

User Guide v7.x



February 9, 2024

Table of Contents

Copyrights and Trademark Notices.....	3
General.....	3
GNU LESSER GENERAL PUBLIC LICENSE.....	7
0. Additional Definitions.....	7
1. Exception to Section 3 of the GNU GPL.....	7
2. Conveying Modified Versions.....	7
3. Object Code Incorporating Material from Library Header Files.....	7
4. Combined Works.....	7
5. Combined Libraries.....	8
6. Revised Versions of the GNU Lesser General Public License.....	8
MPEG Disclaimers.....	9
<i>MPEGLA MPEG2 Patent.....</i>	9
<i>MPEGLA MPEG4 VISUAL.....</i>	9
<i>MPEGLA AVC.....</i>	9
<i>MPEG4 SYSTEMS.....</i>	9
Limited Warranty and Disclaimers.....	9
Warranty Remedies.....	9
Software Updates.....	10
Restrictions and Conditions of Limited Warranty.....	10
Limitations of Warranties.....	10
Damages.....	10
About NETXROUTER.....	11
<i>Main Use Cases.....</i>	12
<i>Technical Specifications.....</i>	13
Installing NETXROUTER.....	14
Windows.....	14
Linux.....	14
Apache Config.....	14
Configuring NETXROUTER.....	15
Set Up a Source IP Stream.....	15
<i>Source Button Settings.....</i>	17
Specify Destination Details.....	17
Configure a Destination.....	21
<i>Destination Button Settings.....</i>	22
Setting the Destination to the Source.....	24
Real Time Status.....	25
CPU.....	25
Memory.....	25
Network Inbound.....	26
Network Outbound.....	26
IP Protocols.....	27
UDP and RTP.....	27
SRT.....	27
RIST.....	28
Operation Under Control.....	29
Grass Valley Control Protocols.....	29
AJA Control Protocols.....	29

Copyrights and Trademark Notices

General

Copyright 2024, 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.

Adobe: Adobe® HTTP Dynamic Streaming Copyright © 2014 of Adobe Systems All rights reserved. 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

AJA: 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.

Apple: 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, Safari, and QuickTime are trademarks of Apple Inc., registered in the U.S. and other countries. Bonjour, the Bonjour logo, and the Bonjour symbol are trademarks of Apple, Inc.

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: 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.

Blackmagic: 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.

Bluefish444: 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.

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

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

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

Control Corporation - Control is a registered trademark of Control Corporation

ConnectX, Inc - CONNECTX is a trademark of ConnectX, Inc

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

Corel Corporation - Pinnacle is a registered trademark of Corel Corporation

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

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

Drastic Technologies: D2110Scope, 4KScope, ccConvert, Drastic Technologies, DrasticPreview, FlowCaster, HDRScope, Media File Scanner, MediaNXS, MediaReactor, MediaReactor Workstation, MR Lite, ndiScope, Net-X-Code Channel, Net-X-Code Server, Net-X-Convert, Net-X-Proxy, Network Video Analyzer, NetXfer, NETXROUTER, QuickClip, sdiScope, SyncControl, TcCalc, videoQC Inspect, videoQC Pro, videoQC View, and videoQC Workstation are trademarks of Drastic Technologies Ltd. All other trademarks are the property of their respective owners.

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)

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.

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

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: 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 is a registered trademark 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.

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.

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.

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

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.

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.

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

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, .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.

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.

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.

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

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

QT: The Qt Toolkit is copyright by The Qt Company and/or its subsidiary(-ies) and other contributors. The Qt Toolkit is used under the terms of the GNU Lesser General Public License v. 3 and the GNU Lesser General Public License v. 2.1 (both jointly "LGPL"). On each supported platform, the Tool dynamically links to the unmodified Qt libraries, as provided by

the Qt Project in the pre-compiled binary format. In compliance with LGPL, all the relevant information about downloading, installing, and building the Qt Toolkit from sources is available from <http://www.drastic.tv>. As there have been no modifications, the main source of the information and most of the web links provided here come from the Qt Company's website.

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

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.

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

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

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

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

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

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)

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

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.

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.

x264 LLC: The product is manufactured by Drastic Technologies under license from x264 LLC.

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.

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. 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.

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.

MPEG Disclaimers

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.

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).

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).

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.

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.

Warranty Remedies

Your sole remedies under this limited warranty are as follows:

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

Software 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.

Restrictions and Conditions of Limited Warranty

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

Limitations of Warranties

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

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

Limitations on Remedies—YOUR EXCLUSIVE REMEDIES, AND THE ENTIRE LIABILITY OF 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.

