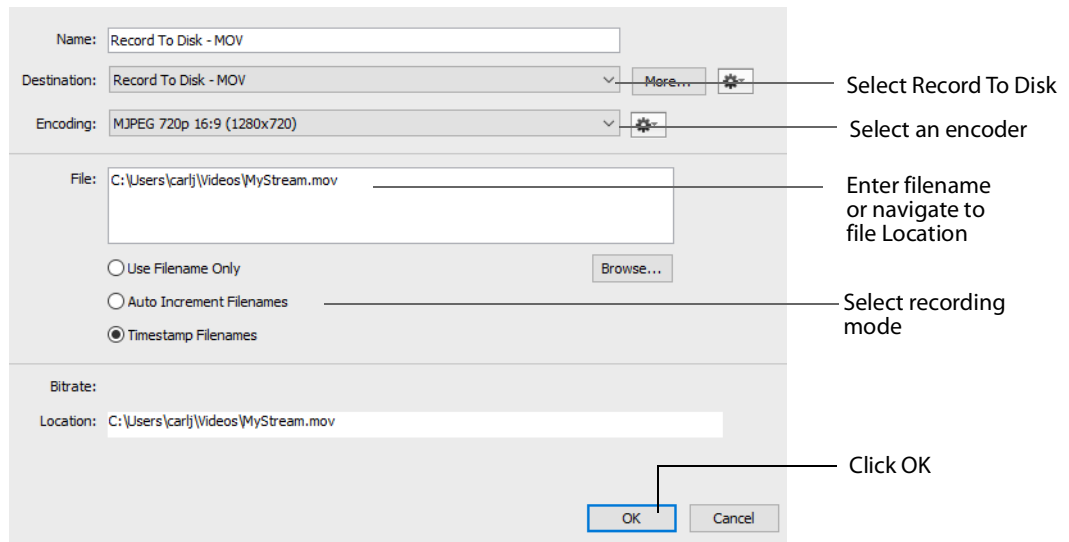
2. When the Output window opens, click the *Add* button at the bottom of the window to add a recording destination



3. When the dialog box displays, select *Record to Disk* and click *OK*.



4. In the Output Settings window select *Record To Disk* (for MP4 or Windows Media, MOV)
5. Select an encoder.
6. Click Browse or enter the path to where you want your recording located.
7. Select the recording mode: Use Filename Only, Auto Increment Filenames, or Timestamp Filenames. If you select Auto Increment Filenames, your filename will have an incremental number appended to the end of it. This causes a new file to be created every time you start recording to disk, otherwise your previous file is overwritten (if you have selected Use Filename Only).
8. Click OK.



Note: When recording to disk on FAT32 formatted drives, single files cannot be larger than 4GB in size. So, recording to disk on a FAT32 formatted drive may result in files that do not close properly if they exceed 4GB in size. It is recommended that you record to disk on a Windows NTFS formatted partition whenever possible.

Encoder Presets

Introduction

Wirecast supports a wide variety of encoders (also known as codecs).

An encoder is a program that compresses the audio and/or video output of Wirecast One for broadcast. Without an encoder, the uncompressed data is too large to successfully broadcast across a network. This is why encoders are so important.

The settings for encoders range from simple to very complex. Because of this, Wirecast One offers presets of the most common settings for encoders. This provides a starting point, reduces complexity, and enables you to experiment and adjust settings as you test your broadcast.

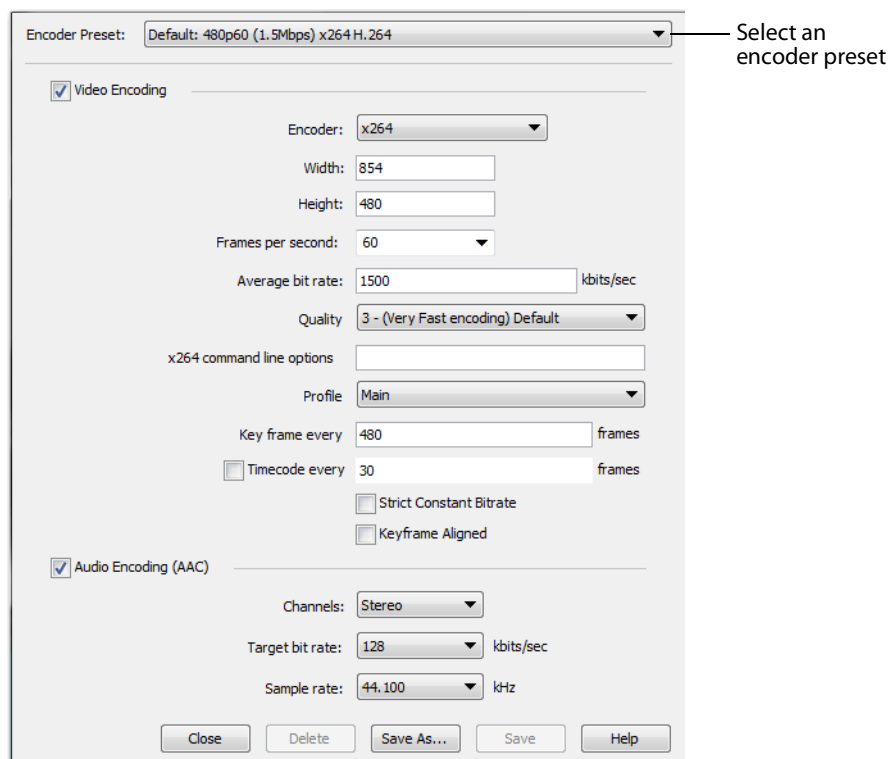
Note: Encoder Presets can also be edited from the Output Settings window. To do this select *Output > Output Settings*, click the gear icon, then choose *View Details* from the drop-down menu.

