XPression

Clips User Guide

VERSION 12.5

ROSS

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at solutions@rossvideo.com.

David Ross

CEO, Ross Video

dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

XPression Clips User Guide

- Ross Part Number: 3500DR-019-12.5
- Version: 12.5

The information contained in this guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

End User Software License Agreement

This End User Software License Agreement is a legal agreement between you (the "**Licensee**") and Ross Video Limited ("**Ross Video**") specifying the terms and conditions of your installation and use of the Software and all Documentation (as those terms are defined herein).

IMPORTANT:

BY DOWNLOADING, ACCESSING, INSTALLING OR USING THE SOFTWARE AND/OR DOCUMENTATION AND/OR BY AUTHORIZING ANY THIRD PARTY, INCLUDING WITHOUT LIMITATION AN INSTALLER OR COMMISSIONER ACTING ON YOUR BEHALF TO DO SO, LICENSEE AGREES TO THE TERMS OF THIS AGREEMENT AND THE LICENSE GRANTED HEREUNDER SHALL BE EFFECTIVE AS OF AND FROM SUCH DATE. IF YOU DO NOT WISH TO ACCEPT THE TERMS AND CONDITIONS OF THIS AGREEMENT, DO NOT DOWNLOAD, ACCESS, INSTALL, REFER TO OR OTHERWISE USE THE SOFTWARE AND/OR DOCUMENTATION.

1. **INTERPRETATION.** In this Agreement, (a) words signifying the singular number include the plural and vice versa, and words signifying gender include all genders; (b) every use of the words "herein", "hereof", "hereto" "hereunder" and similar words shall be construed to refer to this Agreement in its entirety and not to any particular provision hereof; (c) reference to any agreement or other document herein will be construed as referring to such agreement or other document as from time to time amended, modified or supplemented (subject to any restrictions on such amendment, modification or supplement set forth therein); (d) every use of the words "including" or "includes" is to be construed as meaning "including, without limitation" or "includes, without limitation", respectively; and (e) references to an Article or a Section are to be construed as references to an Article or Section of or to this Agreement unless otherwise specified.

2. **DEFINITIONS.** In this Agreement, in addition to the terms defined elsewhere in this Agreement, the following terms have the meanings set out below:

   "**Affiliate**" means, with respect to any Person, any other Person who directly or indirectly controls, is controlled by, or is under direct or indirect common control with, such Person. A Person shall be deemed to control a Person if such Person possesses, directly or indirectly, the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise; and the term "controlled" and "controlling" shall have a similar meaning.

   "**Agreement**" means this End User Software License Agreement including the recitals hereto, as the same may be amended from time to time in accordance with the provisions hereof.

   "**Backup System**" means the secondary piece of Designated Equipment upon which the Software is installed and mirrored for the sole purpose of replacing a Primary System in the event such Primary System is not available or functioning properly for any reason.

   "**Change of Control**" means (a) the direct or indirect sale, transfer or exchange by the shareholders of a Party of more than fifty percent (50%) of the voting securities of such Party, (b) a merger or amalgamation or reorganization or other transaction to which a Party is party after which the shareholders of such Party immediately prior to such transaction hold less than fifty percent (50%) of the voting securities of the surviving entity, (c) the sale, exchange, or transfer of all or substantially all of the assets of a Party.

"Confidential Information" means all data and information relating to the business and management of either Party, including the Software, trade secrets and other technology to which access is obtained or granted hereunder by the other Party, and any materials provided by Ross Video to Licensee; provided, however, that Confidential Information shall not include any data or information which:

(i) is or becomes publicly available through no fault of the other Party;

(ii) is already in the rightful possession of the other Party prior to its receipt from the other Party;

(iii) is already known to the receiving Party at the time of its disclosure to the receiving Party by the disclosing Party and is not the subject of an obligation of confidence of any kind;

(iv) is independently developed by the other Party;

(v) is rightfully obtained by the other Party from a third party; or

(vi) is disclosed with the written consent of the Party whose information it is.

"Designated Equipment" shall mean (a) the hardware products sold by Ross Video to Licensee on which the Software is installed and licensed for use, as the same may be replaced from time to time by Ross Video; or (b) in the case of Software licensed on a stand-alone basis, the equipment of Licensee on which the Software is to be installed and meets the minimum specifications set out in the Documentation.

"Documentation" shall mean manuals, instruction guides, user documentation and other related materials of any kind pertaining to the Software (whether in electronic, hard-copy or other media format) that are furnished to Licensee by or on behalf of Ross Video in relation to the Software.

"Freeware" means Software that is available free of charge from Ross Video, and includes, without limitation the master control system software known as "DashBoard".

"Governmental Authority" means (a) any federal, provincial, state, local, municipal, regional, territorial, aboriginal, or other government, governmental or public department, branch, ministry, or court, domestic or foreign, including any district, agency, commission, board, arbitration panel or authority and any subdivision of any of them exercising or entitled to exercise any administrative, executive, judicial, ministerial, prerogative, legislative, regulatory, or taxing authority or power of any nature; and (b) any quasi-governmental or private body exercising any regulatory, expropriation or taxing authority under or for the account of any of them, and any subdivision of any of them.

"Improvements" means all inventions, works, discoveries, improvements and innovations of or in connection with the Software, including error corrections, bug fixes, patches and other updates in Object Code form to the extent made available to Licensee in accordance with Ross Video's release schedule.

"License Fee" means the fee(s), if any, payable in respect of the Software in accordance with the relevant invoice(s) or other purchase documents delivered in connection with this Agreement.

"License Period" means the period of time that Licensee will have the rights granted under this Agreement, as may be specified in an Order.

"**Modifications**" means any enhancements, changes, corrections, translations, adaptations, revisions, developments, upgrades or updates thereto; and "Modify" shall mean the creation of any of the foregoing.

"**Object Code**" means the machine readable executable form of a computer software program.

"Open Source Components" means third party Open Source software, libraries or other components.

"Open Source License" means the license that governs each Open Source Component.

"Order" means the documents provided by Ross Video to Licensee detailing the Ross Video products contemplated for purchase, the corresponding fees and License Period that may apply to the Software, including any and all quotations, purchase orders, acknowledgments, pro formas, invoices and other purchase documentation.

"**Parties**" means both Ross Video and Licensee and "Party" means either one of them as the context requires.

"**Person**" will be broadly interpreted and includes (a) a natural person, whether acting in his or her own capacity, or in his or her capacity as executor, administrator, estate trustee, trustee or personal or legal representative; (b) a corporation or a company of any kind, a partnership of any kind, a sole proprietorship, a trust, a joint venture, an association, an unincorporated association, an unincorporated syndicate, an unincorporated organization or any other association, organization or entity of any kind; and (c) a Governmental Authority.

"**Primary System**" means the Designated Equipment upon which the Software is installed and executed to deliver its intended functionality.

"Released Claims" has the meaning ascribed to it in Section 9(b).

"Released Parties" has the meaning ascribed to it in Section 9(b).

"Ross Video" means Ross Video Limited and its Affiliates.

"Software" means the version of the Object Code licensed and delivered to Licensee by Ross Video concurrently with delivery of this Agreement, including without limitation the Freeware, and any subsequent error corrections, updates, Modifications or Improvements provided to Licensee by Ross Video pursuant to this Agreement, but specifically excluding any features or plug-ins that may be purchased by you directly from third parties as upgrades or enhancements to the Software.

"**Source Code**" means the human readable form of a computer software program, and all tools and documentation necessary for a reasonably competent computer programmer to understand, maintain and Modify the Software.

"**Third Party Software**" means those portions of the Software, if any, which are owned or controlled by third parties and licensed to Ross Video pursuant to certain license agreements or arrangements with such third parties, including the Open Source Components and NDI®[1] software (http://NDI.video); and

"**Use**" means to execute, run, display, store, merge, network, Modify, translate, host or integrate with Licensee's products or other third party software.

[1] NDI® is a registered trademark of Vizrt NDI AB.

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   If the Primary System is not operating properly for any reason, the Software may be used on the designated Backup System for that Primary System until such time that the Primary System begins operating properly. The Software and Documentation are provided to Licensee for the exclusive use by Licensee's organization for its ordinary business purposes and shall not be used by any third party for any purposes. Licensee may make copies of the Software as required for internal backup and archival purposes. To the extent permitted hereunder, Licensee may distribute copies of the Software and/or Documentation to members of its organization, provided (a) this Agreement is included with each copy, (b) any member of its organization who uses the Software and/or Documentation accepts and agrees to be bound by the terms of this Agreement and by any other license agreements or other agreement incorporated by reference into this Agreement, and (c) Licensee has paid any applicable additional License Fees in respect of copying and redistributing of the Software. To the extent Licensee is permitted to make copies of the Software under this Agreement, Licensee agrees to reproduce and include on any copy made or portion merged into another work, all Ross Video proprietary notices, including any notices with respect to copyrights, trademarks and this License. With the exception of copying the Software for backup or archival purposes, Licensee agrees to keep a record of the number and location of all such copies and will make such record available at Ross Video's request. The Software may include mechanisms to limit or inhibit copying.

4. **LICENSE RESTRICTIONS.** Except as otherwise provided in section 3 above, Licensee shall not: (1) copy any Software or Documentation, or part thereof, which is provided to Licensee by Ross Video pursuant to this Agreement, in Object Code form, Source Code form or other human or machine readable form, including written or printed documents, without the prior written consent of Ross Video; (2) in any way market, distribute, export, translate, transmit, merge, Modify, transfer, adapt, loan, rent, lease, assign, share, sub-license, sell, make available for download on any website or make available to another Person, the Software and/or Documentation, in whole or in part, provided that Licensee shall not be prohibited from renting or leasing the Software if Ross Video has consented, in writing, to Licensee engaging in such activities in respect of the Software; (3) reverse engineer, decompile or disassemble the Software or electronically transfer it into another computer language; or (4) use the Software or Documentation in a manner that is inconsistent with the License granted hereunder or that will result in a breach of this Agreement. Licensee agrees to take all reasonable precautions to prevent third parties from using the Software and/or Documentation in any way that would constitute a breach of this Agreement, including such precautions Licensee would ordinarily take to protect its own proprietary software, hardware or information.

5. **DELIVERY.** Ross Video shall deliver to Licensee one (1) master copy of the Software in compiled binary (executable) form suitable for reproduction in electronic files only and Ross Video shall deliver to Licensee a minimum of one copy of the Documentation.

6. **IMPROVEMENTS.** Licensee may from time to time request Ross Video to incorporate certain Improvements into the Software. Ross Video may, in its sole discretion, undertake to incorporate and provide such Improvements to Licensee with or without payment of a fee to be negotiated at the time of such request. All Improvements, whether recommended and developed by Ross Video or Licensee, shall be considered the sole property of Ross Video and shall be used by Licensee pursuant to the terms of the License granted under this Agreement.

7. **FREEWARE.** Other than the obligation to pay a License Fee, which does not apply to the Freeware, all other provisions of this End User Software License Agreement apply to the Freeware in the same way as they apply to all other Software that is the subject of this Agreement. In addition, in connection with the Freeware, the following provisions apply:

   a. Licensee will not Use the Freeware to engage in or allow others to engage in any illegal activity.

   b. Licensee will not Use the Freeware in any way that will interfere with or damage the operation of the services of any third parties by overburdening/disabling network resources through automated queries, excessive usage or similar conduct.

   c. Licensee will not Use the Freeware to engage in any activity that will violate the rights of others, including, without limitation, by using it for operations that involve child labour, suppressing the right of freedom of expression or endangering the security of person.

8. **OWNERSHIP.** The Parties acknowledge and agree that, as between the Parties, Ross Video shall be the owner of all intellectual property rights in the Software, Documentation and all related Modifications and Improvements, written materials, logos, trademarks, trade names, copyright, patents, trade secrets and moral rights, registered or unregistered. No proprietary interest or title in or to the intellectual property in the Software, Documentation or any Improvements or Modifications is transferred to Licensee by this Agreement. Ross Video reserves all rights not expressly licensed to Licensee under section 3.

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   a. Software may use and/or be provided with Open Source Components, including those detailed in the Third Party section below. To the extent stipulated by its Open Source License, each such Open Source Component is licensed directly to Licensee from its respective licensors and not sub-licensed to Licensee by Ross Video, and such Open Source Component is subject to its respective Open Source License, and not to this Agreement. If, and to the extent, an Open Source Component requires that this Agreement effectively impose, or incorporate by reference, certain disclaimers, permissions, provisions, prohibitions or restrictions, then such disclaimers, permissions, provisions, prohibitions or restrictions shall be deemed to be imposed, or incorporated by reference into this Agreement, as required, and shall supersede any conflicting provision of this Agreement, solely with respect to the corresponding Open Source Component which is governed by such Open Source License.

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10. **THIRD PARTY SOFTWARE.**

a. Licensee acknowledges that the Third Party Software is not owned by Ross Video. Notwithstanding any other provision of this Agreement, Ross Video, to the extent permitted by applicable law, offers no warranties (whether express, implied, statutory or by course of communication or dealing with Licensee, or otherwise) with respect to the Third Party Software. Ross Video may pass through to Licensee, if and to the extent permitted by applicable law, any warranties expressly provided by such third parties to Ross Video for such Third Party Software.

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11. **INTELLECTUAL PROPERTY INDEMNITY.**

a. Ross Video agrees to defend, indemnify and hold harmless Licensee from final damages awarded by a court of competent jurisdiction (hereinafter referred to as the "**Losses**"), which Licensee, or any of its officers or directors, may incur, suffer or become liable for as a result of, or in connection with, any third party claim asserted against Licensee to the extent such claim is based on a contention that the Software, Documentation or any portion thereof, infringes any valid, registered, enforceable patents, copyrights, trade secrets, trademarks or other intellectual property rights of any third party, provided that (a) the allegedly infringing Software or Documentation has been used within the scope of and in accordance with the terms of this Agreement, and (b) Licensee notifies Ross Video in writing of such claim within ten (10) days of a responsible officer of Licensee becoming aware of such claim. If the Software, Documentation or any portion thereof is held to constitute an infringement of a third party's intellectual property rights, and use thereof is enjoined, Ross Video shall, at its election and expense, either (i) procure the right to use the infringing element of the Software or Documentation; or (ii) replace or modify the element of the Software or Documentation so that the infringing portion is no longer infringing and still performs the same function without any material loss of functionality. Ross Video shall make every reasonable effort to correct the situation with minimal effect upon the operations of Licensee.

b. Notwithstanding the above, Ross Video reserves the right to terminate this Agreement and the License granted hereunder on immediate notice to Licensee, and without liability to Licensee, in the event that the Software or Documentation constitutes or may, in Ross Video's determination, constitute, an infringement of the rights of a third party that Ross Video, in its sole discretion, does not consider to be affordably remediable.

c. Either party may terminate this Agreement immediately should any Software become, or in either party's opinion be likely to become, the subject of a claim of infringement of any intellectual property right and, in such event, there shall be no claim by either Licensee or Ross Video against the other arising out of such termination, provided that the foregoing shall not apply to a claim for infringement by Ross Video against Licensee in the event that Licensee is alleged to have infringed Ross Video's intellectual property rights, in which case Licensee shall remain liable for all outstanding License Fees and other amounts owing to Ross Video.

d. Notwithstanding the foregoing, Ross Video shall have no liability for any claim of infringement based on use of other than a current, unaltered release of the Software and/or Documentation available from Ross Video if such infringement would have been avoided by the use of a current, unaltered release of the Software and/or Documentation provided that such current, unaltered release performs substantially in conformity with the specifications set out in the Documentation and was provided, at no additional cost by Ross Video, to those subscribing for maintenance services for the Software or Documentation.

12. **CONFIDENTIALITY.** Each Party shall maintain in confidence all Confidential Information of the other Party, shall use such Confidential Information only for the purpose of exercising its rights and fulfilling its obligations under this Agreement, and shall not disclose any Confidential Information of the disclosing Party to any third party except as expressly permitted hereunder or make any unauthorized use thereof. Each Party shall disclose the Confidential Information only to those of its employees, consultants, advisors, and/or subcontractors who have a need to know the Confidential Information. Each Party shall, prior to disclosing the Confidential Information to such employees, consultants, advisors and/or subcontractors, obtain their agreement to receive and use the Confidential Information on a confidential basis on the same terms and conditions contained in this Agreement. The receiving Party shall treat the Confidential Information of the disclosing Party with the same degree of care against disclosure and/or unauthorized use as it affords to its own information of a similar nature, or a reasonable degree of care, whichever is greater. The receiving Party further agrees not to remove or destroy any proprietary or confidential legends or markings placed upon any documents or other materials of the disclosing Party. The obligations of confidence set forth in this Agreement shall extend to any Affiliates that have received Confidential Information of the disclosing Party and shall also cover Confidential Information disclosed by any Affiliate. The receiving Party shall be responsible for any actions or omissions of its Affiliates as if such actions or omissions were its own.

    Either party may disclose certain Confidential Information if it is expressly required to do so pursuant to legal, judicial, or administrative proceedings, or otherwise required by law, provided that (i) such Party provides the other Party with reasonable written notice prior to such disclosure; (ii) such Party seeks confidential treatment for such Confidential Information; (iii) the extent of such disclosure is only to the extent expressly required by law or under the applicable court order; and (iv) such Party complies with any applicable protective or equivalent order.

    Each of Ross Video and Licensee (the **"Indemnifying Party"**, as applicable) agree to indemnify the other (the **"Indemnified Party"**, as applicable) for all Losses incurred by the Indemnified Party as a result of a failure of the Indemnifying Party to comply with its obligations under this Section 12 provided that the Indemnified Party has given prompt notice of any such claim and, to the extent that a claim may lie against a third party for the unauthorized disclosure of such Confidential Information, the right to control and direct the investigation, preparation, action and settlement of each such claim and, further, provided that the Indemnified Party reasonably co-operates with the Indemnifying Party in connection with the foregoing and provides the Indemnifying Party with all information in the Indemnified Party's possession related to such claim and such further assistance as reasonably requested by the Indemnifying Party.

    The Parties acknowledge and agree that any breach of the confidentiality provisions of this Agreement by one Party may cause significant and irreparable injury to the other Party that is not compensable monetarily, as well as damages that may be difficult to ascertain, and agrees that, in addition to such other remedies that may be available at law or in equity, the other Party shall be entitled to seek injunctive relief (including temporary restraining orders, interim injunctions and permanent injunctions) in a court of competent jurisdiction in the event of the breach or threatened breach by such party of any of the confidentiality provisions of this Agreement. The relief contemplated in this Section shall be available to each Party without the necessity of having to prove actual damages and without the necessity of having to post any bond or other security. Each Party further agrees to notify the other Party in the event that it learns of or has reason to believe that any Person has breached the confidentiality provisions of this Agreement.

13. **LIMITATION OF LIABILITY.** The limitation of liability provisions of this Agreement reflect an informed voluntary allocation of the risks (known and unknown) that may exist in connection with the licensing of the Software or Documentation hereunder by Ross Video, and that voluntary risk allocation represents a material part of the Agreement reached between Ross Video and Licensee. Should Ross Video be in breach of any obligation, Licensee agrees that Licensee's remedies will be limited to those set forth in this Agreement. No action, regardless of form, arising out of this Agreement may be brought by Licensee more than twelve (12) months after the facts giving rise to the cause of action have occurred, regardless of whether those facts by that time are known to, or reasonably ought to have been discovered by, Licensee.

    (A) EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT, THE SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" AND ROSS VIDEO (I) MAKES NO OTHER REPRESENTATIONS, AND PROVIDES NO WARRANTIES OR CONDITIONS OF ANY KIND, EXPRESS OR IMPLIED, STATUTORY, BY USAGE OF TRADE CUSTOM OF DEALING, OR OTHERWISE, AND (II) SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF UNINTERRUPTED OR ERROR FREE OPERATION, MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS VIDEO DOES NOT REPRESENT OR WARRANT THAT THE SOFTWARE WILL MEET ANY OR ALL OF LICENSEE'S PARTICULAR REQUIREMENTS, THAT THE USE AND OPERATION OF THE SOFTWARE WILL OPERATE ERROR-FREE OR UNINTERRUPTED, THAT ALL PROGRAMMING ERRORS IN THE SOFTWARE CAN BE FOUND IN ORDER TO BE CORRECTED, OR THAT THE SOFTWARE WILL BE COMPATIBLE WITH OTHER PROGRAMS, SYSTEMS, AND HARDWARE.

    (B) IN NO EVENT SHALL ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS, BE LIABLE FOR ANY CLAIM FOR INDIRECT, CONSEQUENTIAL, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, AGGRAVATED DAMAGES; LOST PROFITS, OR LOST REVENUE ARISING FROM OR IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, OR IN TORT, EVEN IF THE PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

    (C) IN ANY EVENT THE AGGREGATE LIABILITY OF ROSS VIDEO, ITS AFFILIATES AND LICENSORS, AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS, FOR ANY CLAIM FOR DIRECT DAMAGES WITH RESPECT TO THE SUBJECT MATTER OF THIS AGREEMENT SHALL NOT EXCEED THE AMOUNT OF THE PURCHASE PRICE PAID TO ROSS VIDEO UNDER THIS AGREEMENT.

14. **TERM AND TERMINATION**.

    (1) Unless terminated earlier in accordance with the terms of this Agreement, the term of this Agreement shall commence upon Licensee's first download, access, installation, or other use of the Software or Documentation and continues until, in the case of Software licensed with Designated Equipment provided by Ross Video, the earliest of (a) the end of the License Period, or (b) if the Designated Equipment is assigned or transferred in accordance with this Agreement, the date on which the Designated Equipment is no longer owned by Licensee;

    (2) Either Party shall have the right to terminate this Agreement on notice to the other Party if:

        (a) the other Party fails to pay any fees or other amounts when due hereunder or under any other agreement between the Parties (or any Affiliates of the Parties, as applicable) in connection with the Software and/or Designated Equipment and such breach is not cured within thirty (30) days after written notice of such failure to pay is given to the defaulting Party by the non-defaulting Party;

        (b) the other Party shall file a voluntary petition in bankruptcy or insolvency or shall petition for reorganization under any bankruptcy law, consent to an involuntary petition in bankruptcy, or if a receiving order is given against it under the Bankruptcy and Insolvency Act (Canada) or the comparable law of any other jurisdiction (and such is not dismissed within ten (10) days);

(c) there shall be entered an order, judgment or decree by a court of competent jurisdiction, upon the application of a creditor, approving a petition seeking reorganization or appointing a receiver, trustee or liquidator of all or a substantial part of the other Party's assets and such order, judgment or decree continues in effect for a period of thirty (30) consecutive days; or

(d) the other Party shall fail to perform any of the other material obligations set forth in this Agreement and such default, in the case of a default which is remediable, continues for a period of thirty (30) days after written notice of such failure has been given by the non-defaulting Party or, in the case of a non-remediable default, immediately upon notice.

(3) Notwithstanding anything to the contrary contained in this Agreement:

(a) Ross Video may forthwith terminate this Agreement if Licensee is in breach of any of sections 3, 4 or 12 of this Agreement. For greater certainty, in such instances Ross Video shall provide written notice of such termination as soon as practicable but written notice shall not be a necessary prerequisite to such termination; and

(b) in the event of a Change of Control of Licensee, Ross Video shall have the right to terminate this Agreement and the License granted hereunder upon thirty (30) days' prior written notice to Licensee. For greater certainty, Ross Video's right to terminate in the event of a Change of Control of Licensee shall continue for a period of six (6) months from the date Licensee delivers notice of such Change of Control to Ross Video.

(c) Ross Video may terminate the License immediately on the date on which it provides notice to Licensee, if its agreements for Third Party Software are terminated.

(4) Upon the termination or expiry of this Agreement:

(a) Licensee shall immediately cease and desist all use of the Software and Documentation;

(b) Licensee shall immediately deliver to Ross Video any of Ross Video's Confidential Information provided hereunder (including the Software and Documentation) then in its possession or control, if any, and shall deliver a certificate of an officer of Licensee certifying the completeness of same;

(c) Licensee shall refrain from further use of such Confidential Information; and

(d) Licensee shall forthwith pay all amounts owing to Ross Video or any of its Affiliates hereunder.

15. **SURVIVAL.** The provisions of sections 1, 2, 6, 8, 9, 10, 11, 12, 13, 14, 18, 22, 23, and 24 herein shall survive the expiry or termination of this Agreement.

16. **FORCE MAJEURE.** Dates and times by which Ross Video is required to render performance under this Agreement shall be automatically postponed to the extent and for the period that Ross Video is prevented from meeting them by reason of events of force majeure or any cause beyond its reasonable control provided Ross Video notifies Licensee of the commencement and nature of such cause and uses its reasonable efforts to render performance in a timely manner.

17. **ASSIGNMENT.** Ross Video may assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, upon notice to Licensee. Licensee shall not assign this Agreement, or any of its rights or obligations hereunder, in whole or in part, without the prior written consent of Ross Video, which consent may not be unreasonably withheld. This Agreement enures to the benefit of and is binding upon each of the Parties and their respective successors and permitted assigns.

18. **GOVERNING LAW.** If Licensee acquired the Ross Product(s) in the United States or Canada, the laws of the state or province where Licensee's principal place of business is located govern the interpretation of this Agreement, claims for its breach, and all other claims regardless of conflict of laws principles. If Licensee acquired the Ross Product(s) in the European Union or the United Kingdom, then the laws of England and Wales apply. If Licensee acquired the Ross Product(s) in any other country, then the laws of the Province of Ontario, Canada shall apply.

19. **LANGUAGE.** The Parties have expressly required that this Agreement and all documents relating thereto be prepared in English. Les parties ont expressément exigé que cette convention ainsi que tous les documents qui s'y rattachent soient rédigés en anglais.

20. **GOVERNMENT CONTRACTS.** If the Software and/or Documentation to be furnished to Licensee hereunder are to be used in the performance of a government contract or subcontract, the Software and/or Documentation shall be provided on a "restricted rights" basis only and Licensee shall place a legend, in addition to applicable copyright notices, in the form provided under the applicable governmental regulations. For greater certainty, Ross Video shall not be subject to any flow-down provisions required by any customer of Licensee that is a Governmental Authority unless Ross Video expressly agrees to be bound by such flow-down provisions in writing.

21. **EXPORT AND IMPORT LAWS.** Licensee acknowledges and agrees that the Software (including any technical data and related technology) may be subject to the export control laws, rules, regulations, restrictions and national security controls of the United States and other applicable countries (the "**Export Controls**") and agrees not to export, re-export, import or allow the export, re-export or import of such export-controlled Software (including any technical data and related technology) or any copy, portion or direct product of the foregoing in violation of the Export Controls. Licensee hereby represents that it is not an entity or person to whom provision of the Software (including any technical data and related technology) is restricted or prohibited by the Export Controls. Licensee agrees that it has the sole responsibility to obtain any authorization to export, re-export, or import the Software (including any technical data and related technology), as may be required. Licensee will defend, indemnify and hold Ross Video harmless from any and all claims, losses, liabilities, damages, fines, penalties, costs and expenses (including attorney's fees) arising from or relating to any breach by Licensee of its obligations under this Section.

22. **AMENDMENT AND WAIVER.** No amendment, discharge, modification, restatement, supplement, termination or waiver of this Agreement or any Section of this Agreement is binding unless it is in writing and executed by the Party to be bound. No waiver of, failure to exercise or delay in exercising, any Section of this Agreement constitutes a waiver of any other Section (whether or not similar) nor does any waiver constitute a continuing waiver unless otherwise expressly provided.

23. **SEVERABILITY.** Each Section of this Agreement is distinct and severable. If any Section of this Agreement, in whole or in part, is or becomes illegal, invalid, void, voidable or unenforceable in any jurisdiction by any court of competent jurisdiction, the illegality, invalidity or unenforceability of that Section, in whole or in part, will not affect (a) the legality, validity or enforceability of the remaining Sections of this Agreement, in whole or in part; or (b) the legality, validity or enforceability of that Section, in whole or in part, in any other jurisdiction.

24. **ENTIRE AGREEMENT.** This Agreement, and any other documents referred to herein, constitutes the entire agreement between the Parties relating to the subject matter of this Agreement and supersedes all prior written or oral agreements, representations and other communications between the Parties.

Updated: November 1, 2023

Warranty and Repair Policy

Ross Video Limited (Ross) warrants its XPression Clips systems to be free from defects under normal use and service for the following time periods from the date of shipment:

- XPression Clips Server — 12 months
- XPression Clips Software Upgrades — 12 months free of charge
- System and Media hard drives — 12 months

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Extended Warranty

For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your XPression Clips system, contact your regional sales manager.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Company Address

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Contents

Introduction

Pre-rolls are a thing of the past with XPression Clips, a production clip server for live production that incorporates the latest advances in IT technologies. Built on the industry-leading XPression real-time graphics platform, XPression Clips offers you instant recall times and back-to-back clip transitions from an intuitive user interface or via automation triggers from other devices like Ross Video productions switchers.

You can simultaneously ingest multiple channels of baseband video and output multiple channels of clips to air. Both NAS and SAN configurations are available for attached storage, in addition to ample local hard drive space. Database management and synchronization are possible with the Clip Store that supports user rights and roles.