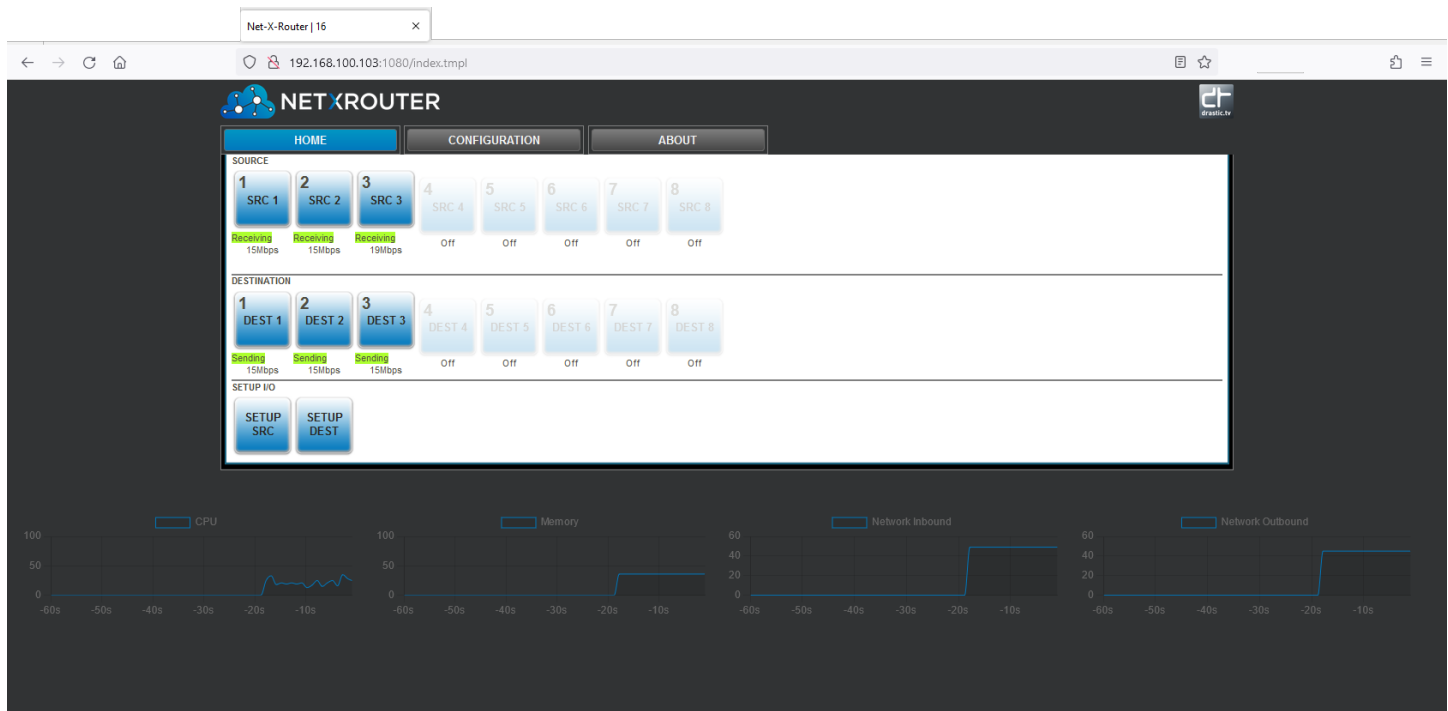
Damages

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

About NETXROUTER



Increasingly, video content creation and distribution workflows are migrating toward an IP backbone, with obvious cost and efficiency benefits. However, there are an ever growing number of streaming protocols, and each distribution endpoint may require a different protocol depending on a number of factors such as security, multiplexing/single endpoint, current setup, bandwidth, and so on.

There will be cases where you have access to an IP stream or streams, and they are either SRT, RTP, UDP, or RIST streams. In some of these cases you will want to use these streams by sending them to other stakeholders for collaboration, asset sharing, delivery and output purposes.

NETXROUTER can take either up to 8 or up to 16 SRT, RIST, UDP, or RTP inputs and send them out as up to 16 SRT, RIST, UDP, or RTP outputs with on the fly transcoding as needed. Local or cloud based workflows supported. **NETXROUTER** provides dependable, secure live video streaming to multiple destinations for content sharing, review and approval, production, broadcast, and distribution workflows.

NETXROUTER can receive these streams and route them to remote users. It is possible the destination targets will require a flavor of IP stream other than the source. **NETXROUTER** can convert from one type of stream to another in real time to accommodate varying destination capabilities. **NETXROUTER** performs real time video routing and protocol conversion so you can send your streams to an unlimited number of users with varying network security and bandwidth capabilities.

NETXROUTER can distribute and multiplex your streams, so you can provide access to your stakeholders as needed. Each module provides 16 channels of output, and may be scaled up as needed by adding modules.

NETXROUTER is the secure, robust media stream gateway that will simplify your content creation workflow. Quickly assign an input and output 'port', a UDP/RTP/SRT/RIST IP address, port and latency/encryption settings and go. **NETXROUTER** performs all the necessary protocol conversion with extremely low latency to optimize streams to specific networks without impacting video quality and latency. **NETXROUTER** can be deployed anywhere on a network so that devices behind the firewall can reach streams while maintaining network security policies. You can use **NETXROUTER** in one static configuration all the time, or change the setup every time a new source or destination is needed.

