



# FLOWCASTER

FlowCaster version 7

---

February 8, 2024

# Table of Contents

|  |    |
|--|----|
| 1 Copyrights and Trademark Notices.....                              | 5  |
| 1.1 General.....   | 5  |
| 1.2 GNU LESSER GENERAL PUBLIC LICENSE.....                           | 12 |
| 1.2.1.1 0. Additional Definitions.....                               | 12 |
| 1.2.1.2 1. Exception to Section 3 of the GNU GPL.....                | 12 |
| 1.2.1.3 2. Conveying Modified Versions.....                          | 12 |
| 3. Object Code Incorporating Material from Library Header Files..... | 13 |
| 4. Combined Works.....   | 13 |
| 5. Combined Libraries.....   | 13 |
| 6. Revised Versions of the GNU Lesser General Public License.....    | 14 |
| 1.3 MPEG Disclaimers.....  | 15 |
| 1.3.1 MPEGLA MPEG2 Patent.....                                       | 15 |
| 1.3.2 MPEGLA MPEG4 VISUAL.....                                       | 15 |
| 1.3.3 MPEGLA AVC.....  | 15 |
| 1.3.4 MPEG4 SYSTEMS.....   | 15 |
| 1.4 Drastic Technologies Limited Warranty and Disclaimers.....       | 15 |
| 1.4.1 Warranty Remedies.....   | 16 |
| 1.4.2 Software Updates.....  | 16 |
| 1.4.3 Restrictions and Conditions of Limited Warranty.....           | 16 |
| 1.4.4 Limitations of Warranties.....                                 | 16 |
| 1.4.5 Damages.....   | 17 |
| 2 Introduction.....  | 18 |
| 3 Using IP Video Streaming.....                                      | 19 |
| 3.1 Basic IP Video URLs.....   | 19 |
| 3.2 UDP and RTP.....   | 19 |
| 3.3 SRT.....   | 19 |
| 3.4 RIST.....  | 20 |
| 3.5 RTSP.....  | 20 |
| 3.6 RTMP.....  | 21 |
| 3.7 WebRTC.....  | 21 |
| 3.8 WHIP (WebRTC – Millicast).....                                   | 21 |
| 3.9 BLS (Bliss Protocol).....  | 21 |
| 3.10 NDI.....  | 22 |
| 3.11 CDI.....  | 22 |
| 3.12 S2022 and S2110.....  | 23 |
| 3.12.1 2110 Video Setup.....   | 24 |
| 3.12.2 2110 Audio Setup.....   | 25 |
| 3.12.3 2110 Anc Setup.....   | 26 |
| 3.13 videoQC URL/URI From Browser.....                               | 27 |

|  |    |
|--|----|
| 3.14 Application Specific Notes.....               | 27 |
| 3.14.1 VLC (version 3.0.8 and greater).....        | 27 |
| 3.14.2 OBS - Open Broadcast System.....            | 27 |
| 3.14.3 Marshall and other Cameras.....             | 27 |
| 4 Workflows.....                                   | 28 |
| 4.1 Work from home/cloud/remote monitoring.....    | 28 |
| 4.2 Production team sharing/collaboration.....     | 28 |
| 4.3 Cloud production or capture feed.....          | 28 |
| 4.4 IP format conversion.....                      | 29 |
| 4.5 Cloud to cloud.....                            | 29 |
| 5 Quick Start – SRT/RTP/UDP.....                   | 30 |
| 6 Quick Start – RTMP.....                          | 37 |
| 7 FlowCaster Configuration.....                    | 44 |
| 8 Adobe.....                                       | 45 |
| 8.1 Adobe Premiere.....                            | 45 |
| 8.2 FlowCaster Configuration Dialog.....           | 47 |
| 8.2.1 Transmit Type.....                           | 47 |
| 8.2.2 URL.....                                     | 48 |
| 8.2.3 Latency.....                                 | 49 |
| 8.2.4 Encryption.....                              | 49 |
| 8.2.5 Password.....                                | 49 |
| 8.2.6 User.....                                    | 49 |
| 8.2.7 Stream #.....                                | 49 |
| 8.2.8 Compression.....                             | 49 |
| 8.2.9 Structure.....                               | 49 |
| 8.2.10 Bit Rate.....                               | 50 |
| 8.2.11 Receiver Supports HDR Signaling.....        | 50 |
| 8.2.12 Audio Mode.....                             | 50 |
| 8.2.13 Watermark.....                              | 50 |
| 9 Avid.....  | 51 |
| 9.1 Using FlowCaster with Avid Media Composer..... | 51 |
| 9.2 Avid Media Composer.....                       | 51 |
| 9.3 FlowCaster Configuration Dialog.....           | 52 |
| 9.3.1 Transmit Type.....                           | 53 |
| 9.3.2 URL.....                                     | 53 |
| 9.3.3 Latency.....                                 | 54 |
| 9.3.4 Encryption.....                              | 54 |
| 9.3.5 Password.....                                | 54 |
| 9.3.6 User.....                                    | 54 |
| 9.3.7 Stream #.....                                | 54 |
| 9.3.8 Compression.....                             | 55 |
| 9.3.9 Structure.....                               | 55 |

|   |    |
|---|----|
| 9.3.10 Bit Rate.....                        | 55 |
| 9.3.11 Receiver Supports HDR Signaling..... | 55 |
| 9.3.12 Audio Mode.....                      | 55 |
| 9.3.13 Watermark.....                       | 56 |
| 10 Assimilate SCRATCH.....                  | 57 |
| 11 DaVinci Resolve.....                     | 58 |
| 12 OpenFX Compatible Software.....          | 59 |
| 13 SDI/HDMI/NDI/Desktop Input.....          | 60 |
| 13.1 SDI/HDMI.....                          | 61 |
| 13.2 NDI.....                               | 61 |
| 13.3 Desktop.....                           | 61 |
| 14 Controlling/Configuring.....             | 61 |
| 14.1 Command Line Parameters.....           | 61 |
| 14.2 Configuring.....                       | 62 |

# 1 Copyrights and Trademark Notices

## 1.1 General

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

**Drastic Technologies, Ltd.** – 2110Scope, 4KScope, ccConvert, DDRConfig, Drastic Technologies, Drastic, Drastic.tv, DrasticPreview, FlowCaster, HDRScope, Media File Scanner, MediaNXS, MediaReactor Workstation, MediaReactor, MR Lite, ndiScope, Net-X-Code Channel, Net-X-Code Server, Net-X-Convert, Net-X-Proxy, Net-X-Switcher, Network Video Analyzer, QuickClip, sdiScope, SyncControl videoQC Inspect, videoQC Pro, videoQC View, and videoQC Workstation are registered trademarks of Drastic Technologies, Ltd.

**A&E Television Networks** - A&E Networks is a trademark of A&E Television Networks

**Adobe, Inc.** - Adobe, the Adobe logo, Adobe Premiere, Adobe After Effects, Creative Cloud, Frame.io, and Iridas are either registered trademarks or trademarks of Adobe in the United States and/or other countries.

**Advanced Micro Devices, Inc.** - AMD is a trademark of Advanced Micro Devices, Inc.

**ADVANTECH CO., LTD** - ADVANTECH and B&B are trademarks of ADVANTECH CO., LTD

**aescripts + aeplugins** - ZXPInstaller Copyright aescripts + aeplugins 2023

**AJA Video Systems, Inc.** - AJA® is a registered trademark of AJA Video Systems, Inc. AJA™ is a trademark of AJA Video Systems, Inc. Corvid Ultra®, KONA®, IO®, KUMO®, U-Tap®, and T-Tap® are registered trademarks of AJA Video Systems, Inc.

**Amazon Web Services, Inc.** - Amazon, AWS and Smile Logo, Powered by AWS Logo, AWS Co-Marketing Tools, the Partner Logo, the Program Marks, Amazon Web Services, AWS, AWS S3, and the names of AWS products, services, programs, and initiatives are trademarks or registered trademarks of Amazon Web Services, Inc.

**Amberfin Limited** - AMBERFIN is a trademark of Amberfin Limited.

**AMERICAN BROADCASTING COMPANIES, INC** - ABC is a trademark of AMERICAN BROADCASTING COMPANIES, INC

**Apple Inc.** - Apple, the Apple logo, Final Cut, Final Cut Pro, Apple TV, iOS, iPad, iPhone, iPod touch, iTunes, Mac, Mac OS X, macOS, Shake, Final Cut Pro, ProRes, High Sierra, Mojave, M1, M2, and QuickTime are trademarks of Apple Inc., registered in the U.S. and other countries. OpenCL and the OpenCL logo™ are trademarks owned by Apple Inc. and licensed to the Khronos Group.

**ARRI AG** – ARRI, Arri T-Link, and Alexa are registered trademarks of the ARRI Group

**ASSIMILATE® Inc.** - Assimilate SCRATCH and Assimilate SCRATCH Lab are either trademarks or registered trademarks of ASSIMILATE® Inc. or its subsidiaries in the United States and/or other countries.

**ATI TECHNOLOGIES ULC** - ATI is a trademark of ATI TECHNOLOGIES ULC

**Autodesk, Inc.** - Autodesk, Discreet, Flame, Flare, Smoke, Lustre, Maya, and Moxion are either trademarks or registered trademarks of Autodesk, Inc. or its subsidiaries in the United States and/or other countries.

**Avid Technology, Inc.** - Avid Media Composer®, Avid MediaCentral®, Avid Interplay®, and Avid NewsCutter® are either trademarks or registered trademarks of Avid Technology, Inc. or its

subsidiaries in the United States and/or other countries.

**Axis Communications AB** - Axis is a registered trademark of Axis Communications AB

**Bell Media Inc.** - Bell Media, BNN, CP24, CTV, CTV TWO, Much, MuchMusic and The Comedy Network, and all associated designs and logos are trademarks of Bell Media Inc.

**Belle Nuit Montage** - Matthias Bürcher August 2000-2016. All rights reserved. Written in Switzerland. Starting 2016 Belle Nuit Subtitler is released under the GNU Lesser General Public License

**BirdDog Software Corporation** - BIRDDOG is a trademark of BirdDog Software Corporation

**Blackmagic Design Pty. Ltd.** - DaVinci Resolve, DaVinci Fusion, UltraStudio, DeckLink, Intensity Pro 4K, UltraScope, and RED are either trademarks or registered trademarks of Blackmagic Design Pty. Ltd. or its subsidiaries in the United States and/or other countries.

**Bluefish Technologies** - Bluefish444, IngeSTore, Symmetry, Kronos, Epoch, Epoch:Neutron, Fury, Lust, Vengeance HD, Deepblue, Envy SD, and Epoch:SuperNova are trademarks of Bluefish Technologies

**Boris FX, Inc.** - Boris FX, Sapphire, and Silhouette are trademarks of Boris FX, Inc.

**Bridge Digital, Inc.** - Bridge Digital is a trademark of Bridge Digital, Inc.

**Bright Technologies, Inc.** - Bright and Bright Systems are trademarks of Bright Technologies, Inc.

**British Broadcasting Corporation** - BBC is a trademark of British Broadcasting Corporation

**BT Group plc** - BT is a trademark of BT Group plc

**Cable News Network, Inc.** - CNN is a trademark of Cable News Network, Inc.

**Canadian Federal Institutions** - Official symbols of federal institutions, including the Arms of Canada may not be reproduced, whether for commercial or non-commercial purposes, without prior written authorization.

**CANON KABUSHIKI KAISHA** - CANON is a trademark of CANON KABUSHIKI KAISHA

**Catapult Group International Ltd** - Catapult is a trademark owned by Catapult Group International Ltd

**Changsha Kiloview Electronics Co., Ltd** - KILOVIEW is a trademark of Changsha Kiloview Electronics Co., Ltd

**Charter Communications Inc.** - Charter Communications is a trademark of Charter Communications Inc.

**CineSys LLC** - CineSys is a registered trademark of CineSys LLC.

**Cisco Systems, Inc.** - Cisco, and Webex are registered trademarks of Cisco Systems, Inc.

**Cloudfirst Technology Solutions Inc.** - Cloudfirst is a registered trademark of Cloudfirst Technology Solutions Inc.

**Codex Corporation** - CODEX and Action Cam are trademarks of Codex Corporation

**Comcast Corporation** - Sky UK Limited is a wholly owned subsidiary of Comcast Corporation

**Comtrol Corporation** - Comtrol is a registered trademark of Comtrol Corporation

**CoreCodec, Inc.** - MATROSKA is a trademark of CoreCodec, Inc.

**Corel Corporation** - WinZip, the WinZip vise and file logo, and Pinnacle are registered trademarks of Corel Corporation

**CORSAIR MEMORY, INC.** - ELGATO is a trademark of CORSAIR MEMORY, INC.

**Corus Entertainment Inc.** - CORUS is a trademark of Corus Entertainment Inc.

**Crayon Software Experts Spain SL** - Crayon is a trademark of Crayon Software Experts Spain SL

**CrypKey Inc (formerly Kenonics)** - CrypKey is a registered trademark of CrypKey Inc.

**Deluxe Media Inc.** - Deluxe is a trademark of Deluxe Media Inc.

**Digital Formation, Inc.** - Digital Formation is a Copyright of Digital Formation, Inc.

**Digital Video Systems Ltd** - DVS is a trademark of Digital Video Systems Ltd

**Digital Vision World** - Digital Vision World is an operating brand of BlissTek Ltd. BlissTek Ltd.

Digital Vision Nucoda is either a trademark or registered trademark of BlissTek Ltd. or its subsidiaries in England, Wales, and/or other countries.

**DIGITNOW!** - Digitnow is a trademark of DIGITNOW!

**Docker Inc.** - DOCKER is a trademark of Docker, Inc.

**Dolby Laboratories** – Dolby, Dolby Vision, the double-D symbol, and Millicast are registered trademarks of Dolby Laboratories.

**DSC Labs** - DSC Labs' CamBook, CamAlign, and ChromaDuMonde charts are trademarks or registered trademarks of DSC Labs

**Dublin Core™ Metadata Initiative** - "Dublin Core" is a protected under common law trademark of the Dublin Core™ Metadata Initiative.

**Eastman Kodak Company** - Cineon™ is a trademark of Eastman Kodak Company

**Eaton Corporation plc** - Eaton, Tripp Lite, and PowerAlert are registered trademarks of Eaton Corporation plc

**Empress Media Asset Management (eMAM)** – eMAM, and eMAMDirector are registered trademarks of Empress Media Asset Management (eMAM)

**Entertainment and Sports Programming Network** - ESPN is a trademark of Entertainment and Sports Programming Network

**Epiphan** - All Epiphan product names and logos are trademarks or registered trademarks of Epiphan

**Evercast, LLC** - EVERCAST is a trademark owned by Evercast, LLC

**Evertz Technologies Limited** - Evertz is a registered trademark of Evertz Technologies Limited

**EVS Broadcast Equipment** - EVS is a registered trademark of EVS Broadcast Equipment

**Fabrice Bellard** - FFmpeg is a trademark of Fabrice Bellard

**Filestage GmbH** - Filestage is a trademark of Filestage GmbH

**FilmLight Ltd.** - FilmLight and BaseLight are trademarks of FilmLight Ltd.

**France Télévisions** - France.tv is a trademark of France Télévisions

**Fraunhofer IIS and Thomson Multimedia** - MPEG Layer-3 audio coding technology licensed from Fraunhofer IIS and Thomson Multimedia.

**Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.** - EASYDCP is a trademark and brand of Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V..

**Free Software Foundation (FSF)** - Portions of this product are licensed under LGPL, governed by the GNU LESSER GENERAL PUBLIC LICENSE, published by the Free Software Foundation (FSF).

**Ftrack AB** - FTRACK is a trademark and brand of Ftrack AB

**Gen Digital Inc. (formerly Symantec Corporation and NortonLifeLock)** - Symantec, Symantec Endpoint Virtualization Suite, Sygate, Altiris, and Altiris Virtualization Agent are registered trademarks of Gen Digital Inc.

**Google LLC** – YouTube, Google, Google Cloud, Google.meet.com, and Android are registered trademarks of Google LLC

**GoPro, Inc.** - Cineform® is a trademark or registered trademark of GoPro, Inc.

**Grass Valley USA, LLC** - Grass Valley®, GV®, the Grass Valley logo, and EDIUS® are trademarks or registered trademarks of Grass Valley USA, LLC, or its affiliated companies in the United States and other jurisdictions.

**HaiVision Systems, Inc.** - Haivision is a registered trademark of HaiVision Systems, Inc.

**Harris Corporation** - Harris, and Leitch Technology Corp. are registered trademarks of Harris Corporation

**Hewlett Packard Enterprise Company** – OpenGL and SGI are registered trademarks and the OpenGL SC logo is a trademark of Hewlett Packard Enterprise Company

**Hewlett Packard Group LLC** - HP is a trademark of HP Hewlett Packard Group LLC.

**i-scream** - i-scream is a trademark of i-scream

**Ideal Systems Asia Pacific Ltd.** - Ideal Systems is a registered trademark of Ideal Systems Asia Pacific Ltd.

**Ikegami Electronics (USA) Inc.** - EditCam is a registered trademark of Ikegami Electronics (USA)



Inc.

**Indiecam GmbH** - IndieCam is a registered trademark of Indiecam GmbH

**INOGENI Inc** - INOGENI® is a Registered Trademark and TOGGLE is a Trademark of INOGENI Inc

**Institute of Electrical and Electronics Engineers** - IRE is a trademark of the Institute of Electrical and Electronics Engineers

**INTEL CORPORATION** - INTEL is a trademark of INTEL CORPORATION

**International Business Machines Corporation (“IBM”)** - IBM® is a trademark owned by International Business Machines Corporation (“IBM”) and might also be trademarked or a registered trademark in other countries

**Interactive Effects, Inc.** - Piranha is a registered trademark of Interactive Effects, Inc.

**Intraware, Inc.** – Intraware is a registered trademark of Intraware, Inc.

**IO Industries Ltd.** - IO Industries is a trademark of IO Industries Ltd.

**Iteris, Inc.** - Odetics is a registered trademark of Iteris, Inc.

**JVC KENWOOD CORPORATION** - JVC is a trademark of JVC KENWOOD CORPORATION

**Kinefinity Inc.** - KINEFINITY is a trademark of Kinefinity Inc.

**L3Harris Technologies, Inc.** - Louth is a trademark of L3Harris Technologies, Inc.

**LeeLu Soft** - Watch 4 Folder is a trademark of LeeLu Soft

**LinkedIn Corporation** - LinkedIn is a trademark of LinkedIn Corporation

**Linus Torvalds** - Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

**Logitech International SA** - LOGITECH is a trademark of Logitech International SA

**LogMeIn, Inc.** - GoTo is a trademarks and service marks of LogMeIn, Inc., and may be registered in the U.S. Patent and Trademark Office and in other countries.