Key features of XPression Clips include:

- Multi-channel ingest and playout
- 1, 2, or 4 channels of baseband video ingest
- 2 or 4 channels of playout (user-definable fill/fill or fill/key configuration). Only one channel of 1080p 50 f/s or 1080p 59.94 f/s for fill/key.
- Back-to-back transitions
- Multiple clips on the same output
- Clip Browser with searching
- Clip trimming and looping
- VDCP, AMP, PBus, and RossTalk automation protocols
- PBus Manager for intelligent clip assignment
- Clip Manager application with user rights for database management and synchronization setup
- NAS or SAN attached storage with SNS storage (Studio Network Solutions)

Streamline your production clips workflow with Ross Video's next-generation production clip servers and transcoding applications. XPression Clips brings lightning-fast recall speeds, baseband video ingest, and multi-layer clip playback to the control room.

For More Information on...

- VDCP and AMP protocols, refer to the **Media Control Gateway** section of the *XPression Clips Workflow User Guide.*
- Clip Manager, refer to the *XPression Clips Workflow User Guide.*

About This Guide

This user guide describes the XPression Clips workflow, its configuration, and functions.

If, at any time, you have a question pertaining to the installation, configuration, or operation of the XPression Clips tools, please contact us at the numbers listed in the section Contacting Technical Support. Our technical staff are always available for consultation, training, or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Bold text	Bold text identifies a user interface element such as a dialog box, menu item, or button. For example: In the **Slug** column, type a slug name for the story.
Italic text	Italic text is used to identify the titles of referenced guides, manuals, or documents. For example: For more information, refer to the *DashBoard User Guide.*
`Courier text`	Courier text identifies text that a user must type. For example: In the **Username** box, type `postgres`.
Menu Sequences	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example: If a step reads **Server > Save As**, you would select the **Server** menu and then select **Save As**.
Hypertext	Identifies a hyperlink to a related topic.

Getting Help

The XPression Clips User Guide is supplied as a print-ready PDF file. Locate the guide in the C:\Archive folder.

Contacting Technical Support

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

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Hypertext	Identifies a hyperlink to a related topic.

Installation Notes

NVIDIA Drivers

If NVIDIA drivers are installed while XPression is running and actively outputting graphics, the output will turn green and not recover until XPression is restarted.

Windows® updates can install NVIDIA drivers automatically, which can create this situation.

Solution:

Schedule Windows updates for a time when XPression is not running.

XPression Updates

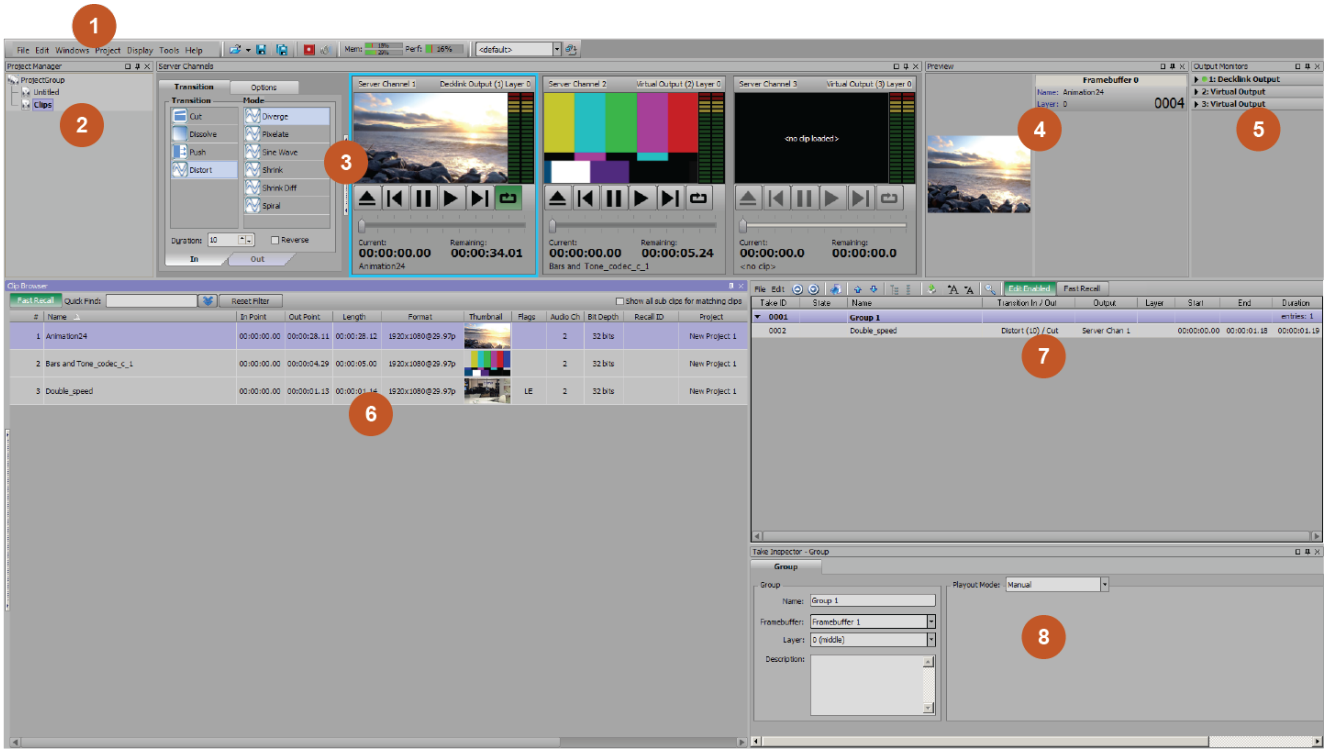
When installing a new XPression build or updates to XPression, if the installation is canceled before it finishes, the existing framebuffers will be cleared and clips will not play out.

Solution:

Reinstall XPression fully.

User Interface Overview

The following screen capture displays the main elements of the XPression Clips user interface. Descriptions of individual elements are contained in the legend below the diagram.



1. **Menu Bar & Toolbar** — access the File, Edit, Windows, Projects, Display, Tools, and Help menus. Use the toolbar to quickly access XPression tools.
2. **Project Manager** — view and manage the projects and project groups.
3. **Server Channels** — preview, playout, and edit clips.
4. **Preview** — use this window to preview a selected take item from the sequencer.
5. **Output Monitors** — select the output framebuffer. Each output framebuffer contains an infinite number of layers. The hierarchical order for visibility runs from +# to -#, with positive layers being the top layers and negative layers being the lower layers.
6. **Clip Browser** — browse for clips to drop into the Server Channels or Sequencer for preview and playout. Clips can also be edited and sub clips can be created.
7. **Sequencer** — view and control a list of take items or take item groups to be played in the order from top to bottom. A list is built by adding take items from the Clip Browser.
8. Take **Inspector** — edit the properties of a selected group or take item.

System Setup

Before you start using XPression Clips to playout clips, it needs to be configured for your environment. In addition to describing how to set preferences for XPression Clips, this section also describes how to configure GPIs, video framebuffers, audio devices, video preview, and audio monitors.

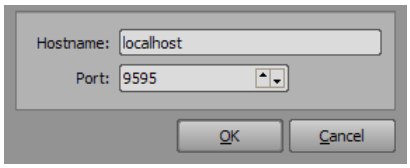
★A backup copy of the preferences and hardware setup are created when changes in the Preferences and Hardware Setup dialog box are made and OK is clicked, or when XPression is exited.

The following topics are discussed in this section:

Configuring XPression Clips for the XPression Clips Store

1. Once the XPression **Clip Store** has been configured using the **Clip Store Manager**, XPression needs to be set up for use with the **Clip Store**.
2. In XPression, select **Edit > Clip Store Setup**.

   The **Clip Store Setup** dialog opens.

3. In the **Hostname** field, enter the IP address of the Clip Store service if using remotely.

   OR

   If using the **Clip Store** service locally, use **localhost (default)**.
4. In the **Port** field, enter or select the port number for the **Clip Store** server connection.

   The default port is **9595**.
5. Select **OK**.

   XPression is now connected to the **Clip Store** service.

Setting Preferences

Before you start using XPression Clips, take some time to set up your project preferences.

To set preferences:

1. In XPression, select **Edit** > **Preferences**.

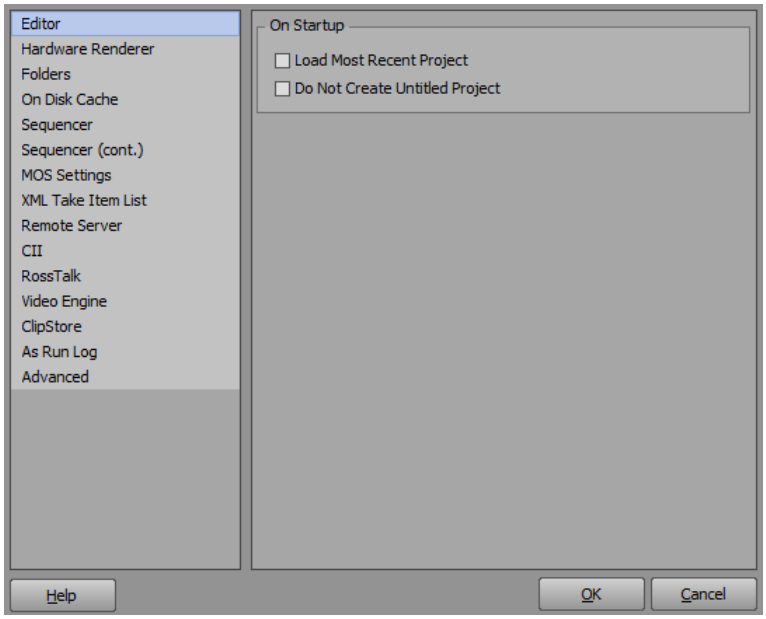
   The **Preferences** window opens.
2. From the list on the left side, select a component.
3. Follow the instructions in the topics below to configure each component.

Editor

Use the **Editor** panel to set project preferences for XPression Clips.

To configure the Editor settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Editor** panel.



3. In the **On Startup** section, select from the following options as needed:
   - Select the **Load Most Recent Project** checkbox to automatically load the last opened project after starting XPression.
   - Select the **Do Not Create Untitled Project** chec box to avoid creating a new project when launching XPression.

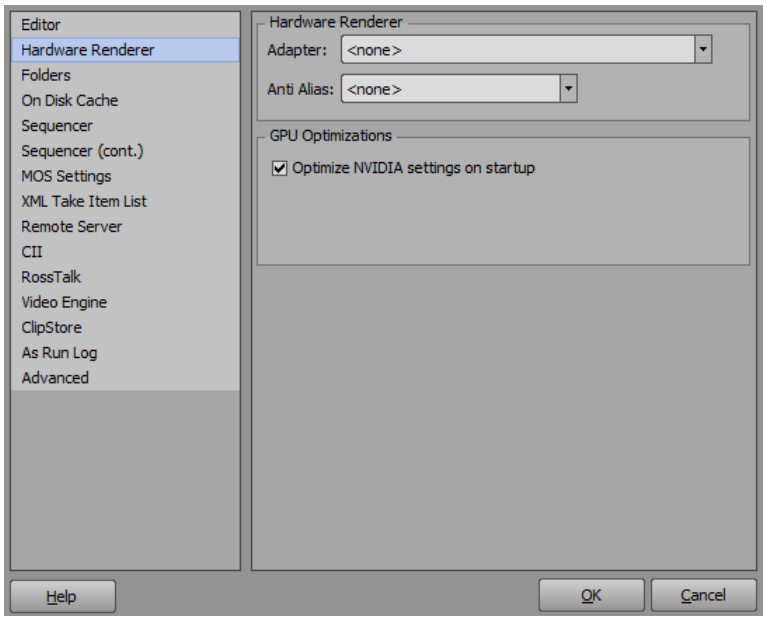
     This is useful for MOS workflows.
4. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Hardware Renderer

Use the **Hardware Renderer** panel to select the graphics device installed in the XPression computer and the **Anti Alias** quality and to optimize the GPU.

To configure the Hardware Renderer settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Hardware Renderer** panel.



3. From the **Adapter** drop-down, select the graphics device used by XPression to render scenes to output framebuffers.
4. From the **Anti-Alias** drop-down, select the sampling value used to control the visual quality of rendered output.

   The higher the sampling value, the smoother the rendered graphic edges. The **<none>** option is equal to 1x multi-sampling.

   For most situations, set the sampling value according to the best quality/performance ratio, usually around **8x**.
5. In the **GPU Optimizations** section, select **Optimize NVIDIA settings on startup** to optimize the NVIDIA global settings on startup to disable options like **Anti-aliasing Gamma Correction**.

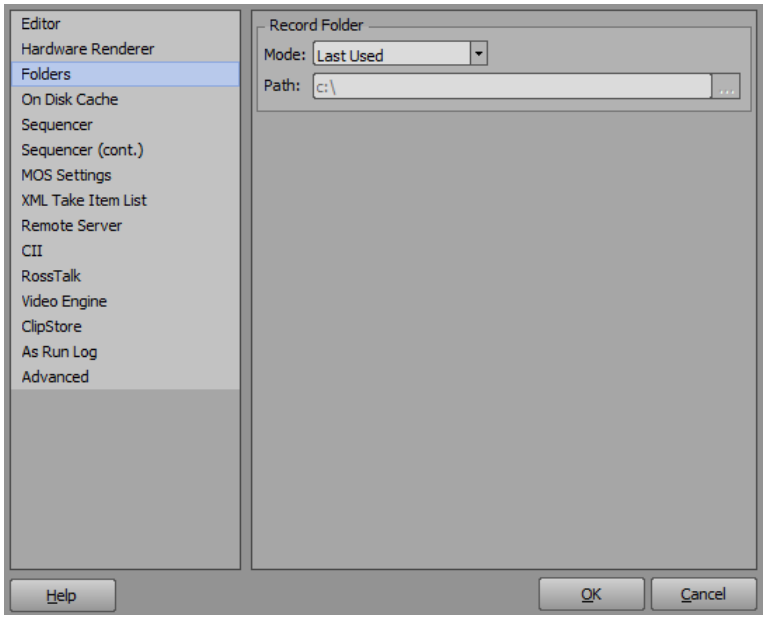
   This option is selected by default.
6. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Folders

Use the **Folders** panel to select the folder used by XPression to store files created by the **Record Client**.

To configure the Folders options:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Folders** panel.



3. In the **Record Folder** section, from the **Mode** drop-down, select the mode of folder management to use to store files created by the **Record Client**.

   The options are:

   - **Project | Last Used** — save the files to the last folder used in a project folder for saving a file.
   - **Last Used** — save the files to the last folder used for saving a file.
   - **Fixed** — always save the files to the folder file path entered or selected in the **Path** field.
   - **Project** — always save the files to the last project folder used for saving a file.

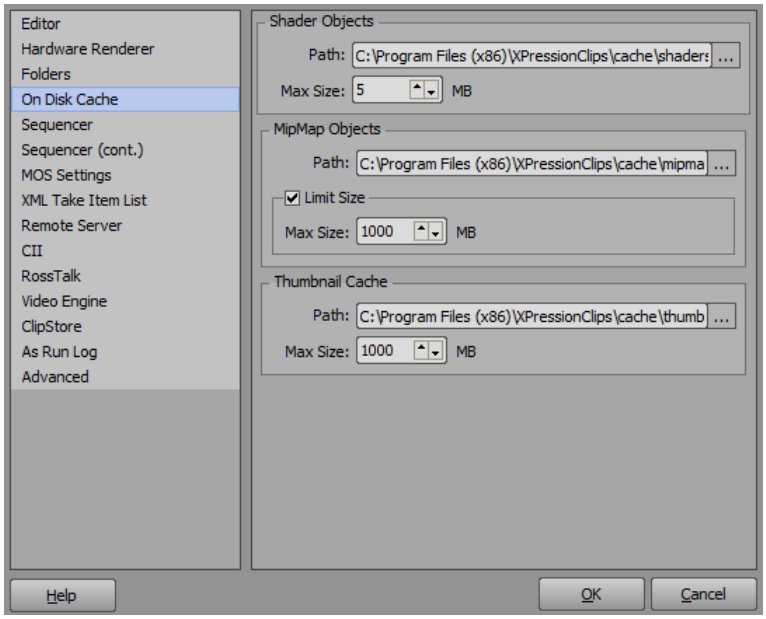
4. If using the **Fixed** folder mode, in the **Path** field, enter the full path to the folder in which to save files created using the **Record Client**, or select **Browse (...)** to locate and select a folder.
5. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

On Disk Cache

Use the **On Disk Cache** panel to set the folder locations used by XPression to store cache files on disk.

To configure the Texture & Image Cache settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **On Disk Cache** panel.



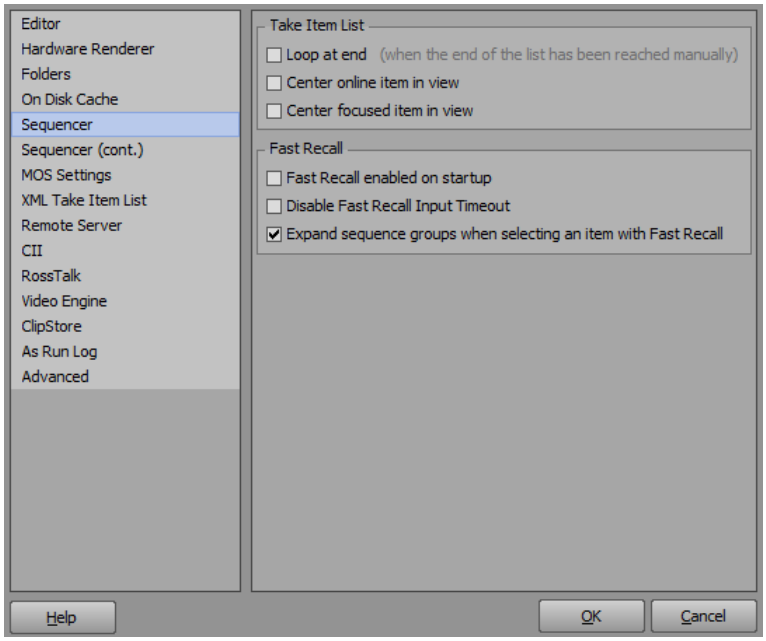
3. In the **Shader Objects** section, do the following:
   - In the **Path** field, enter the full path to the folder in which to cache shader object files or select **Browse (...)** to locate and select the **Shader Objects Cache** folder.
   - In the **Max Size** field, enter or select the size limit in MB for the total of all the cache files stored in the **Shader Objects Cache** folder.
4. In the **MipMap Objects** section, do the following:
   - In the **Path** field, enter the full path to the folder in which to cache MipMap object files or select **Browse (...)** to locate and select the **MipMap Objects Cache** folder.
   - Select **Limit Size** to limit the total size of MipMap object files stored in the cache folder.
   - In the **Max Size** field, enter or select the size limit in MB for the total of all the cache files stored in the **MipMap Objects Cache** folder.
5. In the **Thumbnail Cache** section, do the following:
   - In the **Path** field, enter the full path to the folder in which to cache thumbnails or select **Browse (...)** to locate and select the **Thumbnails Cache** folder.
   - In the **Max Size** field, enter or select the size limit in MB for the total of all the **Thumbnail** files stored in the **Thumbnails Cache** folder.
6. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Sequencer

Use the **Sequencer** panel to control the behavior of the sequencer.

To configure the Sequencer behavior:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Sequencer** panel.



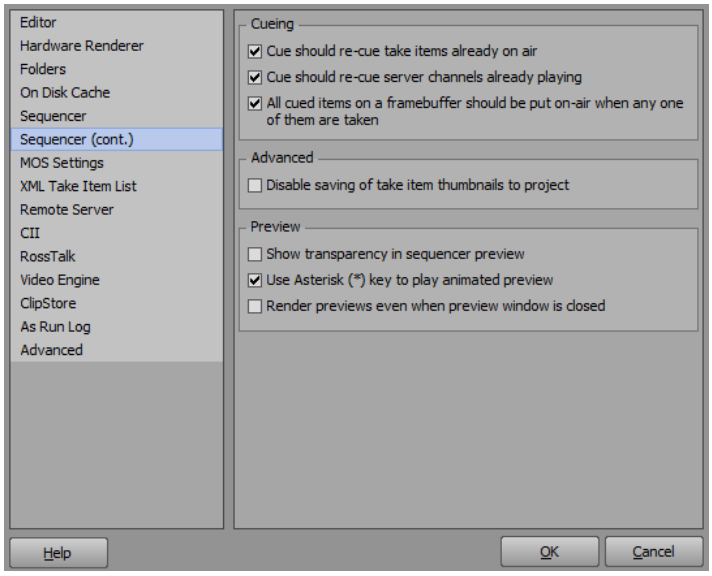
3. In the **Take Item List** section, select from the following options as needed:
   - Select **Loop at end** to automatically loop a sequence list when the end is reached manually.
   - Select **Center online item in view** to position the active scene in a sequence list in the middle of the view, provided the sequence list extends the size of the view.
   - Select **Center focused item in view** to position a focused scene in a sequence list in the middle of the view, provided the sequence list extends the size of the view.
4. In the **Fast Recall** section, select from the following:
   - Select the **Fast Recall enabled on startup** to automatically enable fast recall in the sequencer on startup.
   - Select the **Disable Fast Recall Input Timeout** to turn off the user entered input timeout for **Take IDs** in the sequencer.
   - Select the **Expand sequence groups when selecting an item with Fast Recall** to expand the parent group of an item when it is selected using **Fast Recall**.
5. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Sequencer (cont.)

Use the **Sequencer (cont.)** panel to configure more options for controlling the behavior of the sequencer.

To configure the additional Sequencer behavior settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Sequencer (cont.)** panel.



3. In the **Cueing** section, select from the following options as needed:
   - Select **Cue should re-cue take items already on air** to re-cue on air take items when the cue button is pressed.
   - Select **Cue should re-cue server channels already playing** to re-cue on air server channels when the cue button is pressed.
   - Select **All cued items on a framebuffer should be put on-air when any one of them are taken** to take all cued items on a framebuffer on air when one of them is taken online.
4. In the **Advanced** section, select **Disable saving of take item thumbnails to project** to save projects without take item thumbnails.

   This results in faster saving, but the thumbnails might need to be regenerated upon loading of the project.
5. In the **Preview** section, select from the following options:
   - Select **Show transparency in sequencer preview** to display transparency when previewing a take item in the sequencer preview window.

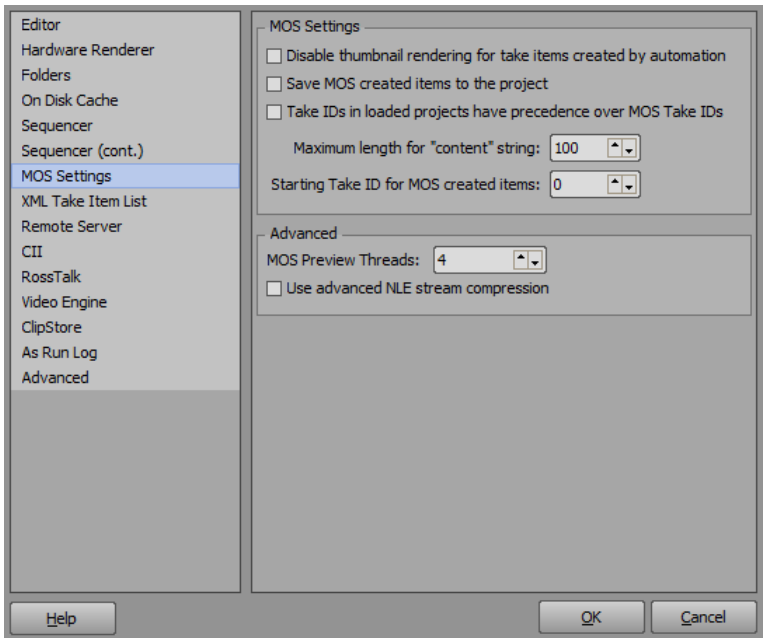
     This option can also be applied by right-clicking in the sequencer **Preview** window and selecting **Show Transparency** from the shortcut menu.
   - Select **Use Asterisk (*) key to play animated preview** to enable the display of a live moving preview in the sequence mode when the asterisk key (*) is pressed on the number pad.
   - Select **Render previews even when preview window is closed** to allow for external previews to be updated or for logic in **OnPreviewRender** scripts to be executed even when the preview window is closed.
6. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

MOS Settings

Use the **MOS Settings** panel to configure the MOS settings when using XPression Clips within a MOS workflow.

To configure the MOS settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **MOS Settings** panel.



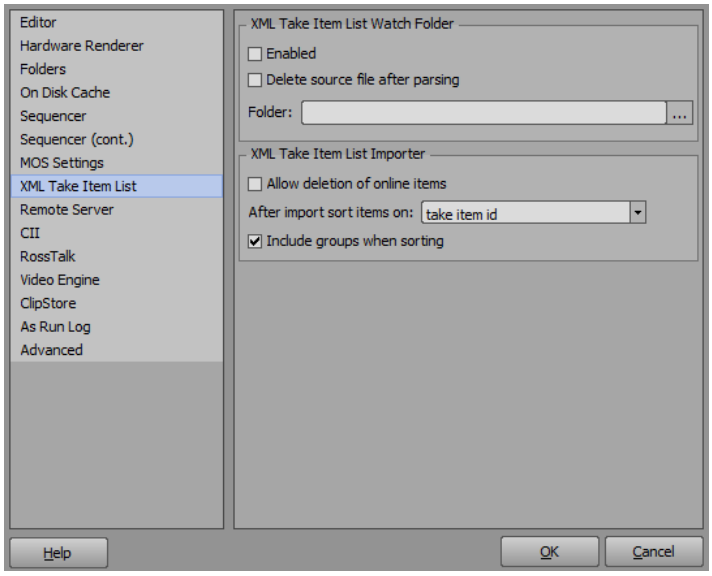
3. In the **MOS Settings** section, select from the following options as needed:
   - **Disable thumbnail rendering for take items created by automation** — disable displaying scene thumbnails in the **Sequencer Playlist** for MOS items.
   - **Save MOS created items to the project** — save MOS items in the sequencer.
   - **Take IDs in loaded projects have precedence over MOS Take IDs** — give priority to the take IDs of take items from a subsequently loaded project over those from MOS.
   - **Maximum length for Content string** — enter or select a maximum character length for the take item content string in the sequencer.
   - **Starting Take ID for MOS created items** — enter or select a take ID number at which to start the MOS take IDs in the sequencer.
4. In the **Advanced** section, in the **MOS Preview Threads** field, enter or select the number of simultaneous MOS previews that can be rendered at a time.
5. Select the **Use advanced NLE stream compression** checkbox to use RLE and LZO compression for NLE if the network connection is saturated.
6. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

XML Take Item List

Use the **XML Take Item List** panel to configure the path and settings for XML Take Items.

To configure the XML Take Items settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **XML Take Item List** panel.



3. In the **XML Take Item List Watch Folder** section, select **Enabled** to use XML Take Items from a folder.
4. Select **Delete source file after parsing** to delete XML Take Items after they are parsed from the selected folder.
5. In the **Folder** field, enter the full path to the folder containing the XML Take Items or select **Browse (...)** to locate and select the folder.
6. In the **XML Take Item List Importer** section, select **Allow deletion of online items** to enable the removal of take items that are currently active on an output.
7. From the **After import sort items on** drop-down, select a method to sort the imported take items.

   The available options are as follows:

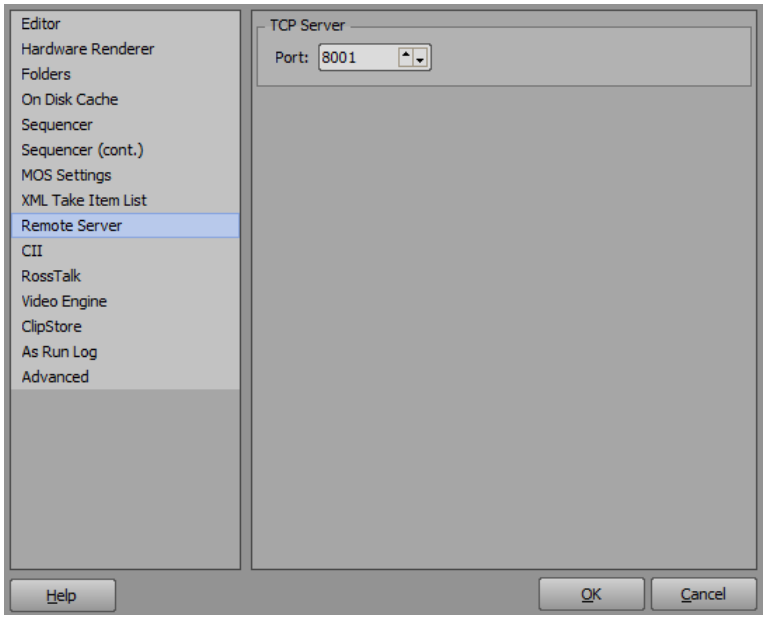
   - **<do not sort>** — do not sort the take items.
   - **take item id** — sort the take items by ID.
   - **take item state** — sort the take items by state.
   - **take item scene name** — sort the take items by scene name.
   - **take item name** — sort the take items by name.
   - **take item layer** — sort the take items by layer.
   - **take item framebuffer** — sort the take items by framebuffer.
8. Select **Include groups when sorting** to import the XML Take Items according to the groups to which the items have been assigned.
9. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Remote Server

Use the **Remote Server** panel to configure the TCP server settings.