Main Use Cases

- Remote contribution
- Backhaul
- Return feeds
- Bi-directional interviews
- Content distribution for international syndication
- Sharing with affiliates

Technical Specifications

- **IP Stream Inputs:** up to 8 or up to 16 (depending on the license) SRT, RIST, UDP, or RTP inputs, user selectable
- **IP Stream Outputs:** up to 16 SRT, RIST, UDP, or RTP outputs, user selectable

Installing NETXROUTER

NETXROUTER is designed to run locally or in the cloud on Windows or Linux (RedHat or Ubuntu) platforms. Please note: **NETXROUTER MUST BE LICENSED** to run at all. You can use the licensing app included in the installs to get a temporary license to test with.

Windows

The Windows **NETXROUTER** installer is a standard Setup.exe style installer. Run SetupNet-X-Router_x64_7_0.exe and follow the prompts.

By default, **NETXROUTER** runs on port 80/443 using the Apache web service. To run it on Windows you must also install UwAmp (a Windows Apache HTTP server) from

<https://www.uwamp.com/en/?page=download>

If there is a request for restart during an installation, do not allow it to restart. Once the installer finished, you must restart the system.

Linux

- @todo

Apache Config

To allow the **NETXROUTER** API to work properly, the config file must include the following entries. In the main section, enable these modules:

```
LoadModule log_rotate_module "{APACHEPATH}/modules/mod_log_rotate.so"  
LoadModule proxy_module "{APACHEPATH}/modules/mod_proxy.so"  
LoadModule proxy_http_module "{APACHEPATH}/modules/mod_proxy_http.so"  
LoadModule rewrite_module "{APACHEPATH}/modules/mod_rewrite.so"
```

In the normal (port 80) section and https section (port 443), the following must be added:

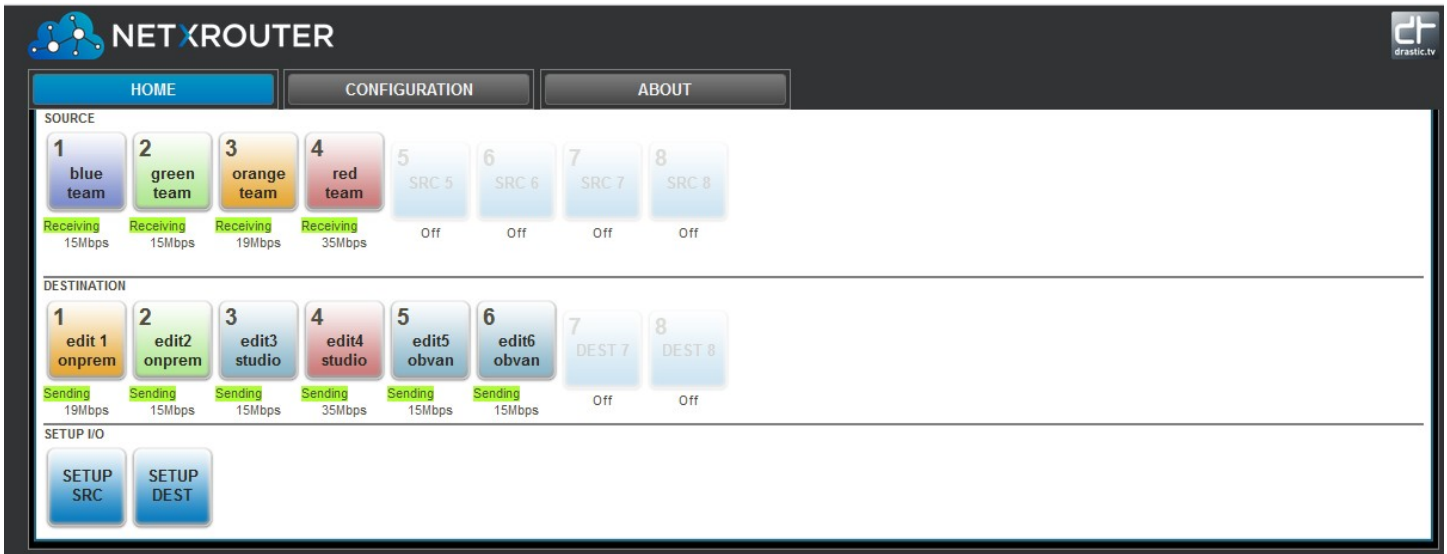
```
ReWriteEngine On  
ProxyPass /config http://127.0.0.1:1080/config  
ProxyPassReverse /config http://127.0.0.1:1080/config  
ProxyPass /options http://127.0.0.1:1080/options  
ProxyPassReverse /options http://127.0.0.1:1080/options
```

Configuring NETXROUTER

NETXROUTER is a software based router for IP streams. It assumes you have access to a number of SRT, RTP, UDP, or RIST streams, and you would like to route them to various end points for distribution. As the signals are routed they can optionally be converted from one supported protocol to another.