**Louper.io Ltd** - Louper.io is a trademark of Louper.io Ltd

**Magic Lantern** - Magic Lantern is a registered trademark of Magic Lantern

**MAINCONCEPT GMBH** - MAIN CONCEPT is a trademark of MAINCONCEPT GMBH

**Marshall Electronics, Inc.** - Marshall is a registered trademark of Marshall Electronics, Inc.

**Mastercard International Incorporated** - Mastercard is a trademark of Mastercard International Incorporated

**Matrox Electronic Systems, Ltd** - Matrox and Matrox product names are registered trademarks and/or trademarks of Matrox Electronic Systems, Ltd.

**MediaArea.net SARL** - MediaInfo - Copyright © 2002-2013 MediaArea.net SARL. All rights reserved.

**Mellanox Technologies, Inc** - Mellanox® and ConnectX® are registered trademarks of Mellanox Technologies, Inc

**Meta Platforms, Inc** - Facebook and Instagram are trademarks of Meta Platforms, Inc

**Metro-Goldwyn-Mayer Studios, Inc.** - Metro Goldwyn Mayer, and MGM, are trademarks of Metro-Goldwyn-Mayer Studios, Inc.

**Microsoft Corporation** – Microsoft: Windows®, Video For Windows (VFW), DirectShow, Microsoft, Skype, Microsoft Azure, Microsoft Teams, Wave Mapper, Microsoft, Windows NT|2000|XP|XP Professional|Server 2003|Server 2008 |Server 2012, Windows 7, Windows 8, Media Player, Media Encoder, Windows Defender, Microsoft Office, .Net, Internet Explorer, SQL Server 2005|2008|2012|2014, Windows Media Technologies and Internet Explorer are trademarks of Microsoft Corporation.

**MPEG LA** - MPEG LA licenses patent pools covering essential patents required for use of the MPEG-2, MPEG-4, IEEE 1394, VC-1, ATSC, MVC, MPEG-2 Systems, AVC/H.264 and HEVC standards.

**Nanjing Magewell Electronics Co.** - Magewell™ , ULTRA STREAM® and (the MAGEWELL Logo) are trademarks or registered trademarks of Nanjing Magewell Electronics Co.

**National Aeronautics and Space Administration** - NASA is a registered trademark of The



National Aeronautics and Space Administration

**National Geographic Society** - NATIONAL GEOGRAPHIC is a trademark of National Geographic Society

**NBA Properties, Inc.** - NBA and the NBA logo are trademarks of NBA Properties, Inc.

**NBC UNIVERSAL MEDIA, LLC** - NBC and NBC Universal are trademarks of NBC UNIVERSAL MEDIA, LLC

**Netflix, Inc.** - Netflix is a registered trademark of Netflix, Inc.

**NewTek, Inc.** - NDI, TriCaster, 3Play, TalkShow, Video Toaster, LightWave 3D, and Broadcast Minds are registered trademarks of NewTek, Inc.

**Nexidia Inc.** - NEXIDIA is a trademark owned by Nexidia Inc.

**NGC Corporation** - NGC is a registered trademark of NGC Corporation

**Nippon Hatsujo Kabushiki Kaisha** - NHK is a trademark of Nippon Hatsujo Kabushiki Kaisha

**Nokia Corporation** - OSPREY is a trademark owned by Nokia Corporation

**NVIDIA Corporation** - NVIDIA, the NVIDIA logo, NVIDIA Quadro, Rivermax, BlueField2, PhysX, and NVIDIA RTX are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and/or other countries

**Object Matrix Limited** - ObjectMatrix, and Object Matrix are registered trademarks of Object Matrix Limited

**Omneon Video Networks, Inc** - Omneon is a trademark of Omneon Video Networks, Inc

**ONVIF** - the ONVIF primary trademark is the word, "ONVIF". This trademark has been registered in the United States, European Union, China, Japan and other countries throughout the world.

**OpenSSL Project Authors** - OpenSSL is a trademark of OpenSSL Project Authors

**Oracle Corporation** - Oracle®, Java, Front Porch Digital, and MySQL are registered trademarks of Oracle Corporation and/or its affiliates.

**Panasonic Holdings Co., Ltd** - Panasonic, and Varicam are trademarks of Panasonic Holdings Co., Ltd

**PayPal, Inc.** - PAYPAL is a trademark of PayPal, Inc.

**PELTON INTERACTIVE, INC.** - PELTON is a trademark of PELTON INTERACTIVE, INC.

**Pioneer Corporation** - Pioneer is a registered trademark of Pioneer Corporation

**RE:Vision Effects, Inc.** - RE:Vision Effects is a registered trademark of RE:Vision Effects, Inc.

**Red Hat, Inc.** - Red Hat, and the Red Hat logo are trademarks or registered trademarks of Red Hat, Inc. or its subsidiaries in the United States and other countries

**Rogers Communications Inc.** - Rogers and related marks are trademarks of Rogers Communications Inc. or an affiliate, used under licence.

**Shenzhen Yunlang Technology Co., Ltd.** - MOKOSE is a trademark of Shenzhen Yunlang Technology Co., Ltd.

**Sigma Design Company, LLC** - Sigma Design is a registered trademark of Sigma Design Company, LLC

**Sinclair Broadcast Group, Inc.** - Sinclair Broadcast Group is a trademark of Sinclair Broadcast Group, Inc.

**Snell & Wilcox Limited** - SNELL & WILCOX, and Quantel are trademarks owned by Snell & Wilcox Limited

**Society of Motion Picture and Television Engineers** - SMPTE is a trademark of Society of Motion Picture and Television Engineers.

**SoftNI Corporation** – SoftNI is a trademark of SoftNI Corporation

**Sony Corporation** – Sony, Sony DVD Architect, DVD, Catalyst, and Vegas are trademarks of Sony Corporation and/or its affiliates.

**Streambox Inc.** - Streambox is a trademark of Streambox Inc.

**STREAMWELL LLC** – Streamwell is a trademark of STREAMWELL LLC

**Technicolor Creative Studios SA** - Technicolor is a trademark of Technicolor Creative Studios SA

**TechSmith Corporation** - CAMTASIA STUDIO is a trademark of TechSmith Corporation

**Tektronix, Inc.** - Tektronix® and all identified Tektronix trademarks and logos are the property of Tektronix, Inc. or its wholly-owned subsidiaries

**Telestream, LLC** - Telestream, is a registered trademark, and MacCaption and CaptionMaker are trademarks of Telestream, LLC

**The Apache Software Foundation (ASF)** - Apache is a registered trademark of The Apache Software Foundation

**The Foundry Visionmongers Ltd.** - Nuke™ is a trademark of The Foundry Visionmongers Ltd.

**The Perl Foundation** - Perl and the Perl logo are trademarks of The Perl Foundation

**The Qt Company Ltd** - The Qt Company Ltd and its subsidiaries (“The Qt Company”) is the owner of Qt trademarks (“Qt trademarks”) worldwide, and “froglogic”, “Squish” and “Coco” are trademarks of the Qt Company Ltd.

**THE UNIVISION NETWORK LIMITED PARTNERSHIP** - UNIVISION is a trademark of THE UNIVISION NETWORK LIMITED PARTNERSHIP

**The Walt Disney Company** - Disney, and The Walt Disney Company are trademarks of The Walt Disney Company. LucasFilm is a wholly owned subsidiary of The Walt Disney Company

**Toolfarm.com Inc.** - Toolfarm is a registered trademark of Toolfarm.com Inc.

**Trend Micro Inc.** - TrendMicro, and TrendMicro System Protection and registered trademarks of Trend Micro Inc.

**Truevision, Inc** - TARGA is a registered trademark of Truevision, Inc

**TV Asahi Corporation** - TV Asahi is a trademark of TV Asahi Corporation

**Twitch Interactive, Inc** - TWITCH, the TWITCH Logo, the Glitch Logo, and/or TWITCHTV are trademarks of Twitch Interactive, Inc. or its affiliates.

**Twitter, Inc.** - Twitter is a trademark of Twitter, Inc.

**Tyler Perry Studios, LLC** - Tyler Perry Studios is a trademark of Tyler Perry Studios, LLC

**Vefxi Corporation** - VEFXi DiamondBlade is a registered trademark of Vefxi Corporation

**Video Clarity, Inc.** - Video Clarity and ClearView are trademarks of Video Clarity, Inc.

**VideoLAN Non-profit Organization** - VideoLAN, VLC, VLC media player and x264 are trademarks internationally registered by the VideoLAN non-profit organization

**Visa International** - Visa is a registered trademark of Visa International

**Vision Research, Inc** - PHANTOM is a trademark of Vision Research, Inc

**Warner Bros. Discovery** – Discovery, Turner, and Home Box Office, Inc. (HBO), are trademarks of Warner Bros. Discovery

**Weisscam GmbH** - Weisscam is a trademark and brand of Weisscam GmbH

**Wizards of OBS, LLC** – UNIX, OBS, Open Broadcast Software, the OBS logo, and OBS Studio are trademarks of Wizards of OBS, LLC (The Company)

**Workflow Intelligence Nexus** - Workflow Intelligence Nexus is a trademark of Workflow Intelligence Nexus

**World Wrestling Entertainment, Inc.** - WWE is a trademark of World Wrestling Entertainment, Inc.

**Wowza Media Systems, LLC** - Wowza is a trademark of Wowza Media Systems, LLC

**wxWidgets** - wxWidgets is a trademark of wxWidgets

**Xceed Software Inc.** - Xceed DataGrid for JavaScript, Xceed Ultimate ListBox for Silverlight, Xceed DataGrid for Silverlight, Xceed DataGrid for WPF, Xceed Grid for .NET, Xceed Zip for .NET, Xceed Real-Time Zip for Silverlight, Xceed Upload for Silverlight, Xceed Zip Compression Library, Xceed FTP for .NET, Xceed Chart for .NET, Xceed Chart for ASP.NET, Xceed SmartUI for .NET, Xceed SmartUI, Xceed Encryption Library, Xceed Binary Encoding Library, Xceed Streaming Compression Library, Xceed Streaming Compression for .NET, Xceed Zip for .NET Compact Framework, Xceed Ultimate Suite, Xceed Data Manipulation Suite, Xceed Absolute Packager are trademarks of Xceed Software Inc.

**Xena Networks** - Xena is a trademark of Xena Networks

**Zapex Technologies** - Zapex is a registered trademark of Zapex Technologies

**Zhang Haijun** - RYBOZEN is a trademark of Zhang Haijun

**Ziflow Limited** - Ziflow is a trademark of Ziflow Limited

**Zixi** - Zixi Software and any logos or icons identifying Zixi and the Zixi Software are trademarks of Zixi.

**ZLIB** - The ZLIB Compressed Data Format Specification is Copyright (C) 1995-2013 Jean-Loup Gailly and Mark Adler.

**Zoom Video Communications, Inc.** - Zoom and the Zoom logo are trademarks of Zoom Video Communications, Inc.

All other trademarks are the property of their respective owners

**LGPL:** Portions of this product are licensed under LGPL, governed by the following license:

---

## 1.2 GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright © 2007 Free Software Foundation, Inc. <<https://fsf.org/>>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

### 1.2.1.1 0. *Additional Definitions.*

As used herein, “this License” refers to version 3 of the GNU Lesser General Public License, and the “GNU GPL” refers to version 3 of the GNU General Public License.

“The Library” refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An “Application” is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A “Combined Work” is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the “Linked Version”.

The “Minimal Corresponding Source” for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The “Corresponding Application Code” for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

### 1.2.1.2 1. *Exception to Section 3 of the GNU GPL.*

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

### 1.2.1.3 2. *Conveying Modified Versions.*

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or
- b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

### **3. Object Code Incorporating Material from Library Header Files.**

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

- a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the object code with a copy of the GNU GPL and this license document.

### **4. Combined Works.**

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

- a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the Combined Work with a copy of the GNU GPL and this license document.
- c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.
- d) Do one of the following:
  - 0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.
  - 1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.
- e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

### **5. Combined Libraries.**

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 that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.
- b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

## ***6. Revised Versions of the GNU Lesser General Public License.***

The Free Software Foundation may publish revised and/or new versions of the GNU 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 as you received it specifies that a certain numbered version of the GNU Lesser General Public License “or any later version” applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy’s public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

Other brands, product names, and company names are trademarks of their respective holders, and are used for identification purpose only.

## 1.3 MPEG Disclaimers

### 1.3.1 MPEGLA MPEG2 Patent

ANY USE OF THIS PRODUCT IN ANY MANNER OTHER THAN PERSONAL USE THAT COMPLIES WITH THE MPEG-2 STANDARD FOR ENCODING VIDEO INFORMATION FOR PACKAGED MEDIA IS EXPRESSLY PROHIBITED WITHOUT A LICENSE UNDER APPLICABLE PATENTS IN THE MPEG-2 PATENT PORTFOLIO, WHICH LICENSE IS AVAILABLE FROM MPEG LA, LLC, 4600 S. Ulster Street, Suite 400, Denver, Colorado 80237 U.S.A.

### 1.3.2 MPEGLA MPEG4 VISUAL

THIS PRODUCT IS LICENSED UNDER THE MPEG-4 VISUAL PATENT PORTFOLIO LICENSE FOR THE PERSONAL AND NON-COMMERCIAL USE OF A CONSUMER FOR (i) ENCODING VIDEO IN COMPLIANCE WITH THE MPEG-4 VISUAL STANDARD (“MPEG-4 VIDEO”) AND/OR (ii) DECODING MPEG-4 VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL AND NON-COMMERCIAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION INCLUDING THAT RELATING TO PROMOTIONAL, INTERNAL AND COMMERCIAL USES AND LICENSING MAY BE OBTAINED FROM MPEG LA, LLC. SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com).

### 1.3.3 MPEGLA AVC

THIS PRODUCT IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO (i) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD (“AVC VIDEO”) AND/OR (ii) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com).

### 1.3.4 MPEG4 SYSTEMS

THIS PRODUCT IS LICENSED UNDER THE MPEG-4 SYSTEMS PATENT PORTFOLIO LICENSE FOR ENCODING IN COMPLIANCE WITH THE MPEG-4 SYSTEMS STANDARD, EXCEPT THAT AN ADDITIONAL LICENSE AND PAYMENT OF ROYALTIES ARE NECESSARY FOR ENCODING IN CONNECTION WITH (i) DATA STORED OR REPLICATED IN PHYSICAL MEDIA WHICH IS PAID FOR ON A TITLE BY TITLE BASIS AND/OR (ii) DATA WHICH IS PAID FOR ON A TITLE BY TITLE BASIS AND IS TRANSMITTED TO AN END USER FOR PERMANENT STORAGE AND/OR USE. SUCH ADDITIONAL LICENSE MAY BE OBTAINED FROM MPEG LA, LLC. SEE [HTTP://WWW.MPEGLA.COM](http://www.mpegla.com) FOR ADDITIONAL DETAILS.

## 1.4 Drastic Technologies Limited Warranty and Disclaimers

Drastic Technologies Ltd (the Company) warrants to the original registered end user that the product will perform as stated below for a period of ninety (90) days from the date of licensing or; in the case of



hardware, for a period matching the warranty period offered by the original manufacturer of said equipment.

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

### 1.4.1 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.

### 1.4.2 Software Updates

Except as may be provided in a separate agreement between Drastic Technologies and You, if any, Drastic Technologies is under no obligation to maintain or support the Software and Drastic Technologies has no obligation to furnish you with any further assistance, technical support, documentation, software, update, upgrades, or information of any nature or kind.

### 1.4.3 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.

### 1.4.4 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 Drastic Technologies Ltd 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.

## 1.4.5 Damages

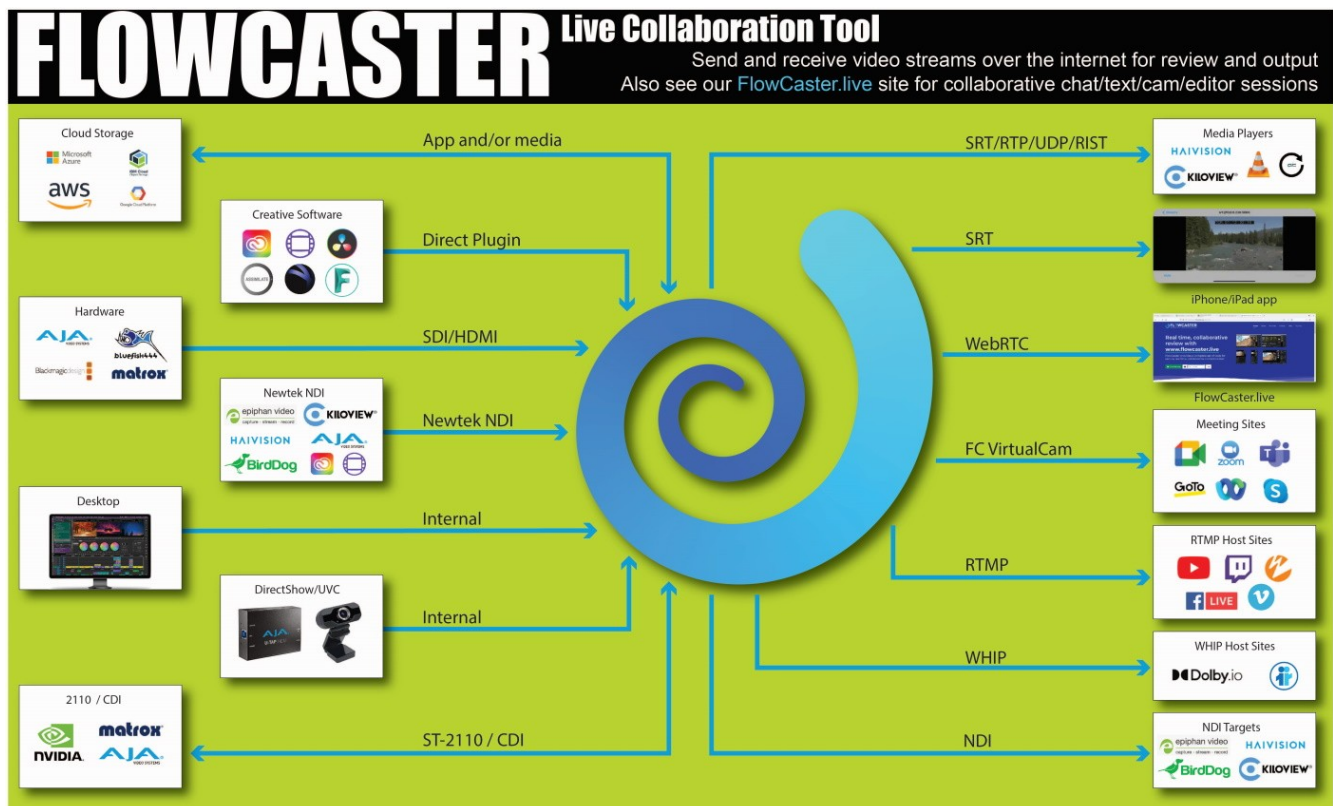
Drastic Technologies Ltd SHALL NOT BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF YOUR USE OR INABILITY TO USE THE PRODUCT, OR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, EVEN IF THE COMPANY HAS BEEN ADVISED OF 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:

Drastic Technologies Ltd  
523 The Queensway, Suite 201  
Toronto, ON, M8V 1J7  
Telephone: (416) 255-5636

## 2 Introduction

FlowCaster software provides a secure connection from your creative software to a local monitor, no matter where the software or the monitor is. FlowCaster lets you keep your creative software and media in your facility or cloud, while allowing your editors and artists working remotely to get the pixel perfect display they need to create their magic. FlowCaster provides direct plugins for most creative software, and convenient tools to share any other software they need.