Topics

- [The Encoder Presets Window](#)
- [Windows Media Streaming](#)
- [MainConcept H.264](#)
- [x264](#)

The Encoder Presets Window

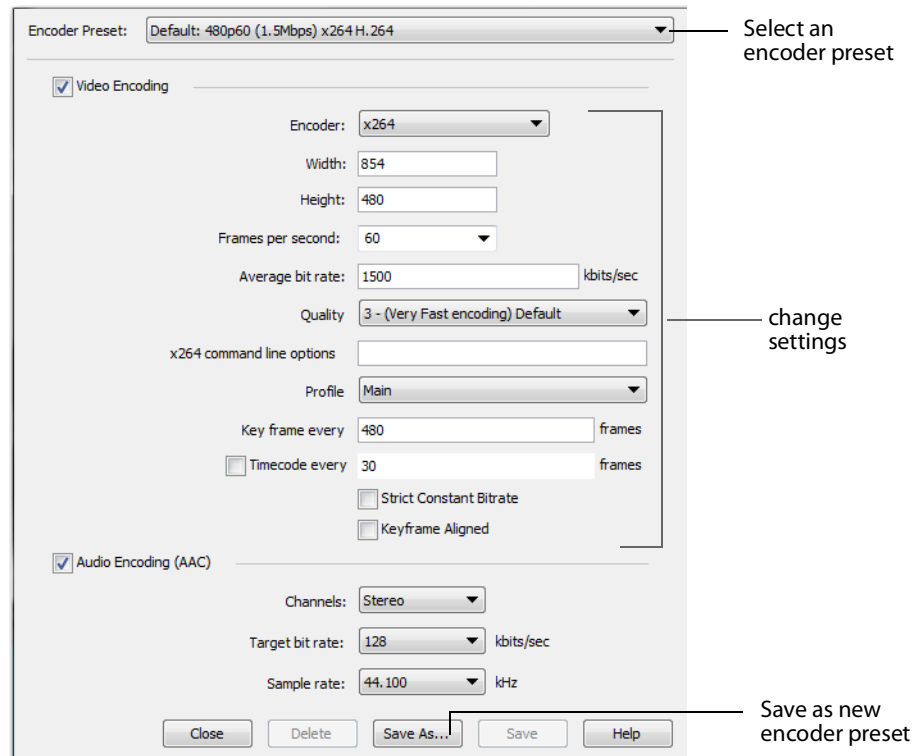
To open the Encoder Presets window, select **Window > Encoder Presets**. The Encoder Preset menu at the top of the window provides a list of encoder presets. Select a preset to edit.



Creating New Presets

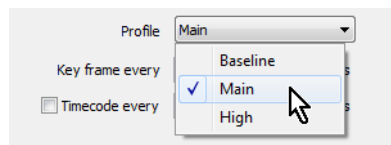
The default encoder presets cannot be changed. However, you can make a copy of any preset, modify it as needed, and save it under a new name. You can refer back to the default presets at any time since they are never modified.

To create a new preset, you must make a copy of an existing preset. To do this, select an existing preset from the Encoder Presets menu that is close to what you need, change settings as needed, then click *Save As* to save the preset with a new name.



Profile Options

Many encoder presets enable you to select one of three profiles: Baseline, Main, or High.



Baseline Profile (BP) Baseline profile is primarily for low-cost applications that require additional data loss robustness. This profile is used in some video conferencing and mobile applications. It includes all features supported in the Constrained Baseline Profile, plus three additional features used for loss robustness (or for other purposes such as low-delay multi-point video stream compositing). The importance of this

profile has faded somewhat since the definition of the Constrained Baseline Profile in 2009. All Constrained Baseline Profile bitstreams are also considered to be Baseline Profile bitstreams, since these two profiles share the same profile identifier code value.