To configure the TCP server settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Remote Server** panel.



3. In the **TCP Server** section, enter or select the port number for the remote server.

   This is the port number on which XPression will listen for incoming connections from other applications such as the MOS Gateway, CII gateway, and Media Control Gateway.

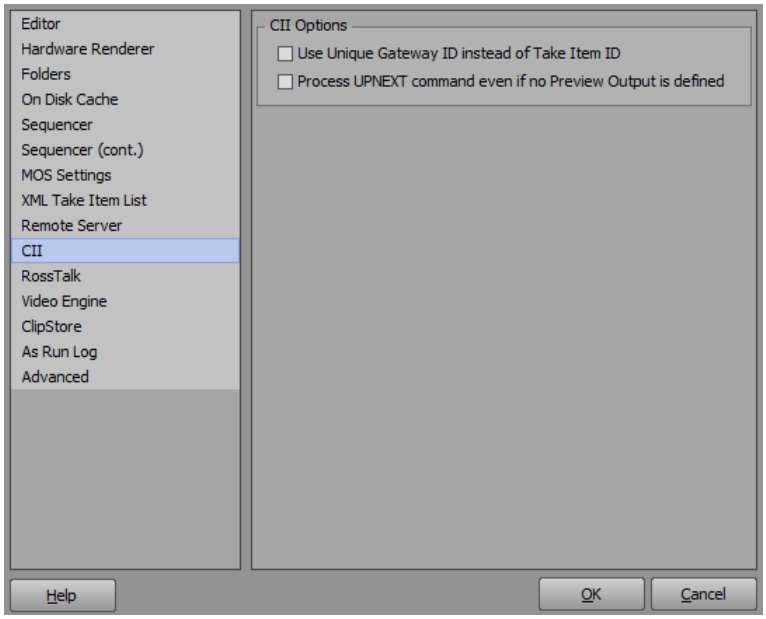
4. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

CII

Use the **CII** panel to configure the CII settings.

To configure the CII settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **CII** panel.



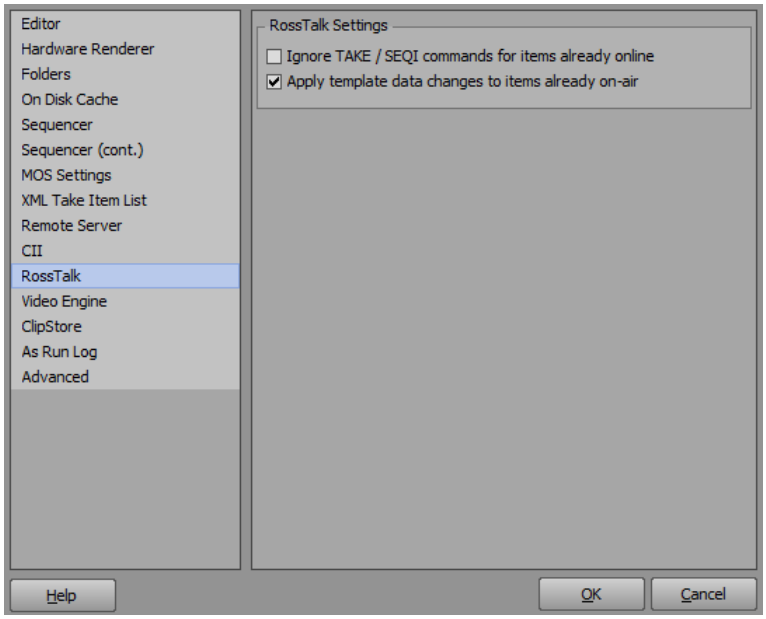
3. In the **CII Page Recall** section, select **Use Unique Gateway ID instead of Take Item ID** to recall CII pages using a **Unique Gateway ID**.
4. Select **Process UPNEXT command even if no Preview Output is defined** to process **UPNEXT** commands from OverDrive when no preview output has been defined in the hardware setup.
5. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

RossTalk

Use the **RossTalk** panel to configure the RossTalk settings for XPression Clips.

To configure the RossTalk settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **RossTalk** panel.



3. In the **RossTalk Settings** section, select **Ignore TAKE / SEQI commands for items already online** to ignore TAKE and SEQI RossTalk commands for an item if it is already in the online state.
4. Select **Apply template data changes to items already on-air** to allow RossTalk TEMPLATEDATA commands to update published fields in sequencer items that are already on-air.

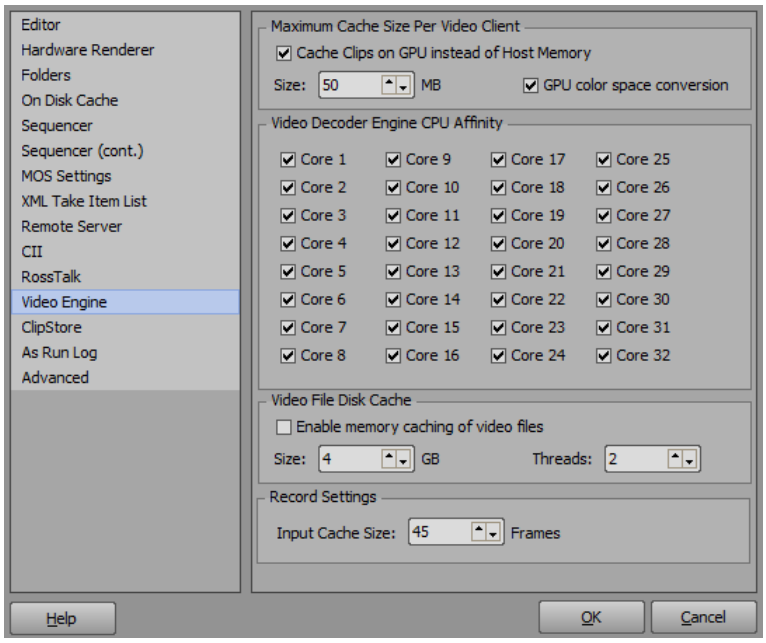
   This option is selected by default.
5. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Video Engine

Use the **Video Engine** panel to configure the cache size and select the CPU core of the video clients. You can also cache video files and set the **Input Cache Size**.

To configure the video client settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Video Engine** panel.



3. In the **Maximum Cache Size Per Video Client** section, select **Cache Clips on GPU instead of Host Memory** to cache directly on the GPU to improve playback performance.

   If **Cache Clips on GPU instead of Host Memory** is selected, the **GPU color space conversion** option is automatically enabled.

   This option means that the XPVC2 video codec will provide XPression with YCoCg 4:2:2 data, which requires less bandwidth than ARGB (4:4:4).

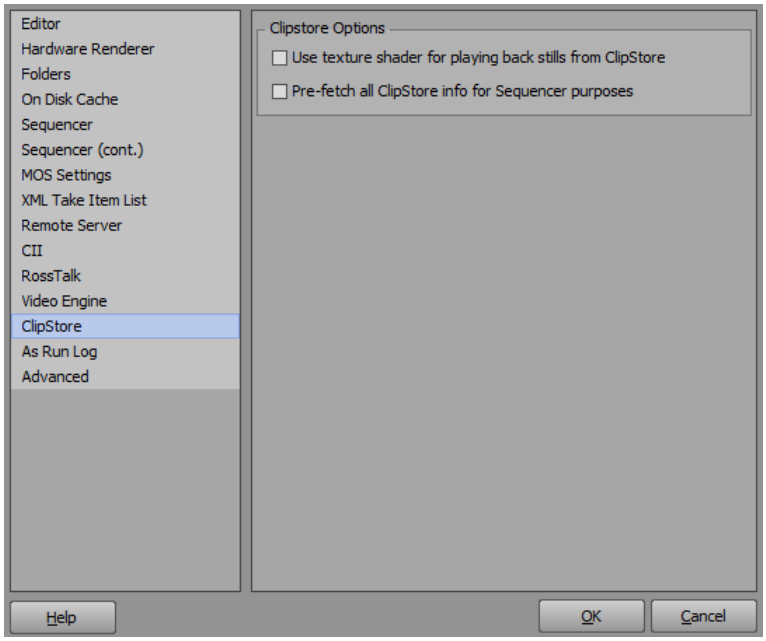
   This option is only for XPVC2 and requires both XPression and the codec to be of build 12.4.6094 or later.
4. In the **Size** field, enter or select the maximum cache size in MB per video client.
5. In the **Video Decoder Engine CPU Affinity** section, select the CPU core of the video client.
6. In the **Video File Disk Cache** section, do the following:
   - Select the **Enable memory caching of video files** to enable video file caching.
   - In the **Size** field, enter or use the arrows to select the size (in GB) of the video file cache.
   - In the **Threads** field, enter or use the arrows to select the number of threads to use for simultaneous loading of video data into memory.
7. In the **Record Settings** section, in the **Input Cache Size** field, enter or select the number of frames to cache when recording with the **Record Client**.
8. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

ClipStore

Use the **ClipStore** panel to configure the ClipStore **Texture Shader** options for XPression Clips.

To configure the ClipStore Texture Shader option:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **ClipStore** panel.



3. In the **ClipStore Options** section, select from the following as needed:
   - **Use texture shader for playing back stills from ClipStore** to assign ClipStore stills to published material using a texture shader instead of a video shader.
   - **Pre-fetch all ClipStore info for Sequencer purposes** to speed up cueing take items containing several clips from the ClipStore.
4. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

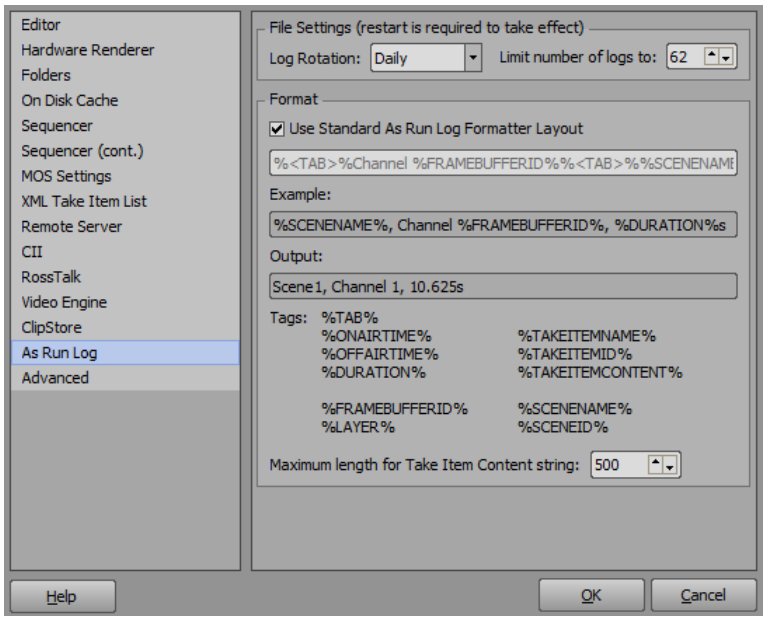
As Run Log

Use the **As Run Log** panel to configure the file settings and format for the **XPression As Run** Log.

The **As Run Log** is located in **C:\Program Files (x86)\XPressionClips\logs\AsRun**.

To configure the As Run Log settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **As Run Log** panel.



3. In the **File Settings** section, from the **Log Rotation** drop-down, select the frequency with which the logging takes place.

   The available options are:

   - **Daily**
   - **Weekly**
   - **Monthly**

4. In the **Limit number of logs to** field, enter or select the maximum number of log files to keep.

   ★XPression Clips needs to be restarted for any changes to the file settings to take effect.

5. In the **Format** section, select **Use Standard As Run Log Formatter Layout** to set the **As Run Log** format to the standard layout required by the (external) XPression As Run Log formatter.
6. In the text field, enter a tag string for the items you want to log.

   Use the example string and output to assist in constructing the format using the available tags.

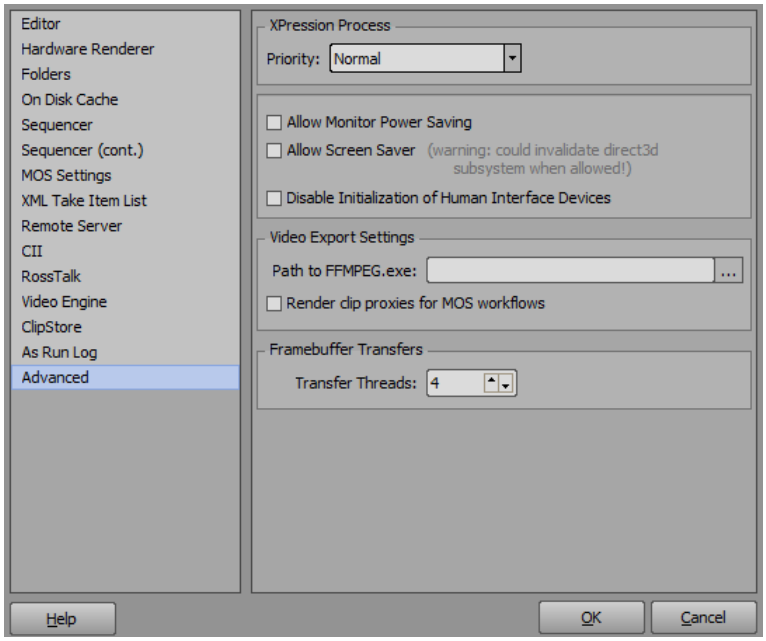
7. In the **Maximum length for Take Item Content string** field, enter or select a maximum character length for the take item content string logged in the As Run Log.
8. Select **OK** to close the **Preferences** window or select another panel to continue with configuring your preferences.

Advanced

Use the **Advanced** panel to manage screen settings.

To configure the screen settings:

1. Select **Edit > Preferences**.
2. In the **Preferences** window, select the **Advanced** panel.



3. In the **XPression Process** section, from the **Priority** drop-down, select the CPU usage priority for XPression.

   The available CPU usage priorities are:

   - **Normal** — evenly distribute the CPU time between system processes with similar priority.
   - **High** — give XPression preference and allocate the majority of the CPU time to XPression.
   - **Real-Time** — allocate all CPU time to XPression.

   ★Use the **Real-Time** CPU usage priority with caution, as this priority may cause other applications running on the XPression computer to freeze.

4. Select **Allow Monitor Power Saving** to allow the monitor to run in sleep mode.
5. Select **Allow Screen Saver** to allow the screen saver to run.

   ★A screen saver may compromise output performance. For maximum performance, clear this checkbox to stop the screen saver from running on the XPression computer.

6. Select **Disable Initialization of Human Interface Devices** to ignore a 3Dconnexion 3D mouse connected to an XPression system.

7. In the **Video Export Settings** section, do the following:
   - In the **Path to FFMPEG.exe** field, enter the full path to an FFMPEG executable or select **Browse (...)** to locate the executable (if using XPression 64-bit).

     ★XPression 64-bit editions cannot use QuickTime for export, so it is necessary to use a user-supplied FFMPEG version to perform a .MOV export.
   - Select the **Render clip proxies for MOS workflows** checkbox, to automatically generate proxies when clips are created in the **Sequencer** and/or sent to the clipstore directly from the Record Client.
8. Select **OK** to close the **Preferences** window.

Configuring an AJA NTV2 Video FrameBuffer

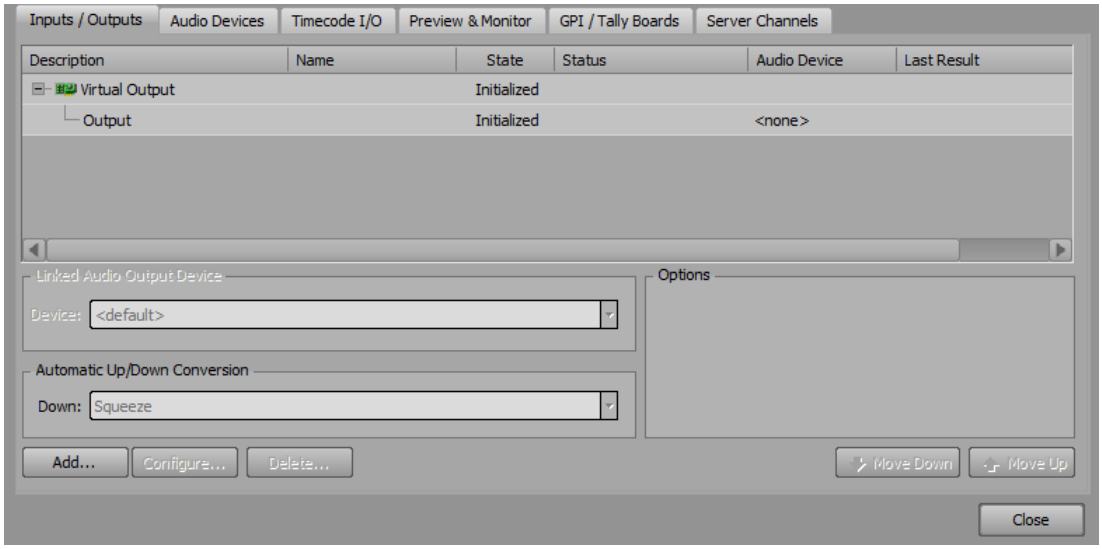
This topic describes the selection and configuration of an AJA NTV2 video framebuffer.

To select an AJA NTV2 Video FrameBuffer:

1. In XPression Clips, select **Edit > Hardware Setup**.

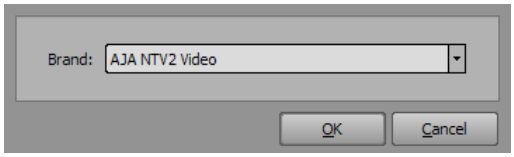
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **AJA NTV2 Video**.
5. Select **OK**.

   The **AJA NTV2 Video - Framebuffer Setup** dialog opens.

   Continue with configuring the **Hardware**, **GenLock** and **I/O** settings in the Board tab.

   When the configuration is complete, the configured AJA NTV2 Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

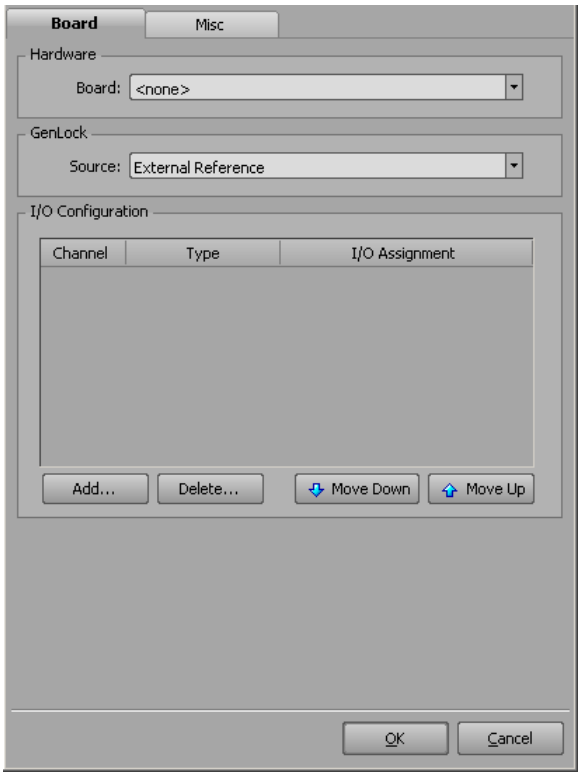
6. Select **Close** to exit the **Hardware Setup** dialog.

Board

This section describes how to configure an AJA NTV2 video framebuffer board.

To configure the AJA NTV2 Video FrameBuffer Board:

1. Select the **Board** tab.



2. Configure the following settings:

   Hardware

   Genlock

   I/O Configuration

Hardware

To configure the Hardware board:

- In the **Hardware** section, from the **Board** drop-down, select the installed board.

  This menu is automatically populated based on installed hardware (such as Corvid22, Corvid88, Kona IP).

Genlock

- In the **GenLock** section, from the **Source** drop-down, select the source of the GenLock signal with which to synchronize XPression Clips.

  The available GenLock signal sources are as follows:

  External Reference — Synchronize with a GenLock signal received from an external application through the GenLock In port of the XPression Clips computer. Ross Video recommends using an external reference for the GenLock signal source.

  Input 1 — Sync to Video In 1 source signal.

  Input 2 — Sync to Video In 2 source signal.

  Input 3 — Sync to Video In 3 source signal.

  Input 4 — Sync to Video In 4 source signal.

  Input 5 — Sync to Video In 5 source signal.

  Input 6 — Sync to Video In 6 source signal.

  Input 7 — Sync to Video In 7 source signal.

  Input 8 — Sync to Video In 8 source signal.

  Free Running — Do not synchronize XPression Clips with an external source.

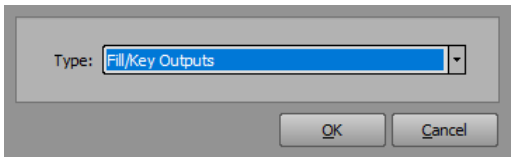
  ★The availability of inputs depends on the output board of the XPression Clips system. For example: up to two inputs with the Corvid22 or up to eight inputs with the Corvid88.

  ★If the output keying mode is set to **Internal** in the **Output** tab, it is recommended that the GenLock source be set to an SDI input.

I/O Configuration

1. In the **I/O Configuration** section, select **Add** to add an input or output channel.

   The **Select I/O Type** dialog opens.



2. From the **Type** drop-down, select an input /output type.

   The options are:

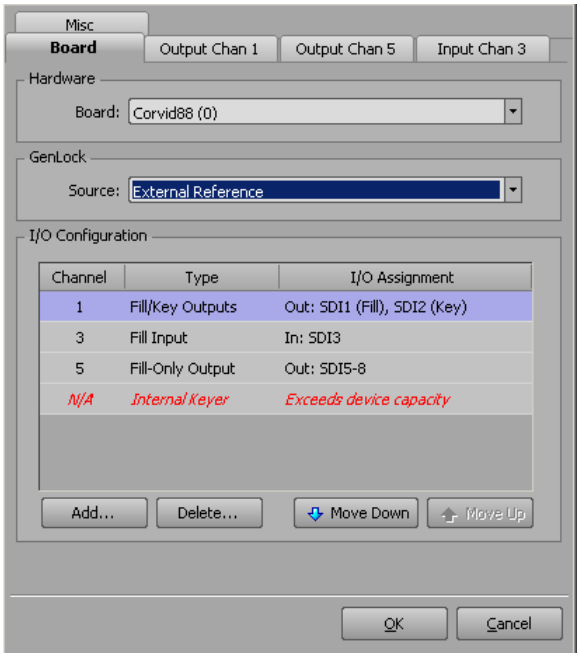
   - **<none>** (this option is not applicable)
   - **Fill-Only Output** (1 output, no input) (requires a separate license or the XPression Clips option)
   - **Fill/Key Outputs** (2 outputs, no input)
   - **Fill Input** (1 input, no output)
   - **Internal Keyer** (1 input, 1 output)

   ★If the installed card does not have bidirectional I/Os, adding the output channels before the input channels is recommended.

3. Select **OK**.

   The input/output assignment is added to the **I/O Configuration** list.

4. Repeat steps 1 to 3 to add as many input and output channels as necessary.



   ★SDI channel assignments are automatic and any channels beyond the number of channels supported by the graphics card will be listed as N/A.

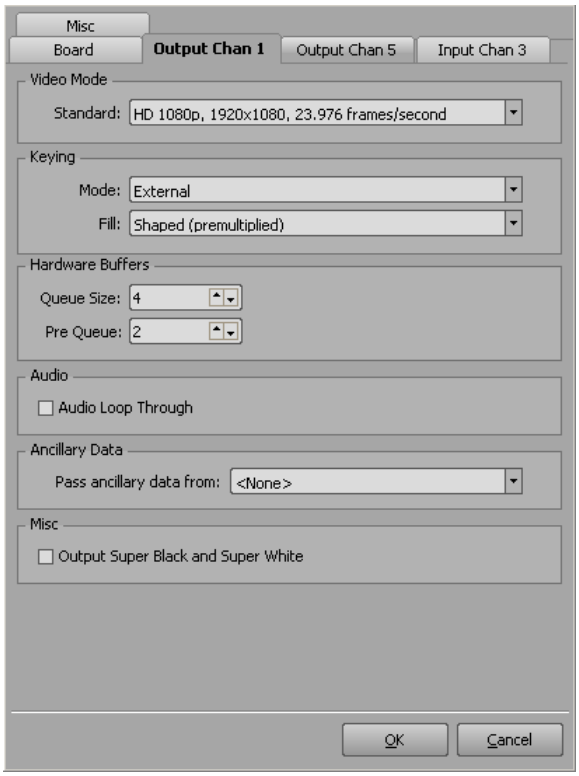
   Continue with configuring the Output settings.

Outputs

This section describes how to configure the output channels of an AJA NTV2 video framebuffer.

To configure the Output Channels:

1. Select an **Output** tab to configure output channel settings.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format in which to output an XPression Clips project.

   ★When configuring more than one output, they must share the same base frame rate that matches the GenLock reference.

   The available formats depend on the graphics card in your system.

Video Formats

- **<from project>** — automatically switch the output video format to the video format of the currently loaded project.

  The project video format is ignored when a specific output video format is selected, and the selected video format is used to play out scenes.

- **PAL, 720x576, 25 frames/second**
- **NTSC, 720x486, 29.97 frames/second**
- **HD 1080i, 1920x1080, 25 frames/second**
- **HD 1080i, 1920x1080, 29.97 frames/second**
- **HD 1080p, 1920x1080, 23.976 frames/second**
- **HD 1080p, 1920x1080, 29.97 frames/second**

- **HD 1080p, 1920x1080, 50 frames/second**
- **HD 1080p, 1920x1080, 59.94 frames/second**
- **HD 1080p, 1920x1080, 60 frames/second**
- **HD 720p, 1280x720, 50 frames/second**
- **HD 720p, 1280x720, 59.94 frames/second**
- **HD 720p, 1280x720, 60 frames/second**
- **HD 1080psf, 1920x1080 23.976 frames/second**
- **HD 1080psf, 1920x1080 24 frames/second**
- **HD 1080psf, 1920x1080 25 frames/second**
- **HD 1080psf, 1920x1080 29.97 frames/second**
- **HD 1080psf, 1920x1080 30 frames/second**
- **UHD 2160p (Quad), 3840x2160, 29.97 frames/second**
- **UHD 2160p (Quad), 3840x2160, 50 frames/second**
- **UHD 2160p (Quad), 3840x2160, 59.94 frames/second**
- **UHD 2160p (2SI), 3840x2160, 29.97 frames/second**
- **UHD 2160p (2SI), 3840x2160, 50 frames/second**
- **UHD 2160p (2SI), 3840x2160, 59.94 frames/second**
- **UHD 2160psf (Quad), 3840x2160, 23.976 frames/second**
- **UHD 2160psf (Quad), 3840x2160, 24 frames/second**
- **UHD 2160psf (Quad), 3840x2160, 25 frames/second**

★UHD formats are only available on cards that support UHD.

3. In the **Keying** section, from the **Mode** drop-down select how graphics are output to a video stream.

   The available modes are as follows:

   - **Off (Fill Only)** — output a video signal with no key.
   - **External** — output the key and fill graphics as separate video signals. Graphics mixing occurs in an external keyer/mixer.
   - **Internal** — key and fill graphics are mixed internally and output as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.

   ★Selecting external or internal keying will change the number of inputs/outputs required and the I/O assignments in the **Board** tab.

   ★If the output keying mode is set to Internal, it is recommended that the GenLock source in the **Board** tab be set to an SDI input.

4. When **External** is selected from the **Mode** drop-down, use the **Fill** drop-down to select the method used to process fill graphics before output.

   The available processing methods are as follows:

   - **Shaped (premultiplied)** — multiply/shape the fill signal color information by the luminance information in the key signal.
   - **Unshaped** — output fill and key signals "as is".

5. In the **Hardware Buffers** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to the output.

   Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

6. In the **Pre Queue** field, enter or select the number of frames to buffer for the pre-queue.

   The pre-queue size can be between 1 and 8.

7. In the **Audio** section, select the **Audio Loop Through** checkbox to enable embedded audio loop through.

   This option applies to internal keyer only.

8. In the **Ancillary Data** section, select the **Pass Ancillary Data From** checkbox and from the drop-down, select an input from which to pass the vertical ancillary data from a live source.

   The functionality of this feature is based on the availability of an ancillary input that is determined by the installed output board.

9. In the **Misc** section, select the **Output Super Black and Super White** to output using the full super black to super white range.