Set Up a Source IP Stream

Run **NETXROUTER**. The user will run the **NETXROUTER** GUI in their browser, which provides a convenient web interface to access all the controls. Select the **Home** tab. The below image shows a few sources already set up.



Click on the **Setup SRC** button on the lower left. This opens a configuration window to let you specify the stream's details.

Configure a source

Button Index:

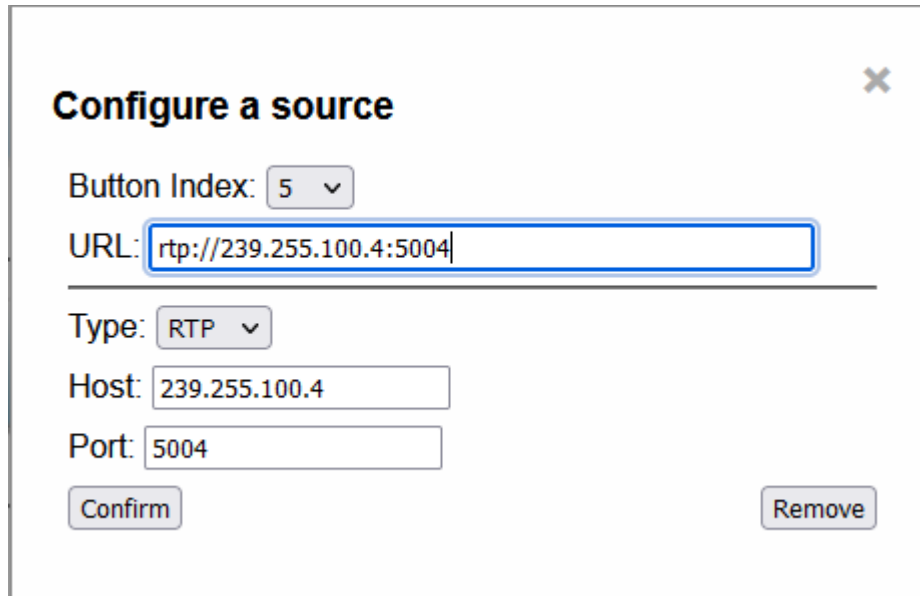
URL:

Type:

Host:

Port:

Use the **Button Index** pulldown menu to confirm which button you'd like to assign your source to. For this example, we will add a fifth source channel.



Configure a source ✕

Button Index: 5 ▾

URL: rtp://239.255.100.4:5004

Type: RTP ▾

Host: 239.255.100.4

Port: 5004

Confirm Remove

Specify the URL of the incoming stream. You can type in the host, and the port, and specify an IP stream type, and **NETXROUTER** will fill in the URL. Alternately, you can enter the URL, and the type, host, and port will all be automatically filled in.

You can check the IP Protocols section of this manual for information on each protocol's style.

In the **Host** field, specify the URL of the host system that will receive the stream. Note that the host is also contained in the source URL.

In the **Port** field, specify the port being used to send the stream. Note that the port # is also contained in the source URL.

Press the **Confirm** button. The button will connect, and begin receiving.