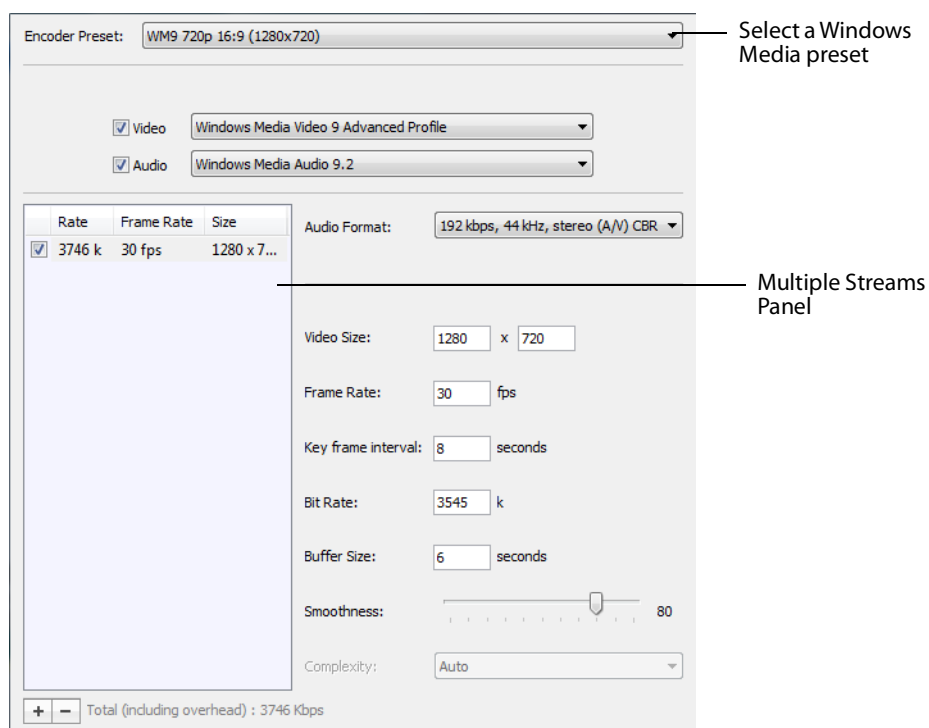
Main Profile (MP) The Main profile is used for standard-definition digital TV broadcasts that use the MPEG-4 format as defined in the DVB standard. It is not, however, used for high-definition television broadcasts, since the importance of this profile faded when the High Profile was developed in 2004 for that application.

High Profile (HiP) The High profile is the primary profile used for broadcast and disc storage applications, particularly for high-definition television applications. For example, this profile is used by the Blu-ray Disc storage format and the DVB HDTV broadcast service.

Windows Media Streaming

To modify a Windows Media encoder preset, follow these steps:

1. Open the Encoder Presets window
2. Select a Windows Media preset from the Encoder Presets menu.



3. Check the Video checkbox and select the Windows Media codec version to use.
4. Check the Audio checkbox and select the Windows Media codec version to use.
5. Use the Multiple Streams Panel (left side of window) to set up multiple simultaneous streams in a single encoder. This allows the media player receiving the stream to adjust its quality depending on the connection speed and reliability.

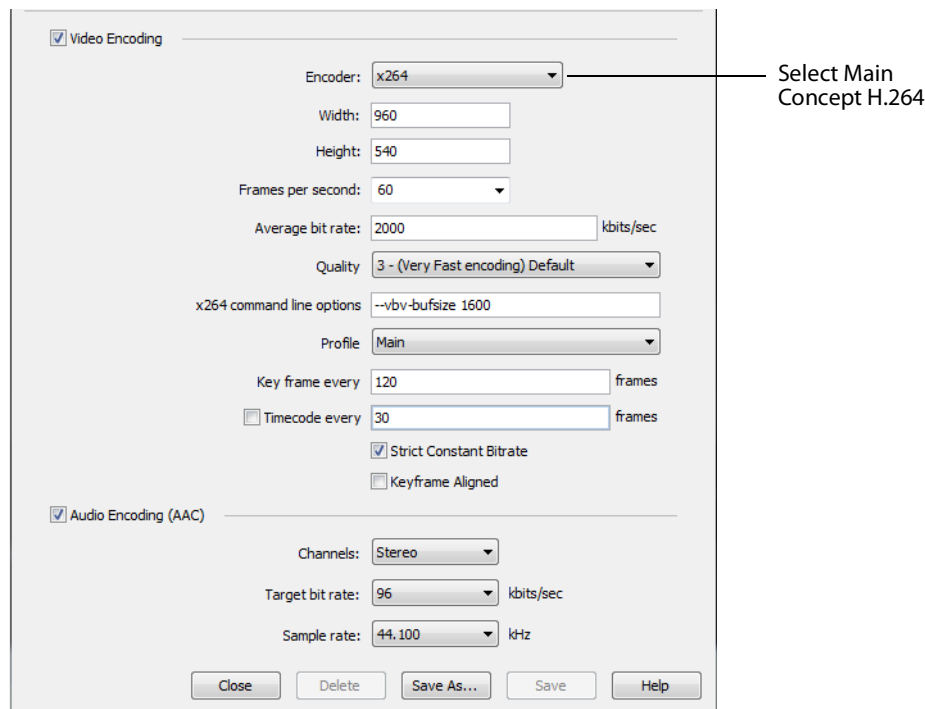
The plus and minus buttons at the bottom enable you add or remove additional streams to your preset.

6. Select the Audio Format. This is a pre-configured audio encoder setting.
7. Enter the Video Size. This sets the width and height of your resulting broadcast. Every stream should have the same aspect ratio. For example, if 640x480 is used, it has an aspect ratio of 4:3. Therefore, all other streams should also have a 4:3 aspect ratio.
8. Enter the broadcast frame rate in frames per second (fps). This is a target rate and is only a goal for the encoder. It is not a guaranteed value.
9. Enter the Key Frame Interval in seconds. This controls how often the encoder makes a new keyframe. The more keyframes your broadcast has, the more bandwidth it takes (since less compression can occur). However, more keyframes means motion in your video stream is better supported.
10. Enter the bit rate in Kbits (1000 bits) per second. This is a target setting for the encoder, not a guaranteed value. Higher numbers provide better quality - lower numbers, lower quality. The connection speed of your audience is a significant factor in determining your target bit rate.
11. Set the smoothness using the slider. Video smoothness determines the trade-off between sharp images and smooth motion. Video appears smooth when objects move across the screen with non-jagged object edges. If you are dropping frames during encoding, consider decreasing video smoothness.
12. Select Complexity. Some video codecs support multiple complexity levels. Complexity level does not directly affect the bit rate of a stream, but it can affect its quality. Complexity level is a measure of the processing power needed to reconstruct the compressed data.
13. Enter the buffer size. The bit rate and quality depends on the buffer size. A larger buffer size enables more bits to be allocated for complex video. For example, if you set the buffer size to 10 seconds, the codec may choose to allocate some bytes to the first 8 seconds and the rest during the last 2 seconds. Increasing the buffer typically improves overall quality. For lower bit rates, it is recommended to increase the buffer size. For higher bit rates, increasing the buffer size has less effect.