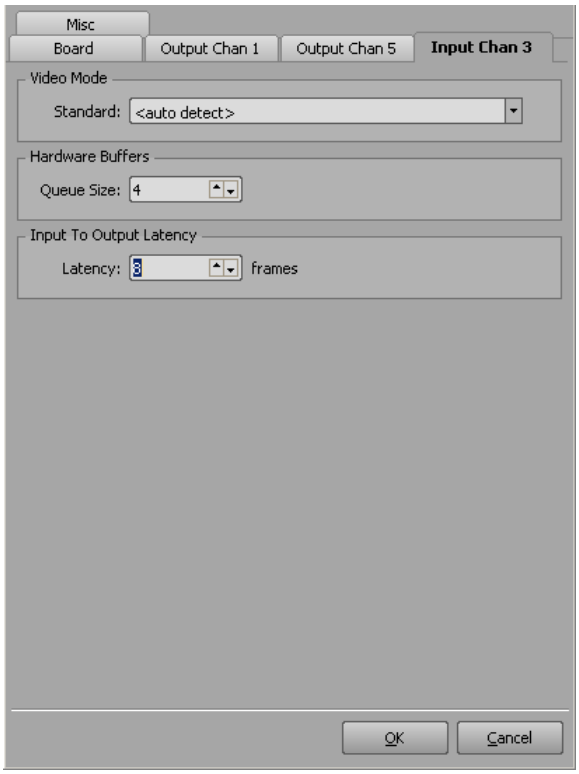
   Continue with configuring the Input settings.

Inputs

This section describes how to configure the input channels of an AJA NTV2 video framebuffer.

To configure the input channels:

1. Select the **Input** tab to configure input settings.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format in which to receive video.
3. In the **Hardware Buffers** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to XPression Clips.
4. In the **Input to Output Latency** section, in the **Latency** field, enter or select a fixed delay, in frames, between the input and output.

   To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section.

   Continue with configuring the Miscellaneous settings.

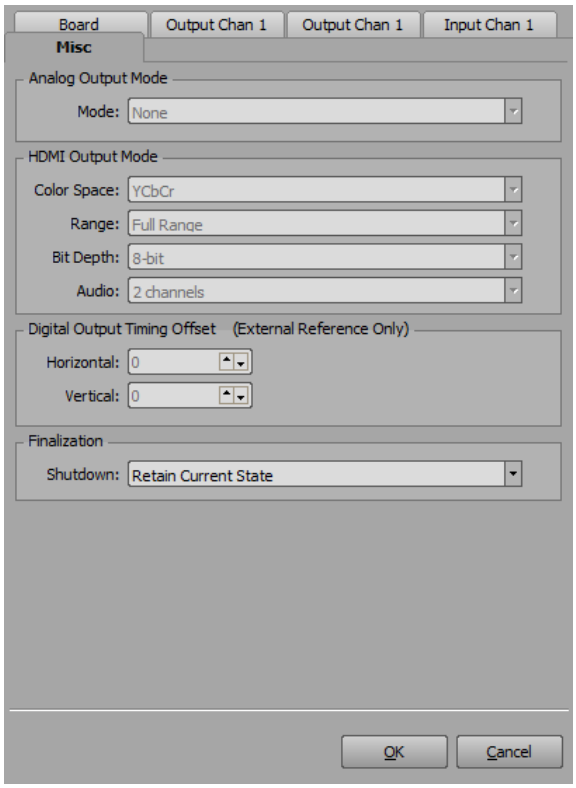
Misc

This section describes how to configure the miscellaneous settings of an AJA NTV2 video framebuffer.

To configure the miscellaneous settings:

1. Select the **Misc** tab.

   ★Analog output and HDMI output are only available on cards that provide them.



2. In the **Analog Output Mode** section, from the **Mode** drop-down, select the video format in which to output an analog video signal.
3. In the **HDMI Output Mode** section, from the **Color Space** drop-down, select the specific organization of colors for the HDMI output.

   The options are:

   - **YCbCr**
   - **RGB**
4. From the **Range** drop-down, select the color range for the selected color space.

   The options are:

   - **SMPTE Range**
   - **Full Range**

5. From the **Bit Depth** drop-down, select the number of bits used for a pixel.

   The options are:

   - **8-bit**
   - **10-bit**

6. From the **Audio Channels** drop-down, select the number of audio channels to output.

   The options are:

   - **2 channels**
   - **8 channels**

7. In the **Digital Output Timing Offset** section, enter the following information:

   - In the **Horizontal** field, enter or select the horizontal delay timing offset with regards to an external reference.

     This setting is for external reference only.

   - In the **Vertical** field, enter or select the number of lines for vertical delay timing offset with regards to an external reference.

     This setting is for external reference only.

8. In the **Finalization** section, from the **Shutdown** drop-down, select the video state at shutdown.

   The available states are as follows:

   - **Retain Current State** — do not clear the content of the framebuffers on shutdown.
   - **Clear Framebuffers** — clear all framebuffers from the output framebuffer.

   If the installed card provides up/down conversion, continue with the Conversion settings to enable or disable output conversion to a predefined signal.

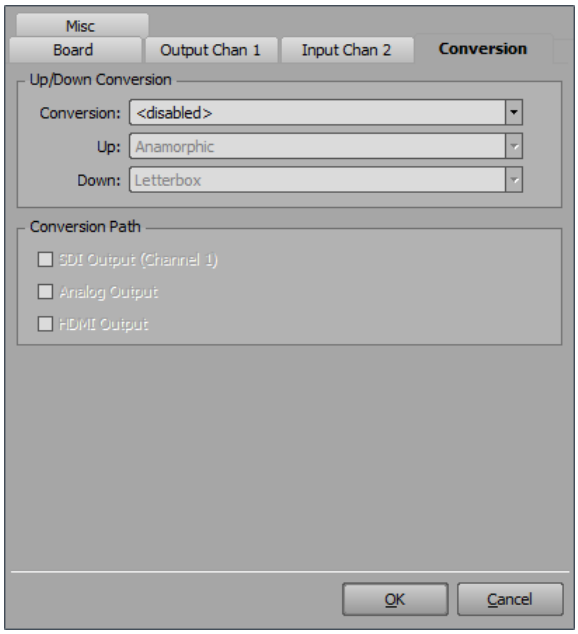
   Otherwise, continue with configuring the IP settings.

Conversion

This section describes how to configure the conversion settings of an AJA NTV2 video framebuffer.

To configure the conversion settings:

1. Select the **Conversion** tab to enable or disable output conversion to a predefined signal.



2. In the **Up/Down Conversion** section, from the **Conversion** drop-down, select the video mode for the conversion.
3. From the **Up** drop-down, select a format for the up converted output.

   The available output formats are:

   - **Anamorphic** — display a full-screen image.
   - **Pillar box 4:3** — display a 4:3 image in the center of the screen with black sidebars.
   - **Zoom 14:9** — display a 4:3 image zoomed to fill a 14:9 image with black sidebars.
   - **Letterbox** — display an image zoomed to fill letterbox displays or display a reduced image with black bars added to top and bottom of the image area with aspect ratio preserved.
   - **Zoom Wide** — display an image zoomed and horizontally stretched to fill full screen.
4. From the **Down** drop-down, select a format for the down converted output.

   The available output formats are:

   - **Letterbox** — display a reduce image with black bars added to the top and bottom of the image area with the aspect ratio preserved.
   - **Crop** — crop the image to fit the new screen size.
   - **Anamorphic** — display a 16:9 image in a 4:3 box.

5. In the **Conversion Path** section, select the checkbox or checkboxes of the outputs to use to display the converted video:

   - **SDI Output (Channel 1)**
   - **Analog Output**
   - **HDMI Output**

   If configuring a Kona IP card, continue with configuring the IP settings.

   Otherwise, your AJA NTV2 framebuffer is now fully configured.

IP

This section describes how to configure the IP settings of an AJA NTV2 video framebuffer.

The settings in the IP tab will depend on the card firmware configuration. There are 2 options:

1-SFP — the primary streams will be on the top SFP module. If 1-SFP is enabled with 2022-7 protocol, the bottom SFP module will be used for the redundant streams.

See the following sections for instructions:

Configuring the IP Settings with Redundancy

Configuring the IP Settings without Redundancy

2-SFP, the same primary streams will be on the top SFP module and others on the bottom SFP module.

Specifically:

- output streams 1 and 2 on the bottom
- output streams 3 and 4 on the top
- input streams 1 and 2 on the top
- input streams 3 and 4 on the bottom

See the following section for instructions:

2-SFP

1-SFP

This section describes the configuration for a 1-SFP module setup, with and without redundancy.

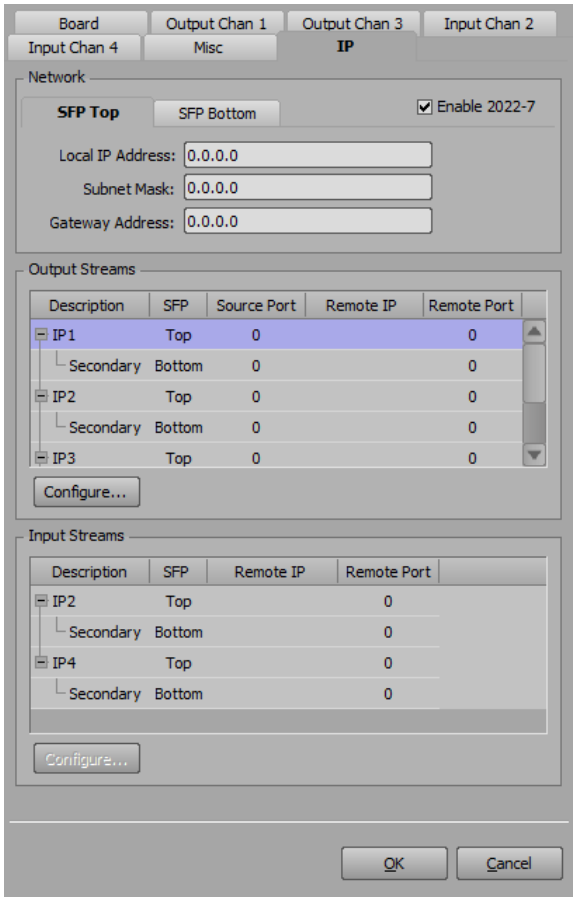
Configuring the IP settings with Redundancy

If you are using a second SFP module to provide redundancy, the output streams will include both a primary and secondary stream.

To configure the Network settings with redundancy:

1. Select the **IP** tab.

   The **IP** tab is displayed.

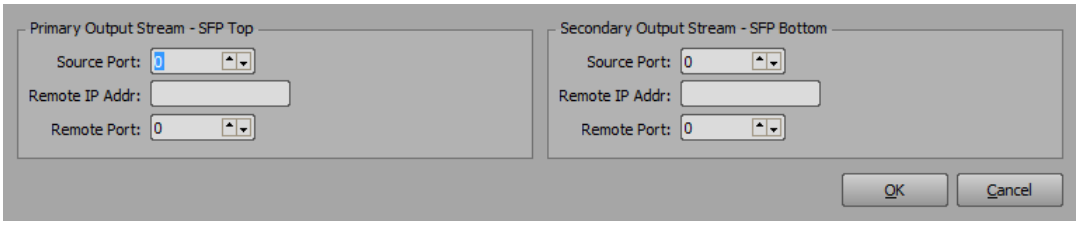


2. In the **Network** section, select the **Enable 2022-7** checkbox to use the 2022-7 standard to enable redundancy for the SFP module connection.
3. In the **SFP Top** and **SFP Bottom** tabs, in the **Local IP Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
4. In the **Subnet Mask** field, enter the subnet mask of the location to connect the small form-factor pluggable transceiver.
5. In the **Gateway Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
6. Continue with configuring the **Output Streams**.

To configure the Output Streams:

1. In the **Output Streams** section, select an output stream and then select **Configure**.

   The **AJA NTV2 - IP Output Stream Setup** dialog opens.



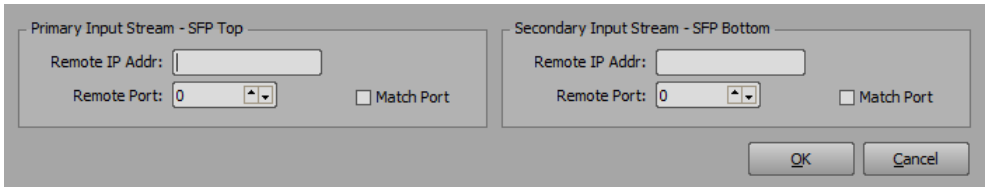
2. In the **Primary Output Stream - SFP Top** section, configure the following settings:
   - **Source Port** — use this box to enter or select the port number of the primary output stream source.
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary output stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary output stream.
3. In the **Secondary Output Stream - SFP Bottom** section, configure the following settings:
   - **Source Port** — use this box to enter or select the port number of the secondary output stream source.
   - **Remote IP Addr** — use this box to enter the remote IP address of the secondary output stream.
   - **Remote Port** — use this box to enter or select the remote port number for the secondary output stream.
4. Select **OK**.

   The **AJA NTV2 - IP Output Stream Setup** dialog closes and the settings are added to the selected output stream.
5. Repeat steps 1 to 4 for any other output streams.
6. Continue with configuring the **Input Streams**.

To configure the Input Streams:

1. In the **Input Streams** section, select an input stream and then select **Configure**.

   The **AJA NTV2 - IP Input Stream Setup** dialog opens.



2. In the **Primary Input Stream - SFP Top** section, configure the following settings:
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.
3. In the **Secondary Input Stream - SFP Bottom** section, configure the following settings:
   - **Remote IP Addr** — use this box to enter the remote IP address of the secondary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the secondary video input stream.
   - **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.
4. Select **OK**.

   The **AJA NTV2 - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
5. Repeat steps 1 to 4 for any other input streams.
6. When you have finished configuring the input streams, in the **Hardware Setup** dialog, select **Close**.

   The **Hardware Setup** dialog closes.

   The configured AJA Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

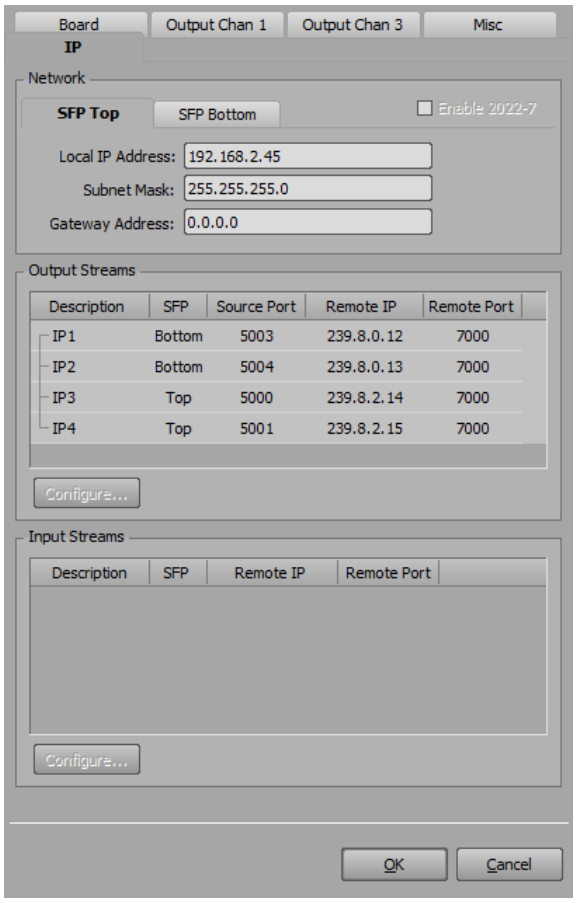
Configuring the IP Settings without Redundancy

If you do not require redundancy, you will only have primary output and input streams.

To configure the Network settings without redundancy:

1. Select the **IP** tab.

   The **IP** tab is displayed.

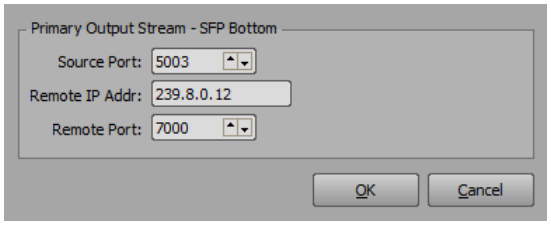


2. In the **Network** section, in the **SFP Top** and **SFP Bottom** tabs, in the **Local IP Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
3. In the **Subnet Mask** field, enter the subnet mask of the location to connect the small form-factor pluggable transceiver.
4. In the **Gateway Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
5. Continue with configuring the **Output Streams**.

To configure the Output Streams:

1. In the **Output Streams** section, select an output stream and then select **Configure**.

   The **AJA NTV2 - IP Output Stream Setup** dialog opens.



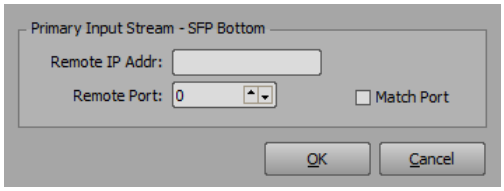
2. Configure the following settings:
   - **Source Port** — enter or select the port number of the primary output stream source.
   - **Remote IP Addr** — enter the remote IP address of the primary output stream.
   - **Remote Port** — enter or select the remote port number for the primary output stream.
3. Select **OK**.

   The AJA NTV2 - IP Output Stream Setup dialog closes and the settings are added to the selected output stream.
4. Repeat steps 1 to 3 for any other output streams.
5. Continue with configuring the **Input Streams**.

To configure the Input Streams:

1. In the **Input Streams** section, select an input stream and then select **Configure**.

   The **AJA NTV2 - IP Input Stream Setup** dialog opens.



2. Configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
   - **Remote Port** — enter or select the remote port number for the primary video input stream.
   - **Match Port** — select this checkbox to require that the remote IP address and remote port match.

   ★When not selected, only the remote IP address needs to match and the remote port is ignored.
3. Select **OK**.

   The **AJA NTV2 - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
4. Repeat steps 1 to 3 for any other input streams.
5. When you have finished configuring the input streams, in the **Hardware Setup** dialog, select **Close**.

   The **Hardware Setup** dialog closes.

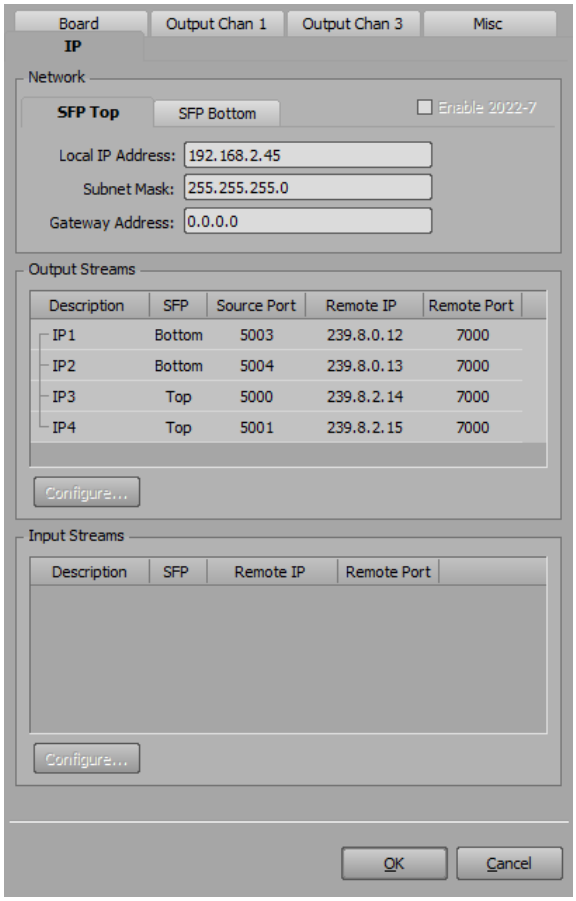
   The configured AJA Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware**

Setup dialog.

2-SFP

This section describes the configuration for a 2-SFP module setup.

1. Select the **IP** tab.
2. The **IP** tab is displayed.

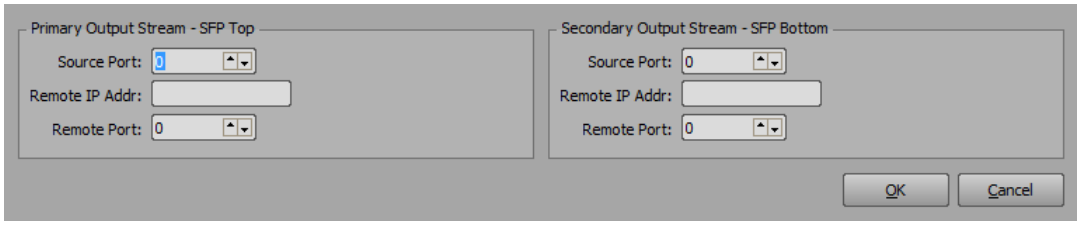


3. In the **Network** section, in the **SFP Top** and **SFP Bottom** tabs, in the **Local IP Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
4. In the **Subnet Mask** field, enter the subnet mask of the location to connect the small form-factor pluggable transceiver.
5. In the **Gateway Address** field, enter the IP address of the location to connect the small form-factor pluggable transceiver.
6. Continue with configuring the **Output Streams**.

To configure the Output Streams:

1. In the **Output Streams** section, select an output stream and then select **Configure**.

   The **AJA NTV2 - IP Output Stream Setup** dialog opens.



2. In the **Primary Output Stream - SFP Top** section, configure the following settings:

   Source Port — enter or select the port number of the primary output stream source.

   Remote IP Addr — enter the remote IP address of the primary output stream.

   Remote Port — enter or select the remote port number for the primary output stream.

3. In the **Secondary Output Stream** - SFP Bottom section, configure the following settings:

   Source Port — enter or select the port number of the secondary output stream source.

   Remote IP Addr — enter the remote IP address of the secondary output stream.

   Remote Port — enter or select the remote port number for the secondary output stream.

4. Select **OK**.

   The AJA NTV2 - IP Output Stream Setup dialog closes and the settings are added to the selected output stream.

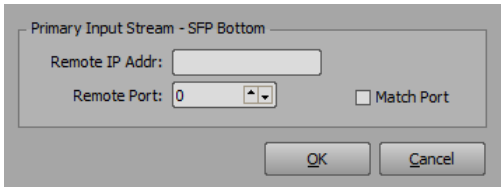
5. Repeat steps 1 to 3 for any other output streams.

6. Continue with configuring the **Input Streams**.

To configure the Input Streams:

1. In the **Input Streams** section, select an input stream and then select **Configure**.

   The **AJA NTV2 - IP Input Stream Setup** dialog opens.



2. Configure the following settings:
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Match Port** — select this check box to enable that the remote IP address and remote port must match. When not selected, only the remote IP address needs to match and the remote port is ignored.
3. Select **OK**.

   The **AJA NTV2 - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
4. Repeat steps 1 to 3 for any other input streams.
5. Select **OK**.

Configuring an AJA Video FrameBuffer (Legacy)

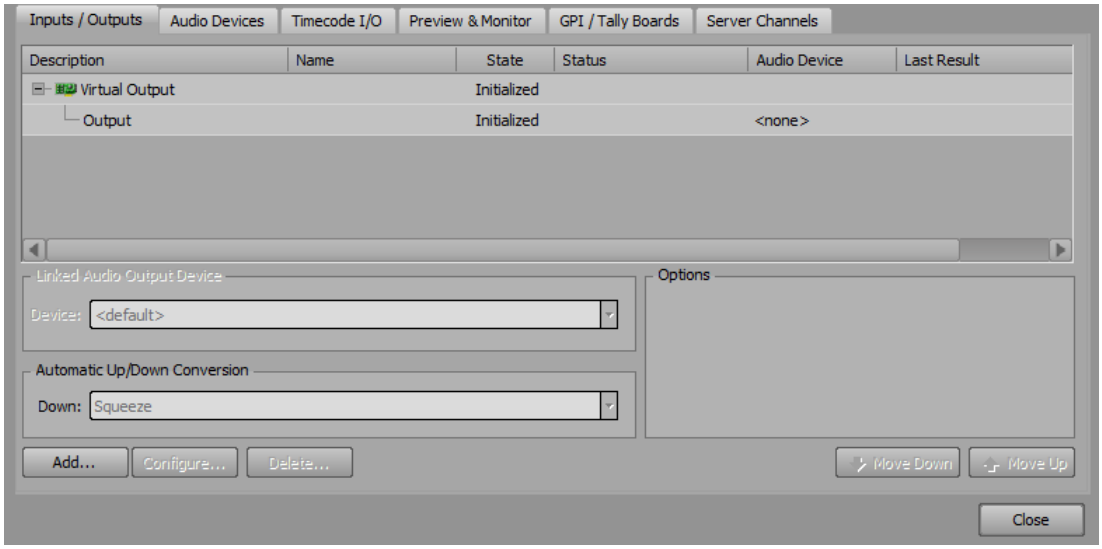
This topic describes the selection and configuration of an AJA Video framebuffer.

To configure an AJA Video framebuffer:

1. In XPression Clips, select **Edit > Hardware Setup**.

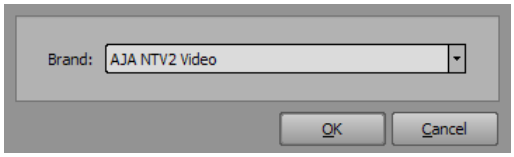
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. Select **Add**.

4. The **Add New FrameBuffer Board** dialog opens.



5. From the **Brand** drop-down, select **AJA Video (legacy)** and then select **OK**.

6. Select **OK**.

   The **AJA Video (Legacy) - Framebuffer Setup** dialog opens.

   Continue with configuring the Board settings.

   When the configuration is complete, the configured AJA Video framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

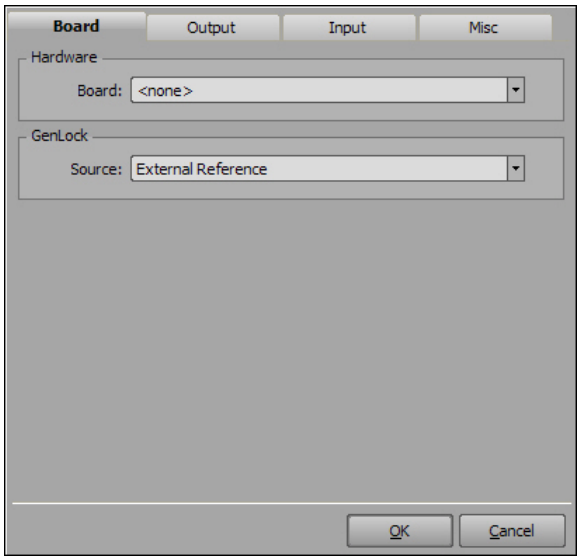
7. Select **Close** to exit the **Hardware Setup**.

Board

This section describes how to configure the AJA video framebuffer board.

To configure the AJA video framebuffer board:

1. Select the **Board** tab.



2. In the **Hardware** section, from the **Board** drop-down, select the installed board.

   This menu is automatically populated based on installed hardware.

3. In the **GenLock** section, from the **Source** drop-down, select the source of the GenLock signal with which to synchronize XPression Clips.

   The available GenLock signal sources are as follows:

   External Reference — Synchronize with a **GenLock** signal received from an external application through the **GenLock In** port of the XPression Clips computer.

   ★Ross Video recommends using an external reference for the GenLock signal source.

   Input 1 — Sync to Video In 1 source signal.

   Input 2 — Sync to Video In 2 source signal.

   Free Running — Do not synchronize XPression Clips with an external source.

   ★If the output keying mode is set to **Internal** in the **Output** tab, the GenLock source needs to be set to an SDI input.

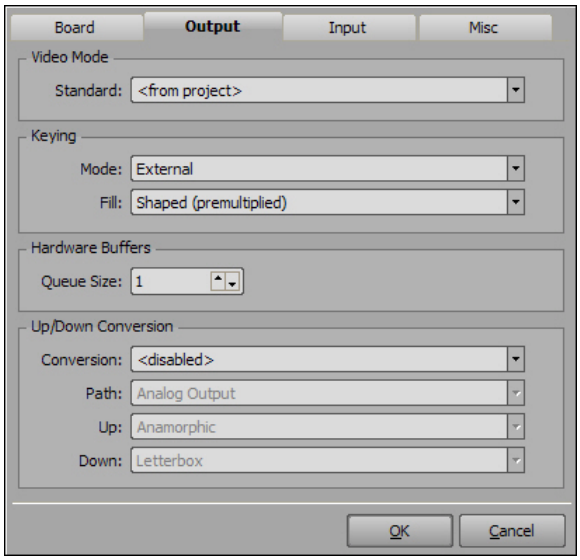
   Continue with configuring the Output settings.

Outputs

This section describes how to configure the outputs of the AJA video framebuffer.

To configure the outputs:

1. Select the **Output** tab.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format in which to output an XPression Clips project.

   ★When configuring more than one output, they must share the same base frame rate that matches the GenLock reference.

   The available video formats are:

   - **<from project>** — automatically switch to the output video format to the video format of the currently loaded project.

     The project video format is ignored when a specific output video format is selected, and the selected video format is used to play out scenes.
   - **PAL, 720x576, 25 frames/second**
   - **NTSC, 720x486, 29.97 frames/second**
   - **HD 1080i, 1920x1080, 25 frames/second**
   - **HD 1080i, 1920x1080, 29.97 frames/second**
   - **HD 1080p, 1920x1080, 23.976 frames/second**
   - **HD 1080p, 1920x1080, 50 frames/second**
   - **HD 1080p, 1920x1080, 59.94 frames/second**
   - **HD 1080p, 1920x1080, 60 frames/second**
   - **HD 720p, 1280x720, 50 frames/second**
   - **HD 720p, 1280x720, 59.94 frames/second**

3. In the **Keying** section, from the **Mode** drop-down, select how graphics are output to a video stream.

   The available modes are as follows:

   - **External** — Output the key and fill graphics as separate video signals. Graphics mixing occurs in an external keyer/mixer.
   - **Internal** — Key and fill graphics are mixed internally and output as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.