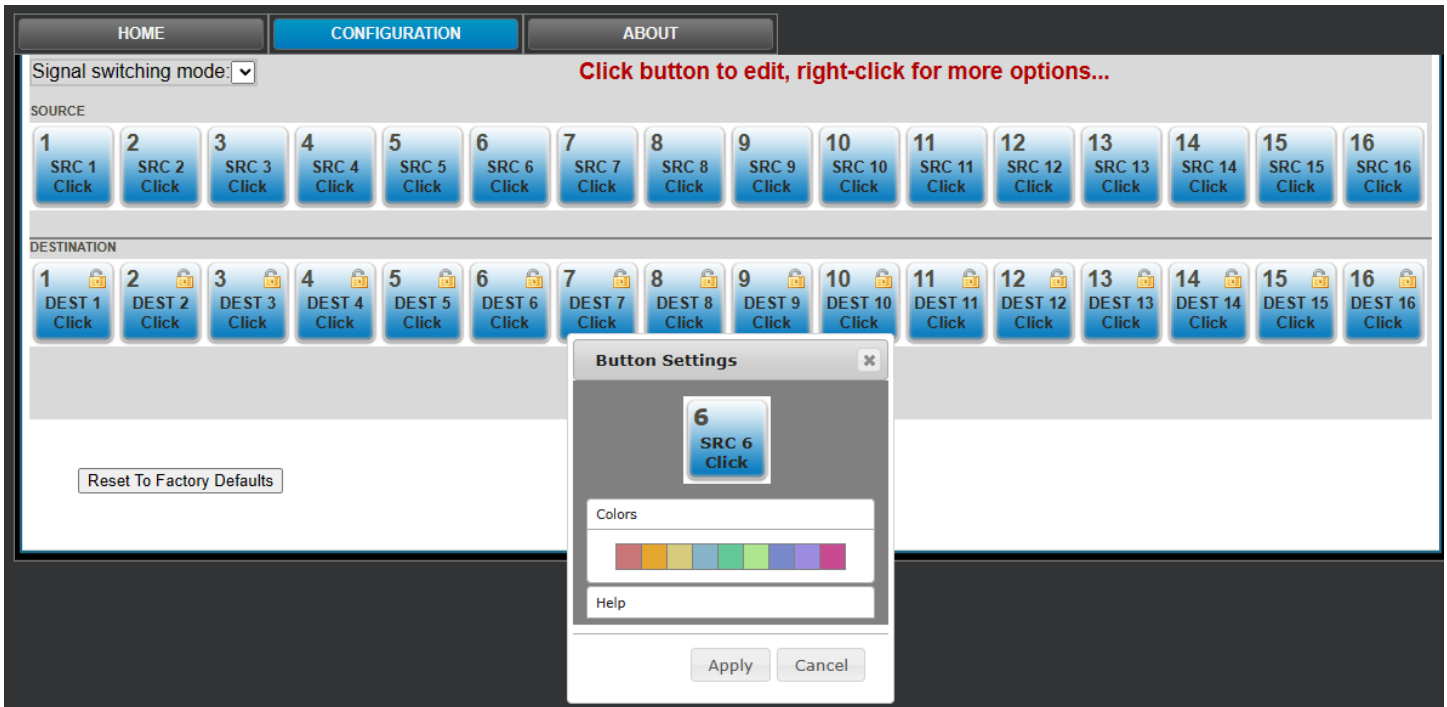


Source Button Settings

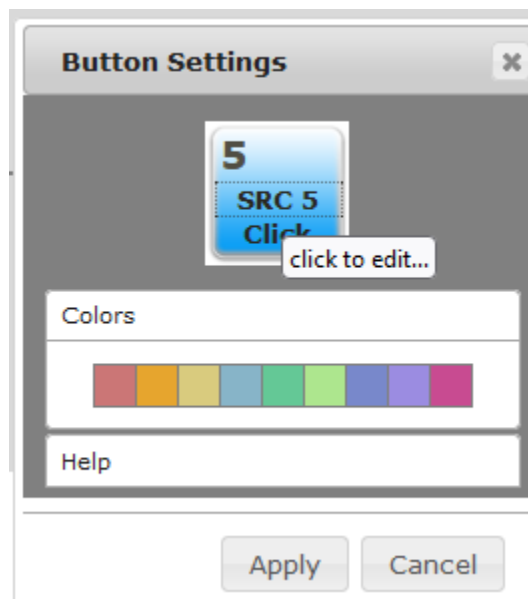
Once you have at least one source set up, you can configure how the button is displayed.

Specify Destination Details

Click the **Configuration** tab. Click a **Source** button to review its settings.



The button for each source can be customized to clarify your workflow. In the above image the user has clicked on button 6.

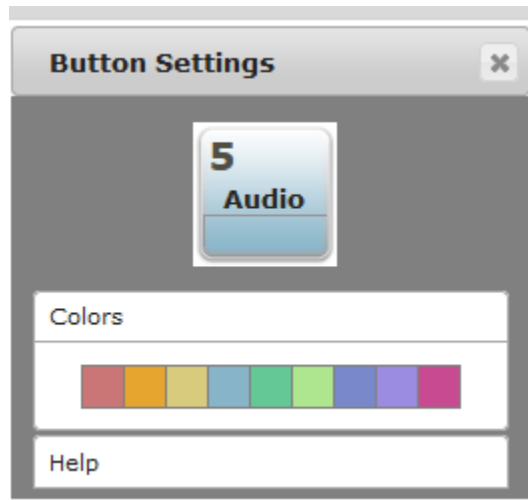


Clicking on the text fields lets you edit the text for easy identification. Clicking a color changes the color of the button so you can logically organize the streams by color.

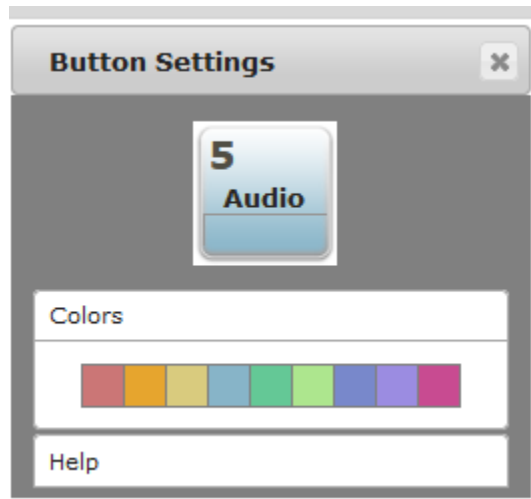
Click on the upper text field. The text will be replaced by a cursor, so you can type in a short title for the button.