MainConcept H.264

To modify a MainConcept H.264 preset, follow these steps:

1. Open the Encoder Presets window.
2. Select the MainConcept H.264 encoder preset from the Encoder menu.



Note: To use a newly created preset (See [Creating New Presets](#)).

3. Check the Video Encoding checkbox. When checked, the video for your broadcast is encoded. When unchecked, a blank video screen is provided. This is the preferred method of producing audio-only broadcasts.
4. Enter the Width of your broadcast video.
5. Enter the Height of your broadcast video.
6. Select the desired frames per second (fps) of your broadcast. This value is a target value for the encoder and the exact value is not guaranteed.
7. Enter the average bit rate in Kbits (1000 bits) per second. This is the target bit rate of your video. Higher numbers provide better quality. The connection speed of your audience is a significant factor in determining your target bit rate. The encoder compresses the video to approximate this target. However, at different times during your broadcast the bit rate may be higher or lower than the target rate.
8. Select an encoder profile from the Profile menu. Three profiles are provided: Baseline, Main, and High. The Baseline profile is commonly used in mobile applications. It is also used in other applications which operate with limited

processing power, storage capacity, and/or bandwidth. The Main profile is appropriate for general-purpose applications of broadcast media, such as high-bandwidth Internet broadcasting. The High profile provides the highest broadcast quality encoding.

9. **Key Frame** (optionally) allows you to enter the number of frames. A movie is a sequence of images and each image is called a frame. To compress video data, most encoders take a frame and make it a reference (also known as a key). This keyframe is sent as part of the broadcast, and all of the data after that keyframe is relative to it. The benefit of this is that the compressor only needs to send what has changed since the last keyframe. The main drawback of this is that over time it becomes harder for the encoder to distinguish the frame-difference information, especially if there is a lot of motion in the video. Another drawback is if your viewer's computer misses a keyframe, the video is distorted until the next keyframe is sent. However, you can control how often the encoder makes a new keyframe by setting the number of frames. The more keyframes you broadcast, the more bandwidth required and less compression, but results in better quality video.
10. **Check** (optionally) the **Timecode Every** checkbox and enter the number of frames between timecodes. Wirecast One can generate timecodes embedded in the flash stream. If a frames value of zero is entered, the timecode is never sent. Wirecast One sends metadata along with the frames. This data looks like an ONFI call. Various timecodes and timestamps are also sent with the stream.
11. **Check** (optionally) **Strict Constant Bitrate**. When checked, it forces the Average bit rate (see item 8 above) to maintain the exact bit rate entered. CBR pads the data (when necessary) to meet exact bitrate specified. Disabling CBR can result in slightly improved quality and decrease file size, but at the cost of greater bitrate fluctuations which could prove troublesome for certain streaming destinations. Selecting this option for recording is not recommended because it can result in decreased quality and larger files, with no real benefit.
12. **Check** (optionally) **Keyframe aligned**. When checked, it facilitates adaptive bitrate streaming by ensuring that keyframes from multiple streams are in sync, along with the keyframes timestamp, DTS and PTS values. But this is true only if those other streams also have the option turned on and have the same keyframe interval. To accomplish this, Wirecast One disables scene detection and manually inserts the keyframe at the exact keyframe interval specified. Therefore, to ensure quality and smooth switching in the player, the keyframe interval should be in the 1 to 4 second range. When Keyframe Aligned is enabled, absolute timestamp is also enabled.
13. **Check** (optionally) the **Audio Encoding (AAC)** checkbox. When checked, the audio for your broadcast is included. When unchecked, audio is absent. This is the preferred method of producing video-only broadcasts because the presence of silent audio uses bandwidth.
14. **Select** the number of channels: **Mono** or **Stereo**. Mono uses less bandwidth than stereo, but stereo is more pleasing to the listener.
15. **Select** the audio bit rate, in Kbits (1000 bits) per second, from the **Target Bit Rate** menu. This is the target bit rate of your audio. Higher numbers provide better quality. The connection speed of your audience is a significant factor in

determining your target bit rate. The encoder compresses the audio to approximate this target. However, at different times during your broadcast the bit rate may be higher lower than the target rate. The total broadcast bit rate is a function of video bit rate plus audio bit rate.