4. When **External** is selected as the keying mode, from the **Fill** drop-down, select the method used to process fill graphics before output.

   The available processing methods are:

   Shaped (premultiplied) — Multiply/shape the fill signal color information by the luminance information in the key signal.

   Unshaped — Output fill and key signals "as is".

5. In the **Hardware Buffers** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to the output.

   ★Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

6. In the **Up/Down Conversion** section, from the **Conversion** drop-down, select whether to enable or disable output conversion to a predefined signal.
7. From the **Path** drop-down, select the source display on the output.
8. From the **Up** drop-down, select the format for up converted output.

   The available output formats are:

   - **Anamorphic** — Display a full-screen image.
   - **Pillar box 4:3** — Display a 4:3 image in the center of the screen with black sidebars.
   - **Zoom 14:9** — Display a 4:3 image zoomed to fill a 14:9 image with black sidebars.
   - **Letterbox** — Display an image zoomed to fill full screen.
   - **Zoom Wide** — Display an image zoomed and horizontally stretched to fill full screen.

9. From the **Down** drop-down, select the format for down converted output.

   The available output formats are:

   - **Letterbox** — Display a reduce image with black bars added to the top and bottom of the image area with the aspect ratio preserved.
   - **Crop** — Crop the image to fit the new screen size.
   - **Anamorphic** — Display a 16:9 image in a 4:3 box.

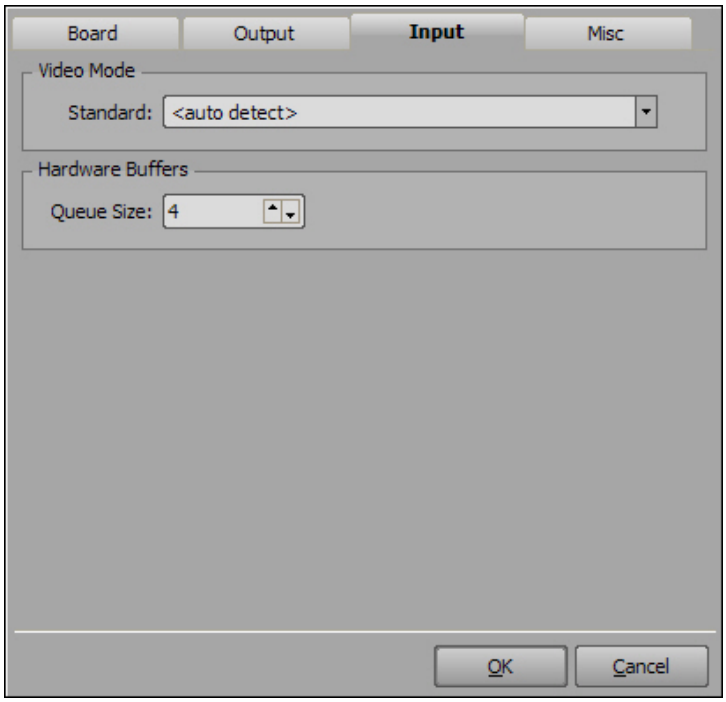
   Continue with configuring the Input settings.

Inputs

This section describes how to configure the inputs of the AJA video framebuffer.

To configure the inputs:

1. Select the **Input** tab.



2. In the **Video Mode** section, from the **Standard** drop-down, select the analog video format in which to receive video.
3. In the **Hardware Buffers** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to XPression Clips.

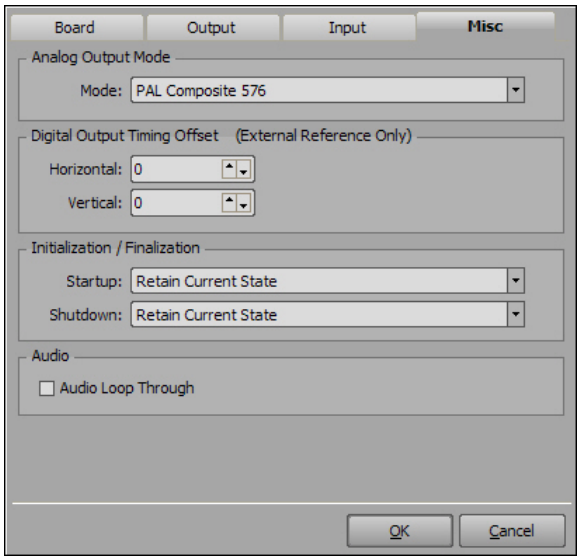
Continue with configuring the Miscellaneous settings.

Misc

This section describes how to configure the miscellaneous settings of the AJA video framebuffer.

To configure the miscellaneous settings:

1. Select the **Misc** tab.



2. In the **Analog Output Mode** section, from the **Mode** drop-down, select the video format in which to output an analog video signal.
3. In the **Digital Output Timing Offset** section, in the **Horizontal** field, enter or select the number of lines for horizontal delay timing offset with regards to an external reference.
4. In the **Vertical** field, enter or select the number of lines for vertical delay timing offset with regards to an external reference.
5. In the **Initialization / Finalization** section, from the Startup drop-down, select the video state at startup.

   The available states are:

   - **Retain Current State** — Retain resources to use once again.
   - **Clear Framebuffers** — Clear all framebuffers from the output framebuffer.
6. From the Shutdown drop-down, select the video state at shutdown.

   The available states are:

   - **Retain Current State** — Retain resources to use once again.
   - **Clear Framebuffers** — Clear all framebuffers from the output framebuffer.
7. In the **Audio** section, select the **Audio Loop Through** checkbox to enable embedded audio loop through.
8. Select **OK**.

Configuring a Blackmagic Design FrameBuffer

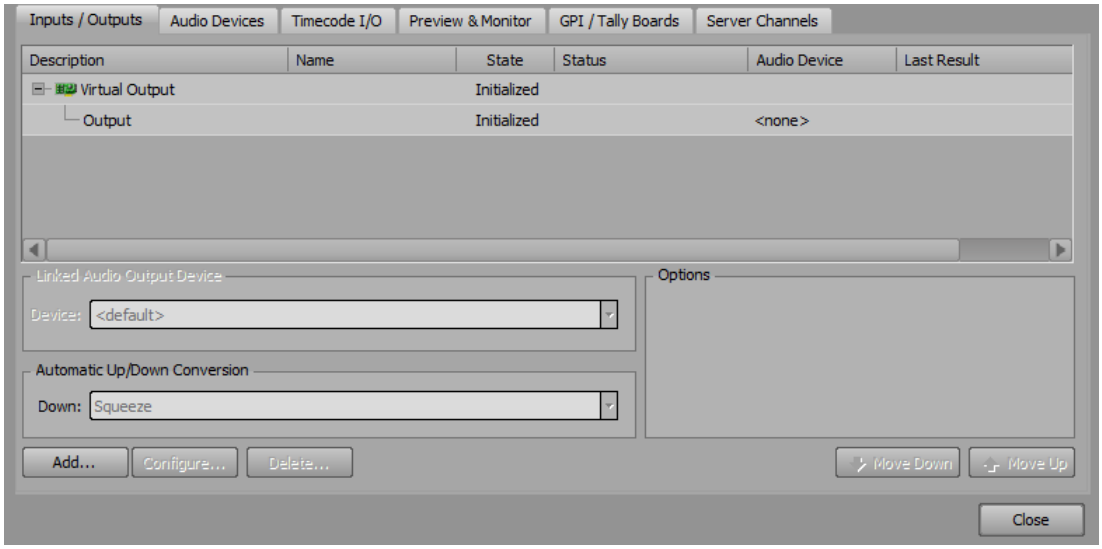
This topic describes the selection and configuration of an Blackmagic Design framebuffer.

To select a Blackmagic Design framebuffer:

1. In XPression, select **Edit > Hardware Setup**.

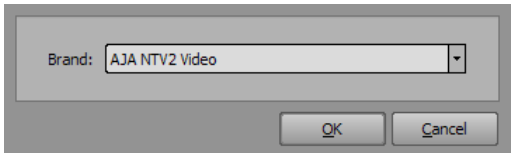
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



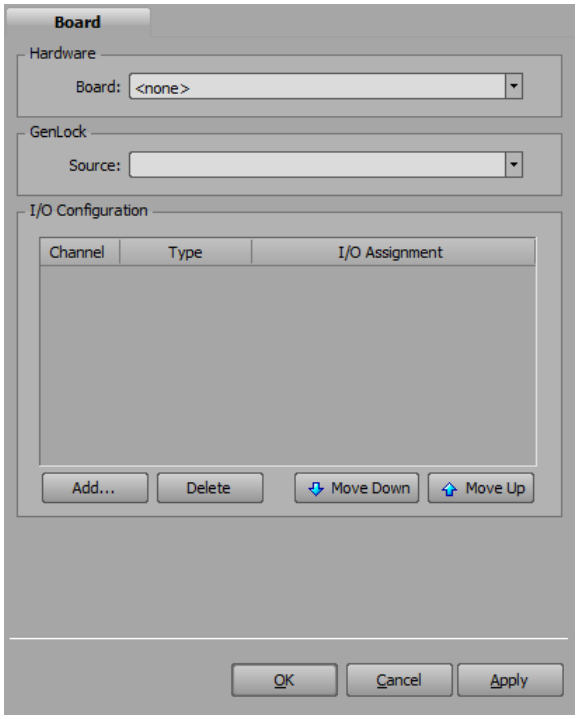
4. From the **Brand** drop-down, select **Blackmagic Design** and then select **OK**.

   The **Blackmagic Design - Framebuffer Setup** dialog opens.

5. Continue with the instructions for configuring the hardware settings.

To configure the hardware settings:

1. Select the **Board** tab to configure the hardware settings.

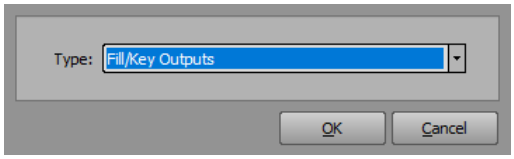


2. In the **Hardware** section, from the Board drop-down, select the installed Blackmagic Design card to configure.
3. In the **GenLock** section, from the Source drop-down, select the source of the GenLock signal with which to synchronize XPression.

   The available GenLock signal sources are as follows:

   - **External Reference** — Synchronize with a GenLock signal received from an external application through the **GenLock In** port of the XPression computer. Ross Video recommends using an external reference for the GenLock signal source.
   - **Free Running** — Do not synchronize XPression with an external source.
4. In the **I/O Configuration** section, select **Add** to add an input or output channel.

   The **Select I/O Type** dialog opens.



5. From the **Type** drop-down, select an input /output type.

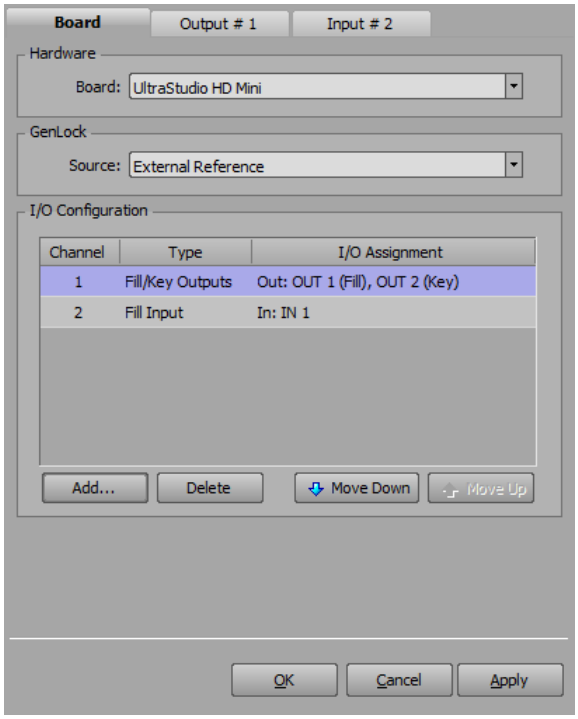
   The options are:

   - **<none>** (this option is not applicable)
   - **Fill-Only Output** (uses 1 output) (requires a separate license or the XPression Clips option)
   - **Fill/Key Output** (uses 2 outputs)
   - **Fill Input** (uses 1 input)
   - **Internal Keyer** (uses 1 input, 1 output)

6. Select **OK**.

   The input/output assignment is added to the **I/O Configuration** list.

7. Repeat steps 3 to 5 for as many channels as necessary.

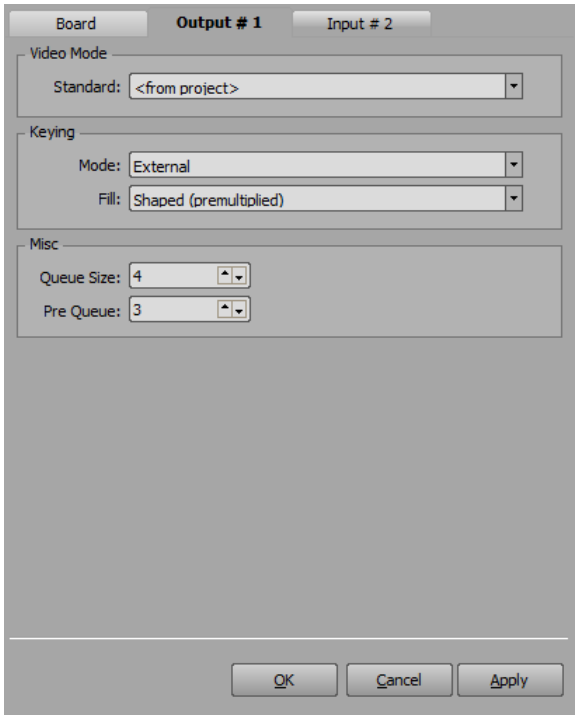


★SDI channel assignments are automatic and any channels beyond the number of channels supported by the graphics card will be listed as **Exceeds device capacity**.

8. Continue with the instructions for configuring the output settings.

To configure the output settings:

1. Select the **Output** tab to configure output settings.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format in which to output an XPression project.
3. In the **Keying** section, from the **Mode** drop-down, select how graphics are output to a video stream.

   The modes are:

   - **Off (Fill Only)** — Only output a video signal. In this mode, graphics are excluded from the output.
   - **External** — Output the key and fill as separate video signals. Graphics and video mixing occurs in an external keyer/mixer.
   - **Internal** — Key and fill are mixed internally. Graphics and video input are outputted as a single video signal from the framebuffer. In this mode the framebuffer functions as the keyer/mixer.
4. When **External** is selected in the **Mode** list, from the **Fill** drop-down, select the method used to process fill graphics before output.

   The available processing methods are as follows:

   - **Shaped (premultiplied)** — Multiply/shape the fill signal color information by the luminance information in the key signal.
   - **Unshaped** — Output fill and key signals "as is".

5. In the **Misc** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to the output.

   Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

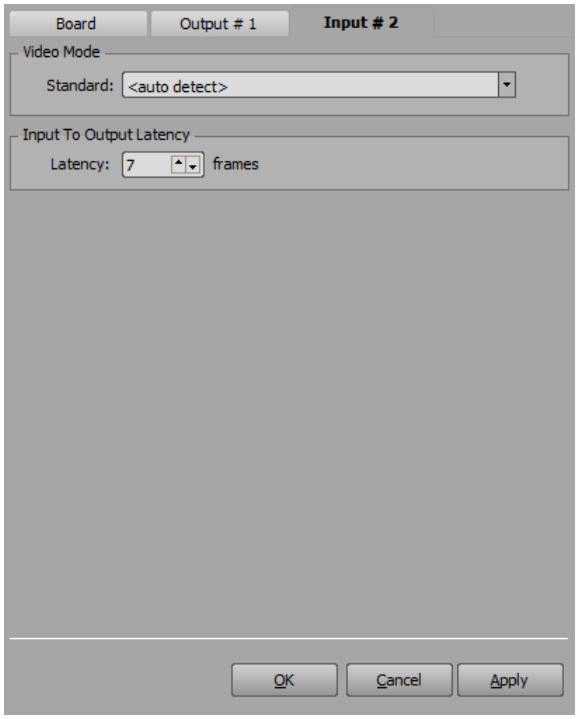
6. In the **Pre Queue** field, enter or select the number of frames to buffer for the pre-queue.

   The pre-queue size can be between 1 and 8.

7. Continue with the instructions for configuring the input settings.

To configure the input settings:

1. Select the **Input** tab to configure input settings.



2. In the **Video Mode** section, from the Standard drop-down, select the analog video format in which to receive video.

   The only option currently available is **<auto detect>**.

3. In the **Input to Output Latency** section, in the Latency field, enter or select a fixed delay, in frames, between the input and output.

   To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section of the corresponding **Output** tab.

4. Select **Apply**.

   The changes to the Blackmagic Design framebuffer board are applied.

5. Select **OK**.

   The configured Blackmagic Design framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

6. Select **Close** to exit the **Hardware Setup** dialog.

Configuring a Blackmagic Design FrameBuffer (Legacy)

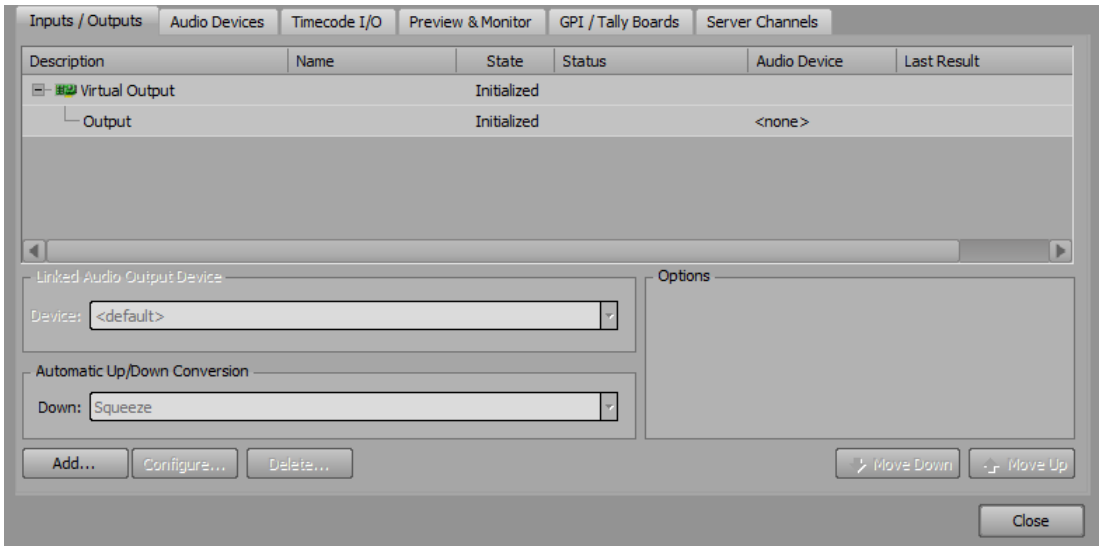
This topic describes the selection and configuration of a Blackmagic Design framebuffer. This option is only available in the 32-bit version of XPression.

To configure a Blackmagic Design framebuffer:

1. In XPression, select **Edit >Hardware Setup**.

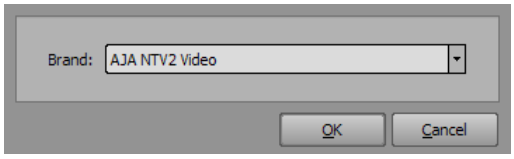
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. Select **Add**.

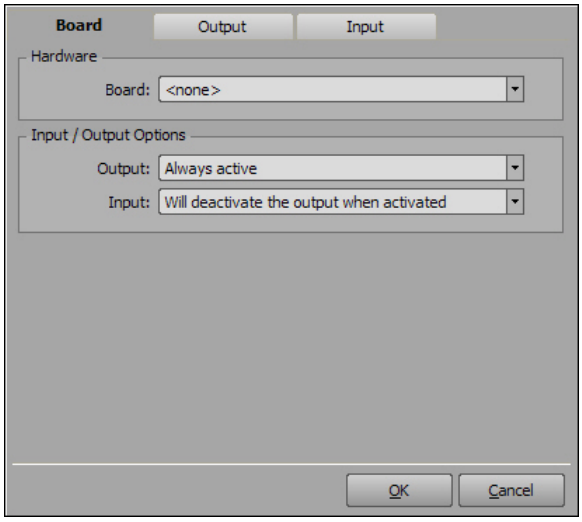
   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **Blackmagic Design (Legacy)** and select **OK**.

   The **Blackmagic Design (Legacy) - Framebuffer Setup** dialog opens.

5. Select the **Board** tab to configure hardware settings.



6. In the **Hardware** section, from the **Board** drop-down, select the installed DeckLink Studio card to configure.
7. In the **Input / Output Options** section, from the **Output** drop-down, select when to activate video output from the Blackmagic Design framebuffer.

   The options are:

   - **Always active** — Always output video.
   - **Active on use only** — Only output video when the card is in use.

8. From the **Input** drop-down, select when to activate video input through the Blackmagic Design framebuffer.

   The options are:

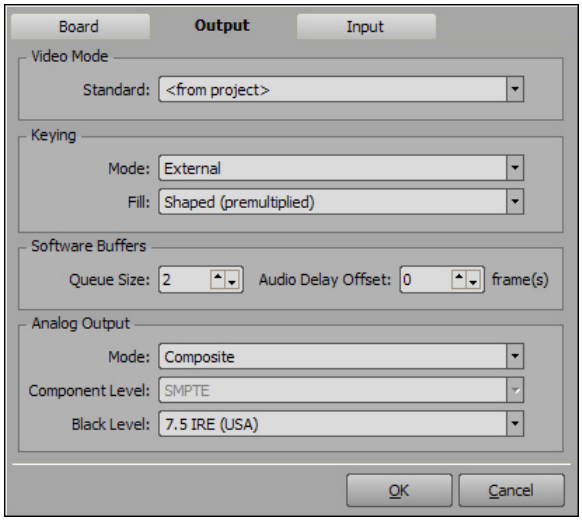
   - **Will deactivate the output when activated** — automatically deactivate the output when the input is activated.
   - **Can only be activated when the output is not active** — input can only be activated when the output is not active.
   - **Always disabled** — disable the input.
   - **Always enabled (output will always be disabled)** — enable the input and disable the output at all times.

   ★Input grabbing may compromise output performance.

9. Continue with configuring the output settings.

To configure the output settings:

1. Select the **Output** tab.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format in which to output an XPression project.
3. In the **Keying** section, from the **Mode** drop-down, select how graphics are output to a video stream.

   The modes are:

   - **External** — Output the key and fill as separate video signals. Graphics and video mixing occurs in an external keyer/mixer.
   - **Internal** — Key and fill are mixed internally. Graphics and video are output as a single video signal from the framebuffer.

     In this mode the framebuffer functions as the keyer/mixer.
   - **Off** — Only output a video signal. In this mode, graphics are excluded from the output.
4. When **External** is selected as the keying mode, from the **Fill** drop-down, select the method used to process fill graphics before output.

   The available processing methods are as follows:

   - **Shaped (premultiplied)** — Multiply/shape the fill signal color information by the luminance information in the key signal.
   - **Unshaped** — Output fill and key signals "as is".
5. In the **Software Buffers** section, in the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to the output.

   ★Use this setting to avoid buffer underruns, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.
6. In the **Audio Delay Offset** field, enter or select an amount of frames as a buffer.

7. In the **Analog Output** section, from the **Mode** drop-down, select the type of analog video signal to output.

   The available output video signals are:

   - **Composite** — output a single video signal that combines luminance and chroma.
   - **Component** — output three channels (Y, R-Y, and B-Y).
   - **S-Video** — output a video signal that carries the video data as two separate signals (brightness and color), unlike composite video which carries the entire set of signals through a signal line.

8. When **Component** is selected output video signal, from the **Component Level** drop-down, select the output component analog level.

   The available levels are:

   - **SMPTE** — use this level for monitoring component analog video.
   - **Betacam** — use this level for output to Sony Betacam SP decks.

9. From the **Black Level** drop-down, select the default black level analog video signal.

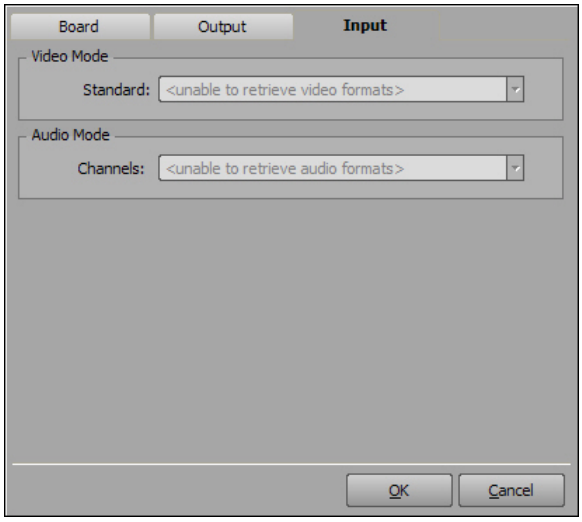
   The available levels are as follows:

   - **7.5 IRE (USA)** — standard black level for all NTSC countries except Japan.
   - **0.0 IRE (Japan)** — standard black level for Japan.

10. Continue with configuring the input settings.

To configure the input settings:

1. Select the **Input** tab.



2. In the **Video Mode** section, from the **Standard** drop-down, select the analog video format in which to receive video.
3. In the **Audio Mode** section, from the **Channels** drop-down, select the channel inputs in which to receive the embedded audio.

   The options available are:

   - **2 channel**
   - **4 channel**
   - **6 channel**
   - **8 channel**
   - **10 channel**
   - **12 channel**
   - **16 channel**
4. Select **OK**.

   The configured Blackmagic Design framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.
5. Select **Close** to exit the **Hardware Setup** dialog.

Configuring a Graphite FrameBuffer

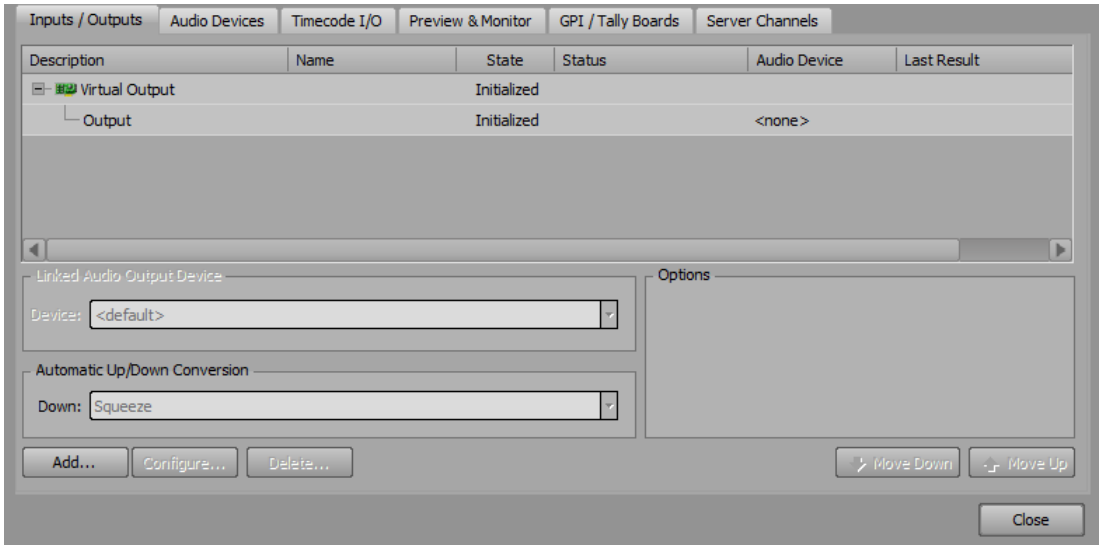
This topic describes the selection and configuration of an Graphite framebuffer.

To select a Graphite framebuffer:

1. In XPression, select **Edit > Hardware Setup**.

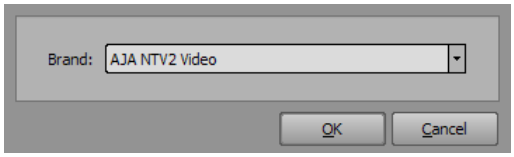
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



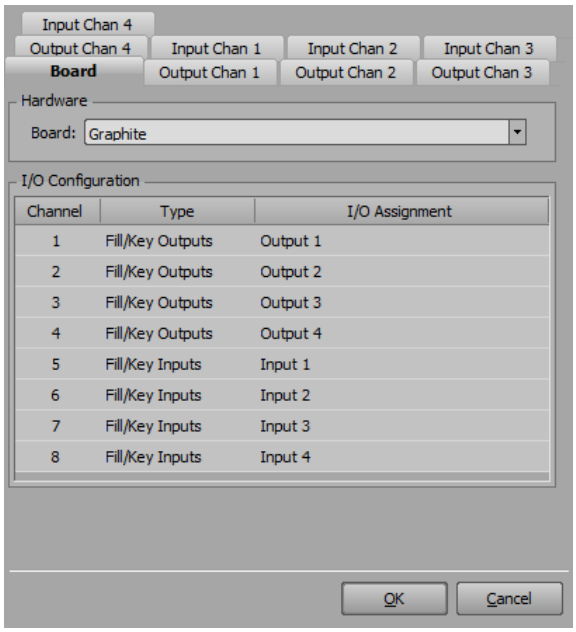
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **Graphite** and then select **OK**.