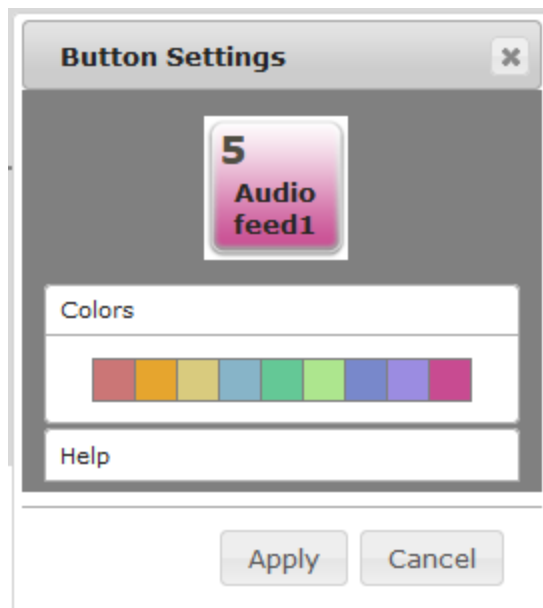
Enter a title into the field. Then click on the lower field.



Enter some descriptive text here to more easily identify the feed.



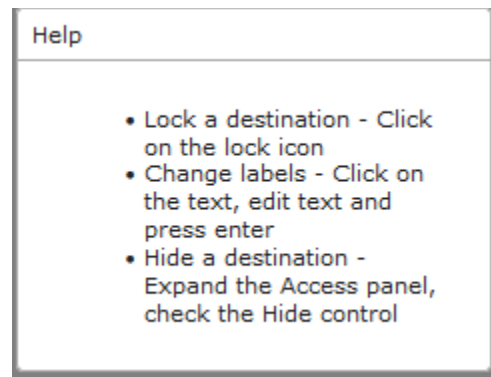
You can also change the color of the button.



Clicking the Apply button closes the button settings window, and enables your changes.



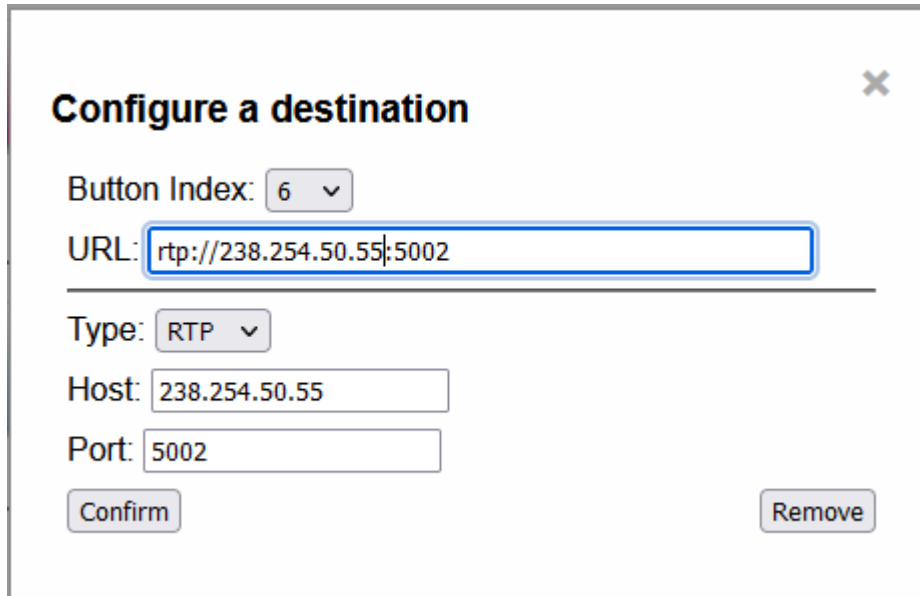
Pressing the **Help** button reveals a couple tips on how to customize each button.



Clicking **Apply** will save any changes. Clicking **Cancel** will exit the settings dialog without making any changes.

Configure a Destination

Click on the **Setup Dest** button. This opens a configuration window to let you specify the stream's details. In this example we will add a 6th destination.



The image shows a dialog box titled "Configure a destination" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