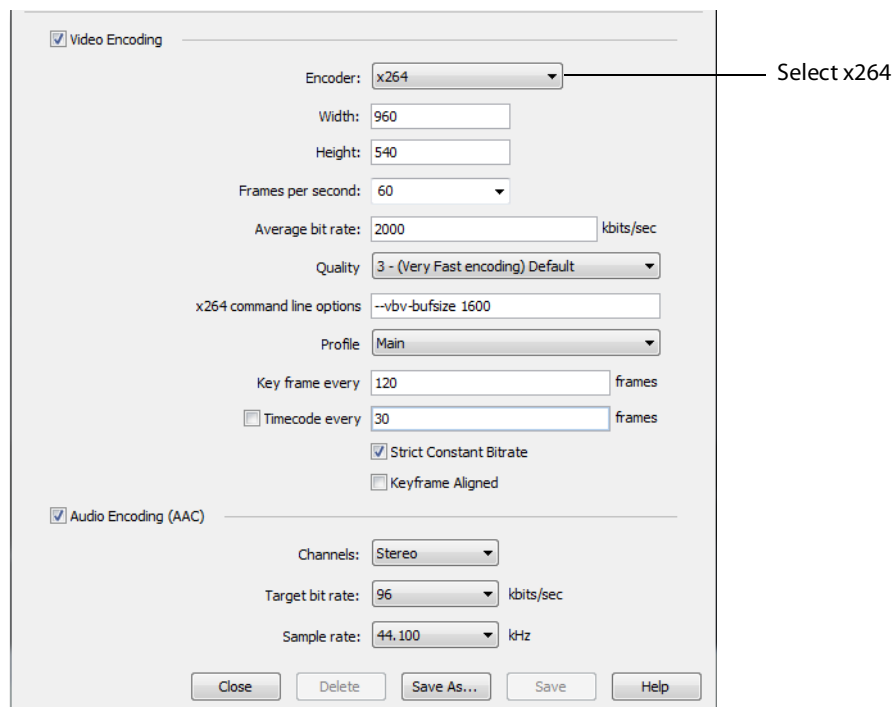
16. Select the audio sample rate, in kHz (1000 Hz) per second, from the Sample Rate menu. This value specifies how many thousands of times per second to sample the audio in the broadcast. Higher values provide better quality sound, but at greater bandwidth.
17. Click Save to save your settings.

x264

Note: The x264 implementation of the H.264 standard results in better quality and lower CPU usage for any given bitrate, but at the cost of higher memory usage. The default implementation is based on the MainConcept codec and uses less memory.

To modify an x264 preset, follow these steps:

1. Open the Encoder Presets window.
2. Select an x264 from the Encoder menu.



The screenshot shows the 'Video Encoding' settings window. The 'Encoder' dropdown menu is set to 'x264', with a callout line pointing to it and the text 'Select x264'. Other settings include: Width: 960, Height: 540, Frames per second: 60, Average bit rate: 2000 kbits/sec, Quality: 3 - (Very Fast encoding) Default, x264 command line options: --vbv-bufsize 1600, Profile: Main, Key frame every: 120 frames, Timecode every: 30 frames (unchecked), Strict Constant Bitrate (checked), Keyframe Aligned (unchecked). The 'Audio Encoding (AAC)' section is also visible with Channels: Stereo, Target bit rate: 96 kbits/sec, and Sample rate: 44.100 kHz. At the bottom are buttons for Close, Delete, Save As..., Save, and Help.

Note: To use a newly created preset (See [Creating New Presets](#)).

3. Check the Video Encoding checkbox. When checked, the video for your broadcast is encoded. When unchecked, a blank video screen is provided. This is the preferred method of producing audio-only broadcasts.
4. Enter the Width of your broadcast video.
5. Enter the Height of your broadcast video.
6. Select the desired frames per second (fps) of your broadcast. This value is a target value for the encoder and the exact value is not guaranteed.
7. Enter the average bit rate in Kbits (1000 bits) per second. This is the target bit rate of your video. Higher numbers provide better quality. The connection speed of your audience is a significant factor in determining your target bit rate. The encoder compresses the video to approximate this target. However, at different times during your broadcast the bit rate may be higher or lower than the target rate.
8. Select encoding quality (*Ultra fast* to *Very slow* encoding). Slower encoding results in better quality.
9. In the *x264 command line options* edit box, enter any command line options you want included.
10. Select an encoder profile from the Profile menu. Three profiles are provided: Baseline, Main, and High. The Baseline profile is commonly used in mobile applications. It is also used in other applications which operate with limited processing power, storage capacity, and/or bandwidth. The Main profile is appropriate for general-purpose applications of broadcast media, such as high-bandwidth Internet broadcasting. The High profile provides the highest broadcast quality encoding.
11. Key Frame (optionally) allows you to enter the number of frames. A movie is a sequence of images and each image is called a frame. To compress video data, most encoders take a frame and make it a reference (also known as a key). This keyframe is sent as part of the broadcast, and all of the data after that keyframe is relative to it. The benefit of this is that the compressor only needs to send what has changed since the last keyframe. The main drawback of this is that over time it becomes harder for the encoder to distinguish the frame-difference information, especially if there is a lot of motion in the video. Another drawback is if your viewer's computer misses a keyframe, the video is distorted until the next keyframe is sent. However, you can control how often the encoder makes a new keyframe by setting the number of frames. The more keyframes you broadcast, the more bandwidth required. The result is less compression but better quality video.
12. Check (optionally) Strict Constant Bitrate. When checked, it forces the Average bit rate (see above) to maintain the exact bit rate entered. CBR pads the data (when necessary) to meet exact bitrate specified. Disabling CBR can result in slightly improved quality and decrease file size, but at the cost of greater bitrate fluctuations which could prove troublesome for certain streaming destinations. Selecting this option for recording is not recommended because it can result in decreased quality and larger files, with no real benefit.
13. Check (optionally) Keyframe aligned. When checked, it facilitates adaptive bitrate streaming by ensuring that keyframes from multiple streams are in sync, along with the keyframes timestamp, DTS and PTS values. But this is true only if those other

streams also have the option turned on and have the same keyframe interval. To accomplish this, Wirecast One disables scene detection and manually inserts the keyframe at the exact keyframe interval specified. Therefore, to ensure quality and smooth switching in the player, the keyframe interval should be in the 1 to 4 second range. When Keyframe Aligned is enabled, absolute timestamp is also enabled.