   The **Graphite - Framebuffer Setup** dialog opens.



To configure the board settings:

1. Select the **Board** tab to choose and configure an installed card.

   This menu is automatically populated based on installed hardware.

2. In the **Hardware** section, from the **Board** drop-down, select a Graphite card to configure, if not already selected.

   The **I/O Configuration** list will be populated according to the type of XPression system:

   - **XPression Graphite and XPression Studio SCE**:

     3 Fill/Key Outputs

     1Fill/Key Input

   - **XPression Studio**:

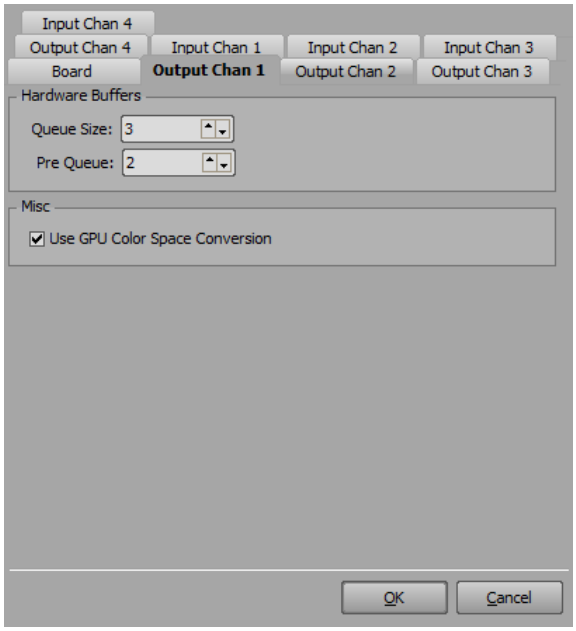
     4 Fill/Key Outputs

     4 Fill/Key Inputs

3. Continue with configuring the output channels.

To configure the output channels:

1. Select an **Output Chan** (Output Channel) tab.



2. In the **Hardware Buffers** section, in the Queue Size field, enter or select the number of frames to buffer in memory before sending to the output.

   ★Use this setting to avoid buffer under runs, which may cause frame skipping. Larger queue sizes ensure smooth playout of generated graphics, but add delay to the output.

3. In the **Pre Queue** field, enter or select the number of frames to buffer for the pre-queue.

   The pre-queue size can be between 1 and 8.

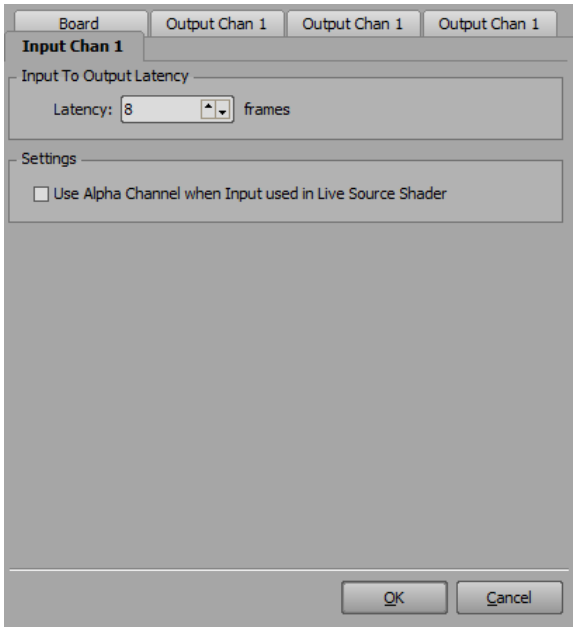
4. In the **Misc** section, select the **Use GPU Color Space Conversion** to use the GPU to perform the color space conversion on the outputs.

   This option provides optimal performance.

5. Continue with configuring the input channels.

To configure the input channels:

1. Select an **Input Chan** (Input Channel) tab.



2. In the **Input to Output Latency** section, in the **Latency** field, enter or select a fixed delay, in frames, between the input and output.

   To remain fixed, the delay must be large enough to accommodate the **Queue Size** and **Pre Queue** values in the **Hardware Buffers** section of the corresponding **Output** tab.

3. In the **Settings** section, select the **Use Alpha Channel when Input used in Live Source Shader** checkbox to use the alpha channel when the selected input is used in a live source shader.

4. Repeat steps 1 to 3 for as many channels as necessary.

5. When all input channels have been configured, select **OK**.

   The configured Graphite framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

6. Select **Close** to exit the **Hardware Setup** dialog.

Configuring a Matrox DSX, X.mio3 or X.mio5 FrameBuffer

Use the following procedure to configure a Matrox DSX LE4, DSX LE5 D25, X.mio3, or X.mio5 framebuffer board.

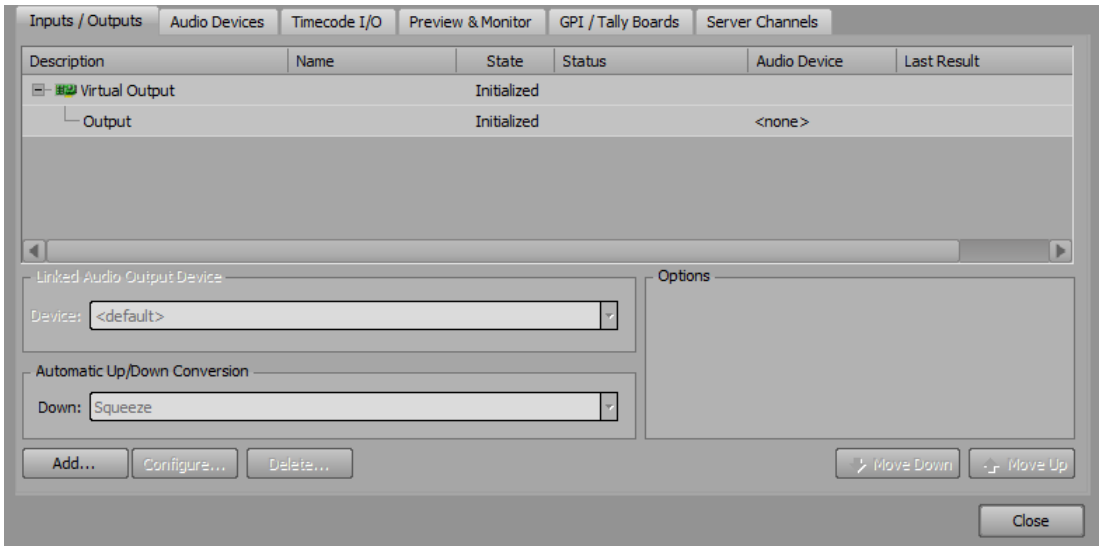
★No 2SI support with XPression Clips 10.5 combined with Matrox driver version 10.0.3. Matrox driver 10.1 is required.

To add a new framebuffer:

1. In XPression Clips, select **Edit > Hardware Setup**.

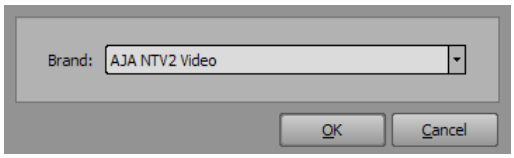
   The **Hardware Setup** window opens.

2. Select the **Inputs / Outputs** tab.



3. Select **Add**.

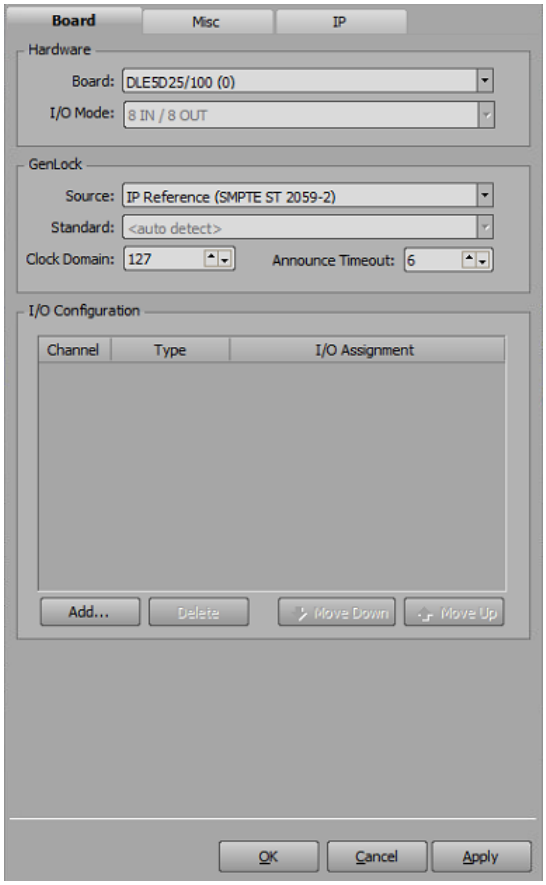
   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **Matrox DSX**.

5. Select **OK**.

   The **Matrox DSX - Framebuffer Setup** dialog opens.



6. Select the **Board** tab to choose and configure an installed DSX LE4, DSX LE5 D25, or X.mio3 card.

   Continue with configuring the **Hardware** and **GenLock** settings in the Board tab.

Board

To configure the Hardware and GenLock settings:

1. From the **Board** drop-down, select the installed framebuffer card to configure.

   The read-only **I/O Mode** displays the input and output configuration for the card. These options vary based on the card and in what configuration it was flashed.

   The defaults are:

   2 IN / 6 Out (for DSX LE4/8/100 and X.mio3/6/100)

   4 IN / 4 Out (for DSX LE IP and X.mio3 IP)

   8 IN / 8 OUT, 2 IN / 2 OUT for UHD (for DSX LE5 D25)

   Depending on the XPression Clips software version, extra fill outputs on the DSX LE4, DSX LE5 D25, and X.mio3 can be used for preview purposes. Contact a Ross representative for details.

2. In the **GenLock** section, from the **Source** drop-down, select the source of the GenLock signal with which to synchronize XPression Clips.

   The available **GenLock** signal sources vary based on the card and card configuration.

   Examples include:

   External Reference — Synchronize with a **GenLock** signal received from an external application through the **GenLock In** port of the XPression Clips computer. Ross Video recommends using an external reference for the **GenLock** signal source.

   SDI IN # — sync to an available **SDI Input** source signal. The SDI input numbers will vary based on the card and how it was flashed.

   IP Reference (SMPTE ST 2059-2)

   SFP A (SMPTE ST 2059-2)

   SFP B (SMPTE ST 2059-2)

   Free Running — do not synchronize XPression Clips with an external source.

3. From the **Standard** drop-down, select the format of the incoming **GenLock** signal.

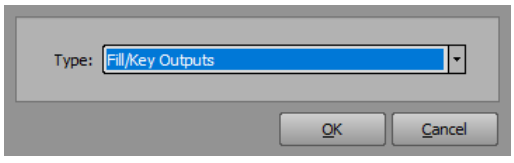
4. In the **Clock Domain** field, enter or select the PTP clock domain when using an **IP GenLock** (SMPTE ST-2059).

   This option is only available on cards supporting IP.

5. In the **Announce Timeout** field, enter or select the number of announce messages that can be missed before triggering the **Best Master Clock Algorithm (BMCA)** to find a new **Grand Master (GM)**.

6. In the **I/O Configuration** section, select **Add** to add an input or output channel.

   The **Select I/O Type** dialog opens.



7. From the **Type** drop-down, select an input /output type.

   The options are:

   - **<none>** (this option is not applicable)
   - **Fill-Only Output** (uses 1 output) (requires a separate license or the XPression Clips Clips option)
   - **Fill/Key Outputs** (uses 2 outputs)
   - **Fill Input** (uses 1 input)
   - **Fill/Key Inputs** (uses 2 inputs)
   - **Internal Keyer** (uses 1 input, 1 output)

8. Select **OK**.
9. Add more inputs and outputs as necessary.

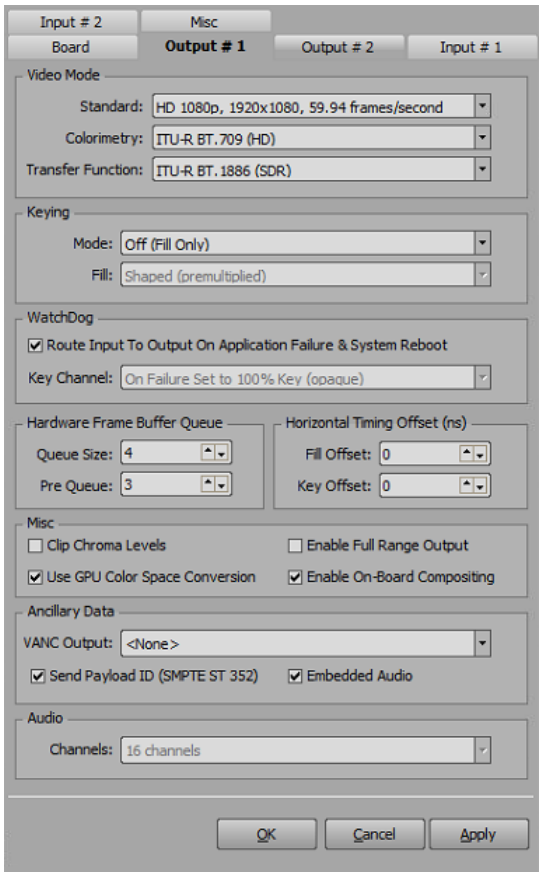
   ★For DSXLE4, when adding three fill/key and one fill, the one fill must be at the bottom of the list. If not, one fill/key will show as exceeding device capacity and will be removed from the hardware setup I/O list.

   Continue with configuring the Output settings.

Outputs

To configure an Output:

1. Select an **Output** tab to configure the parameters of the selected output.



2. Configure the following parameters:

   Video Mode

   Keying

   Watchdog

   Hardware Frame Buffer Queue

   Horizontal Timing Offset

   Misc

   Ancillary Data

   Audio

Video Mode

1. In the **Video Mode** section, from the **Standard** drop-down, select the video format for the output.

   ★When configuring more than one output, they must share the same base frame rate that matches the GenLock reference.

2. From the **Colorimetry** drop-down, select the range of colors that can be represented in the color space:

   <from project> (appears only when <from project> is selected in the **Standard** list)

   ITU-R BT.709 (HD)

   ITU-R BT.2020 (WCG)

3. From the **Transfer Function** drop-down, select the dynamic range standard to use on the output.

   The options are:

   <from project> (appears only when <from project> is selected in the **Standard** list)

   ITU-R BT.1886 (SDR)

   ITU-R BT.2100 (HLG)

Keying

To configure the Keying mode and fill:

1. In the **Keying** section, from the **Mode** drop-down, select a keying mode for the output.

   The available modes are as follows:

   Off (Fill-Only) — select to only output a video signal. In this mode, key is excluded from the output.

   External — select to output video and alpha channels.

   Internal — select to key clips to the associated input.

   ★If the output mode is set to **Internal**, the **GenLock Source** in the **Board** tab needs to be set to an SDI input.

2. From the **Fill** drop-down, select the fill mode.

   The available fill options are as follows:

   Shaped (premultiplied) — select to use an additive key to cut precise holes for the fill.

   Unshaped — select to use a multiplicative key based on the gradient values of the alpha.

Watchdog

To configure the Watchdog settings:

1. In the **Watchdog** section, select the **Route Input To Output On Application Failure & System Reboot** checkbox to route the input to an output in the event of application failure or a system reboot.
2. From the **Key Channel** drop-down, select the **On Failure Set to % Key (transparent)** channel.

   This is currently the only available key channel and it is set to 0%.

Hardware Frame Buffer Queue

To configure the Hardware Frame Buffer Queue settings:

1. In the **Queue Size** field, enter or select the framebuffer queue size.

   The framebuffer queue size can be between 2 and 7.

2. In the **Pre Queue** field, enter or select the pre-queue size.

   The pre-queue size can be between 1 and 6.

Horizontal Timing Offsets

To configure the Horizontal Timing Offsets:

1. In the **Fill Offset** field, enter or select the offset of the fill.
2. In the **Key Offset** field, enter or select the offset of the key.

Misc

To configure the Misc settings:

1. Select the **Clip Chroma Levels** checkbox to limit the chroma levels in the output.
2. Select the **Enable Full Range Output** checkbox to output using the full super black to super white range.
3. Select the **Use GPU Color Space Conversion** chec box to use the GPU to perform the fastest possible color space conversion on the output.

   It is selected by default.

   ★If you are using the HLG transfer function, the **Use GPU Color Space Conversion** checkbox should always be selected.

4. Select the **Enable On-Board Compositing** checkbox to allow use of the low latency material scaler with a Live Source material.

Ancillary Data

To configure the Ancillary Data settings:

1. From the **VANC Output** drop-down, select the vertical ancillary data output.

   The options are:

   - **None** — do not set a vertical ancillary data output.
   - **Input** — pass the vertical ancillary data from an input to the selected output.
   - **Video Shader (Closed Captioning)** — select this option to output 608 closed caption (in a 708 CDP) when a video shader is playing back a file with embedded captioning.

When the XPression INcoder is set to a target folder, it will extract 608 closed captioning from an MOV file. The INcoder will transcode the MOV file to an XPression AVI file as well as an XMD file that contains the closed caption metadata. When the AVI file is played back from XPression Clips, XPression Clips will look for the XMD file and play out with the AVI file.

★Files played back from the Clip Store do not support Closed Captioning.

2. Select the **Send payload ID (SMPTE ST 352)** checkbox to send the video payload ID (SMPTE ST 352) in the ancillary data.
3. Select the **Embedded Audio** checkbox to include embedded audio in the ancillary data.

Audio

To configure the Audio settings:

- In the **Audio** section, from the **Channels** drop-down, select the number of audio channels to output in the IP audio stream.

  The options available are:

  2 channel

  4 channel

  8 channel

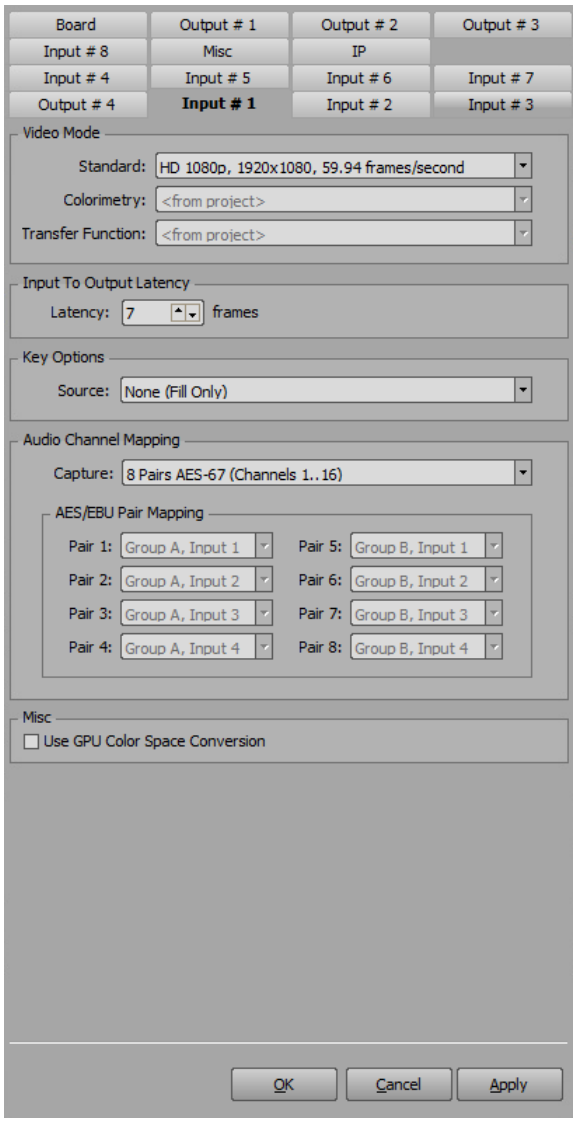
★The output audio channels are only available when using the DSX LE4 IP, DSX LE5 D25 IP, or X.mio3 IP board in **SMPTE 2110** mode.

Continue with configuring the Input settings.

Inputs

To configure the inputs:

1. Select an **Input** tab to configure the parameters of the selected input.



2. Configure the following parameters:

   Video Mode

   Input To Output Latency

   Key Options

   Audio Channel Mapping

   Misc

Video Mode

1. From the **Standard** drop-down, select the video format for the input.
2. From the **Colorimetry** drop-down, select the range of colors that can be represented in the color space:
   - **<from project>** (appears only when <from project> is selected in the Standard list)
   - **ITU-R BT.709 (HD)**
   - **ITU-R BT.2020 (WCG)**
3. From the **Transfer Function** drop-down, select the dynamic range standard to use on the output.

   The options are:
   - **<from project>** (appears only when <from project> is selected from the **Standard** drop-down)
   - **ITU-R BT.1886 (SDR)**
   - **ITU-R BT.2100 (HLG)**

Input To Output Latency

- In the **Latency** field, enter or select a time interval offset, in frames, between the input and output.

Key Options

- From the **Sources** drop-down, select the keying options for the input.

  The options are:

  None (Fill Only)

  Paired Input (Fill/Key)

Audio Channel Mapping

1. From the **Capture** drop-down, select the audio type for the input.
2. In the **AES/EBU Pair Mapping** area, use the **Pair** drop-downs to define the mapping of the AES/EBU inputs.

   ★The AES/EBU pair mapping is only available on cards that support AES audio.

Misc.

To use the GPU to perform the fastest possible color space conversion on the input:

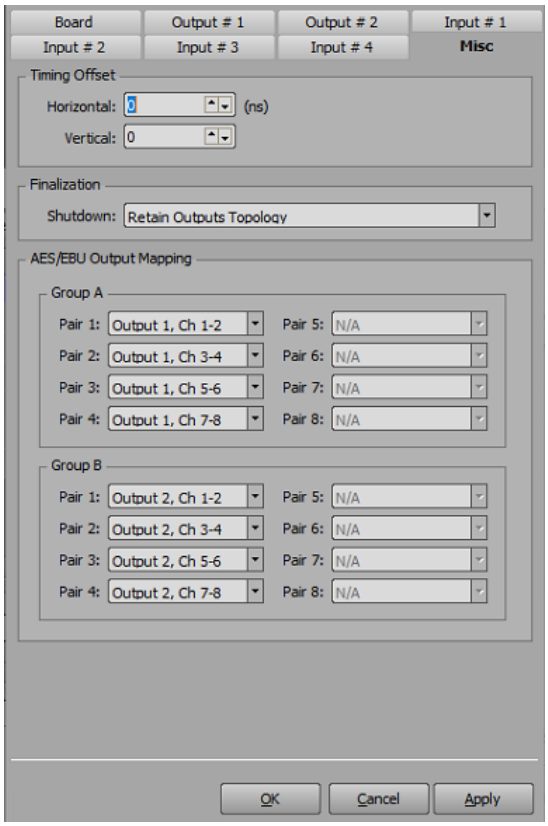
- In the **Misc** section, select the **Use GPU Color Space Conversion** checkbox.

  Continue with configuring the Misc settings.

Misc

To configure the horizontal and vertical offsets:

1. Select the **Misc** tab .



2. In the **Timing Offset** section, do the following:
   - In the **Horizontal** field, enter or select a horizontal delay timing offset (in nanoseconds) with regards to an external reference.

     This setting is for external reference only.
   - In the **Vertical** field, enter or select a vertical delay timing offset (in nanoseconds) with regards to an external reference.

     This setting is for external reference only.
3. In the **Finalization** section, from the **Shutdown** drop-down, select one of the following options for the outputs on shutdown:
   - **Retain Outputs Topology** — retain the output topology when XPression Clips is closed.
   - **Clear Outputs Topology** — clear the output topology when XPression Clips is closed so that NMOS senders are no longer reported after XPression Clips closes.

4. In the **AES/EBU Output Mapping** section, use the **Pair** drop-downs for **Group A** and **Group B** to define the mapping of the AES/EBU outputs.

   The default settings are framebuffer one to AES Group A and framebuffer two to AES Group B.

   ★The AES/EBU output mapping is only available if using the DSX LE4 FH card.

   If you are configuring a DSX LE4 IP, DSX LE5 D25, X.mio3, or X.mio 5 IP card, continue with configuring the IP settings.

IP

This section applies to the DSX LE4 IP, DSX LE5 D25, X.mio3, or X.mio 5 IP cards only.

To configure the IP settings:

1. Select the **IP** tab.

   The available settings depend on the card configuration and protocol. The Matrox DSXLE5 D25 and X.mio5 Q25 only support the **SMPTE 2110** protocol and not **SMPTE 2022-6**.

2. Select the appropriate protocol link for further instructions:

   SMPTE 2110

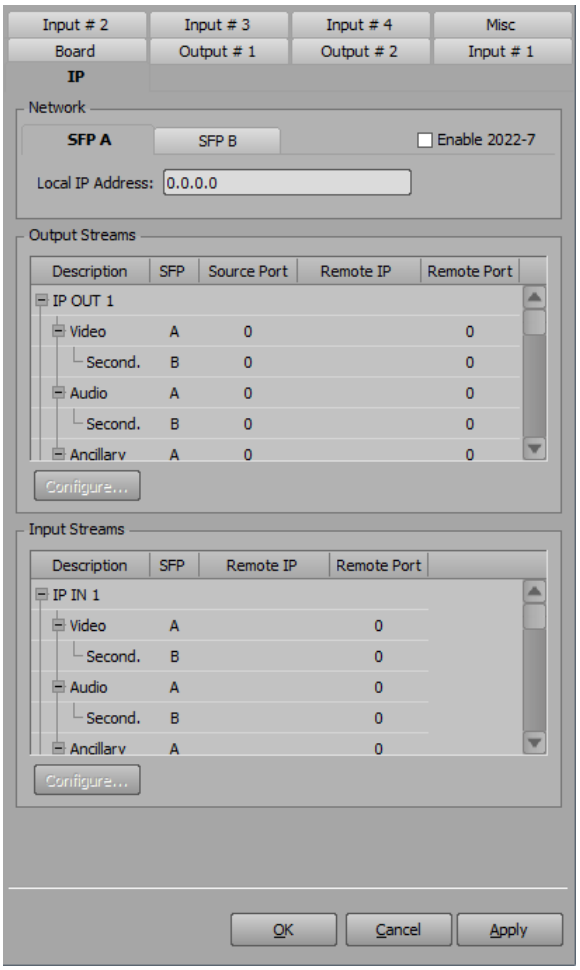
   SMPTE 2110 with 2022-7

   SMPTE 2022-6

   SMPTE 2022-6 with 2022-7

SMPTE 2110

If the IP card is configured for **SMPTE 2110** protocol, the **IP** tab is displayed as follows:



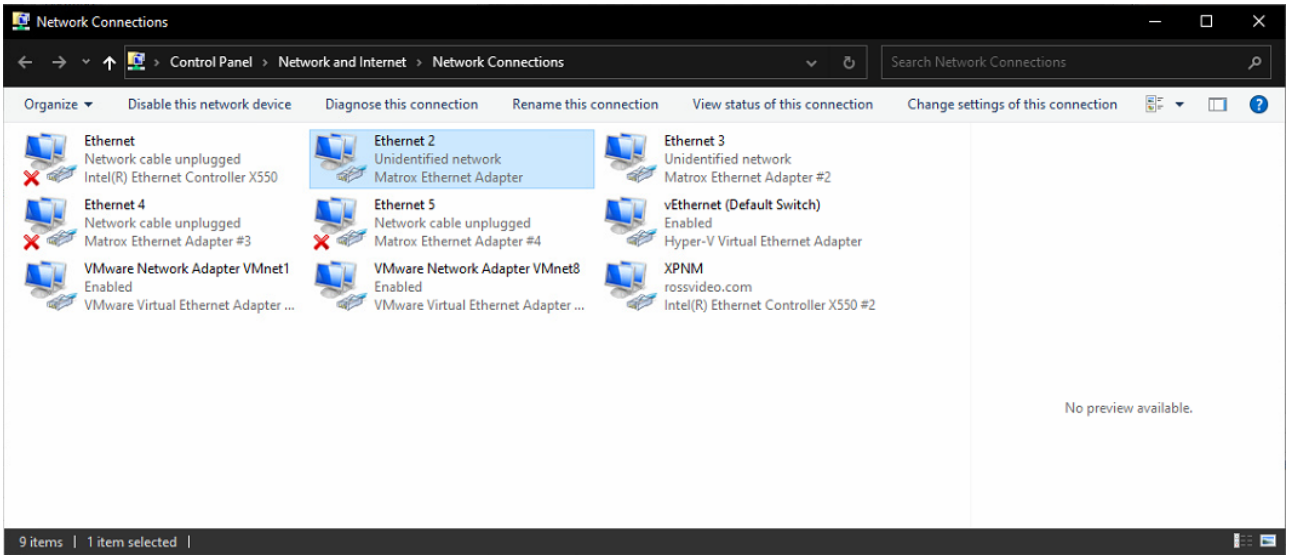
To configure the Network settings:

For Matrox DSXLE4 and X.mio3

1. In the **Network** section, in the **SFP A** and **SFP B** tabs, in the **Local IP Address** field, enter the IP address of the small form-factor pluggable transceivers (Matrox DSXLE4 and X.mio3 only).
2. Select the **Enable 2022-7** checkbox to use the **2022-7** standard to enable redundancy for the SFP module connection. If using **2022-7** redundancy, see SMPTE 2110 with 2022-7 for more information.