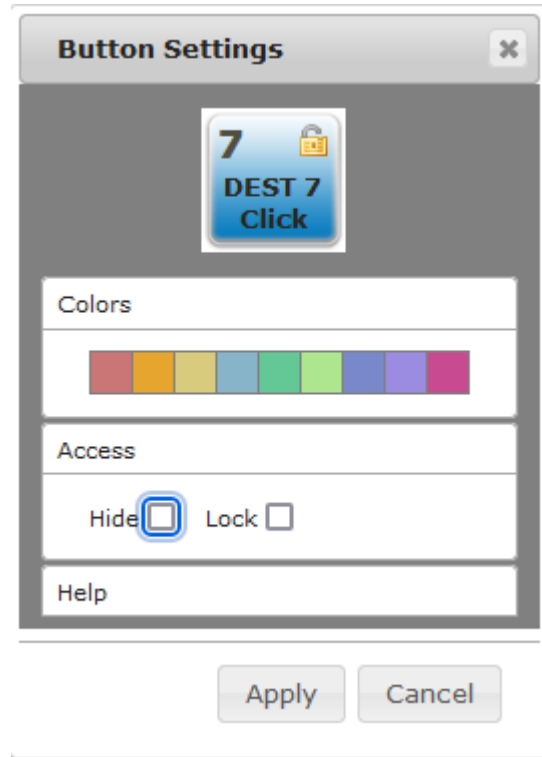
- Button Index:** A dropdown menu showing the value "6".
- URL:** A text input field containing "rtp://238.254.50.55;5002".
- Type:** A dropdown menu showing the value "RTP".
- Host:** A text input field containing "238.254.50.55".
- Port:** A text input field containing "5002".
- Buttons:** "Confirm" and "Remove" buttons at the bottom.

Clicking the confirm button will add the channel as specified. If you enter the whole URL, and Type, Host, and Port will be automatically populated. If you select the Type using the pulldown menu, and enter the host and port manually, the URL will be automatically populated.

Destination Button Settings

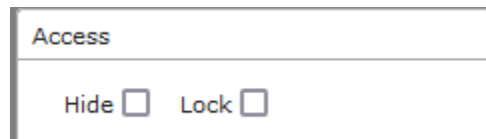
Click the **Configuration** tab. Click a **Destination** button to review its settings.

The button for each source can be customized to clarify your workflow. Clicking on the text fields lets you edit the text for easy identification. Clicking a color changes the color of the button so you can logically organize the streams by color.

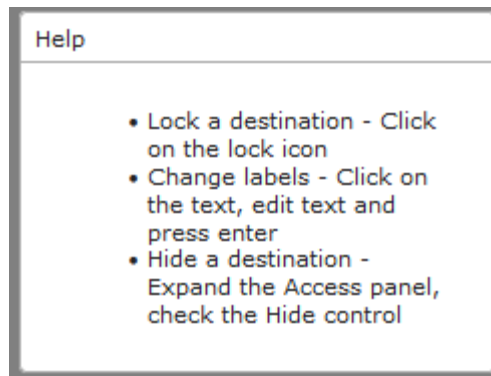


A **Destination** channel can be locked so no accidental changes can be made, and even hidden entirely in a 'set it and forget it' type of configuration.

Clicking the **Lock** checkbox locks the channel so no changes can be made to it. Clicking the **Hide** checkbox removes the channel from display to clarify the current workflow.



Pressing the **Help** button reveals a couple tips on how to customize each button.



Clicking the **Apply** button will save any changes. Clicking the **Cancel** button will exit the settings dialog without making any changes.

Setting the Destination to the Source

Once you have set up the sources and destinations, you can assign each source to a destination as required. It is a rather straightforward two step operation.

Click on a **Destination** button to select it.

Then click on the **Source** button you want to send it to.

It will display "Receiving" to indicate the source is being received.



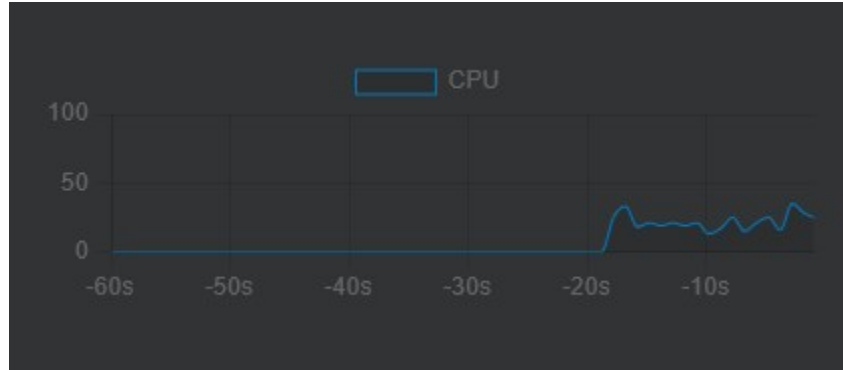
Real Time Status

The resource usage is monitored in real time and displayed at the bottom of the page, so you can make sure your system is handling the throughput properly. Specifically, the CPU usage, the Memory usage, and the Network Inbound and Outbound traffic are monitored.

Each usage meter scales dynamically, and may not show a full 100 unless you are using a lot of resources.