14. Check (optionally) the Timecode Every checkbox and enter the number of frames between timecodes. Wirecast One can generate timecodes embedded in the flash stream. If a frames value of zero is entered, the timecode is never sent. Wirecast One sends metadata along with the frames. This data looks like an ONFI call. Various timecodes and timestamps are also sent with the stream.
15. Check (optionally) the Audio Encoding (AAC) checkbox. When checked, the audio for your broadcast is included. When unchecked, audio is absent. This is the preferred method of producing video-only broadcasts because the presence of silent audio uses bandwidth.
16. Select the number of channels: Mono or Stereo. Mono uses less bandwidth than stereo, but stereo is more pleasing to the listener.
17. Select the audio bit rate, in Kbits (1000 bits) per second, from the Target Bit Rate menu. This is the target bit rate of your audio. Higher numbers provide better quality. The connection speed of your audience is a significant factor in determining your target bit rate. The encoder compresses the audio to approximate this target. However, at different times during your broadcast the bit rate may be higher or lower than the target rate. The total broadcast bit rate is a function of video bit rate plus audio bit rate.
18. Select the audio sample rate, in kHz (1000 Hz) per second, from the Sample Rate menu. This value specifies how many thousands of times per second to sample the audio in the broadcast. Higher values provide better quality sound, but at greater bandwidth.
19. Click Save to save your settings.
- 20.

Making Great Broadcasts

Introduction

These topics provide helpful information about how to prepare for creating great presentations.

Topics

- [Overview](#)
- [High Quality Audio](#)
- [Good Lighting](#)
- [Broadcast Settings](#)

Overview

There are many ways to make a good live event even better. But this appendix focuses on two main things to remember about video streaming:

- **High Quality Audio Input** Great looking video with poor audio input appears unprofessional.
- **Good Lighting** Poor lighting can ruin an otherwise excellent live event. If you are doing chroma keying, this may become the most important part of your setup.

When video is saved to disk or sent over the network, it needs to be compressed. The compression process is done by encoders (codecs) which are optimized to work with clean input data. This means that if the audio or video is muddy to start with, it remains muddy after compression. Some codecs may even highlight poor input because the algorithm is built to look for differences.

Your goal should be to give the best possible quality audio and video to the compression process as possible. This means making sure what you see in the Live area is the best possible quality because Wirecast One takes exactly what you see and sends it to the codecs.

High Quality Audio

Audio has an artistic aspect to it. You can make a great live event even better by remembering to focus on a few details. Here are some suggestions on producing clean audio.

- **Use a Good Microphone** Though this may sound obvious, a good microphone can make a huge difference. Most DV cameras have an audio input for an external microphone. Use this, whenever possible, instead of the built-in microphone that comes with the camera. Built-in microphones are usually not good quality and tend to pick up hum from the electronics inside the camera. Even when it is not a great microphone, an external microphone almost always sound better.
- **Use a Microphone Splitter** If you are doing an interview with one camera, you can use two microphones with a splitter (less than \$5). This often gives better results than one omni-directional microphone at a distance. You can also use a dual lapel microphone with a splitter.
- **Position the Microphone Properly** Place any microphone as close to the sound source as possible, even when using omni-directional microphones, because sound volume decreases greatly the farther away the microphone is placed. Stronger signals coming into the microphone results in better quality.
- **Use Lapel Microphones** Even inexpensive (less than \$20) lapel microphones can make a huge difference because it places the microphone much closer to the person speaking.
- **Control Environmental Noise** If a chair squeaks, use a different one. If you have a wood floor and you can hear people shuffling their feet as they talk, put down a rug. Do whatever it takes to keep noise at a minimum. Microphones pick up everything.

Good Lighting

Do not underestimate the power of lighting. When an event is shot outdoors, a great deal of attention goes into lighting. For professionals, lighting is viewed as an artistic task. Many people make their living controlling lighting, so there is a lot to it. Here are a few suggestions to help you obtain reasonably good lighting:

- If you are using only one lighting source, do not shine it directly on your subject. You should diffuse the light by bouncing it off of a wall or by shining it through opaque material.
- Avoid deep shadows. Make sure you fill all areas of your subject with light. Sometimes this requires adjusting the light to bounce off a different wall or use two lights. Placing a light low and another one high is often a good way to light evenly.
- Do not light too evenly. If you evenly light a set, you may actually be worse off than not lighting the set at all. Take a sample shot and see if it looks natural. Good lighting usually has a little more light coming from above than any other direction. You should very rarely light just from below a subject.