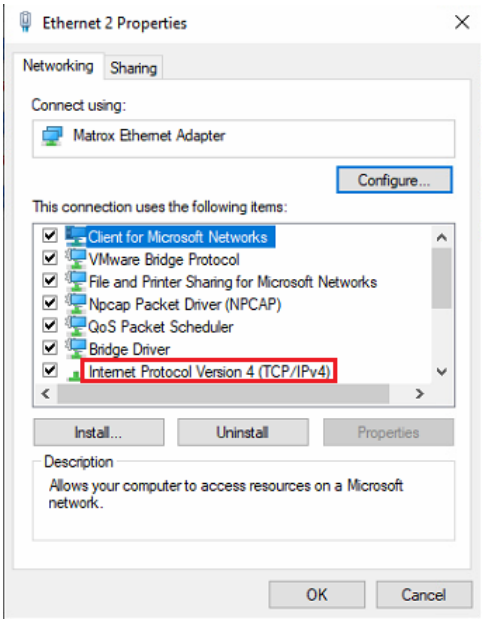
For Matrox DSXLE5 and X.mio5

1. Open **Network Connections** in Windows.
2. Depending on the configuration, there can be up to four **SFPs** (SFP A, SFP B, SFP C, and SFP D).



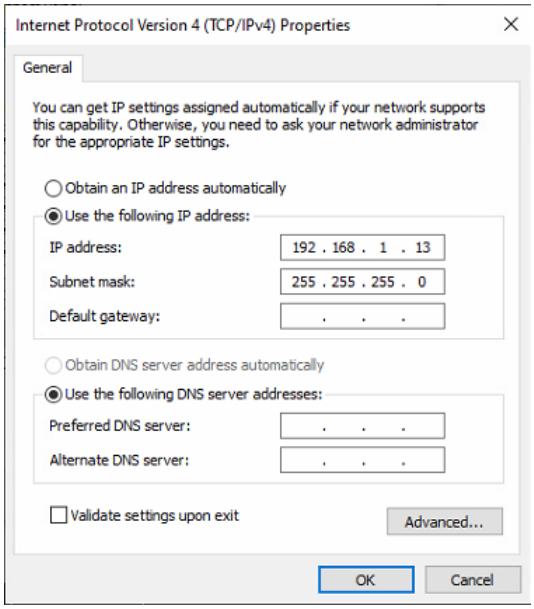
3. Right-click on the **Matrox Ethernet Adapter** and select **Properties**.

   The **Ethernet Properties** window opens.



4. In the **Networking** tab, select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.

   The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.



5. Configure the properties as necessary.
6. Repeat this procedure for any remaining **Matrox Ethernet Adapters**.

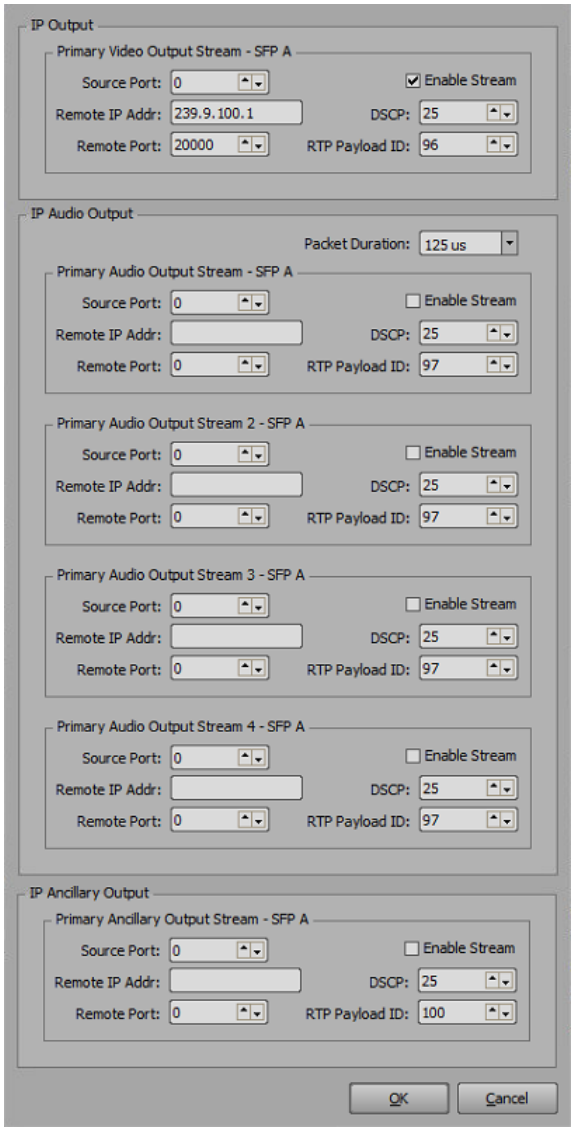
To configure the NMOS setting:

- In the **IP** tab, in the **NMOS** section, select the **Accept IS-05** connection requests checkbox to accept connection requests to use IS-05 via NMOS.

To configure the Output Streams:

1. In the **Output Streams** section, select an output stream and select **Configure**.

   The **Matrox DSX - IP Output Stream Setup** dialog opens.



2. In the **Primary Video Output Stream** section configure the following settings:

   Source Port — enter or select the local port number of the primary video output stream source.

   Enable Stream — enable the primary video output stream.

   Remote IP Addr — enter the remote IP address of the primary video output stream.

   DSCP — enter or select the differentiated services code point of the primary video output stream.

   Remote Port — enter or select the remote port number for the primary video output stream.

   RTP Payload ID — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

3. In the **Primary Audio Output Stream** section configure the following settings:

   Source Port — enter or select the local port number of the of the primary audio output stream source.

   Enable Stream — enable the primary audio output stream.

   Remote IP Addr — enter the remote IP address of the primary audio output stream.

   DSCP — enter or select the differentiated services code point of the primary audio output stream.

   Remote Port — enter or select the remote port number for the primary audio output stream.

   RTP Payload ID — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

4. Repeat step 5 for any other primary audio output streams.

5. In the **Primary Ancillary Output Stream** section configure the following settings:

   Source Port — enter or select the local port number of the of the primary ancillary output stream source.

   Enable Stream — enable the primary ancillary output stream.

   Remote IP Addr — enter the remote IP address of the primary ancillary output stream.

   DSCP — enter or select the differentiated services code point of the primary ancillary output stream.

   Remote Port — enter or select the remote port number for the primary ancillary output stream.

   RTP Payload ID — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

6. Repeat steps 1 to 5 for any other output streams.

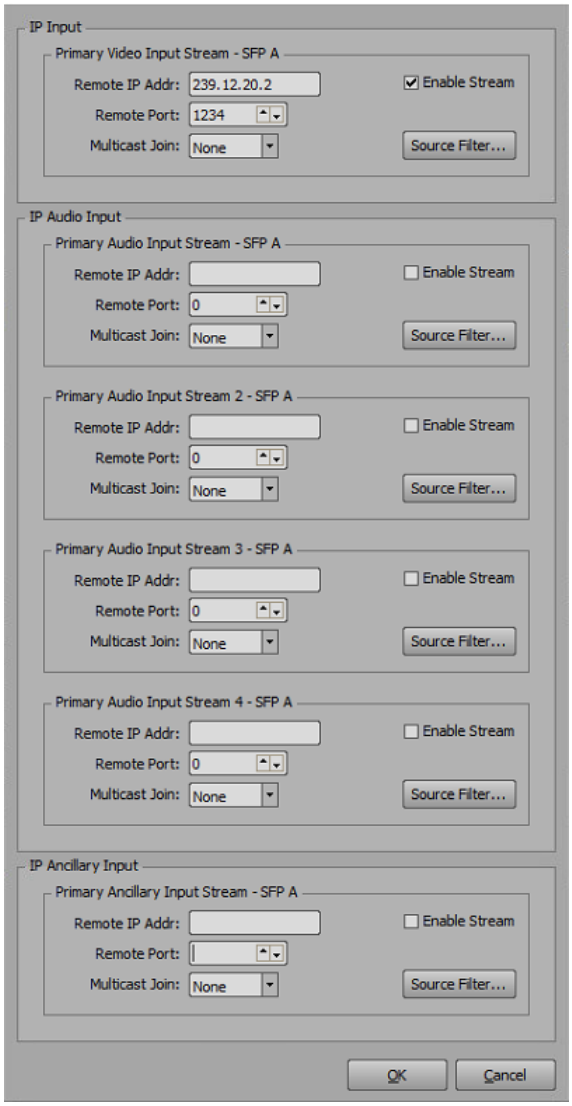
7. Select **OK**.

   The **Matrox DSX - IP Output Stream Setup** dialog closes and the settings are added to the selected output stream.

To configure the Input Streams:

1. In the **Input Streams** section, select an input stream and select **Configure**.

   The **Matrox DSX - IP Input Stream Setup** dialog opens.



2. In the **Primary Video Input Stream** section configure the following settings:

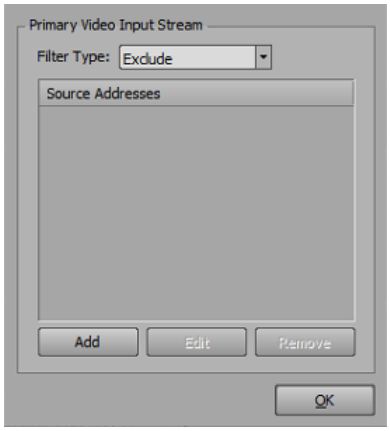
   - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
   - **Enable Stream** — enable the primary video input stream.
   - **Remote Port** — enter or select the remote port number for the primary video input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary video input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.

3. Select the **Source Filter** button to configure IP multicast source filtering if using multicast.

   The **Matrox DSX - IGMP Multicast Source Filter** dialog opens.



   a. From the **Filter Type** drop-down, select one of the following filtering options:

      - **Exclude** — exclude specific source addresses from the IP multicast.
      - **Only Include** — include specific source addresses from the IP multicast.

   b. Select **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected) specific source addresses.

   c. Once any necessary addresses have been added, select **OK**.

4. In the **Primary Audio Input Stream** section configure the following settings:

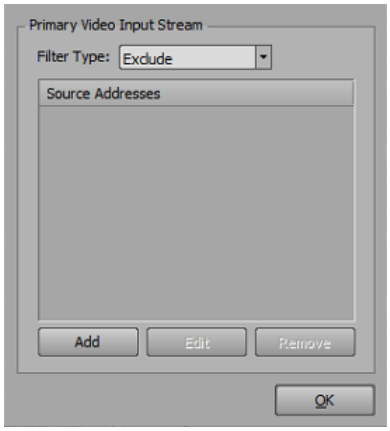
   - **Remote IP Addr** — enter the remote IP address of the primary audio input stream.
   - **Enable Stream** — enable the primary audio input stream.
   - **Remote Port** — enter or select the remote port number for the primary audio input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary audio input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.

5. Select the **Source Filter** button to configure IP multicast source filtering if using multicast.

   The **Matrox DSX - IGMP Multicast Source Filter** dialog opens.



   a. From the **Filter Type** drop-down, select one of the following filtering options:

      - **Exclude** — exclude specific source addresses from the IP multicast.
      - **Only Include** — include specific source addresses from the IP multicast.

   b. Select **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected) specific source addresses.

   c. Once any necessary addresses have been added select **OK**.

6. Repeat step 4 and optionally, step 5 for any other primary audio input streams.

7. In the **Primary Ancillary Input Stream** section configure the following settings:

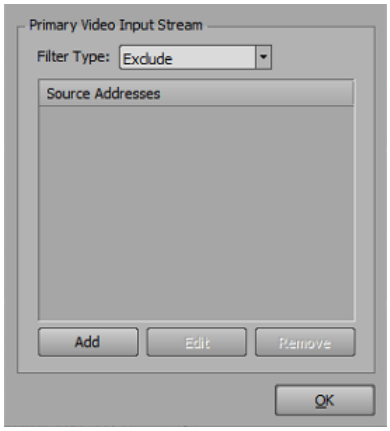
   - **Remote IP Addr** — enter the remote IP address of the primary ancillary input stream.
   - **Enable Stream** — enable the primary ancillary input stream.
   - **Remote Port** — enter or select the remote port number for the primary ancillary input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary ancillary input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.

8. Select the **Source Filter** button to configure IP multicast source filtering if using multicast.

   The **Matrox DSX - IGMP Multicast Source Filter** dialog opens.



   a. From the **Filter Type** drop-down, select one of the following filtering options:

      - **Exclude** — exclude specific source addresses from the IP multicast.
      - **Only Include** — include specific source addresses from the IP multicast.

   b. Select **Add** to add and enter a source address to either exclude or only include (depending on the filter type selected) specific source addresses.

   c. Once any necessary addresses have been added select **OK**.

   The **Matrox DSX - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.

9. Repeat steps 1 to 8 for any other input streams.

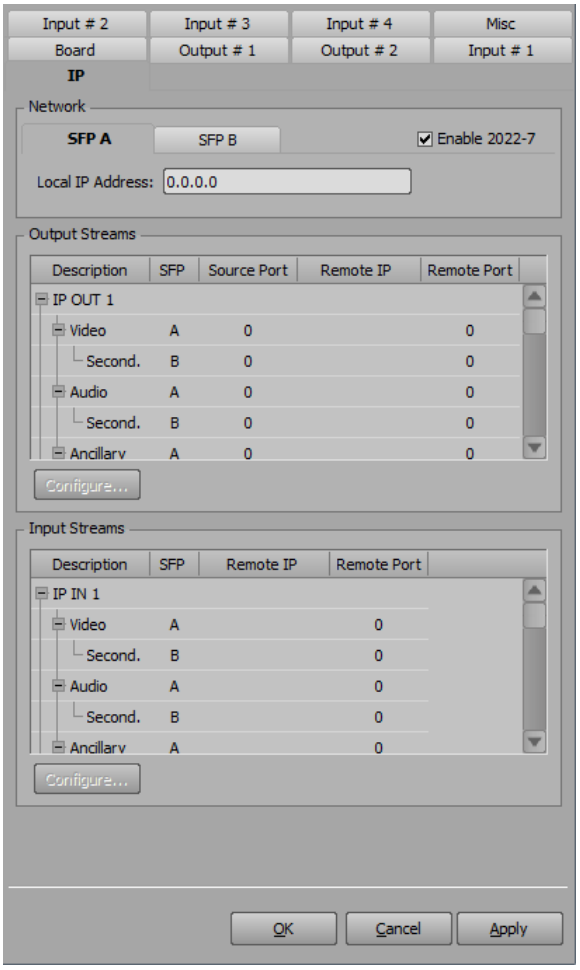
To configure the Input Clean Switch settings:

1. If using the DSX LE4 IP, DSX LE5 D25, X.mio3 IP, or X.mio5 Q25, in the **Input Clean Switch** section, select the **Pair inputs to allow remote clean switch** checkbox to create pairs of inputs (effectively dividing the number of available inputs by two) so that when doing a switch, the 'inactive' input is prepared with the new multicast settings first, then made active when ready.
2. If selected, configure the following settings:

   - **Clean switch prepare delay** — enter or select the number of frames to prepare the delay for the IP clean switch option.
   - **Group NMOS requests received within** — enter or select time in seconds to configure a delay to collect any NMOS connection requests (video/audio/ancillary) received for an input within that time period before applying the IP clean switch.

SMPTE 2110 with 2022-7

If the IP card is configured for **SMPTE 2110** protocol and the **Enable 2022-7** checkbox is selected, the IP tab is displayed as follows:



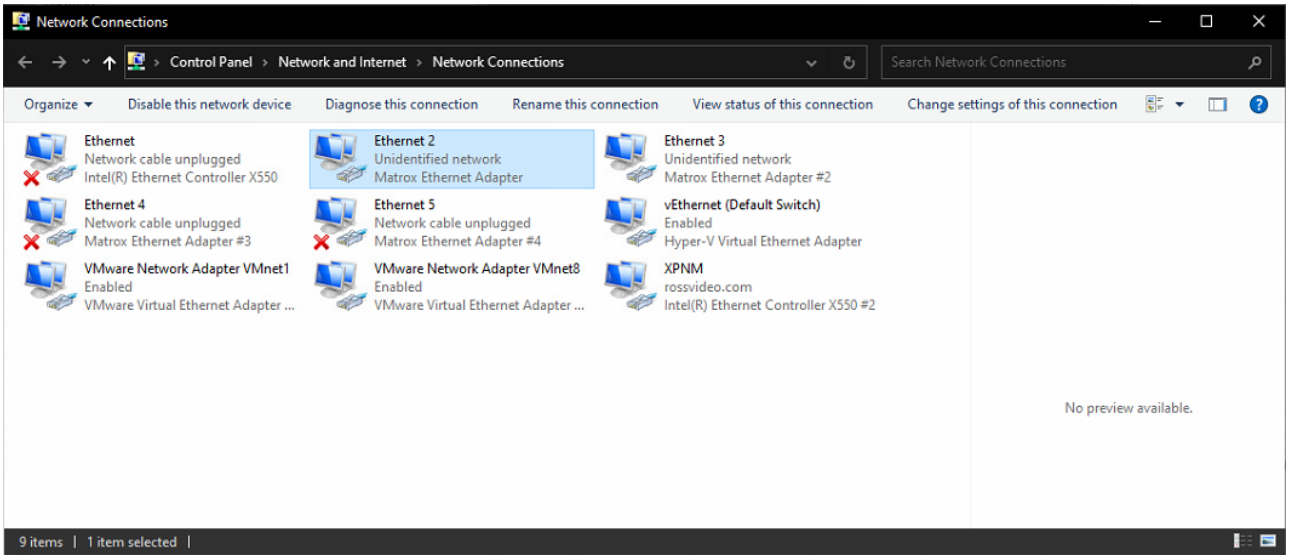
To configure the Network settings:

For Matrox DSXLE4 and X.mio3

1. In the **Network** section, in the **SFP A** and **SFP B** tabs, in the **Local IP Address** field, enter the IP address of the small form-factor pluggable transceivers (Matrox DSXLE4 and X.mio3 only).
2. Select the **Enable 2022-7** checkbox to use the **2022-7** standard to enable redundancy for the SFP module connection.

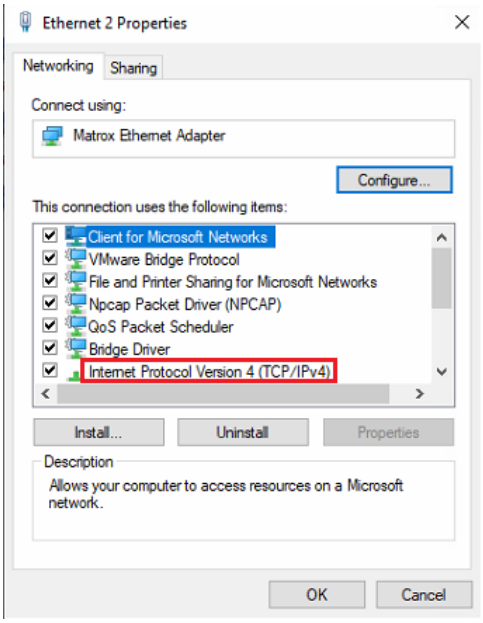
For Matrox DSXLE5 and X.mio5

1. Open **Network Connections** in Windows.
2. Depending on the configuration, there can be up to four **SFPs** (SFP A, SFP B, SFP C, and SFP D).



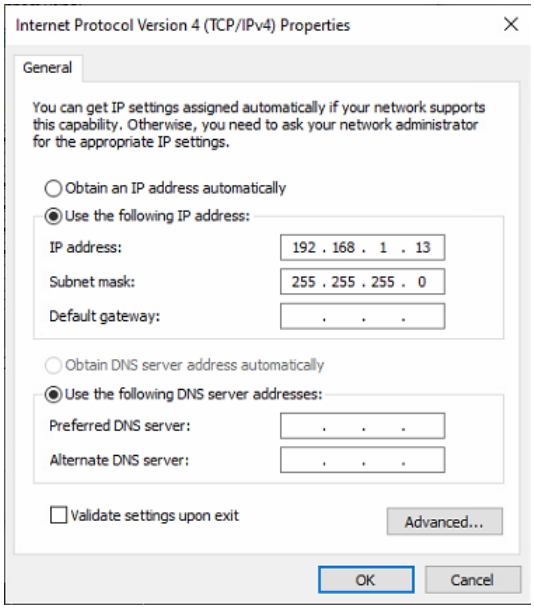
3. Right-click on the **Matrox Ethernet Adapter** and select **Properties**.

   The **Ethernet Properties** window opens.



4. In the **Networking** tab, select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.

   The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.

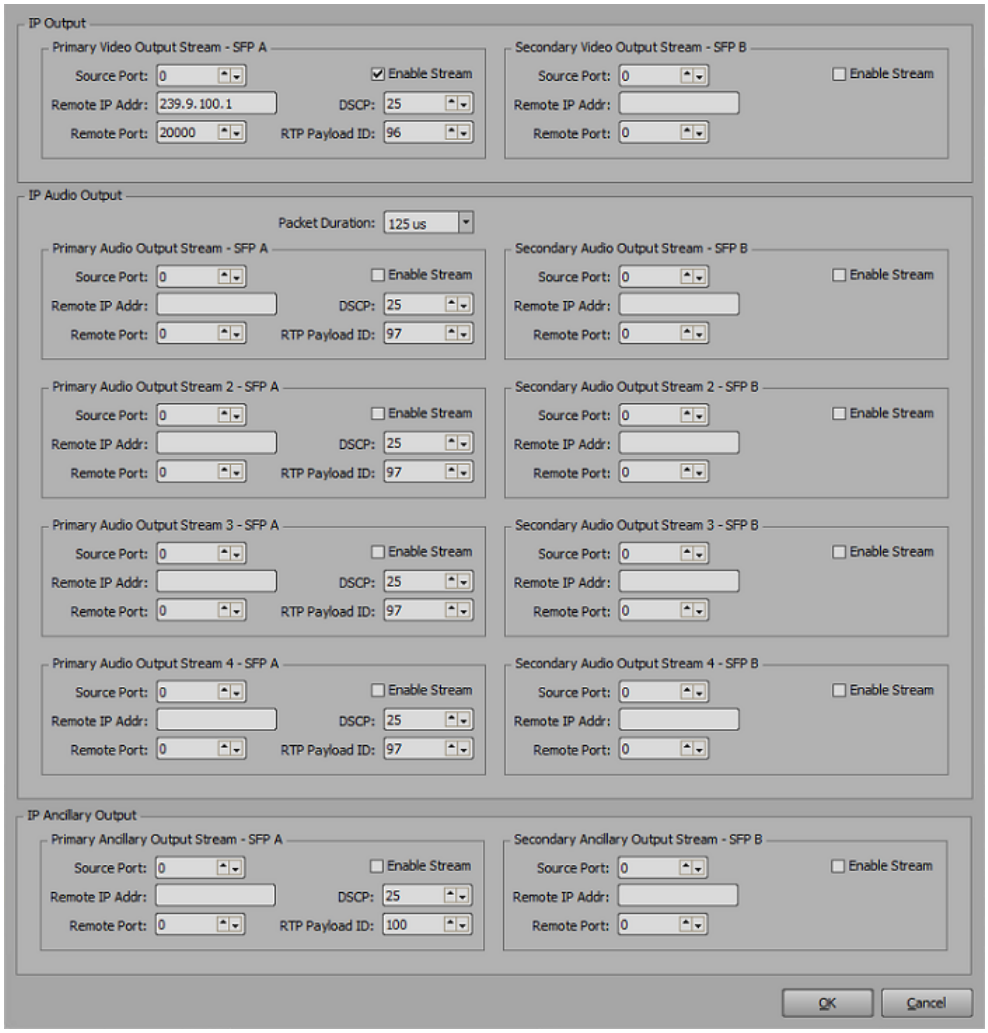


5. Configure the properties as necessary.
6. Repeat this procedure for any remaining **Matrox Ethernet Adapters**.

To configure the Primary Video Output Stream:

1. Select an output stream and select **Configure**.

   The **Matrox DSX - IP Output Stream Setup** dialog opens.



2. In the **Primary Video Output Stream - SFP A** section configure the following settings:

   - **Source Port** — enter or select the local port number of the primary video output stream source.
   - **Enable Stream** — enable the primary video output stream.
   - **Remote IP Addr** — enter the remote IP address of the primary video output stream.
   - **DSCP** — enter or select the differentiated services code point of the primary video output stream.
   - **Remote Port** — enter or select the remote port number for the primary video output stream.
   - **RTP Payload ID** — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

To configure the Secondary Video Output Stream:

- In the **Secondary Video Output Stream - SFP B** section configure the following settings:
  - **Source Port** — enter or select the local port number of the primary video output stream source.
  - **Enable Stream** — enable the secondary video output stream.
  - **Remote IP Addr** — enter the remote IP address of the primary video output stream.
  - **Remote Port** — enter or select the remote port number for the primary video output stream.

To configure the Primary Audio Output Stream:

1. In the **Primary Audio Output Stream - SFP A** section configure the following settings:
   - **Source Port** — enter or select the local port number of the of the primary audio output stream source.
   - **Enable Stream** — enable the primary audio output stream.
   - **Remote IP Addr** — enter the remote IP address of the primary audio output stream.
   - **DSCP** — enter or select the differentiated services code point of the primary audio output stream.
   - **Remote Port** — enter or select the remote port number for the primary audio output stream.
   - **RTP Payload ID** — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.
2. Repeat step 1 for any other audio output streams.

To configure the Secondary Audio Output Stream:

1. In the **Secondary Audio Output Stream - SFP B** section configure the following settings:
   - **Source Port** — enter or select the local port number of the of the primary audio output stream source.
   - **Enable Stream** — enable the secondary audio output stream.
   - **Remote IP Addr** — enter the remote IP address of the primary audio output stream.
   - **Remote Port** — enter or select the remote port number for the primary audio output stream.
2. Repeat step 1 for any other secondary audio output streams.

To configure the Primary Ancillary Output Stream:

- In the **Primary Ancillary Output Stream - SFP A** section configure the following settings:
  - **Source Port** — enter or select the local port number of the of the primary ancillary output stream source.
  - **Enable Stream** — enable the primary ancillary output stream.
  - **Remote IP Addr** — enter the remote IP address of the primary ancillary output stream.
  - **DSCP** — enter or select the differentiated services code point of the primary ancillary output stream.
  - **Remote Port** — enter or select the remote port number for the primary ancillary output stream.
  - **RTP Payload ID** — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.

To configure the Secondary Ancillary Output Stream:

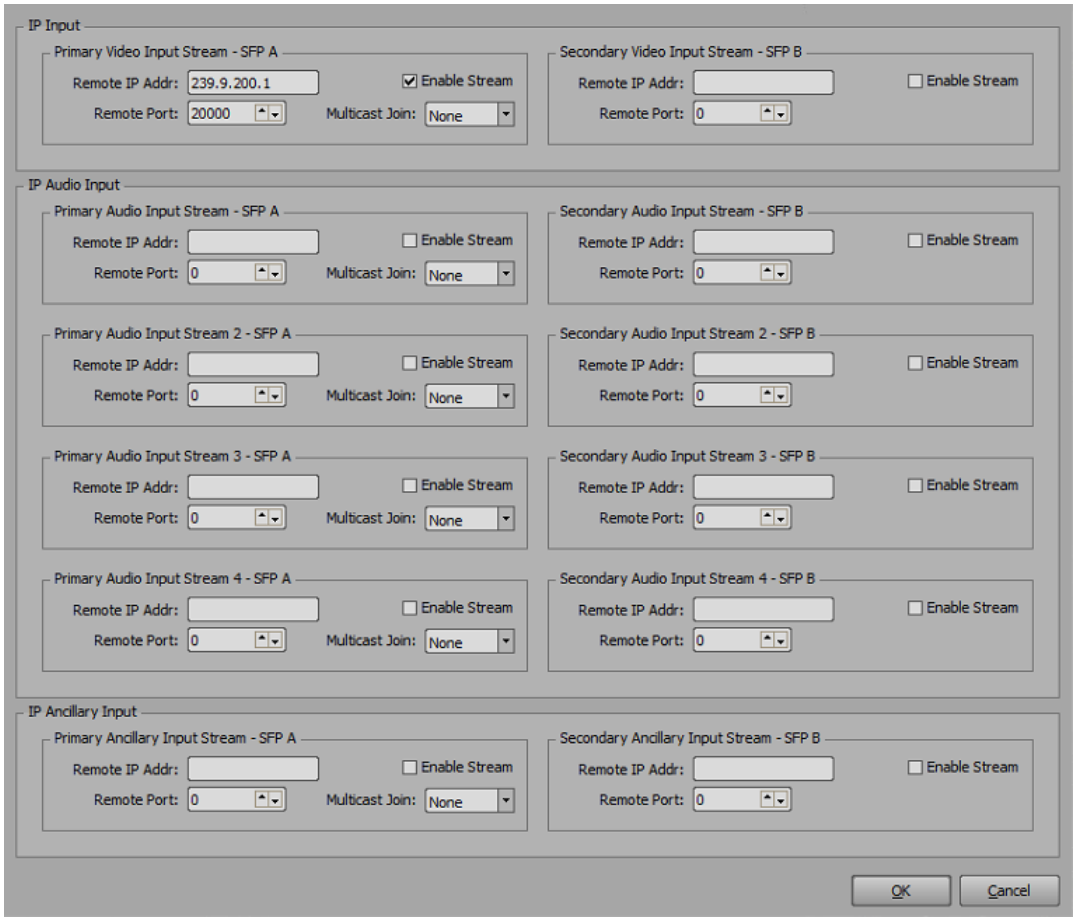
1. In the **Secondary Ancillary Output Stream - SFP B** section configure the following settings:
   - **Source Port** — enter or select the local port number of the of the primary ancillary output stream source.
   - **Enable Stream** — enable the secondary ancillary output stream.
   - **Remote IP Addr** — enter the remote IP address of the primary ancillary output stream.
   - **Remote Port** — enter or select the remote port number for the primary ancillary output stream.
2. Select **OK**.