Video may be transported via the Secure Reliable Transport (SRT) protocol, with full end to end encryption, low latency and excellent error recovery. FlowCaster also supports UDP, RTP, RTMP and WebRTC for alternate workflow sharing. Inside the secure pipe are up to 32 channels of high quality audio and your choice of lightly compressed video, using h.264, h.264/HEVC or JPEG-2000 up to 16 bits per pixel component. SDR and HDR/HLG signals are supported, as well as alternate color spaces like Rec 709, BT 2020 and P3. Any video resolution and frame rate is supported, and quality settings allow for even low bandwidth connections to take advantage of FlowCaster.

## 3 Using IP Video Streaming

Drastic software supports a number of IP video standards in videoQC, Net-X-Code Server, FlowCaster and other products. To access these streams, a URL style string is used to describe them. For some sources, like RTSP, this string is fairly standard. For others, like NDI, a URL style has been developed to allow those streams to be specified. Currently, `udp://`, `rtp://`, `srt://`, `rtsp://`, `ndi://`, `s2022://` and `s2110://` are supported. This document describes the URLs' format in more detail. We have also added some application specific notes for connecting our software to other applications.

### 3.1 Basic IP Video URLs

An IP video URL will always start with the type of stream you are expecting. Some of the types include `udp://`, `rtp://`, `rtsp://`, `ndi://`, `s2022://` and `s2110://`. This will be followed by an IP address or resolvable name for the address of the stream. For some streams there will be a port value, and then a description of the stream on that device. For videoQC, there is also a special form that can be used to launch videoQC, FlowCaster iOS Player or FlowCaster Android Player automatically from a browser link. For these, simply preface the link you want with `videoqc://` and remove the extra colon from the link.

### 3.2 UDP and RTP

**UDP** [User Datagram Protocol] and **RTP** [Real-time Transport Protocol] streams can be elementary video or audio streams, or more commonly a transport stream with PMT/PAT (Program Association Table/Program Mapping Table) and a number of streams within it. For UDP and RTP, you can specify a TCP (direct) address, but normally it will be a multicast group address, and also a port is normally specified. Here are a few examples:

- `udp://239.254.40.40:5004`
- `rtp://239.100.20.20:50004`
- `rtp://239.100.30:31:1234`

### 3.3 SRT

**SRT** [Secure Reliable Transport] streams contain a transport stream with PMT/PAT and a number of streams within it. For SRT you can specify an address and a port. There are three modes for SRT: listener, caller and rendezvous. If you are a listener, you can only connect with a caller and vice versa. For Rendezvous, both the sender and receiver must be in rendezvous mode. A password for encrypted service can also be set. Here is some information on the modes:

- listener - this has to be one of your local IP addresses, and acts as a server waiting for a connection, so it must be directly visible to the caller (not behind a firewall)
- caller - this calls out to a remote IP that is running as a listener. You must be able to reach the IP directly (e.g. no firewall)
- rendezvous - this connects bidirectionally, allowing it to connect through firewalls without extra configuration. Each side of the rendezvous uses the external (internet facing) IP address of their internet connection. This allows the signals to connect and pass through the firewall

Here are a few examples:

- srt://239.254.40.40:5004?mode=listener
- srt://172.12.25.20:5006?mode=caller
- srt://239.100.30.31:1234?mode=caller&password=thisisapassword&user=thisisauser

Possible parameters include:

- mode=
  - caller
  - listener
  - rendezvous
- password=<string>
- keylen=16|24|32
- username=<string>
- streamid=#
- latency=#
- buffering=#
- maxbw=#

### 3.4 RIST

**RIST** [Reliable Internet Stream Transport] streams are UDP based self correcting connections. RIST supports three profiles: Simple, Main, and Advanced. Both the sender and the receiver must be in the same mode. The receiver will be the server and listen for a connection. The sender will be the client and connect to the receiver to send the data. The protocol will use two ports, the lower of which is specified in the URL and the higher which is the lower plus one. The lower port must be even.

Here are a few examples:

- rist://10.0.0.123:5000?mode=listener&profile=main
- rist://192.168.1.22?mode=caller&profile=simple

Possible parameters include:

- mode: listener (for server/receiver), caller (for client/sender) - Required
- profile: simple. main or advanced
- password: encryption key
- buffering: amount of buffer in milliseconds

### 3.5 RTSP

**RTSP** [Real Time Streaming Protocol] streams require not only the device address, but also the description of the source of the stream you are accessing on that device. RTSP streams are also often user/password protected, so you may have to send a user/password in the form "<user>:<pass>@" just before the device identifier. Here are a few examples, and their sources:

- rtsp://192.168.100.10/axis-media/media.amp (an Axis camera)
- rtsp://192.168.199.11/user:pass@/video1+audio1 (a Marshall camera, with password)
- rtsp://192.168.160.20:/onvif/media.amp (an OnVIF source)

- `rtps://192.168.150:11/video1?videocodec=h264` (a Marshall camera, video only, force h.264)

## 3.6 RTMP

**RTMP** [Real-Time Messaging Protocol] is normally used to stream one video and one stereo audio channel to a website for distribution to multiple watchers. In modern sites, the RTMP is actually re-wrapped into HLS, which is then viewed by the end user. To connect to an RTMP site, like `flowcaster.live`, `youtube.com`, and `twitch.com`, you will need the URL/Link and the key/secret. For YouTube, they are available after you 'go live' as the Stream URL and the Stream Key. Once you have them, you simply add a slash and the Stream Key to the Stream URL. For example:

**Stream URL:** `rtmp://a.rtmp.youtube.com/live2`

**Stream Key:** `j2bg-a6ck-8t48-w2y2-aaaa`

**Final URL:** `rtmp://a.rtmp.youtube.com/live2/j2bg-a6ck-8t48-w2y2-aaaa`

## 3.7 WebRTC

**WebRTC** [Web Real-Time Communication] is a browser native method of sharing video, audio and data. It is primarily used in chat programs, like Google Meet. When sending via WebRTC, FlowCaster appears as a person in the chat, with whatever video and audio it is receiving being sent to the chat. Here is an example:

- `webrtc://flowcaster.chat?meetingid=asre-dsec-asds-seff&name=flowcaster`

## 3.8 WHIP (WebRTC – Millicast)

**WHIP** [WebRTC-HTTP ingestion protocol] is a simpler negotiation system for WebRTC. Currently in use by Millicast to receive streams for worldwide, low latency transmission, FlowCaster and Net-X-Code support sending video signals via WHIP. WHIP requires an authorization code (available from the Millicast config pages) and a stream name. The stream name is added to the end of `whip://director.millicast.com/api/whip/` and the auth token is a parameter that starts with `auth=`. Here is an example

- `whip://director.millicast.com/api/whip/kwky3g6g?auth=48ce3daa09cd8355f80fc0d37005f9422a62bebf9b6411b61cfb1cfb2fa`

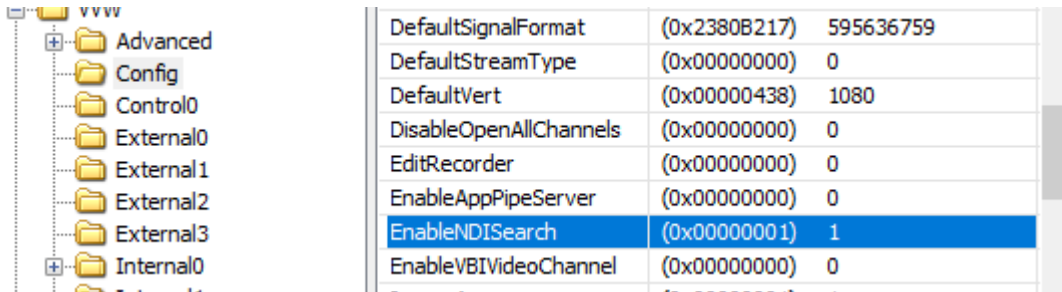
## 3.9 BLS (Bliss Protocol)

**BLS** [Browser Live Stream] is a protocol developed by Drastic to send live video, via an encrypted channel directly to a user's browser. It allows for much higher quality video than WebRTC, while still not requiring any plugins or special setup to present audio and video directly in a modern, HTML5 browser. Here are a couple examples:

- `bls://10.0.0.234:5000`
- `blss://192.168.202.200:3000?password=kfiwgt84jsd&remoteip=120.32.54.6`

### 3.10 NDI

**NDI** [Network Device Interface] is a video over IP protocol from NewTek®. It requires a device name and a source name to access NDI sources. NDI sources may also be searched on the local network. To enable the search, run DDRConfig and select the Advanced tab. Go to /VFW/Config and change EnableNDISearch = 1. If it does not exist, then create a new Numeric value for it.



To specify an NDI stream, use the device name, followed by a space, and then the source name within brackets. Here are some examples:

- ndi://USER-PC (Desktop [2])
- ndi://TestCameraSource (ISO\_1)
- ndi://PC2 (Google Chrome [1])

### 3.11 CDI

**CDI** [Cloud Digital Interface] is an advanced, fully uncompressed, protocol for use within Amazon VMs. It transports video in a number of formats, as well as audio, time code and other metadata. While it is possible to use CDI with Amazon's enhanced network backbone, it is safest and most efficient, within their network stacks. The URL will include a local IP and port, with an optional remote IP, adapter and ID. Here are some examples:

- cdi://10.0.0.2:6000
- cdi://10.0.0.1:6000?remoteip=10.0.0.200&adapter=EFA&id=2

Possible parameters include:

- remoteip: a remote computer to connect to exclusively
- adapter: the transport, EFA (Elastic Fabric Adapter) or socket. EFA is the default.
- id: a numeric value to specify the stream



## 3.12 S2022 and S2110

The SMPTE 2022-6 and SMPTE 2110 protocols can be accessed via SDP (Session Description Protocol) or manual setup. To access an SDP source:

- s2202://192.168.101.200/channel1.sdp
- s2110://mainsources.drastic.ca/crosspoint10.sdp

For some Drastic software, the source can be set up manually. For S2022, this is a single set of Source IP, Source Port, Destination IP, Destination Port and Interface address. One or any combination of these can be used to describe the source of the SMPTE 2022-6 stream, which contains all the video, audio and HANC/VANC channels. For SMPTE 2110, up to three sets of the same information are required to describe the video, audio and anc streams, which are all separate. A PTP (Precision Time Protocol) grandmaster may also be specified.

ST-2110 and ST-2022 require one of the following environments:

[NVIDIA Bluefield-2](#) or [Connect-X 6](#) (requires Rivermax license)

View the [Video Overview](#)

Here is a [Rivermax Setup page](#)

SMPTE 2110 hardware

Matrox: [ST 2110 Network Adapters](#)

AJA: [Kona IP](#)

### 3.12.1 2110 Video Setup

Here is the ST2110 video configuration dialog from videoQC:

The screenshot shows the 'IP Video Setup' dialog box for 'channel-0'. The 'Override NMOS Settings' checkbox is checked. The configuration is as follows:

| Section                | Parameter                | Value                 | Lock                                     |
|------------------------|--------------------------|-----------------------|--|
| Receive                | Type                     | SMPTE-2110            |  |
|                        | Video Format             | 1080i 59.94fps (1920) |  |
|                        | Audio Channels / $\mu$ s | 8 / 125               |  |
|                        | Receive                  | IPv4                  | <input type="checkbox"/> lock all        |
|                        | Source Address           | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|                        | Source port              | 5002                  | <input type="checkbox"/> lock            |
| Send                   | Destination Address      | 127 . 0 . 0 . 1       | <input type="checkbox"/> lock            |
|                        | Destination Port         | 5002                  | <input type="checkbox"/> lock            |
|                        | Interface                | 127 . 0 . 0 . 1       | <input checked="" type="checkbox"/> lock |
|                        | Send / $\mu$ s           | IPv4 / 125            |  |
|                        | Source Address           | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|                        | Source Port              | 5002                  | <input type="checkbox"/> lock            |
| Send                   | Destination Address      | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|                        | Destination Port         | 5002                  | <input type="checkbox"/> lock            |
|                        | Interface                | 0 . 0 . 0 . 0         | <input checked="" type="checkbox"/> lock |
|                        | Clock Source             | Internal              |  |
| Clock Info             | GMT Time                 |                       |  |
| Clock Time             | 2023-08-01 T14:37:29.380 |                       |  |
| Clock Mac Address / ID |                          | 0                     |  |

Audio Mode:  Video,  Audio,  Anc

Audio Channel:  Use single flow,  1,  2,  3,  4,  5,  6,  7,  8

Buttons: Load File, Save File, Accept, Cancel, Save Video SDP

### 3.12.2 2110 Audio Setup

Here is the ST2110 audio configuration dialog from videoQC:

The screenshot shows the 'IP Video Setup' dialog box for 'channel-0'. The 'Override NMOS Settings' checkbox is checked. The configuration is as follows:

- Type: SMPTE-2110
- Video Format: 1080i 59.94fps (1920)
- Audio Channels /  $\mu$ s: 8, 125
- Receive: IPv4, lock all (unchecked)
- Source Address: 0 . 0 . 0 . 0, lock (unchecked)
- Source port: 5004, lock (unchecked)
- Destination Address: 239 . 200 . 100 . 11, lock (unchecked)
- Destination Port: 5004, lock (unchecked)
- Interface: 127 . 0 . 0 . 1, lock (checked)
- Send /  $\mu$ s: IPv4, 125
- Source Address: 0 . 0 . 0 . 0, lock (unchecked)
- Source Port: 5004, lock (unchecked)
- Destination Address: 0 . 0 . 0 . 0, lock (unchecked)
- Destination Port: 5004, lock (unchecked)
- Interface: 0 . 0 . 0 . 0, lock (checked)
- Clock Source: Internal
- Clock Info: GMT Time
- Clock Time: 2023-08-01 T14:38:52.330
- Clock Mac Address / ID: [empty] 0

On the right side, there are radio buttons for 'Video', 'Audio' (selected), and 'Anc'. Below that is the 'Audio Channel' section with a 'Use single flow' checkbox (unchecked) and radio buttons for channels 1 through 8.

At the bottom right is a 'Save Audio SDP' button. At the bottom of the dialog are four buttons: 'Load File', 'Save File', 'Accept', and 'Cancel'.

### 3.12.3 2110 Anc Setup

Here is the ST2110 anc (ancillary data) configuration dialog from videoQC:

The screenshot shows the 'IP Video Setup' dialog box for 'channel-0'. The 'Override NMOS Settings' checkbox is checked. The configuration is as follows:

| Section   | Parameter                                    | Value                 | Lock                                     |
|---|--|-----------------------|--|
| Receive   | Type   | SMPTE-2110            |  |
|   | Video Format                                 | 1080i 59.94fps (1920) |  |
| Receive   | Audio Channels / $\mu$ s                     | 8                     | 125                                      |
|   | Receive                                      | IPv4                  | <input type="checkbox"/> lock all        |
| Receive   | <input type="checkbox"/> Source Address      | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Source port         | 5010                  | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Destination Address | 0 . 200 . 100 . 11    | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Destination Port    | 5010                  | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Interface           | 127 . 0 . 0 . 1       | <input checked="" type="checkbox"/> lock |
| Send / $\mu$ s                                  | Type   | IPv4                  | 125                                      |
|   | Send / $\mu$ s                               | 125                   |  |
| Send / $\mu$ s                                  | <input type="checkbox"/> Source Address      | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Source Port         | 5010                  | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Destination Address | 0 . 0 . 0 . 0         | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Destination Port    | 5010                  | <input type="checkbox"/> lock            |
|   | <input type="checkbox"/> Interface           | 0 . 0 . 0 . 0         | <input checked="" type="checkbox"/> lock |
| Clock Source                                    | Internal                                     |                       |  |
| Clock Info                                      | GMT Time                                     |                       |  |
| Clock Time                                      | 2023-08-01 T14:39:35.940                     |                       |  |
| <input type="checkbox"/> Clock Mac Address / ID |  | 0                     |  |

On the right side, there are radio buttons for 'Video', 'Audio', and 'Anc' (selected). Below that is an 'Audio Channel' section with a 'Use single flow' checkbox and radio buttons for channels 1 through 8.

At the bottom, there are buttons for 'Load File', 'Save File', 'Accept', and 'Cancel'. A 'Save Anc SDP' button is located in the bottom right corner.

## 3.13 videoQC URL/URI From Browser

videoQC supports being run from a browser, if installed on a Windows or macOS computer, with the special videoqc:// URL/URI. This will also work on Apple and Android devices with our FlowCaster Player apps (available free from the app store). In the case of videoqc://, it is not a protocol itself, but rather it loads the player and passes the rest of the protocol to it. So if you wanted an automatic link to bring up the srt stream: srt://239.100.30:31:1234?

mode=caller&password=thisisapassword&user=thisisauser, you would add this to the videoqc:// start and remove its colon, as below:

videoqc://srt://239.100.30:31:1234?mode=caller&password=thisisapassword&user=thisisauser

## 3.14 Application Specific Notes

### 3.14.1 VLC (version 3.0.8 and greater)

VLC supports a number of streaming formats from the menu Media | Open Network Stream. Here you can read our UDP://, RTP:// and SRT://. If you are using multicast IP addresses (eg. 239.###), VLC prefers that you add an at sign (@) before the ip, like:

rtp://@239.240.30.30:5004

You can also use the @ sign to receive on any address using just the port:

udp://@:5004

For SRT, VLC only supports the being a 'caller', so our software needs to be set up as a listener. A typical setup would be

**SMPT2NET:** srt://172.16.12.25:5000?mode=listener

**VLC:** srt://172.16.12.25:5000

Assuming the IP 172.16.12.25 was the IP of the machine SMPT2NET is running on.