- Beware of having too much light on your subject. If your subjects are people and you must use a lot of light, use make-up to compensate for the overly bright lighting. This is not necessarily a bad thing, but you must choose how much effort you want to go through to make a good live event. If your lighting balance is excellent, you can avoid using make-up on your subjects. The key in adjusting the lighting is to look at your subject and make sure they do not look washed out.
- Watch professional events and learn from them. As you watch, notice the lighting instead of watching the program. Notice how they employ the suggestions listed above.

These guidelines might seem to suggest subtle improvements, but good lighting can make an amateur video look professional and a professional video look fabulous. The important thing to remember is that one or two properly placed lights makes a huge difference in the quality of your live event.

Triangular Lighting

One advanced and very effective approach to good lighting is known as *triangular lighting* (or *three light setup*). Although this may sound complicated, it is actually quite simple. It involves setting up three lights (sometimes using natural light as one of the light sources), in a configuration that achieves a good balance. Here are the main elements of Triangular Lighting:

- **Main Light (Key Light)** This is the strongest of your lights and does most of the work. This light normally comes from one side of the camera (the left, for example) and is slightly raised. However, using just the main light results in shadowing.
- **Fill Light** This is a soft light placed directly in front of the subject. It removes shadows and fills in the image. It is usually direct and usually comes from the same direction as the camera (or just to the side and behind it). It could be, for example, placed on the same level as the head of a person you are lighting. If you use only a fill light, your subject might appear too dark. The only purpose of a fill light is to add to the main light by filling in shadows. If your key light comes from the left of your camera, your fill light should come from the right, and vice versa.
- **Back Light (Rim Light)** This light is directed from behind the subject and above it. This is the hardest light to explain, but the best way is to describe it as an accent of your subject. If you look at a typical high school yearbook picture, you will notice that the top-left (or top-right) part of each head shot has a highlight of light in it. This light is the *back light*. It is also called a *rim light* because it makes a slight rim around the edge of the head of your subject. This light normally comes from behind and above the subject, and it is focused. Make sure it is not directed at the camera.

Most serious lighting starts with these three basic lights. There are also some great Websites that describe these techniques in great detail.

Broadcast Settings

Once you have good video and audio coming into Wirecast One, the final item of importance is make sure the Broadcast Settings are configured correctly for your presentation. Though there are many broadcast parameters to modify, there are three that are the most important: bandwidth, motion, and encoder settings.

Bandwidth

The first item of importance is knowing how much bandwidth is available. Bandwidth is how much data you can broadcast from your computer. This depends on the speed of your network connection and the type of connection your viewers are using. More specifically, it is the minimum speed between you and all of your viewers.

Thus, you must know who your viewers are and what kind of connection they have. This may be difficult to know because you must determine if their connection is cable modem or DSL and whether or not they reside on your local network.

In some situations, you are broadcasting for just your local network (in an office building, for example). In this case you should discuss your plans with your network administrator and verify that you will not disrupt the network with your broadcasts. Ask them what your upper limit bandwidth should be. Your available bandwidth is the minimum of what you can upload, combined with what your viewers can download.

Motion

Once you know your bandwidth, you need to decide whether or not your video contains a lot of motion. Motion is how much things move around in your video presentations. An interview is considered low motion. A sports event, however, would probably be high motion. Wirecast One comes configured with defaults to help ease your configuration task. Choose a default configuration that meets your motion (and bandwidth) constraints.

Encoder Settings

The parameters of the encoders are quite technical and can be overwhelming. It is beyond the scope of this document to describe the delicate balance required in setting them. There are professionals who fine-tune encoders to do exactly what is required. The Wirecast One default settings are generally optimal for the various network environments. (See [Encoder Presets](#) for information on changing the encoder settings.)

Acknowledgements

Acknowledgements

Overview

Portions of this software may utilize the following copyrighted material, the use of which is hereby acknowledged:

Steinberg VST Plug-In SDK Licensing Agreement (Version "3.6.6- 17.06.2016")

OBJECT OF THE AGREEMENT

- 1.The object of this agreement consists of the Steinberg VST PlugIn Software Development Kit version 3.6.6 respectively any preview version of this Kit, comprising of documentation, example code, and several PlugIn examples. These are described hereinafter as the "Licensed Software Developer Kit".
- 2.In case a preview or beta version of the Licensed Software Developer Kit is provided, the Licensee is allowed to use the Licensed Software Developer Kit solely for internal evaluations. Any publishing, distribution or transfer to a third party is not permitted.
- 3.Steinberg is the holder of all copyrights, rights of ownership, and other rights concerning the Licensed Software Developer Kit.
- 4.The Licensed Software Developer Kit contains information about how to develop a Product, and how to extend an application so that it can host VST PlugIns, that are developed under the VST PlugIn Specification, either by Steinberg or any Third-Parties.

Currently the Licensed Software Developer Kit is running on the following computer platforms: Apple Macintosh Computers under the Mac OS 10.8, 10.9, 10.10, 10.11 (32 and 64bit) Windows 7, Windows 8 and Windows 10 (32 and 64bit)

GRANTING OF RIGHTS

- 1.Steinberg hereby grants to the Licensee a non-exclusive, worldwide, nontransferable license during the term of this agreement to use the Licensed Software Developer Kit solely:
 - For the development of PlugIns/Application and/or for the development of an application that can host VST PlugIns (herein VST Product),

- Publish, sell or otherwise distribute a Product under his own brand name that is using parts or all of the Licensed Software Developer Kit.