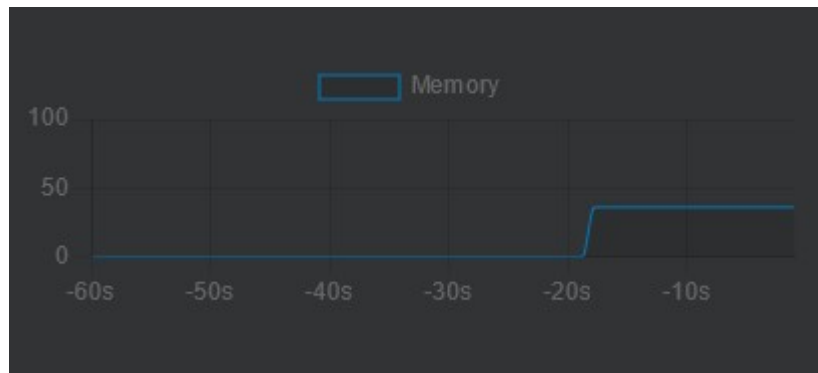
CPU

The CPU usage is monitored in real time. Clicking the checkbox will turn off the CPU monitoring.



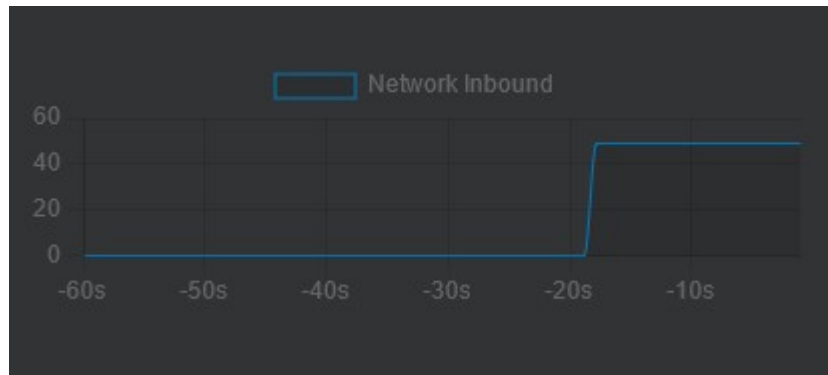
Memory

The memory usage is monitored in real time. Clicking the checkbox will turn off the memory monitoring.



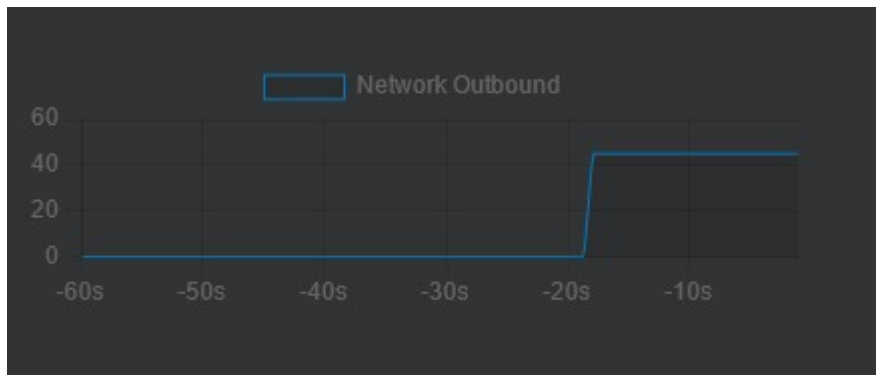
Network Inbound

The network inbound traffic is monitored in real time. Clicking the checkbox will turn off the inbound network monitoring.



Network Outbound

The network outbound traffic is monitored in real time. Clicking the checkbox will turn off the outbound network monitoring.



IP Protocols

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
```

This is a server protocol on the receiver, and requires the selected port to be open to receive. On the send side, it should work without firewall adjustment.

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 bi directionally, 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=#
```

When using the 'listener' mode, the port it is listening on must be open in the firewall. For Caller and Rendezvous, it should work without firewall adjustment.

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
```

When using the 'listener' mode, the port it is listening on must be open in the firewall. For Caller, it should work without firewall adjustment.

Operation Under Control

NETXROUTER supports AJA and Grass Valley control protocols.

Grass Valley Control Protocols

NP Commands Supported

Background:

BK, I; Connect, heartbeat
BK, N; Gets system name
BK, T; Gets software title
BK, t; Gets protocol software
BK, R; Gets software version
BK, d; Gets device name

Queries:

QN, S; Gets all srcs by name
QN, IS; Gets all srcs, name & index
QN, D; Gets all dests, names
QN, ID; Gets all dests, name & indx

AJA Control Protocols

KUMO SDI Routers and Control Panels v4.3 45

QN, L; Gets levels (hard coded as "Kumo_Lev0")
QD, {destname}; Gets: protect {On/Off}, chop{=OFF}, {sourceName}, level{=lev0}
Qd, {destname}; Gets: protect {On/Off}, chop{=OFF}, {sourceName}, level{=lev0}
Control:

TD,{destname,srcname}; Takes by name
TI,{destIndx,srcIndx}; Takes by index
PR,{destname, levelmask} Sets lock for given dest
UP,{destname, levelmask} Unsets lock for given dest

This manual has been compiled to assist the user in their experience using **NETXROUTER** software. It is believed to be correct at the time of writing. 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)opyright 2016-2024, Drastic Technologies Ltd. All Rights Reserved.