### 3.14.2 OBS - Open Broadcast System

OBS supports UDP, RTP and SRT using its FFMPEG media reader. It will support both listener and caller modes in the latest versions (26.0.2 or greater). The reconnect is not 100% reliable, so if connection is lost, then you may have to open the source again to have it set up. To add a UDP, RTP or SRT source, click the + button in the Source panel and select MediaSource. In the Properties, unclick Local File, add the standard srt string, for listener or caller:

srt://172.16.12.25:5000?mode=listener

Set the input format to "mpegts" without the quotes, and set up the buffering and reconnect to taste.

### 3.14.3 Marshall and other Cameras

Most cameras we have tested operate as callers, so our software will have to be set up as a listener on the local IP the SRT stream is coming in on. Alternately, you can use the all addresses mode by using the 0.0.0.0 IP

srt://0.0.0.0:5000?mode=listener

## 4 Workflows

### 4.1 Work from home/cloud/remote monitoring

The main problem with using creative software remotely is the poor quality of the compressed/low bit rate/random frame rate output signal from shared desktop software. While FlowCaster uses desktop sharing for control of the software, the audio/video signal is transported separately, using low latency/high quality compression and matching frame rate to your project. This gives you the ability to monitor your work as if you were using a hardware output to an independent monitor. FlowCaster also supports HDR/HLG/WCG, any video resolution, up to 32 channels of high quality audio, and ancillary data including closed captions, active format description and v-chip information.

### 4.2 Production team sharing/collaboration

There are a number of ways FlowCaster's audio/video and desktops can be shared to a group for collaboration:

- SRT Multicast or Haivision Gateway - maintain direct control of encrypted feeds by using SRT to all the collaborators. With the gateway, different users can be given different passwords and address/ports that can be fixed to a user's IP address for further security
- RTMP - send your output and desktops to the [www.flowcaster.live](http://www.flowcaster.live) server, or any other RTMP compatible server like twitch/youtube/facebook, and use the server's tools to share live audio/video, host chats and handle authentication
- WebRTC – use [www.flowcaster.live](http://www.flowcaster.live)'s WebRTC compatible meeting rooms, or any other WebRTC compatible server, to support live A/V chat, authentication and text chat for one on one or multiuser collaboration

### 4.3 Cloud production or capture feed

Using SRT, signals from your creative software (Adobe/Avid/Assimilate/DaVinci/etc.) or from baseband feeds (SDI, HDMI, NDI, IP) can be sent directly to the cloud and captured to MXF, MOV, AVI, MP4 or others by the FlowCaster server. Optionally, a proxy file can also be generated.

All FlowCaster Server capture files support edit while record and playback while record, for local clipping or editing in Adobe Premiere. Signals can also be sent from the cloud, from Adobe/Avid/DaVinci/FlowCaster Server via SRT to be played locally as SDI or HDMI using a supported A/V device (AJA, Bluefish444, Blackmagic, Matrox).

## 4.4 IP format conversion

The FlowCaster Server can also be used to convert UDP, RTP, NDI and SRT to a new UDP, RTP, NDI or SRT stream. The server supports both re-wrapping of the compressed data and transcoding of the signal to a new compression type. As well as IP to IP, both baseband (SDI/HDMI) to IP and IP to baseband are also supported.

## 4.5 Cloud to cloud

FlowCaster supports cloud to cloud transmission. Both compressed, via RTP, UDP and SRT, and uncompressed, via Amazon CDI, transports are supported. FlowCaster also has the ability to read and write directly from cloud object storage, like Amazon's S3 storage. File mode may also be used for guaranteed copies of media to be moved from one point to another.



## 5 Quick Start – SRT/RTP/UDP

Here is a quick start on demoing FlowCaster’s SRT output:

Download and install FlowCaster

You will need at least a temp license to use all the features of FlowCaster. Please refer to the following page for info on how to license: <http://license.drastictech.com>

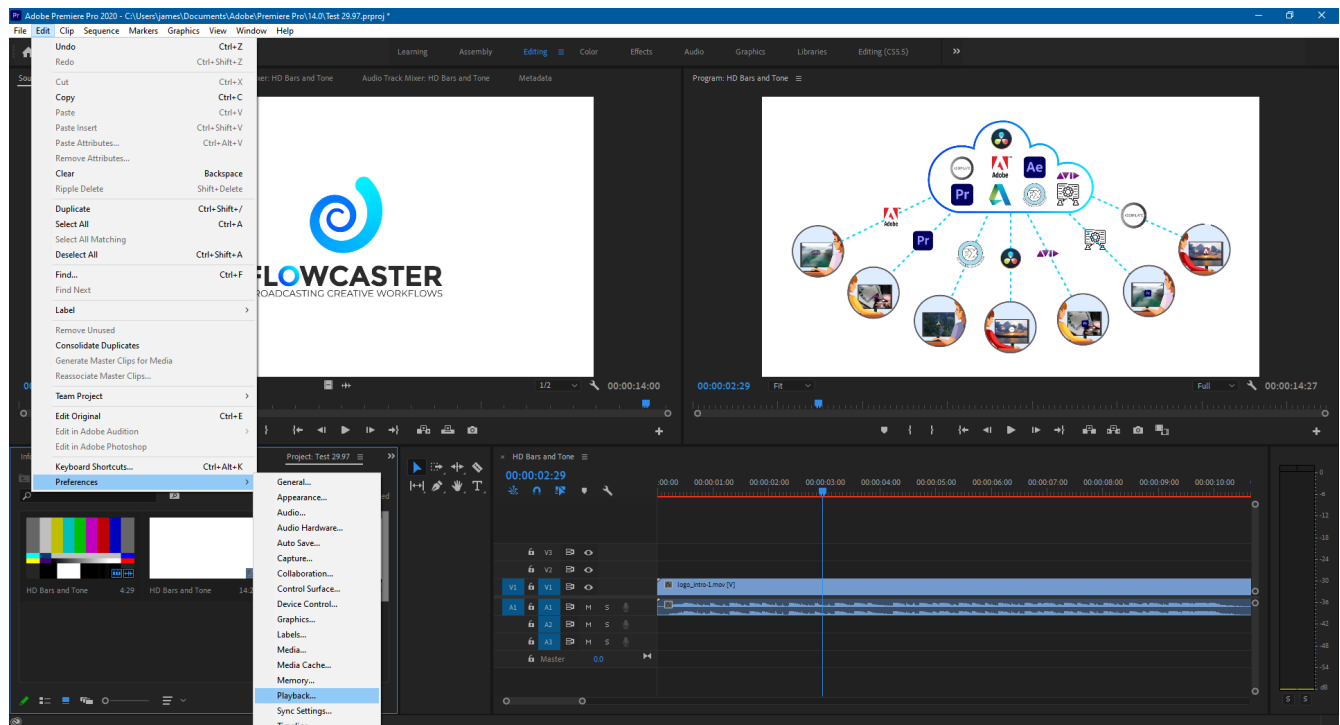
Download and install VLC (on the same machine to start with)

Optional: Install the Haivision Play Pro app on your phone

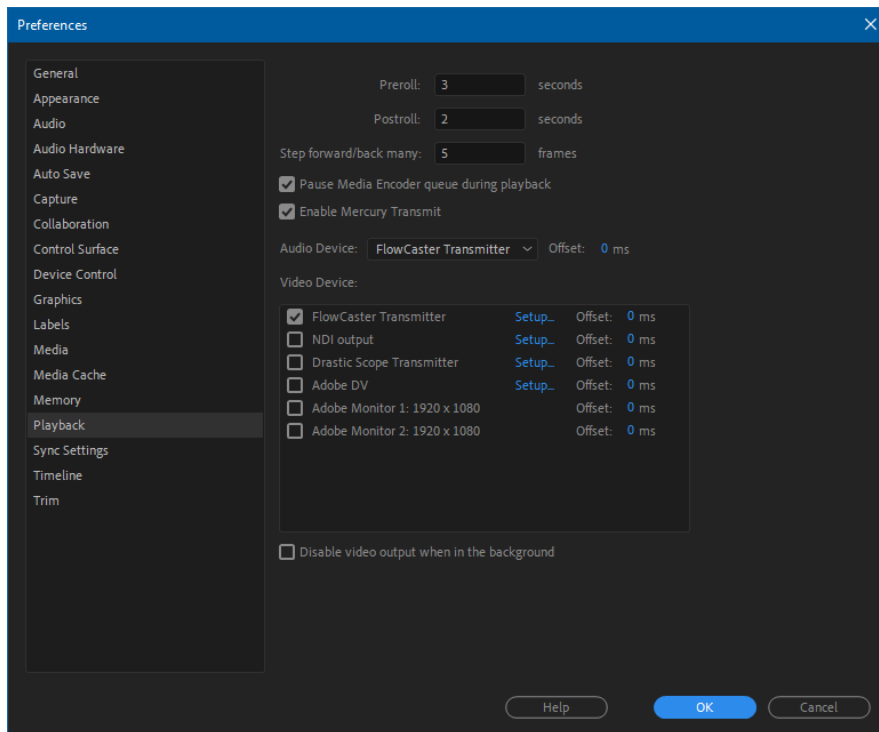
Determine your computer’s IP address (ipconfig or ifconfig or control panel)

Run your creative software (Premiere in this example)

Open the FlowCaster configuration dialog. For Premiere, the menu Preferences | Playback. For Media Composer, the menu Tools | Video Output Tool, when enabled.

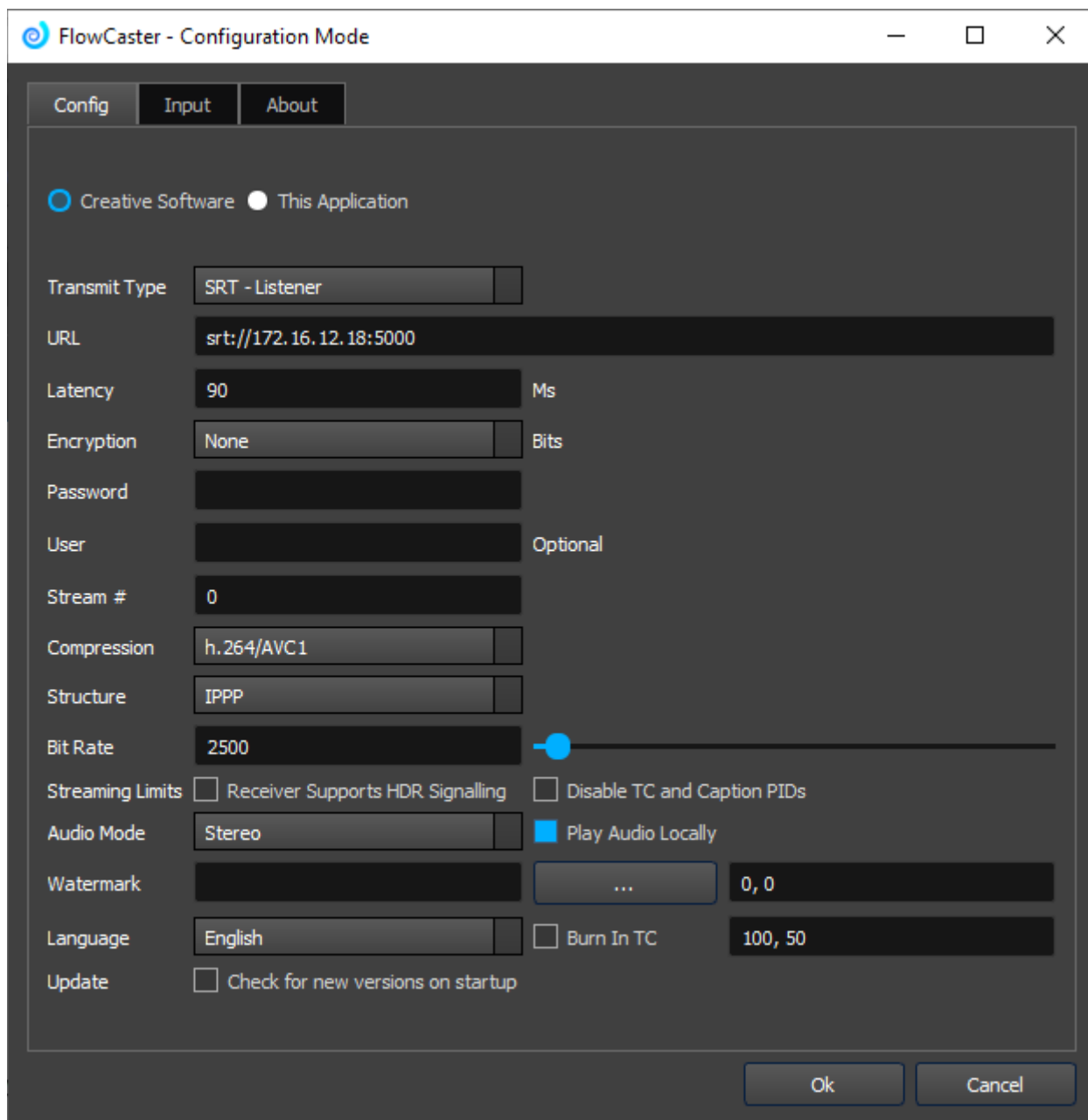


Click on the Preferences | Playback menu.



In the Adobe Preferences dialog, enable the checkbox next to FlowCaster Transmitter, and select FlowCaster Transmitter as your Audio Device.

Click the Setup link next to FlowCaster Transmitter to bring up the FlowCaster configuration dialog.



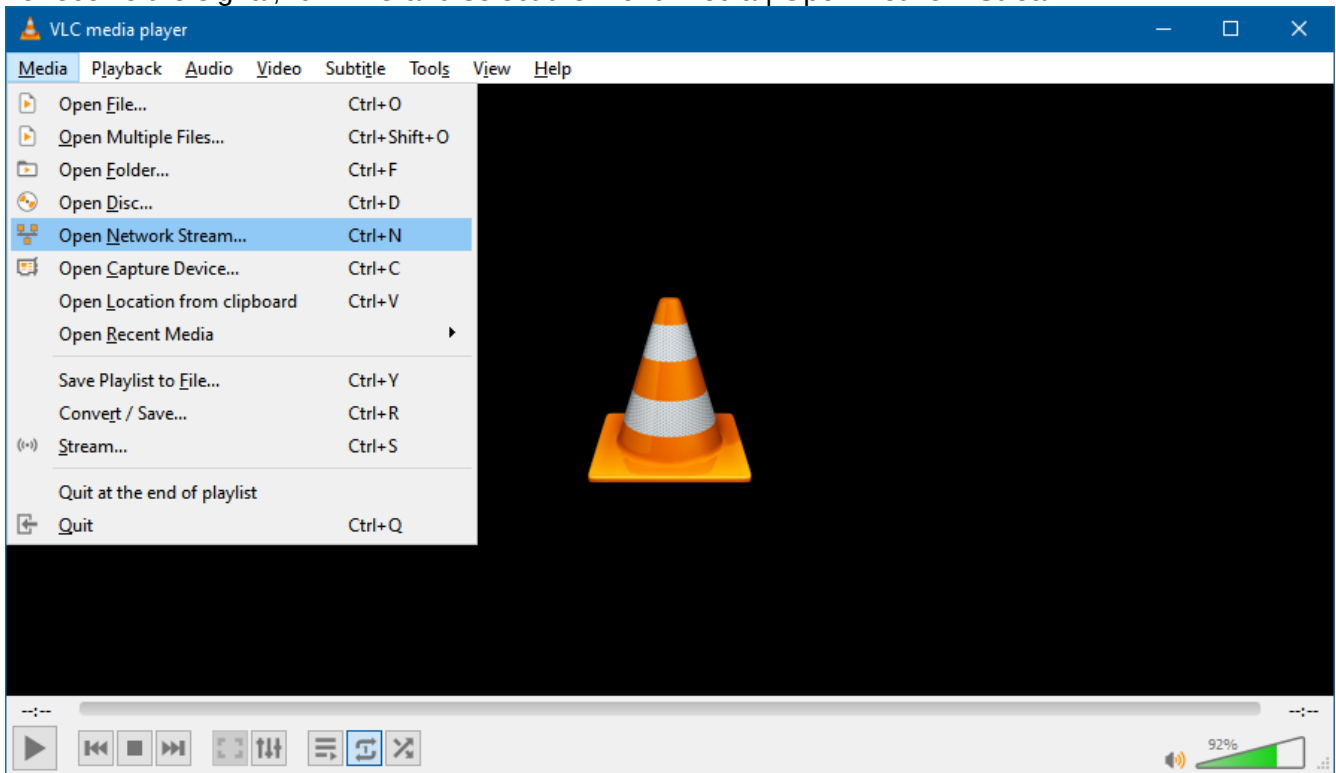
Set up the dialog as shown above

- Transmit Type: SRT Listener
- URL: srt://<your ip>:5000
- Latency: 90
- Encryption: None
- Password: Empty
- User: Empty
- Stream: 0
- Compression: h.264/AVC1
- Structure: IPPP
- Bit Rate: 2500

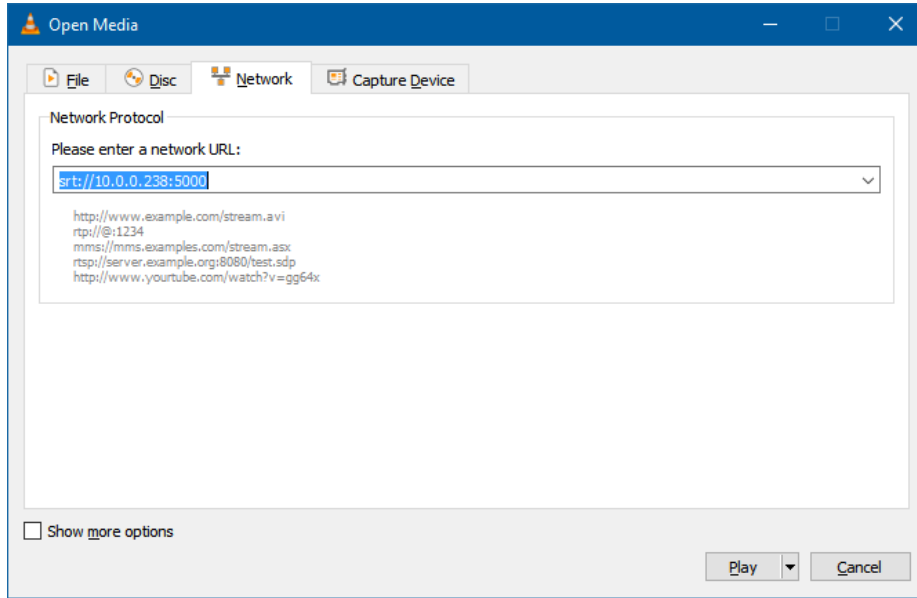
- Audio Mode: Stereo

Click Ok on the FlowCaster Config and Adobe Preferences and you will be transmitting Premiere's output.