2. In case the Licensee receives a preliminary version of the Licensed Software Developer Kit, the Licensee is not allowed to publish any Product to the public using a preliminary Software Developer Kit. The Licensee is only allowed to publish Products to the public based on a Licensed Software Developer Kit which is not declared as a preliminary version by Steinberg.

3. The Licensee has no permission to sell, licence, give-away and/or distribute the Licensed Software Developer Kit or parts of it for the use as software developer kit in any way, for example, integrated in any framework application, on any medium, including the Internet, to any other person, including sub-licensors of the Licensee or companies where the Licensee has any involvement. This includes re-working this specification, or reverse-engineering any products based upon this specification.

4. In case the Licensed Software Developer Kit is modified, it shall not be published, sold or distributed without agreement of Steinberg. Furthermore, the naming of the Licensed Software Developer Kit shall not include "VST3.6.6 SDK" or any combination containing the VST brand without permission of Steinberg.

5. In case the Licensed Software Developer Kit is extended by additional code, it shall not be used in any other description than "(Licensees company name) extension to the Steinberg VST3.6.6 SDK".

6. The Licensee recognises the value of the goodwill associated with the mark VST Plug-In Technology and acknowledges that such goodwill exclusively belongs to the benefit of Steinberg and belongs to Steinberg. The Licensee warrants that it will not use the mark VST PlugIn Technology on promotional merchandise, with the exception of demo versions of any of his product making use of this Licensed Software Developer Kit. The Licensee warrants that it will not use the mark VST PlugIn Technology on, or in connection with products obscene, pornographic, excessively violent or otherwise in poor taste.

7. If the Licensee is developing a Product, that is using parts or all of the Licensed Software Developer Kit, and this product is not published under his own name but will be published under the name of a third party, this third party has to agree to be bound by Sections 2.1 to 2.3 and 3 of this VST PlugIns SDK Licensing Agreement. The third party has to completely comply with these provisions. If the third party is not in accordance with these conditions, the third party is not allowed to distribute this product which is using parts or all of the Licensed Software Developer Kit.

8. If the Licensee is planning to publish a Product under his own name or under the name of a third party, that is using parts or all of the Licensed Software Developer Kit, the Licensee is under the obligation to inform Steinberg about it by sending the signed 'Steinberg VST Plug-In SDK Licensing Agreement' to Steinberg, either by mail, or by fax.

COPYRIGHTS NOTICE, USE OF TRADEMARKS

If the Licensee is publishing a Product under his own name that is using parts or all of the Licensed Software Developer Kit, the Licensee shall be under an obligation to refer to Steinberg's copyrights and trademarks in the following way:

a) In case that the Licensee is publishing a 'boxed product', the Licensee shall display in a visible manner the VST Logo and Steinberg's copyright notice on the packages. Steinberg's copyrights notice: "VST is a trademark and software of Steinberg Media Technologies GmbH"

b) In case that the Product is published without a physical packages (e.g. download), The Licensee shall display the VST Logo and Steinberg's copyrights notice on the Licensee's website in the context of the Product.

c) The Licensee shall include the VST Logo and Steinberg's copyrights notice in all electronic documentation, regardless of the media used, such as PDF manuals, website etc. and all printed and all electronic advertising materials. The VST Logo artwork and usage guidelines are part of the "Licensed Software Developer Kit" and are supplied by Steinberg in digital format.

d) In the 'about box' or an alternative place (e.g. help menu, startup screen) of the Product in one of the following formats: VST PlugIn Technology by Steinberg Media Technologies, VST PlugIn Interface Technology by Steinberg Media Technologies GmbH.

FEES AND ROYALTIES

1.This license is non-royalty bearing and the Licensee shall not obligated to pay to Steinberg any fees or royalties with respect to the VST PlugIn Interface technology.

LIMITATION OF LIABILITY

1.Subject to the provisions in the following sub-sections, Steinberg shall only be liable, irrespective of the legal grounds, for damages caused by the intentional or grossly negligent conduct of Steinberg, its legal representatives, managerial employees or any other vicarious agents. In the case of damage caused by the grossly negligent conduct of any other vicarious agents, the liability shall be limited to those damages which must typically be expected within the scope of an agreement such as the present one. Any further liability other than as permitted under this agreement shall be excluded.

2.Any liability of Steinberg for damages arising from violation of life, body and health, from the assumption of a guarantee or from a procurement risk as well as Steinberg's liability for damages pursuant to the Product Liability Act (Produkthaftungsgesetz) shall remain unaffected.

3.To the extent the liability of Steinberg is excluded pursuant to the subsections of these provisions, this shall also apply to the benefit of Steinberg's employees in the event the Licensee files any claims directly against them.

FFmpeg Project

GNU LESSER GENERAL PUBLIC LICENSE Version 2.1, February 1999 Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you want); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We want to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We

use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License").

Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library

or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".) "Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions: a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.) These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose

permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you want.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you want to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.) Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things: a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.) b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However,

as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things: a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only

way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time.

Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you want to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY 15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.

EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Syphon

Syphon is licensed under a Simplified BSD license. Copyright 2010 bangnoise (Tom Butterworth) & vade (Anton Marini). All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

MIT

Copyright (c) 2018 Telestream, LLC

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.