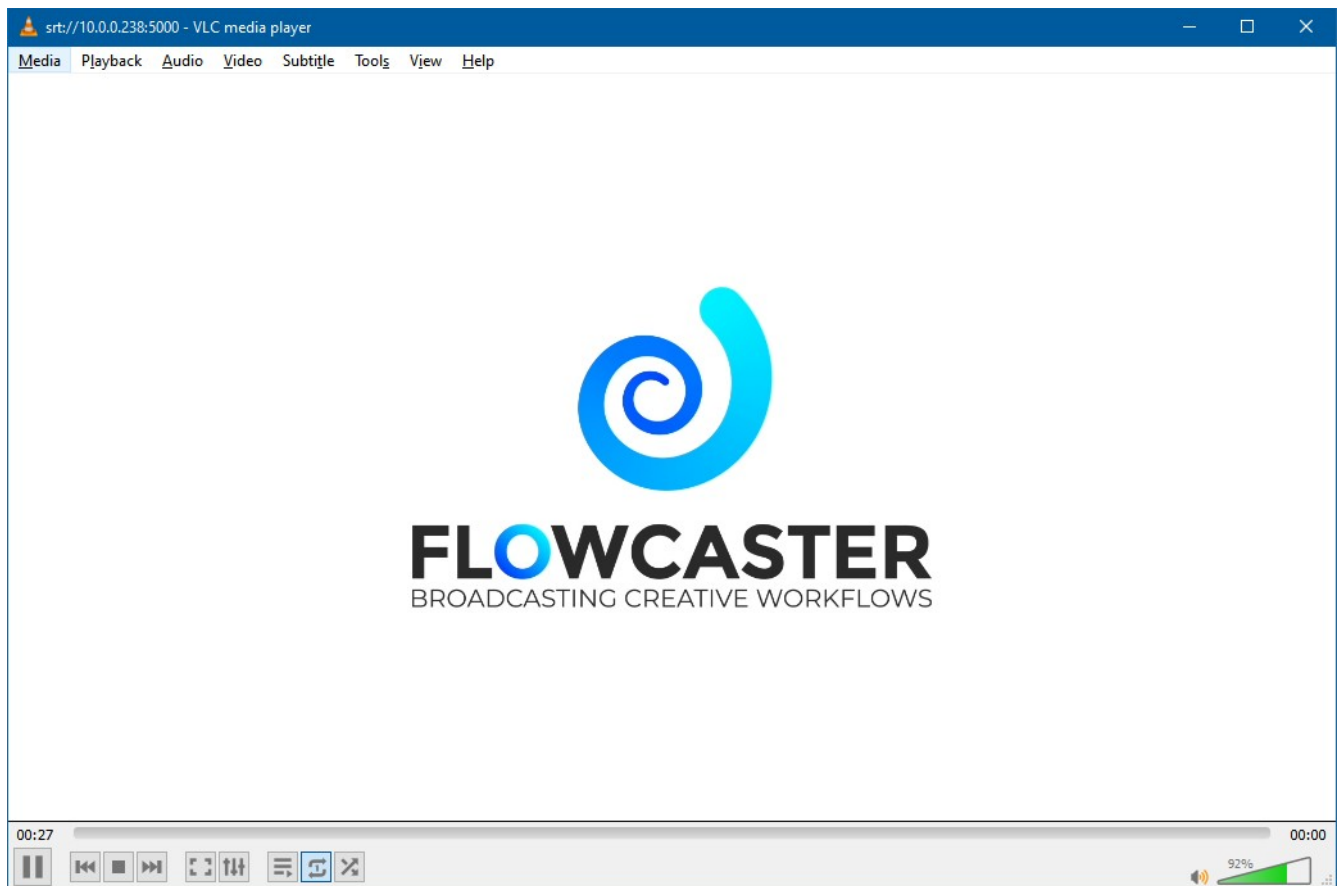
To receive the signal, run VLC and select the menu Media | Open Network Stream.



This will bring up the Network Open Media dialog

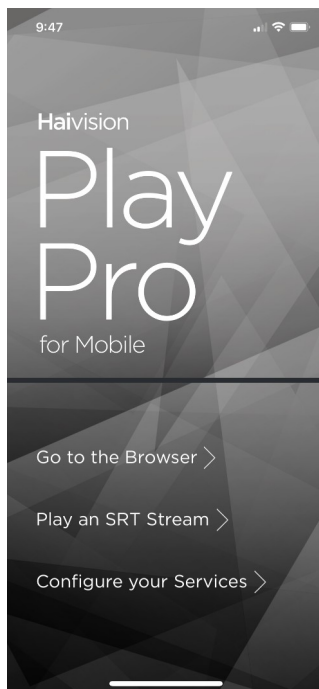


Enter  
srt://<your ip>:5000

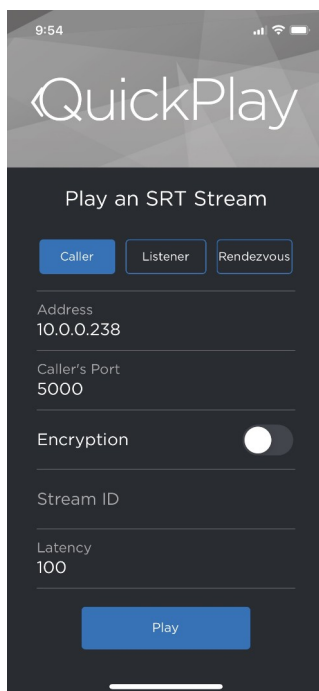


in the network URL text box and click Play and VLC will start receiving the SRT stream from Premiere.

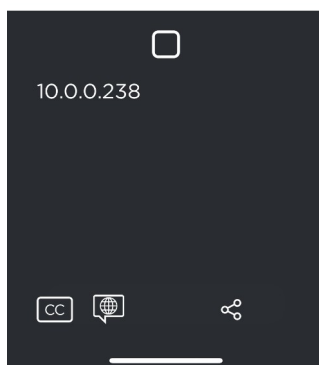
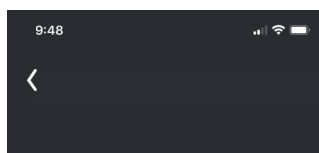
If you have the Haivision Play Pro app installed on your phone you can receive the SRT there as well. Close VLC and open Play Pro on your phone. After logging in, select Play an SRT Stream.



This will bring up the configuration screen.



Select Caller and set the Address to <your ip> and the Caller's Port to 5000. Click Play to start receiving the SRT stream



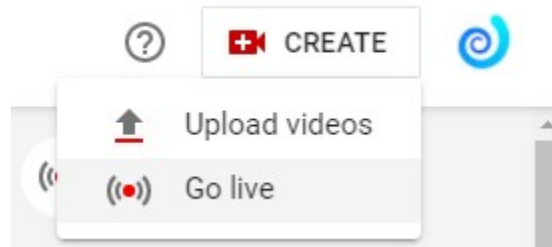
Once you have FlowCaster set up, configuring it for various scenarios will be a combination of transmission type, address and port, to match the sender and receiver. Here are some of the basic rules to follow:

- If FlowCaster is a Listener, then the receiver must be a Caller
- If FlowCaster is a Caller, then the receiver must be a Listener
- If FlowCaster is in Rendezvous mode, the receiver must also be in Rendezvous mode
- VLC only supports Caller mode (so FlowCaster must be a receiver)
- Whoever is the Listener must use a local address on the machine to listen on
- The Caller's address and port should match the Listener's address and port
- Rendezvous address will be the ones outside your firewall, on the actual network/internet

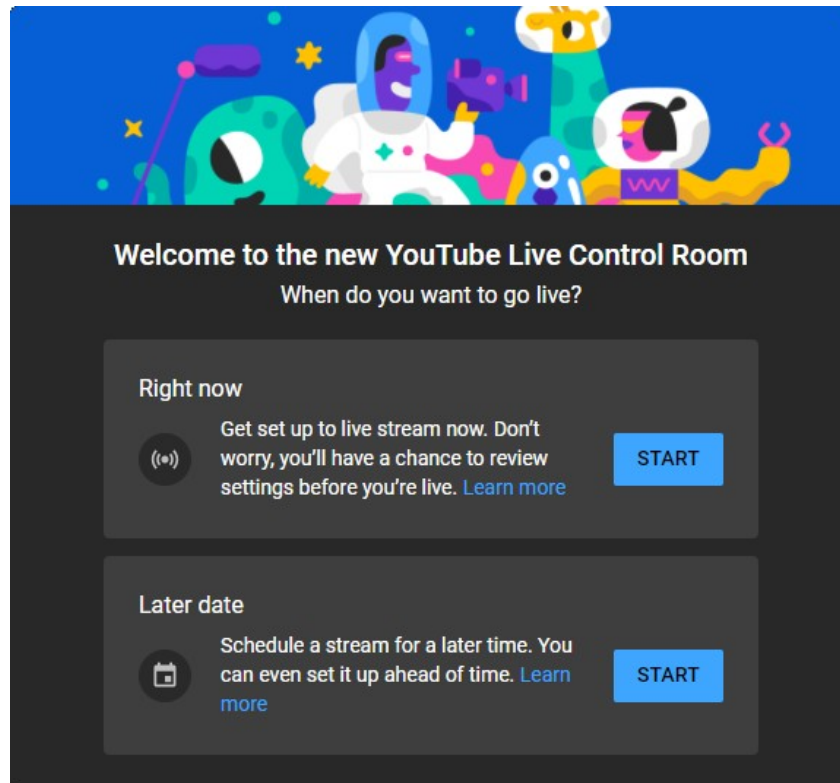
## 6 Quick Start – RTMP

FlowCaster supports local and internet based RTMP sharing sites like flowcaster.live, youtube.com, twitch.tv and many others. This quick start will connect Avid Media Composer's output to youtube.com.

Start by logging into youtube and selecting Go Live from the upper right

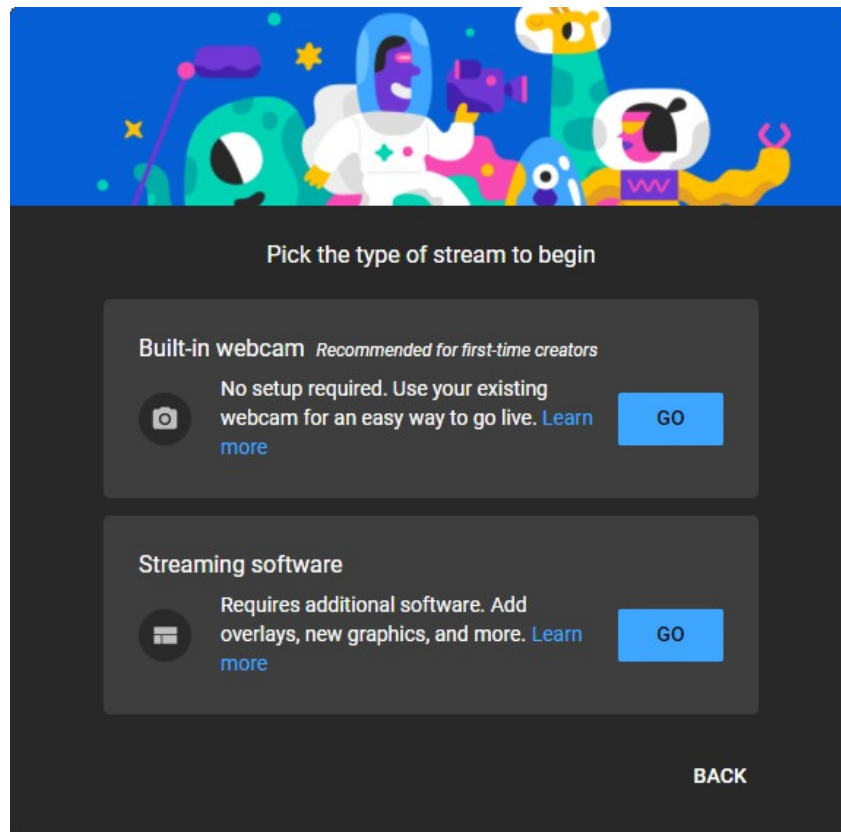


That will bring up the time to stream dialog

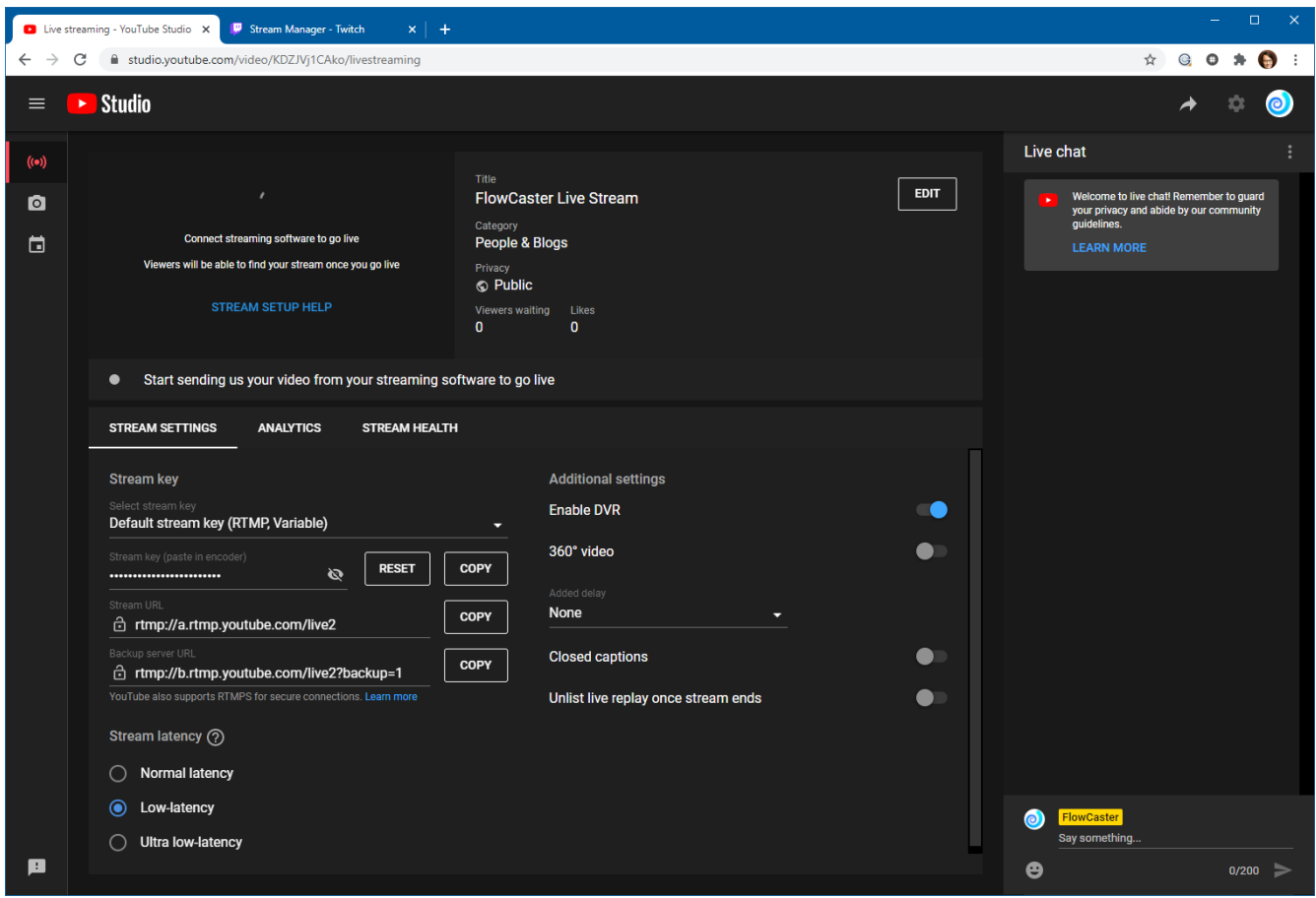


Select Right now's START button. That will bring up the source selection dialog.





Select Streaming software and click GO. This will bring up the live streaming page.



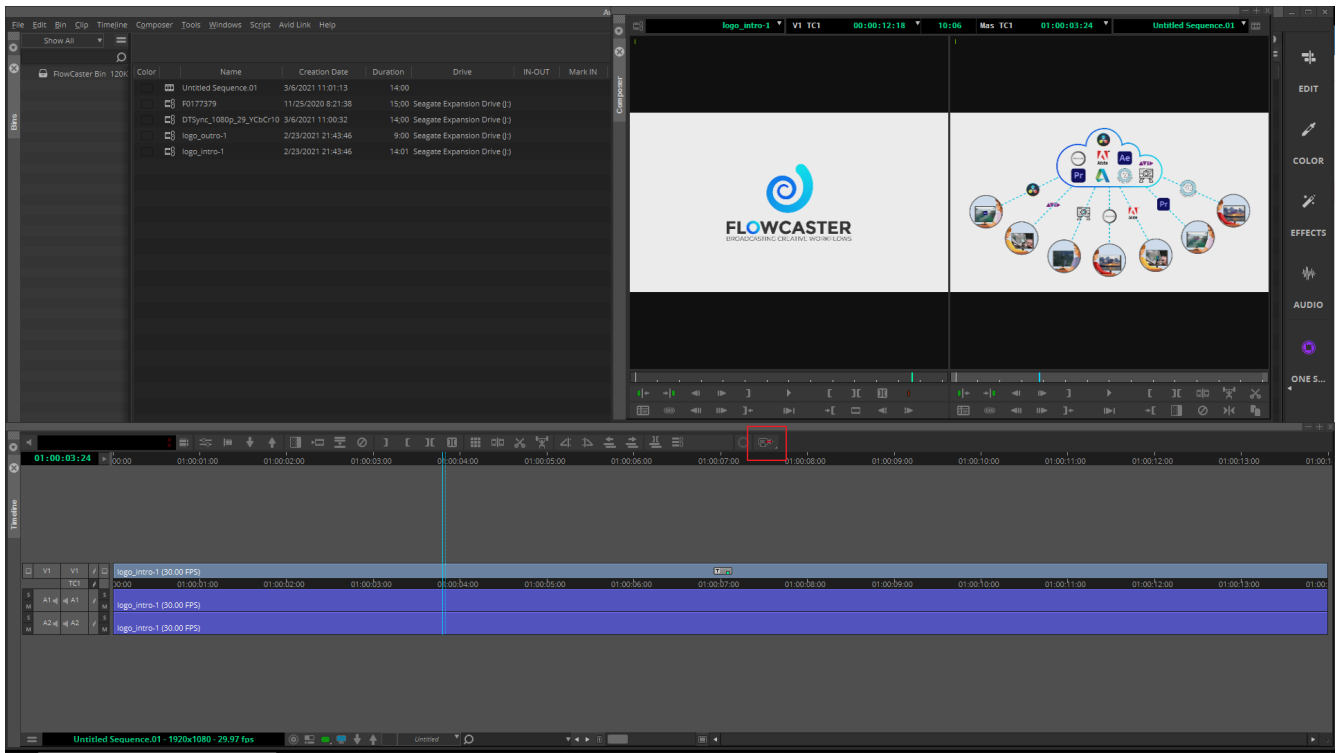
To connect your stream, you will need two things

1. The server URL (`rtmp://a.rtmp.youtube.com/live2`)
2. The secret Stream Key (hidden under the dots)

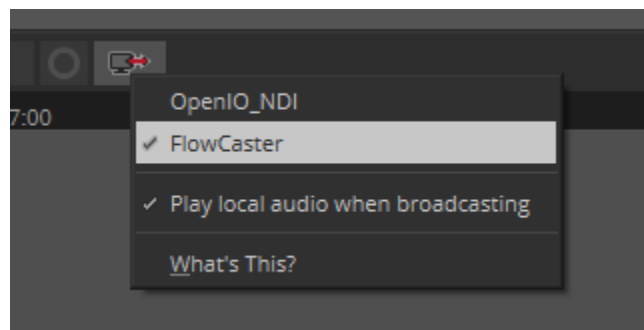
To create the URL for FlowCaster, take the server URL, add a / to it and append the stream key, for something like this:

`rtmp://a.rtmp.youtube.com/live2/z746-80k2-2vxd-vcv8-0pzx`

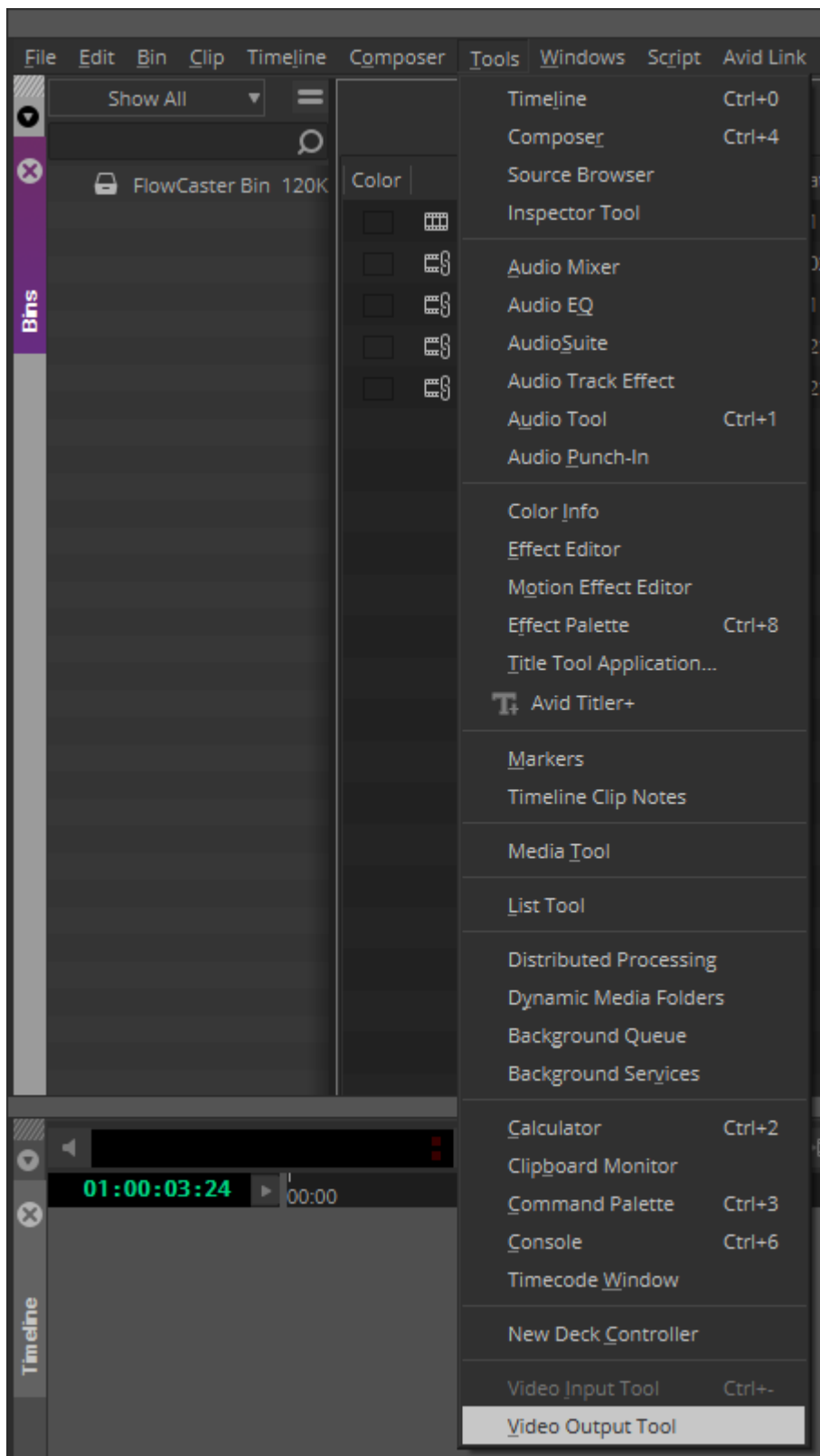
To start streaming, run Media Composer and load your project. To enable digital outputs, click on the button in the red box, so that it flashes red.



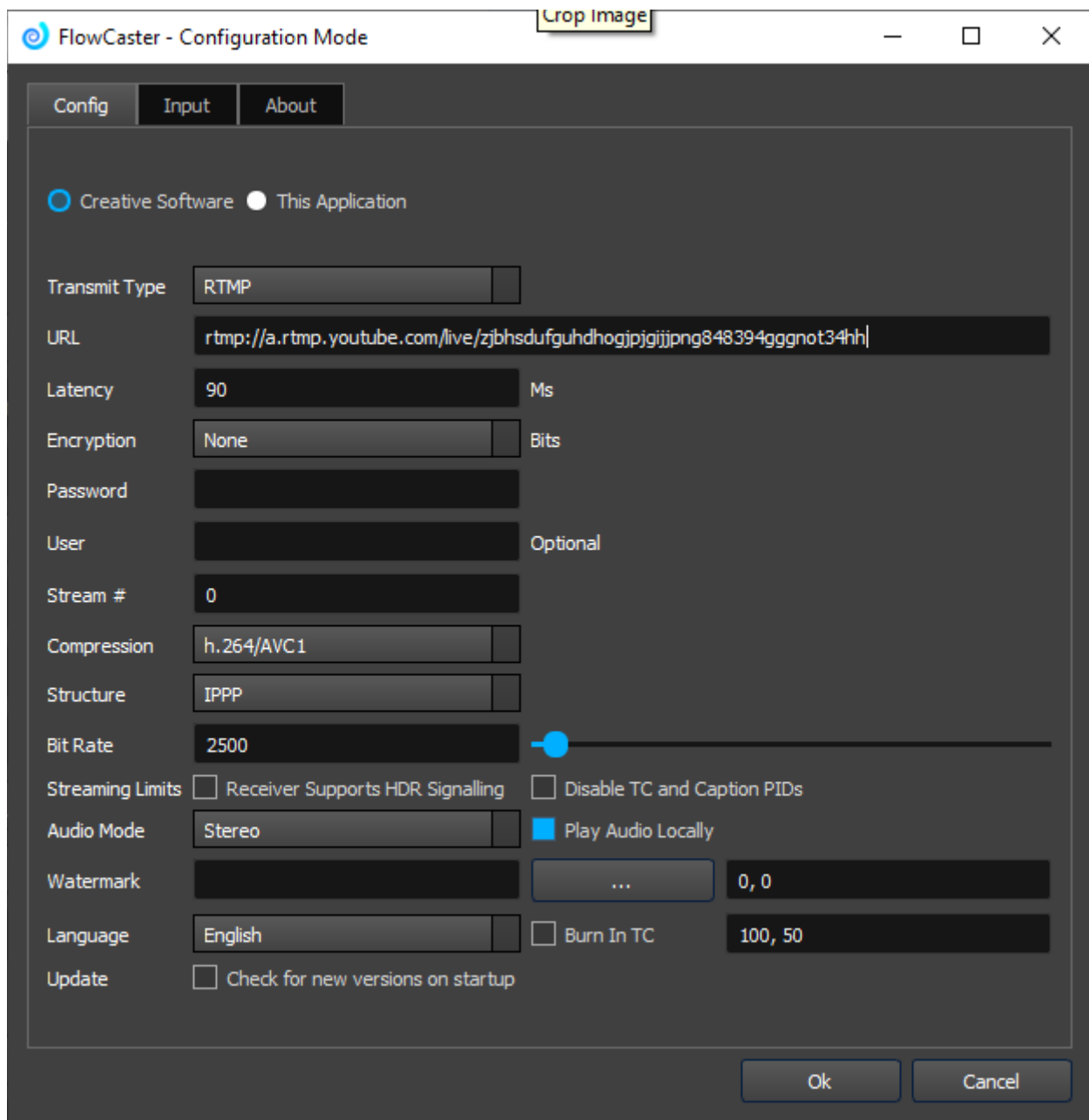
To make sure you are transmitting using FlowCaster, left click on that same button and make sure FlowCaster is selected in the popup menu.



To configure FlowCaster, select the menu Tools | Video Output Tool (please note, this menu is only present when the video output is enabled with the button above).



This will bring up the FlowCaster configuration dialog.



Set the following settings:

Transmit Type: RTMP


URL: rtmp://a.rtmp.youtube.com/live2/<your secret key>

Compression: h.264/AVC1

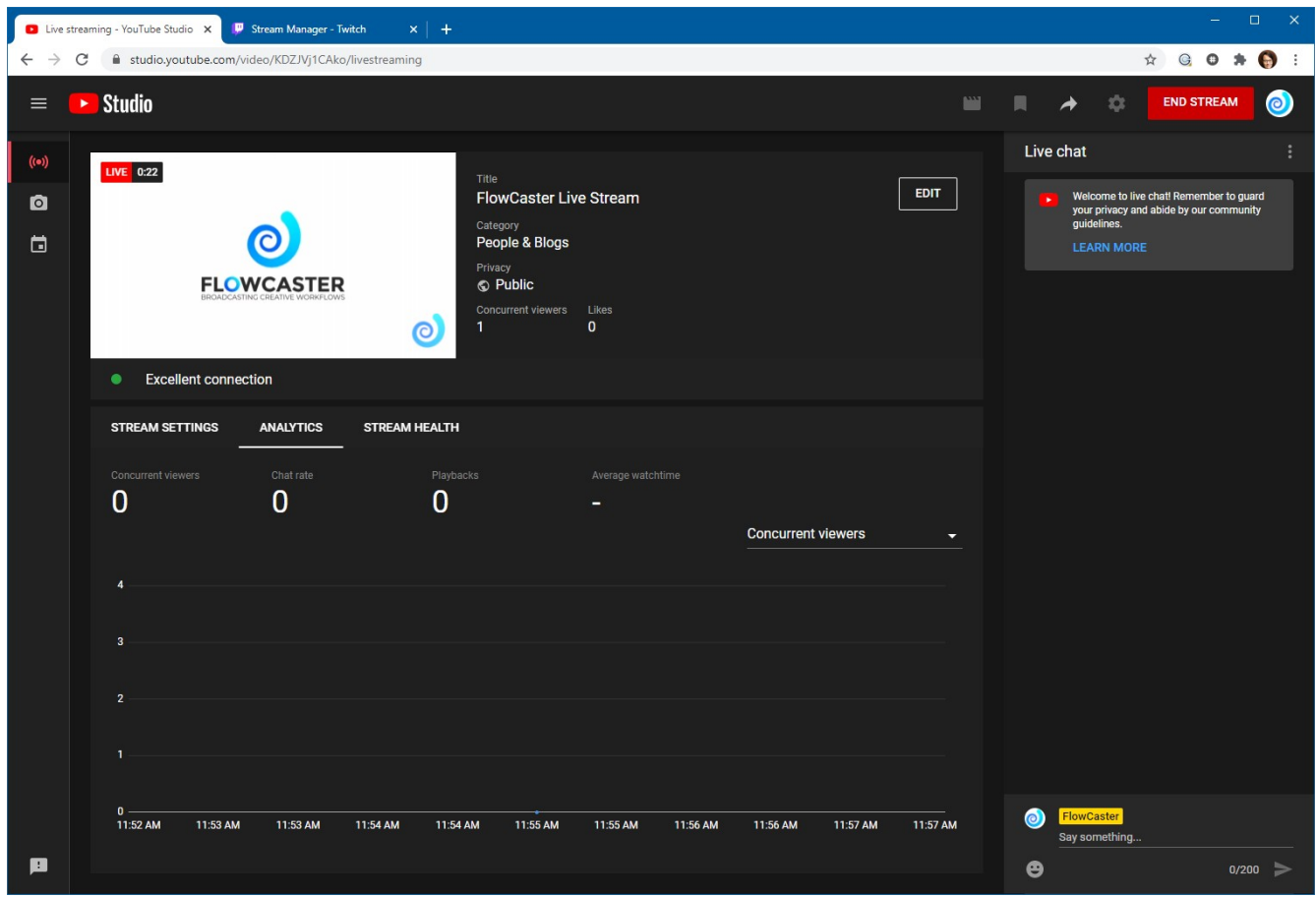
Structure: IPPP

Bit Rate: 2500

Audio Mode: Stereo

Click Ok to close the configuration dialog, and then click  twice (off and then back on) to pick up the new configuration.

After a short while, the stream should appear on youtube.



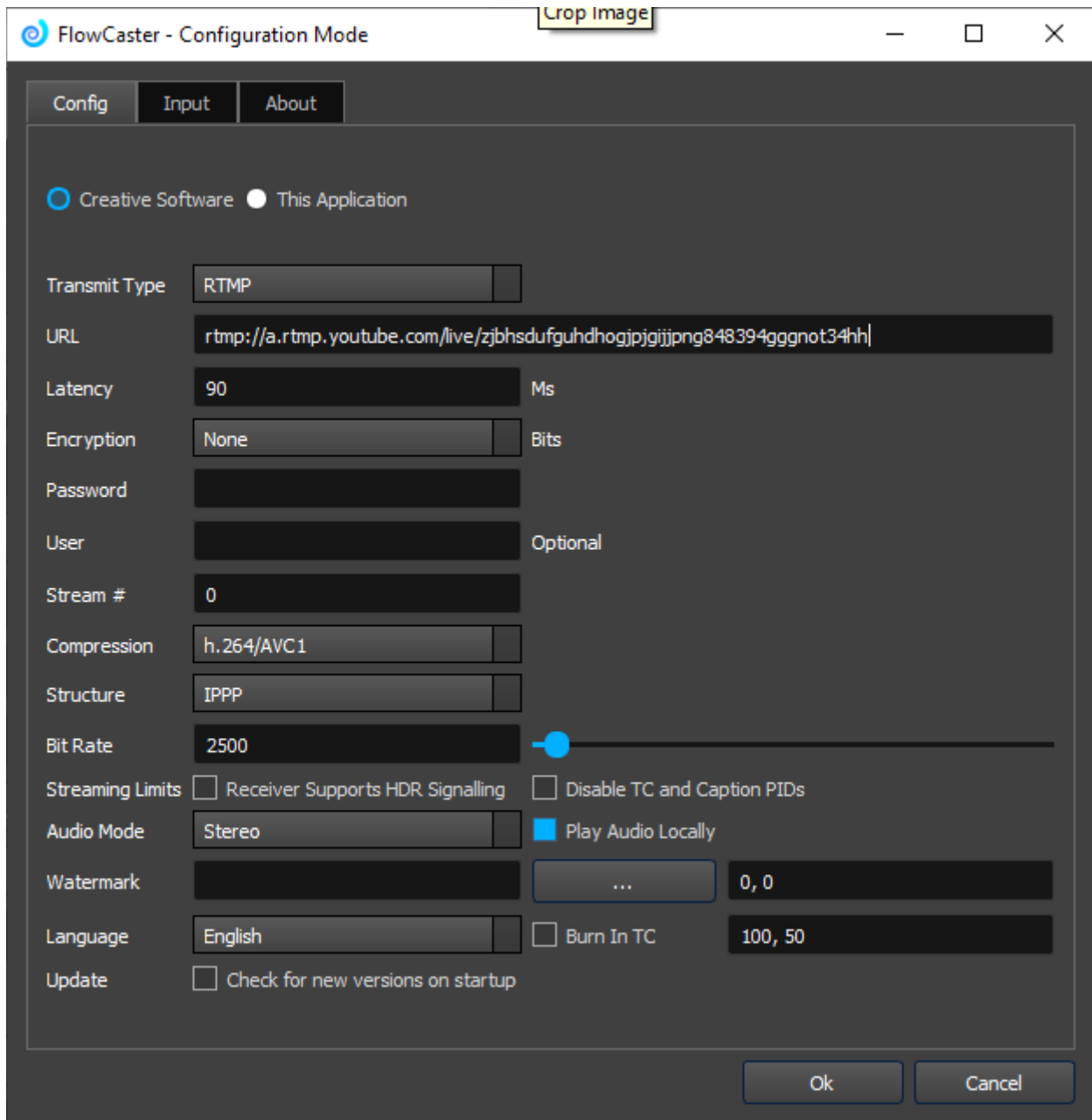
The stream can now be shared publicly or privately to as many people as you wish.

To transmit to Twitch.tv is similar, except they have dedicated servers for each region that you can find here:

<https://stream.twitch.tv/ingests/>

to be combined with your secret twitch key as described above.

## 7 FlowCaster Configuration



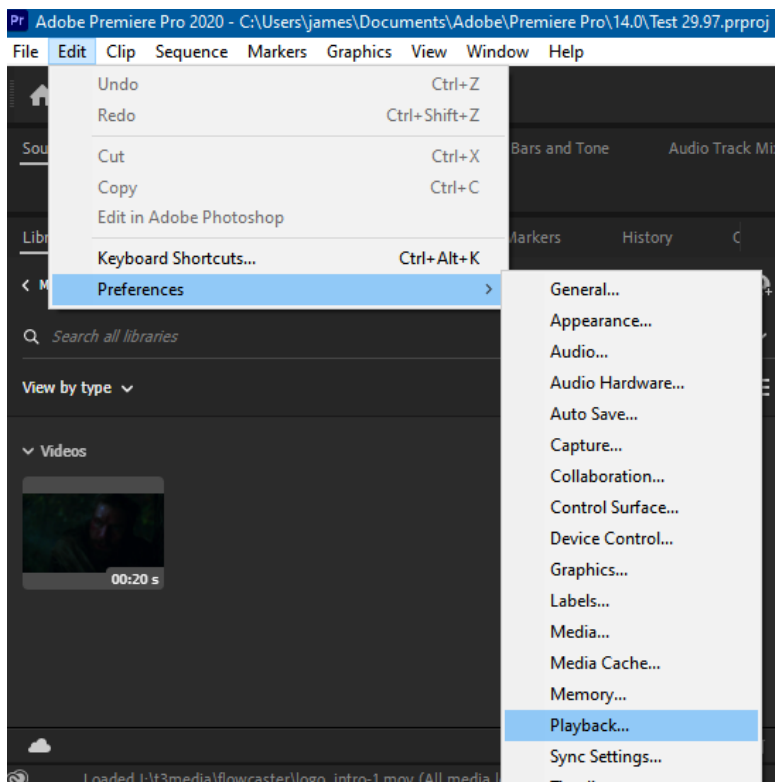
The FlowCaster config dialog is used to configure the output of your creative software (Adobe, Avid, Assimilate, DaVinci, etc) as well as any secondary output from SDI, HDMI, NDI or your desktop.

## 8 Adobe

FlowCaster creates a virtual I/O board as a transmitter for Adobe creative software like Premiere and After Effects. As a virtual video board, it can send the same high quality audio, video and captions from a real or virtual machine to wherever you are doing your creative work for output on a 'third monitor'. This signal can be received by free software, like VLC and the Haivision Pro Player, or by dedicated Drastic receivers for more features, like FlowCaster for IOS and Android, videoQC for Windows, macOS and Linux or even a variety of hardware decoders from AJA, Haivision and others. This article demonstrates configuring FlowCaster in Adobe creative software.

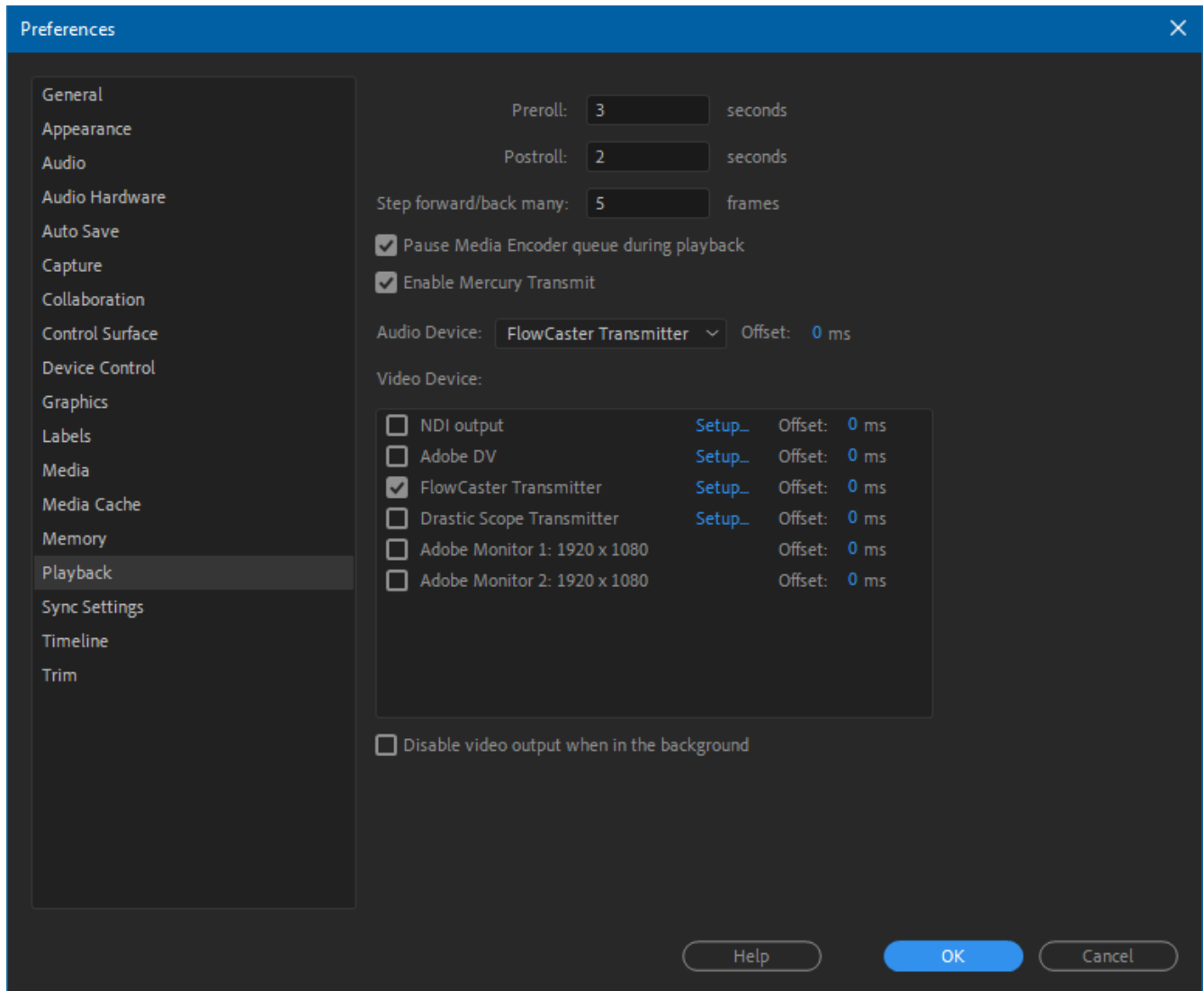
### 8.1 Adobe Premiere

To configure FlowCaster in Adobe Premiere, access the Playback area or Preferences. On Windows, it is the Edit | Preferences | Playback menu. For macOS, it is the Main | Preferences | Playback menu



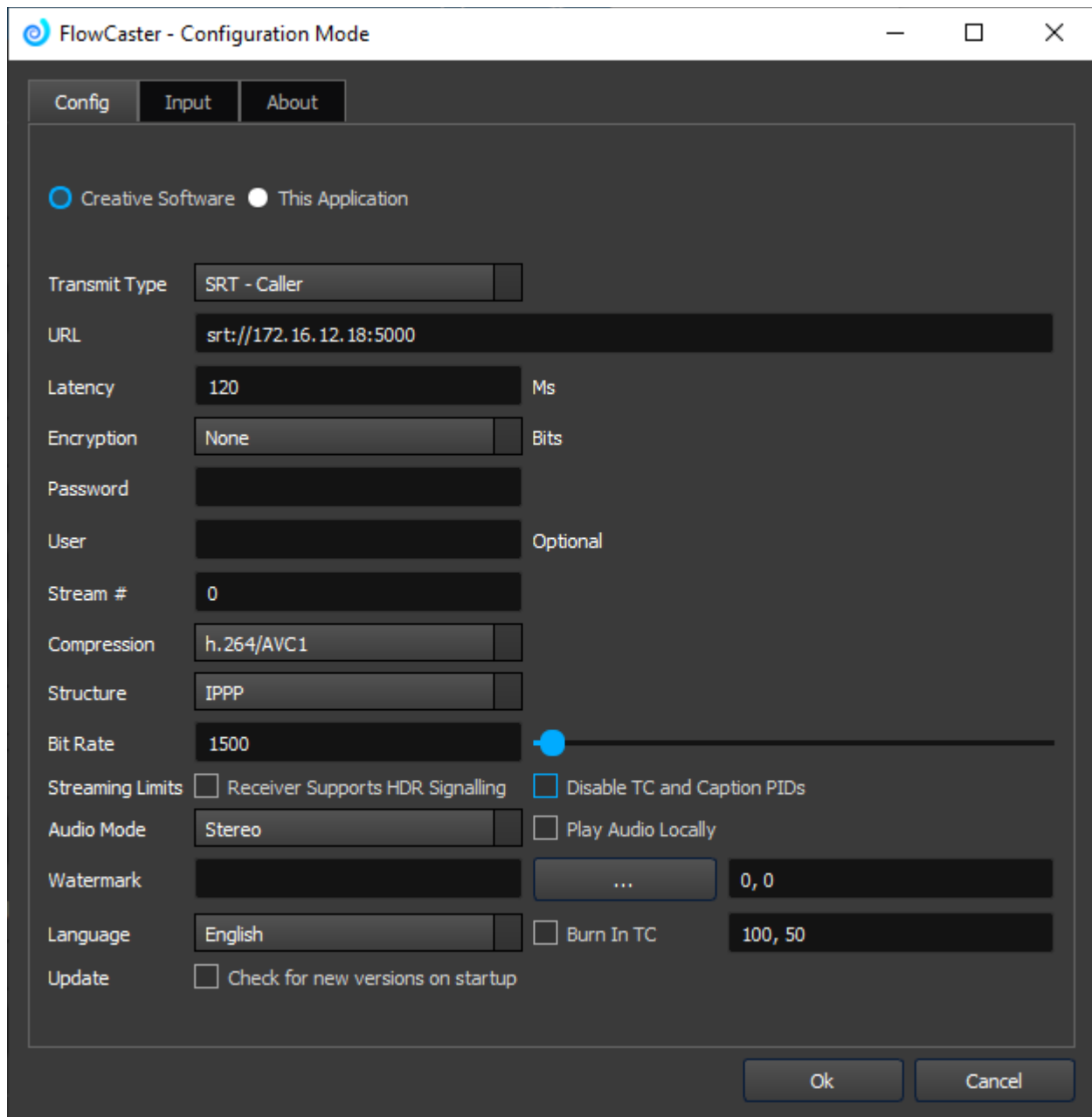


This will bring up the Playback settings in the Preferences panel. To use FlowCaster, you will want to set the Audio Device to FlowCaster Transmitter, as well as checking the checkbox next to FlowCaster Transmitter in the Video Device list.



This will cause Adobe to use FlowCaster as its video board. To configure FlowCaster, click on the Setup link in the Video Device list next to the FlowCaster Transmitter entry. That will bring up the FlowCaster Configuration dialog

## 8.2 FlowCaster Configuration Dialog



### 8.2.1 Transmit Type

SRT Caller - this uses SRT to call out to a remote device. The IP and port for this protocol in URL should be the remote device's IP address and selected port

SRT Listener - this uses SRT to listen on your local machine. The IP must be one of the IPs on your machine, and you must select a port to receive on

SRT Rendezvous - this mode uses the external, internet IP to connect through local NAT routers. Here it should be the internet facing IP of the remote device. On that device's config, it should be your internet facing remote IP. To get those IPs from each network, use <https://whatismyipaddress.com/>

RTP - the IP and Port for this mode can be the remote device, or a multicast address (239.x.x.x) that both the sender and receiver are set to

UDP - the IP and Port for this mode can be the remote device, or a multicast address (239.x.x.x) that both the sender and receiver are set to

RTMP - the URL for this mode will consist of the remote server, followed by the remote key. For instance, with YouTube.com, the address would be `rtmp://a.rtmp.youtube.com/live2`, and the key would be provided by YouTube and look something like this `j2br-3t45-b6ck-s9h9-5dcy`, so the URL would be `rtmp://a.rtmp.youtube.com/live2/j2br-3t45-b6ck-s9h9-5dcy`

NDI - for NDI, the URL would be a unique name, that NDI will combine with the computer name, to create a fully qualified name you can use to connect to the stream

## 8.2.2 URL

Normally the IP and Port or a fully qualified URL, depending on the Transmit Type setting. Below are some typical examples

SRT Caller: 10.0.0.60:5000

SRT Listener: 10.0.0.238:5000

SRT Rendezvous: 108.174.19.198:5000

RTP : 239.254.30.30:1234

UDP: 10.0.0.60:5004

RTMP: `rtmp://a.rtmp.youtube.com/live2/j2br-3t45-b6ck-s9h9-5dcy`

NDI: FlowCaster1Out

## 8.2.3 Latency

Latency is the number of milliseconds to give the signal to recover packets. This is for SRT. The lower this number, the closer to real time the monitor will be. The larger, the more room it will have to recover any lost packets. It is recommended this be the RTT (round trip time) between the two devices plus 20 milliseconds

## 8.2.4 Encryption

SRT supports end to end encryption. Setting this to 128 or 256 will cause all the data to be encrypted, use the Password below.

## 8.2.5 Password

If encryption above is set to 128 or 256, then this password will be used to encrypt the signal, and it must be used on the receiving device for it to be able to decrypt the signal

## 8.2.6 User

If your protocol/transmit type requires authentication, this is the user name that will be used in that authentication

## 8.2.7 Stream #

If your protocol/transmit type supports multiple stream sets, this will specify which one you are sending

## 8.2.8 Compression

What compression to use to send the stream. FlowCaster supports h.264, h.265/HEVC and JPEG 2000, but the receiver must also support them for the monitor to work. If you are unable to see the signal in the receiver, start with h.264 8 bit 4:2:0 and then work up from there to see what the receiver supports. videoQC supports all the codecs.

## 8.2.9 Structure

This is the internal structure of the compression. Three modes are supported

- IBBP - this has the highest quality, but the longest latency
- IPPP - this has the best compromise between quality and latency

- III - this as the shortest latency, but the worst quality

## 8.2.10 Bit Rate

The kilobit rate to encode the video within. For instance, 2 mbs (megabits) would be 2000 kbs (kilobits)

## 8.2.11 Receiver Supports HDR Signaling

If your receiving software supports HDR Signaling, checking the checkbox will enable sending any local HDR signaling to the remote monitor

## 8.2.12 Audio Mode

FlowCaster supports 5 audio modes

- Stereo - just the first stereo pair
- Stereo Mix - mix all available channels to a stereo pair
- 4 channels - send the first four channels
- 8 channels - send the first eight channels
- 16 channels - send the first sixteen channels

## 8.2.13 Watermark

A path and filename to a file to place on the output as a watermark. This would normally be a 32 bit PNG file with Alpha. The "..." button will bring up a file browse dialog to allow you to select a file from your local file system. The two numbers separated by a comma and the x and y start position of the watermark on the output signal in pixels.

Once the OK button is clicked, FlowCaster will reset its output to match the new setup. This may take a few seconds before you see the changes on the receiver.

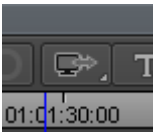
## 9 Avid

### 9.1 Using FlowCaster with Avid Media Composer

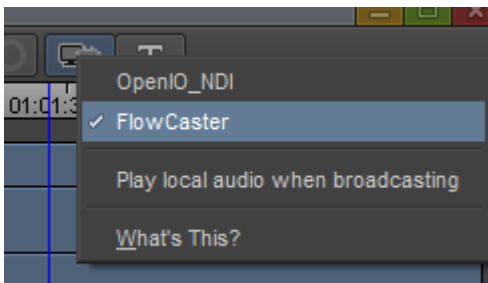
FlowCaster creates an Open I/O board Avid creative software like Media Composer. As a virtual video board, it can send the same high quality audio, video and captions from a real or virtual machine to wherever you are doing your creative work for output on a 'third monitor'. This signal can be received by free software, like VLC and the Haivision Pro Player, or by dedicated Drastic receivers for more features, like FlowCaster for IOS and Android, videoQC for Windows, macOS and Linux or even a variety of hardware decoders from AJA, Haivision and others. This article demonstrates configuring FlowCaster in Avid Media Composer.

### 9.2 Avid Media Composer

To configure FlowCaster in Avid Media Composer, you first have to enable it on the timeline. Find the Open IO output button just above the timeline



To enable it, right click on it and select FlowCaster. If FlowCaster is already selected, you can just left click on the button.



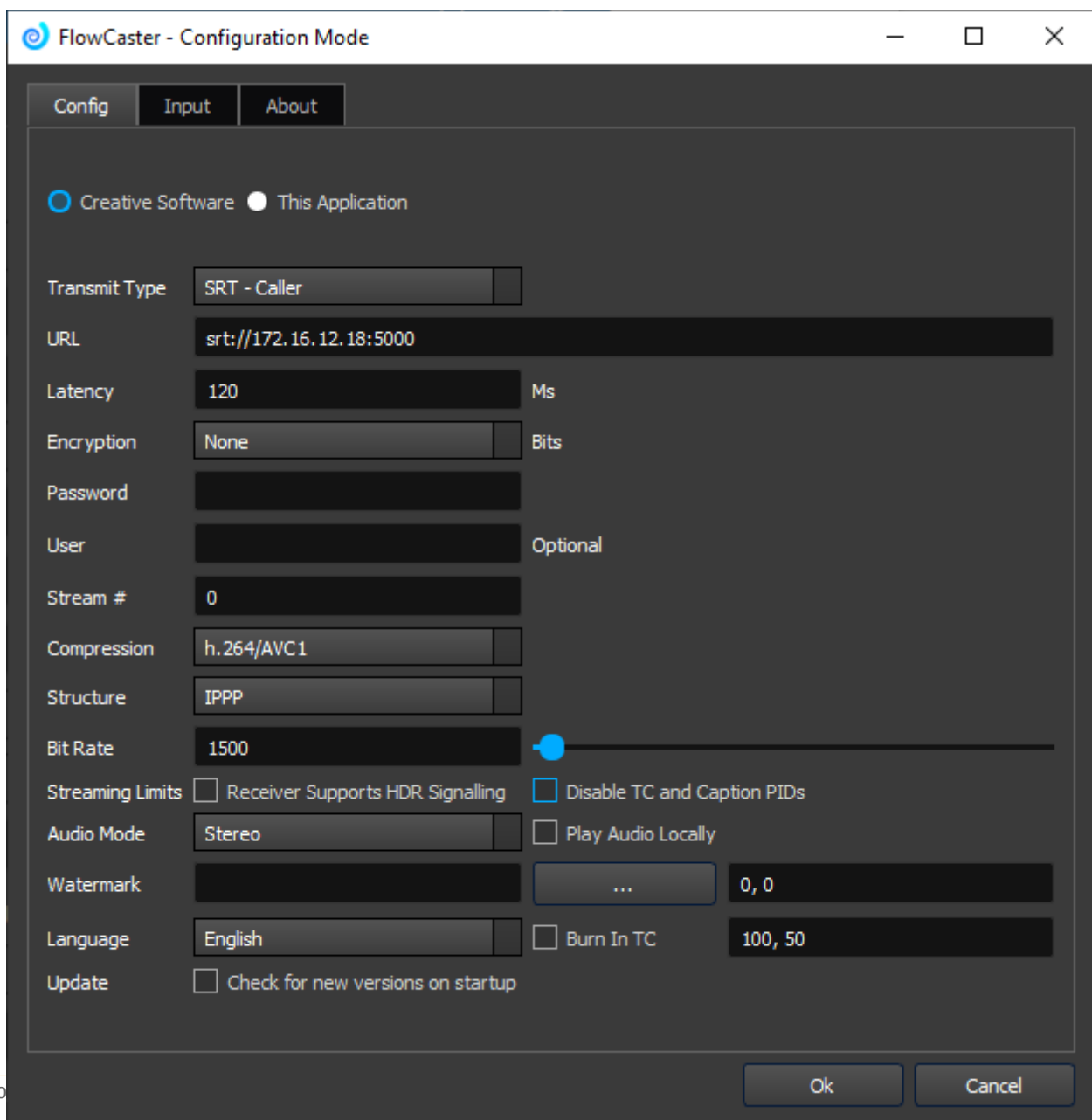
Once enabled, the button will flash a red double arrow to indicate it is sending to FlowCaster.



When enabled, a new menu under Tools will be available called Video Output Tool

Clicking on this will bring up the FlowCaster Configuration Dialog

## 9.3 FlowCaster Configuration Dialog



## 9.3.1 Transmit Type

SRT Caller - this uses SRT to call out to a remote device. The IP and port for this protocol in URL should be the remote device's IP address and selected port

SRT Listener - this uses SRT to listen on your local machine. The IP must be one of the IPs on your machine, and you must select a port to receive on

SRT Rendezvous - this mode uses the external, internet IP to connect through local NAT routers. Here is should be the internet facing IP of the remove device. On that device's config, it should be your internet facing remote IP. To get those IPs, from each network, use <https://whatismyipaddress.com/>

RTP - the IP and Port for this mode can be the remote device, or a multicast address (239.x.x.x) that both the sender and receiver are set to

UDP - the IP and Port for this mode can be the remote device, or a multicast address (239.x.x.x) that both the sender and receiver are set to

RTMP - the URL for this mode will consist of the remote server, followed by the remote key. For instance, with YouTube.com, the address would be `rtmp://a.rtmp.youtube.com/live2`, and the key would be provided by YouTube and look something like this `j2br-3t45-b6ck-s9h9-5dcy`, so the URL would be `rtmp://a.rtmp.youtube.com/live2/j2br-3t45-b6ck-s9h9-5dcy`

NDI - for NDI, the URL would be a unique name, that NDI will combine with the computer name, to create a fully qualified name you can use to connect to the stream

## 9.3.2 URL

Normally the IP and Port or a fully qualified URL, depending on the Transmit Type setting. Below are some typical examples

SRT Caller: 10.0.0.60:5000

SRT Listener: 10.0.0.238:5000

SRT Rendezvous:108.174.19.198:5000



RTP : 239.254.30.30:1234

UDP: 10.0.0.60:5004

RTMP: rtmp://a.rtmp.youtube.com/live2/j2br-3t45-b6ck-s9h9-5dcy

NDI: FlowCaster1Out

### 9.3.3 Latency

Latency is the number of milliseconds to give the signal to recover packets. This is for SRT. The lower this number, the closer to real time the monitor will be. The larger, the more room it will have to recover any lost packets. It is recommended this be the RTT (round trip time) between the two devices plus 20 milliseconds

### 9.3.4 Encryption

SRT supports end to end encryption. Setting this to 128 or 256 will cause all the data to be encrypted, use the Password below.

### 9.3.5 Password

If encryption above is set to 128 or 256, then this password will be used to encrypt the signal, and it must be used on the receiving device for it to be able to decrypt the signal

### 9.3.6 User

If your protocol/transmit type require authentication, this is the user name that will be used in that authentication

### 9.3.7 Stream #

If your protocol/transmit type supports multiple stream sets, this will specify which one you are sending

## 9.3.8 Compression

What compression to use to send the stream. FlowCaster supports h.264, h.265/HEVC and JPEG 2000, but the receiver must also support them for the monitor to work. If you are unable to see the signal in the receiver, start with h.264 8 bit 4:2:0 and then work up from there to see what the receiver supports. videoQC supports all the codecs.

## 9.3.9 Structure

This is the internal structure of the compression. Three modes are supported

- IBBP - this has the highest quality, but the longest latency
- IPPP - this has the best compromise between quality and latency
- ILLL - this as the shortest latency, but the worst quality

## 9.3.10 Bit Rate

The kilobit rate to encode the video within. For instance, 2 mbs (megabits) would be 2000 kbs (kilobits)

## 9.3.11 Receiver Supports HDR Signaling

If your receiving software supports HDR Signaling, checking the checkbox will enable sending any local HDR signaling to the remote monitor

## 9.3.12 Audio Mode

FlowCaster supports 5 audio modes

- Stereo - just the first stereo pair
- Stereo Mix - mix all available channels to a stereo pair
- 4 channels - send the first four channels
- 8 channels - send the first eight channels
- 16 channels - send the first sixteen channels

## 9.3.13 Watermark

A path and filename to a file to place on the output as a watermark. This would normally be a 32 bit PNG file with Alpha. The "..." button will bring up a file browse dialog to allow you to select a file from your local file system. The two numbers separated by a comma and the x and y start position of the watermark on the output signal in pixels.

Once the OK button is clicked, FlowCaster will reset its output to match the new setup. This may take a few seconds before you see the changes on the receiver.

## 10 Assimilate SCRATCH

FlowCaster includes an Assimilate direct and OpenFX monitor plugin, allowing monitoring of any software that supports OpenFX. For Assimilate SCRATCH, high quality audio and video monitoring is supported. For OpenFX software, like DaVinci Resolve, only high quality video monitoring is support, due to the limitations of the OpenFX standard. In both cases, RGB, as well as YCbCr, signals are supported with up to 12 bits per component, using JPEG2000, or 10 bits per component, using HEVC.

## 11 DaVinci Resolve

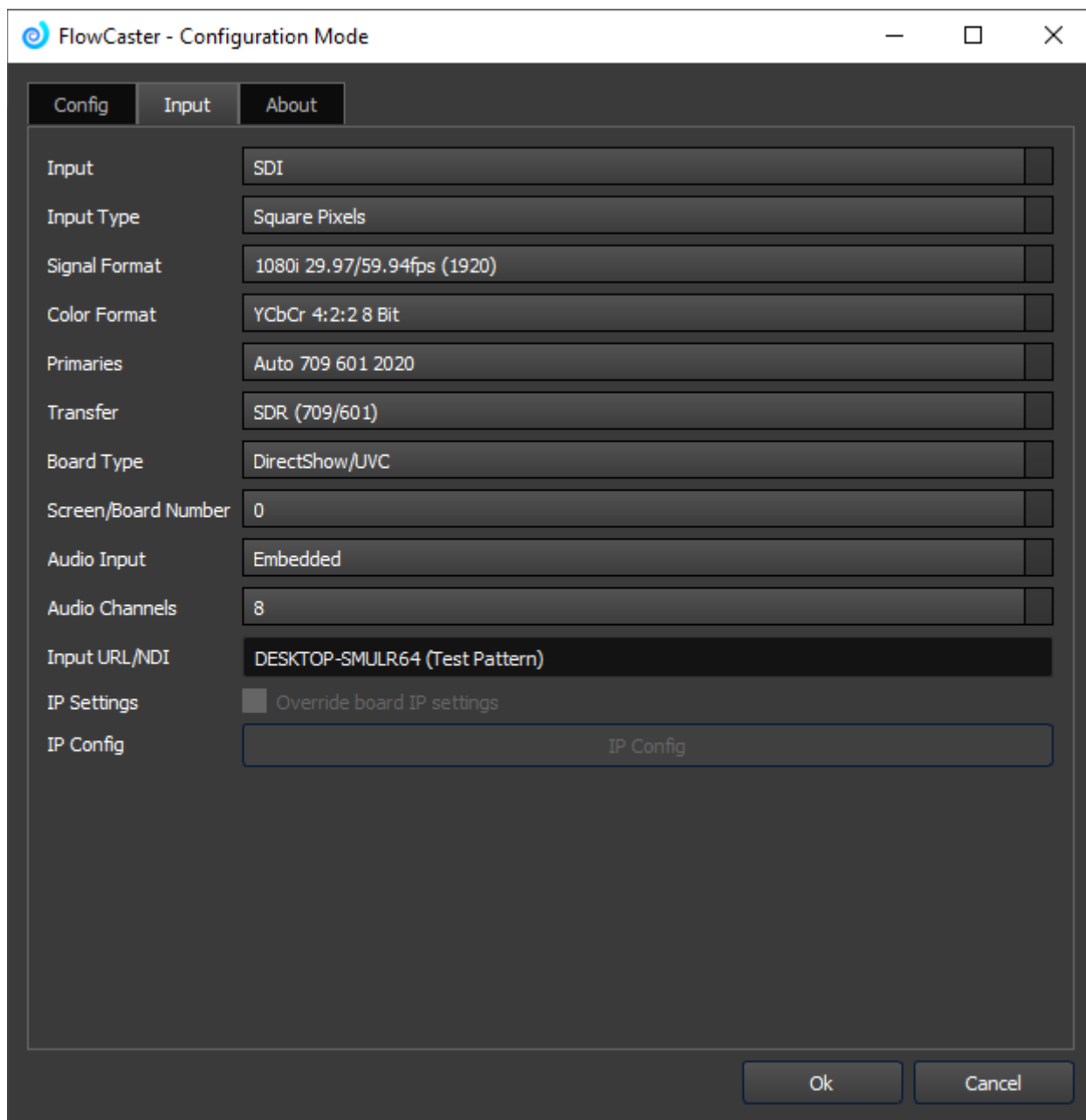


FlowCaster includes an Assimilate direct and OpenFX monitor plug in, allowing monitoring of any software that support OpenFX. For Assimilate SCRATCH, high quality audio and video monitoring is supported. For OpenFX software, like DaVinci Resolve, only high quality video monitoring is support, due to the limitations of the OpenFX standard. In both cases, RGB, as well as YCbCr, signals are supported with up to 12 bits per component, using JPEG2000, or 10 bits per component, using HEVC.

## 12 OpenFX Compatible Software

FlowCaster includes an Assimilate direct and OpenFX monitor plug in, allowing monitoring of any software that supports OpenFX. For Assimilate SCRATCH, high quality audio and video monitoring is supported. For OpenFX software, like DaVinci Resolve, only high quality video monitoring is support, due to the limitations of the OpenFX standard. In both cases, RGB, as well as YCbCr, signals are supported with up to 12 bits per component, using JPEG2000, or 10 bits per component, using HEVC.

## 13 SDI/HDMI/NDI/Desktop Input



**Input** pulldown – select between available input types. Choices may include: Composite, S-Video, Composite 2, Component YUV, Component M2, Component SMPTE, Component RGB, SDI, D1 Parallel, SDTI, S-Video 2, SDI 2, Composite (Japan), S-Video (Japan), XVID RGB, HDMI, HDMI RGB, HDMI YCbCr, DVI, SDI 3G A, SDI 3G B, SDI 4K 425, SDI 12G/6G A, SDI 12G/6G B.

**Input Type** pulldown – select between available Input types. Choices may include: Square Pixels, 2 Pixel Interleave.

**Signal Format** pulldown – select between available signal formats. FlowCaster supports standard

broadcast signal formats from NTSC/PAL to 4K 4096x2160 60fps.

**Color Format** pulldown – select between available color formats. Choices may include YCbCr 4:2:2 8 bit, YCbCr 4:2:2 10 bit.

**Primaries** pulldown – select between available primaries. Choices may include: Auto 709 601 2020, CCIR 601, CCIR 601 Full, Rec.709, Rec.709 Full, BT.2020, BT.2020 Full

**Transfer** pulldown – select between available transfer types. Choices may include: SDR (709/601), PQ/HDR 10, HLG.

**Board Type** pulldown – select between available board types. Choices may include: Auto Select, NIC IP Video, AJA, AJA Shared, Bluefish444, Blackmagic, UltraScope, Matrox, DirectShow/UVC, NDI In.

**Screen/Board Number** pulldown – select between available screens or boards. The first 6 boards/screens may be selected using the pulldown.

**Audio Input** pulldown – select between available audio inputs. Choices may include: Unbalanced -10, Unbalanced +4, Balanced -10, Balanced +4, SPDIF, AES/EBU, Embedded, AES/EBU Pro, HDMI, Silence.

**Audio Channels** pulldown – select the number of audio channels. FlowCaster supports 2, 8, 10, and 32 channels of audio.

**Input URL/NDI** field – displays the current input URL or NDI, if one is present. The user may need to input a URL specific to their input format in this field.

**IP Settings Override** checkbox – check to ignore the board's IP input settings, and use the ones being entered here.

**IP Config** button – opens the IP Configuration dialog.

## 13.1 SDI/HDMI

## 13.2 NDI

## 13.3 Desktop

# 14 Controlling/Configuring

## 14.1 Command Line Parameters

Usage: d:\drastic.trunk\bin64\flowcaster.exe [options]

Options:

-n, --ndisource NDI Source  
-u, --urldestination URL to send to  
-N, --name User name  
-p, --password SRT password (min 10 char)  
-I, --sourcenummer Source ID number  
-s, --source <0-12 See Docs> A/V Source  
-t, --transport <0-5: NDI,UDP,RTP,TR01,SRT,RTMP> Output Transport Type



```

-x, --extrastreams <0-allow, 1-disable> Extra streams that Haivision Player can't handle
-a, --audchan <1 (st mix), 2, 4, 8, 16, 24, 32> Number of output audio channels
-c, --codec <0-4: h264,h264_10,HEVC,HEVC_10,J2K> Codec
-i, --iframeorder <0-IBBP, 1-IPP, 2-III> Frame order
-b, --bitrate <# kilobits per second> Kilobits per second
-l, --latency <# milliseconds> Latency in milliseconds
-e, --encryption <0-none, 1-128, 2-256> Encryption level
-B, --board <# kilobits per second> Source 0-All, 2-AJA, 3-AJA Shared, 4-Bluefish444, 5-Blackmagic, 6-UltraScope, 7-Matrox, 8-USB, 11-NDI, 12-Screen
-f, --format Signal format
-P, --playlocally Play audio locally
-V, --screen <# kilobits per second> Screen or board to send 0..n
-X, --watermarkx X position of the watermark
-Y, --watermarky Y position of the watermark
-W, --watermark Path and name of the watermark file
-z, --netx Parent Net-X-Code
-m, --minimized Start app minimized
-C, --config <0-All, 1-CS, 2-FCApp> Just display config page
-S, --saveconfig <0-NC, 1-CS, 2-FCApp> Save to settings
-L, --license Run for licensing
-?, -h, --help Displays this help
-v, --version Displays version

```

## 14.2 Configuring

### Windows (registry)

```

Creative Software Settings:
HKEY_CURRENT_USER\Software\Drastic\FlowCaster
Applications (SDI/HDMI/NDI/Desktop) Settings:
HKEY_CURRENT_USER\Software\Drastic\FlowCaster1

```

### macOS (~\Library\Preferences\)

```

Creative Software Settings:
/Library/Application\ Support/Drastic/com.drastictech.flowcaster.plist
Applications (SDI/HDMI/NDI/Desktop) Settings:
/Library/Application\ Support/Drastic/com.drastictech.flowcaster1.plist

```

### Linux (~\.config\)

```

Creative Software Settings:
FlowCaster.conf
Applications (SDI/HDMI/NDI/Desktop) Settings:
FlowCaster1.conf

```

### Settings:

```

AudioMode - what audio channels to send
Stereo - 0
Stereo Mix - 1
4 channels - 2
8 channels - 3
16 channels - 4
ColorSpace
Compression - compression for stream as a fourcc code

```

h264 - 875967080  
h264 10 Bit - 1630680628  
HEVC - 1752589105  
HEVC 10 Bit - 1752589153  
JPEG 2000 - 1598501450  
DataRate - in kilobits per second (megabits per second divided by 1000)  
Email - email address for licensing  
Enabled - enable transmission of SDI/HDMI/NDI  
Encryption - type of encryption to use  
0 - None  
1 - AES 128  
2 - AES 256  
FPS  
IBP - the IBP structure of the compressed stream  
IBBP - 0  
IPPP - 1  
IIII - 2  
Latency - the number of milliseconds to use to recover packets  
Password - password to use for the encryption (must be at least 10 characters)  
SDR\_HDR  
SendHDRSignals - 1 if it should send HDR signals to the receiver  
StreamNo - stream number to set for this send  
TransferType  
Type - protocol to send the stream as  
SRT - Caller  
SRT - Listener  
SRT - Rendezvous  
RTP  
UDP  
RTMP  
NDI  
CDI  
RIST  
WebRTC  
SMPTE 2110  
URL - the target address (eg. srt://199.0.0.123:5000?mode=caller)  
User - the user name to use with the URL you are sending to (optional)  
UserName - user name for licensing  
Watermark - a path to a watermark file (normally PNG 32 bit)  
WatermarkX - the horizontal offset at which to display the watermark image  
WatermarkY - the vertical offset at which to display the watermark image

This manual has been compiled to assist the user in their experience using **FlowCaster** software. It is believed to be correct at the time of writing, and every effort has been made to provide accurate and useful information. Any errors that may have crept in are unintentional and will hopefully be purged in a future revision of this document. We welcome your feedback.

*Drastic Technologies Ltd*  
*523 The Queensway, Suite 201*  
*Toronto, ON, M8Y 1J7*  
*Canada*  
(416) 255 5636  
(416) 255 8780

(c)copyright 2023, Drastic Technologies Ltd. All Rights Reserved.