   The **Matrox DSX - IP Output Stream Setup** dialog closes and the settings are added to the selected output stream.
3. Repeat the above steps for any other output streams

To configure the Primary Video Input Stream:

1. In the **Input Streams** section, select an input stream and select **Configure**.

   The **Matrox DSX - IP Input Stream Setup** dialog opens.



2. In the **Primary Video Input Stream - SFP** A section configure the following settings:

   - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
   - **Enable Stream** — enable the primary video input stream.
   - **Remote Port** — enter or select the remote port number for the primary video input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary video input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.

To configure the Secondary Video Input Stream:

- In the **Secondary Video Input Stream - SFP B** section configure the following settings:
  - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
  - **Enable Stream** — enable the secondary video input stream.
  - **Remote Port** — enter or select the remote port number for the primary video input stream.

To configure the Primary Audio Input Stream:

1. In the **Primary Audio Input Stream - SFP A** section configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary audio input stream.
   - **Enable Stream** — enable the primary audio input stream.
   - **Remote Port** — enter or select the remote port number for the primary audio input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary audio input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.
2. Repeat step 1 for any other primary audio input streams.

To configure the Secondary Audio Input Stream:

1. In the **Secondary Audio Input Stream - SFP B** section configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary audio input stream.
   - **Enable Stream** — enable the secondary audio input stream.
   - **Remote Port** — enter or select the remote port number for the primary audio input stream.
2. Repeat step 1 for any other primary audio input stream.

To configure the Primary Ancillary Input Stream:

- In the **Primary Ancillary Input Stream - SFP A** section configure the following settings:
  - **Remote IP Addr** — enter the remote IP address of the primary ancillary input stream.
  - **Enable Stream** — enable the primary ancillary input stream.
  - **Remote Port** — enter or select the remote port number for the primary ancillary input stream.
  - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary ancillary input stream.

    The options are:

    - **None** — select this option if not using IP multicast. This is the default setting.
    - **IGMP v2** — use internet group management protocol version 2.
    - **IGMP v3** — use internet group management protocol version 3.

To configure the Secondary Ancillary Input Stream:

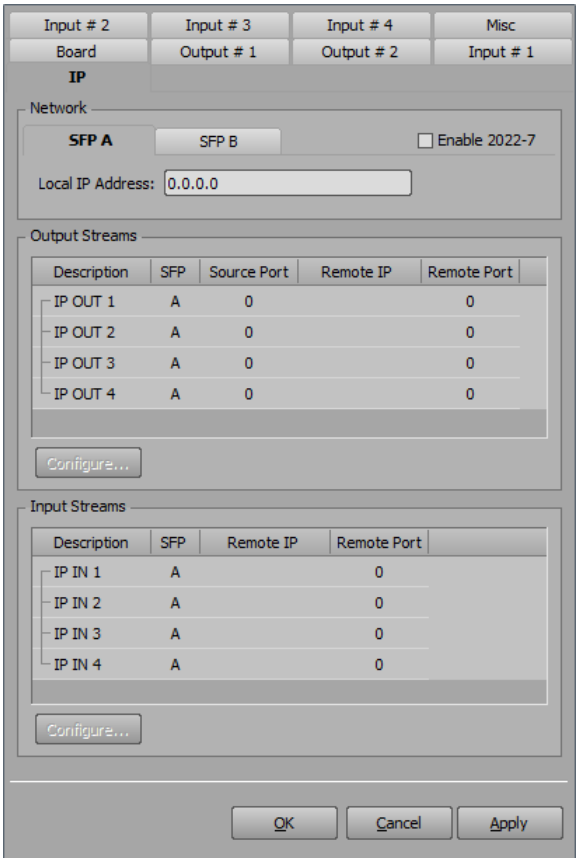
1. In the **Secondary Ancillary Input Stream - SFP B** section configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary ancillary input stream.
   - **Enable Stream** — enable the seconday ancillary input stream.
   - **Remote Port** — enter or select the remote port number for the primary ancillary input stream.
2. Select **OK**.

   The **Matrox DSX - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
3. Repeat the above steps for any other input streams.

SMPTE 2022-6

★SMPTE 2022-6 is not supported on the Matrox DSXLE5 D25 and X.mio5 Q25.

If the IP card is configured for SMPTE 2022-6 protocol, the IP tab is displayed as follows:



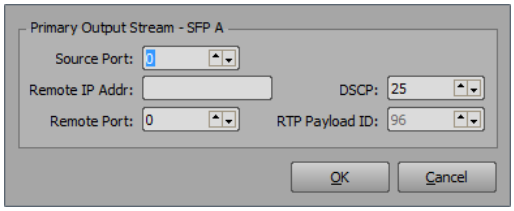
To configure the Network settings:

1. In the **Network** section, in the **SFP A** and **SFP B** tabs, in the **Local IP Address** field, enter the IP address of the small form-factor pluggable transceiver .
2. Select the **Enable 2022-7** check box to use the 2022-7 standard to enable redundancy for the SFP module connection. If using 2022-7 redundancy, see SMPTE 2022-6 with 2022-7 for more information.

To configure the Primary Output Stream:

1. In the **Output Streams** section, select an output stream and select **Configure**.

   The **Matrox DSX - IP Output Stream Setup** dialog opens.

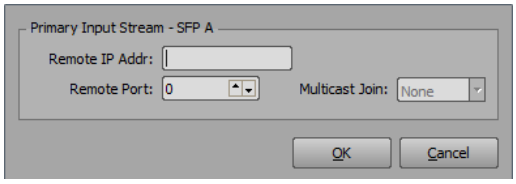


2. In the **Primary Output Stream - SFP A** section configure the following settings:
   - **Source Port** — enter or select the local port number of the primary video output stream source.
   - **Remote IP Addr** — enter the remote IP address of the primary video output stream.
   - **DSCP** — enter or select the differentiated services code point of the primary video output stream.
   - **Remote Port** — enter or select the remote port number for the primary video output stream.
   - **RTP Payload ID** — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.
3. Repeat steps 1 and 2 for any other output streams.

To configure the Primary Input Stream:

1. In the **Input Streams** section, select an input stream and select **Configure**.

   The **Matrox DSX - IP Input Stream Setup** dialog opens.



2. In the **Primary Input Stream - SFP A** section configure the following settings:
   - **Remote IP Addr** — use this box to enter the remote IP address of the primary video input stream.
   - **Remote Port** — use this box to enter or select the remote port number for the primary video input stream.
   - **Multicast Join** — use this list to select an internet group management protocol for joining an IP multicast for the primary video input stream.

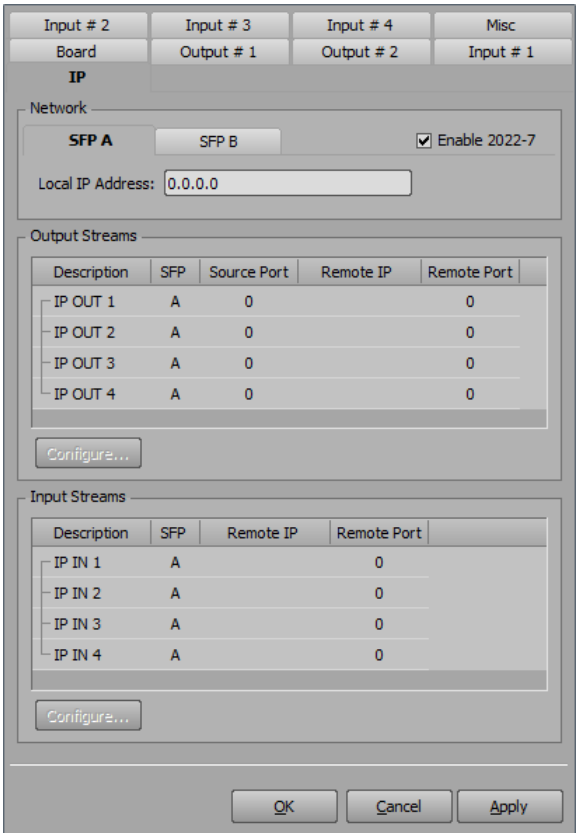
     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.
3. Select **OK**.

   The **Matrox DSX - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
4. Repeat steps 1 and 2 for any other input streams.

SMPTE 2022-6 with 2022-7

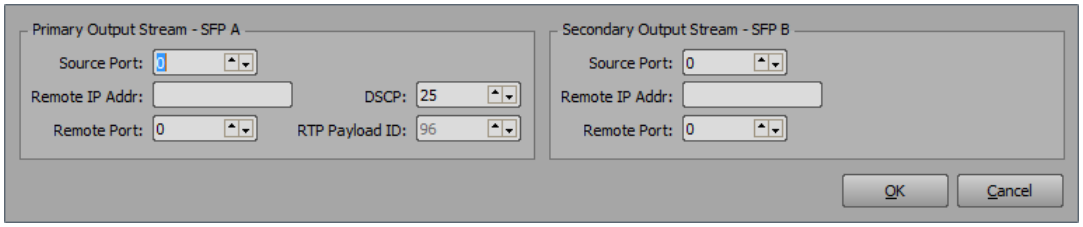
If the IP card is configured for SMPTE 2022-6 protocol and the **Enable 2022-7** checkbox is selected, the IP tab is displayed as follows:



To configure the Primary Output Stream:

1. In the **Output Streams** section, select an output stream and select **Configure**.

   The **Matrox DSX - IP Output Stream Setup** dialog opens.



2. In the **Primary Output Stream - SFP A** section configure the following settings:
   - **Source Port** — enter or select the local port number of the primary video output stream source.
   - **Remote IP Addr** — enter the remote IP address of the primary video output stream.
   - **DSCP** — enter or select the differentiated services code point of the primary video output stream.
   - **Remote Port** — enter or select the remote port number for the primary video output stream.
   - **RTP Payload ID** — enter or select the dynamic payload type chosen in the range of 96 through 127, signaled as specified in section 6 of IETF RFC 4566, unless a fixed payload type designation exists for that RTP stream within the IETF standard which specifies it.
3. In the **Secondary Output Stream - SFP B** section configure the following settings:

   Source Port — enter or select the local port number of the primary video output stream source.

   Remote IP Addr — enter the remote IP address of the primary video output stream.

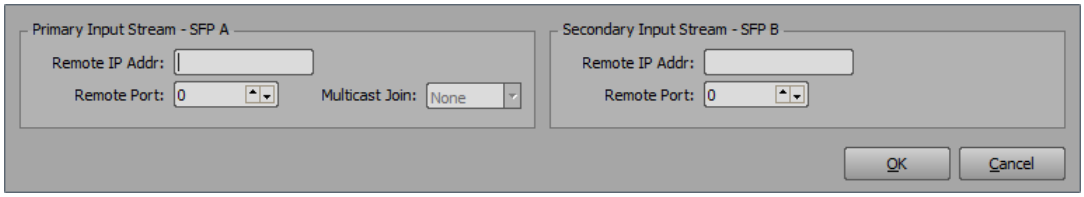
   Remote Port — enter or select the remote port number for the primary video output stream.
4. Select **OK**.

   The **Matrox DSX - IP Output Stream Setup** dialog closes and the settings are added to the selected output stream.
5. Repeat steps 1 to 4 for any other output streams.

To configure the Primary Input Stream:

1. In the **Input Streams** section, select an input stream and select **Configure**.

   The **Matrox DSX - IP Input Stream Setup** dialog opens.



2. In the **Primary Input Stream - SFP A** section configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
   - **Remote Port** — enter or select the remote port number for the primary video input stream.
   - **Multicast Join** — select an internet group management protocol for joining an IP multicast for the primary video input stream.

     The options are:

     - **None** — select this option if not using IP multicast. This is the default setting.
     - **IGMP v2** — use internet group management protocol version 2.
     - **IGMP v3** — use internet group management protocol version 3.
3. In the **Secondary Input Stream - SFP B** section configure the following settings:
   - **Remote IP Addr** — enter the remote IP address of the primary video input stream.
   - **Remote Port** — enter or select the remote port number for the primary video input stream.
4. Select **OK**.

   The **Matrox DSX - IP Input Stream Setup** dialog closes and the settings are added to the selected input stream.
5. Repeat steps 1 to 3 for any other input streams.
6. Select **Apply** to implement the settings.
7. Select **OK**.

   The configured Matrox framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

Configuring a Matrox Video X.mio2 FrameBuffer

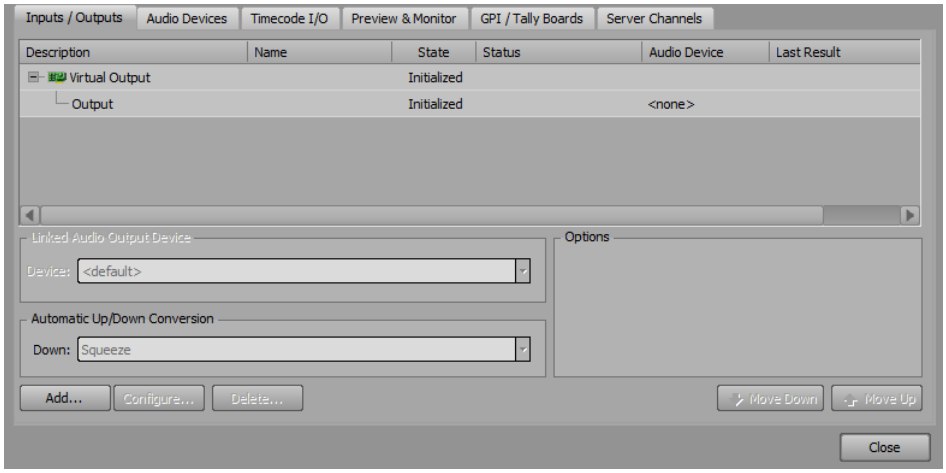
If using Matrox X.mio2 and upgrading to XPression Clips 64-bit, Matrox driver 9.4.2.9297 must be installed.

To add a Matrox Video X.mio2 framebuffer card:

1. In XPression Clips, select **Edit > Hardware Setup**.

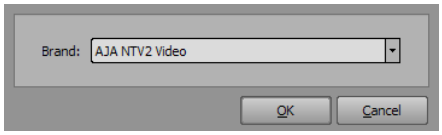
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



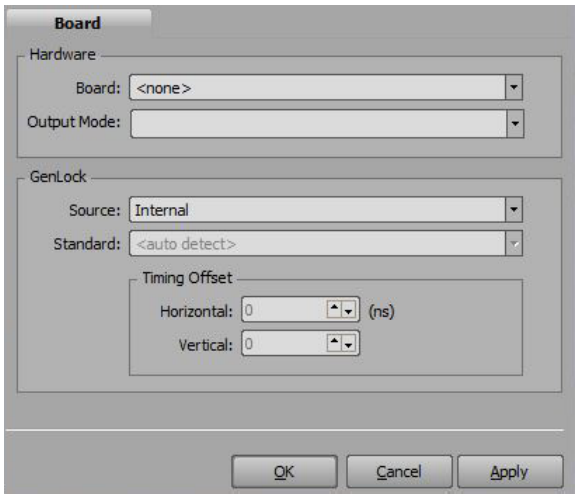
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **Matrox Video X.mio2**.
5. Select **OK**.

   The **Matrox XMIO - Framebuffer Setup** dialog opens.



   Continue with configuring the **Hardware** and **Genlock** settings in the Board tab.

Board

To configure the Hardware and GenLock settings:

1. From the **Output Mode** drop-down, select the output configuration for the card:

   - **2 Fill/Key Outputs**

     The AES outputs will be mapped as follows:

     - Output 1: AES Output A 1-16
     - Output 2: AES Output B 1-16

   - **1 Fill/Key + 2 Fill Outputs**

     The AES outputs will be mapped as follows:

     - Output 1 Fill/Key: AES Output A 1-16
     - Output 2 Fill: AES Output B 1-8
     - Output 3 Fill: AES Output B 9-16

   - **4 Fill Outputs**

     The AES outputs will be mapped as follows:

     - Output 1: AES Output A 1-8
     - Output 2: AES Output B 1-8
     - Output 3: AES Output A 9-16
     - Output 4: AES Output B 9-16

   If using XPression Clips Studio SCE, select the output configuration for the card from the following options:

   - **1 Fill/Key Output**
   - **2 Fill Outputs**

   ★These options are only available if the **Fill-Only** option has been purchased for XPression Clips Studio and XPression Clips Studio SCE. Otherwise, the only options are **2 Fill/Key** for XPression Clips Studio and **1 Fill/Key** for XPression Clips Studio SCE.

2. In the **GenLock** section, from the **Source** drop-down, select the source of the GenLock signal with which to synchronize XPression Clips.

   The available GenLock signal sources are:

   - **Internal** — generate internal sync on the video card for all output channels.
   - **Blackburst** — sync to analog black.
   - **SDI Input 1** — sync to SDI Input 1 source signal.
   - **SDI Input 2** — sync to SDI Input 2 source signal.
   - **SDI Input 3** — sync to SDI Input 3 source signal.
   - **SDI Input 4** — sync to SDI Input 4 source signal.

   ★If the output mode is set to **Internal** in the **Output** tab, the GenLock **Source** needs to be set to an SDI input.

3. From the **Standard** drop-down, select the format of the incoming GenLock signal.

4. In the **Timing Offset** section, in the **Horizontal** field, enter or select the number of nanoseconds for horizontal timing offset with regards to an external reference.
5. In the **Vertical** field, enter or select the number of lines for vertical delay timing offset with regards to an external reference.

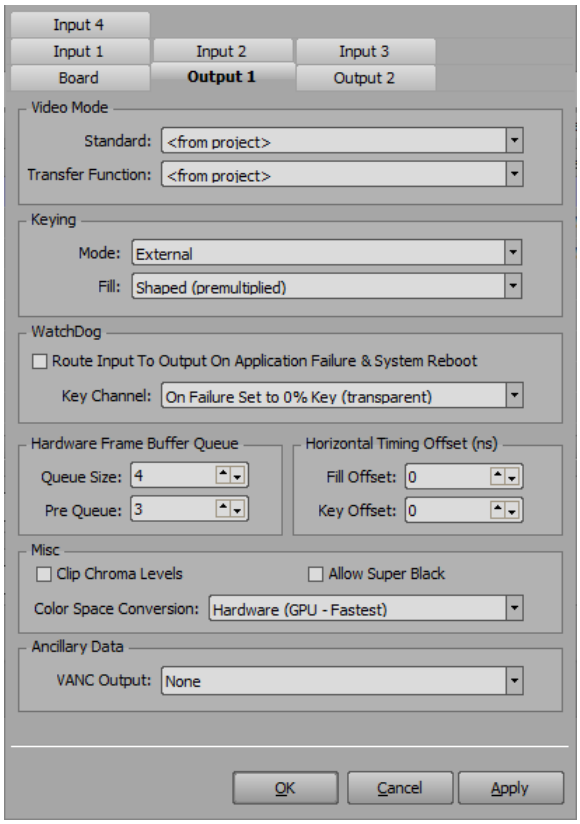
   If configuring an XMIO card when using XPression Clips with a switcher, the **Horizontal** timing offset must be set to **9930** and the **Vertical** timing offset must be set to **1124** if using 1080i/29.27 frames per second and a Tri Level Sync reference.

   Continue with configuring the Output settings.

Outputs

To configure the outputs:

1. Select an **Output** tab to configure the parameters of the selected output.



2. Configure each section as needed.

   Video Mode

   Keying

   WatchDog

   Hardware Frame Buffer Queue

   Horizontal Timing Offset (ns)

   Misc

   Ancillary Data

Video Mode

1. In the **Video Mode** section, from the **Standard** drop-down, select the video format for the output.

   ★When configuring more than one output, they must share the same base frame rate that matches the GenLock reference.

2. From the **Transfer Function** drop-down, select how the physical (linear) light is mapped and encoded.

   The options are:

   - **<from project>** (appears only when <from project> is selected in the **Standard** drop-down)
   - **ITU-R BT.1886 (SDR)**
   - **ITU-R BT.2100 (HLG)**

Keying

1. In the **Keying** section, from the **Mode** drop-down, select a keying mode for the output.

   The options are:

   - **External** — output video and alpha channels.
   - **Internal** — key clips to the associated input.

   ★If the output mode is set to **Internal**, set the GenLock **Source** in the **Board** tab to an SDI input.

2. From the **Fill** drop-down, select the fill mode.

   The options are:

   - **Shaped (premultiplied)** — use an additive key to cut precise holes for the fill.
   - **Unshaped** — use a multiplicative key based on the gradient values of the alpha.

WatchDog

1. In the **WatchDog** section, select the **Route Input To Output On Application Failure & System Reboot** checkbox to route the input to an output in the event of application failure or a system reboot.
2. From the **Key Channel** drop-down, select a transparent or opaque key channel.

   The options are:

   - **On Failure Set to 0% Key (transparent)** — set the key channel to transparent in the event of failure.
   - **On Failure Set to 100% Key (opaque)** — set the key channel to opaque in the event of failure.

Hardware Frame Buffer Queue

1. In the **Hardware Frame Buffer Queue** section, in the **Queue Size** field, enter or select the framebuffer queue size.

   The framebuffer queue size can be between 2 and 7.

2. In the **Pre Queue** field, enter or select the pre-queue size.

   The pre-queue size can be between 1 and 6.

Horizontal Timing Offset (ns)

1. In the **Horizontal Timing Offset (ns)** section, in the **Fill Offset** field, enter or select the offset of the fill.
2. In the **Key Offset** field, enter or select the offset of the key.

Misc

1. In the **Misc** section, select the **Clip Chroma Levels** checkbox to limit the chroma levels in the output.
2. Select the **Allow Super Black** chec box to output using the full super black to super white range.
3. From the **Color Space Conversion** drop-down, select the color space conversion for the outputs.

   The options are:

   - **Hardware (GPU - Fastest)** (default)
   - **Hardware (Board)**
   - **Software (No Chroma Filter)**

   ★If using the **HLG** transfer function, always select the **Hardware (GPU - Fastest)** option.

4. Select the **Enable RGBA -> YUV Filter** checkbox to enhance the conversion from 4:4:4 RGB to 4:2:2 YUV color space by filtering the down-conversion of the chrominance.

   If running in 1080p video modes, you should not enable this on more than one channel simultaneously. This option is only available with Matrox drivers 9.4.2 or higher.

Ancillary Data

- In the **Ancillary Data** section, from the **VANC Output** drop-down, set the vertical ancillary data output.

  The options are:

  - **None** — do not set a vertical ancillary data output.
  - **Pass VANC from Input 1 to Output 1** — pass the vertical ancillary data from input 1 to output 1
  - **Use Closed Captioning from Video Shader** — when using a Matrox card, select this option to output 608 closed caption (in a 708 CDP) when a video shader is playing back a file with embedded captioning.

When the XPression Clips INcoder is set to a target folder, it will extract 608 closed captioning from an MOV file. The INcoder will transcode the MOV file to an XPression Clips AVI file as well as an XMD file that contains the closed caption metadata. When the AVI file is played back from XPression Clips, XPression Clips will look for the XMD file and play out with the AVI file.

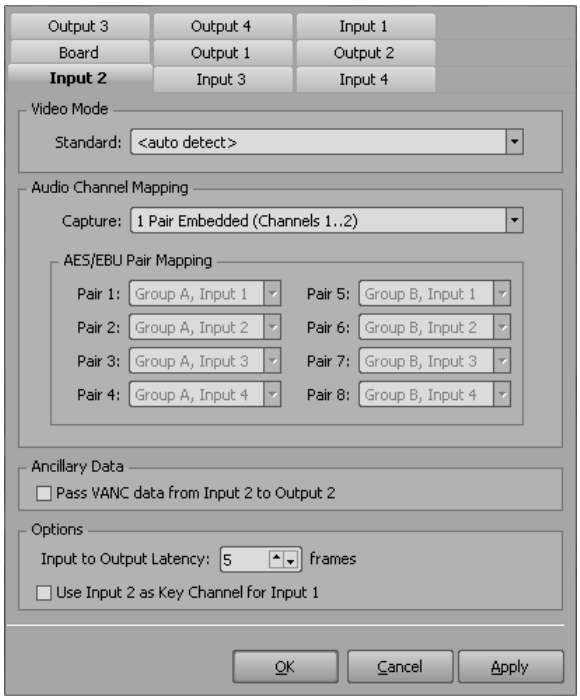
★ Files played back from the Clip Store do not support Closed Captioning.

Continue with configuring the Input settings.

Inputs

To configure the inputs:

1. Select an **Input** tab to configure the parameters of the selected input.



2. In the **Video Mode** section, from the Standard drop-down, select the video format for the input.
3. In the **Audio Channel Mapping** section, from the Capture drop-down, select the audio type for the input.
4. In the **AES/EBU Pair Mapping** section, use the **Pair** drop-downs to define the mapping of the AES/EBU inputs.
5. In the **Ancillary Data** section, select the **Pass VANC data from Input 1 to Output 1** checkbox to pass vertical ancillary data from Input 1 to Output 1 when using a Live Source shader in the scene and a Matrox board.

   ★Requires Matrox DSX version 7.5.2.457.
6. In the **Options** section, in the **Input to Output Latency** field, enter or select a time interval offset, in frames, between the input and output.
7. If configuring **Input 2**, select the **Use Input 2 as Key Channel for Input 1** to use the input as the key channel for Input 1, if necessary.
8. Select **OK**.

   The configured Matrox framebuffer board is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.
9. In the **Hardware Setup** dialog, select **Close**.

Configuring a Ross GeminiIO FrameBuffer

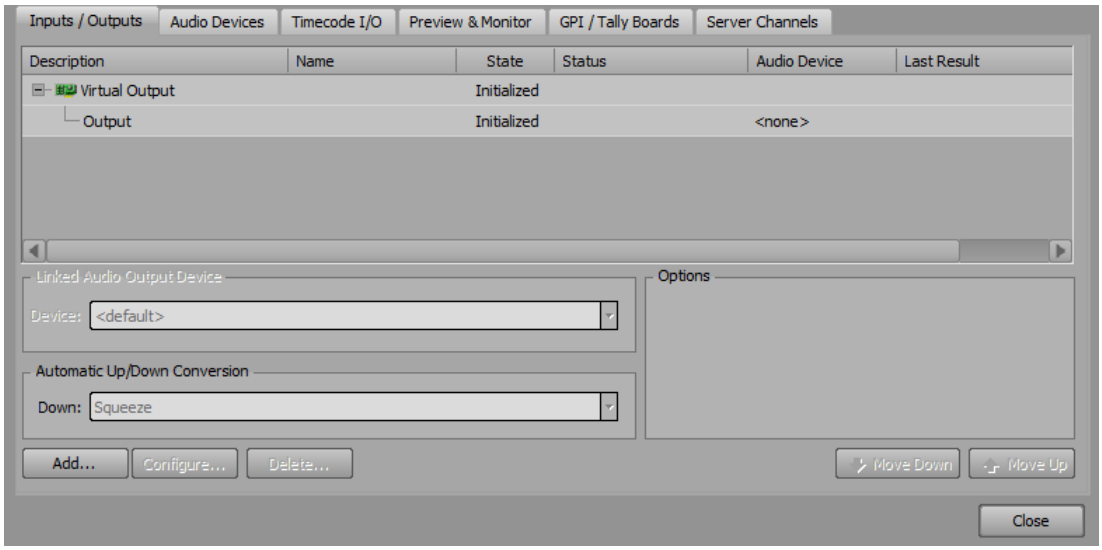
This topic describes the selection and configuration of a Ross GeminiIO framebuffer. The Ross GeminiIO framebuffer supports HD and UHD and the following configuration options:

- 3 Outputs/2 Inputs (default)
- 2 Outputs/2 Inputs
- 2 Outputs/4 Inputs (if an output is configured as an Internal Keyer, you can use the same input as a live source)

  ★The video format configured for the output and the corresponding input in this configuration must match.
- 1 Output/2 Inputs
- 4 Outputs/0 Inputs

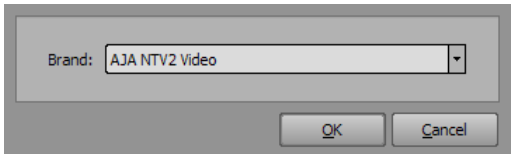
To select a GeminiIO board:

1. In XPression Clips, select **Edit > Hardware Setup**.
2. Select the **Inputs / Outputs** tab.



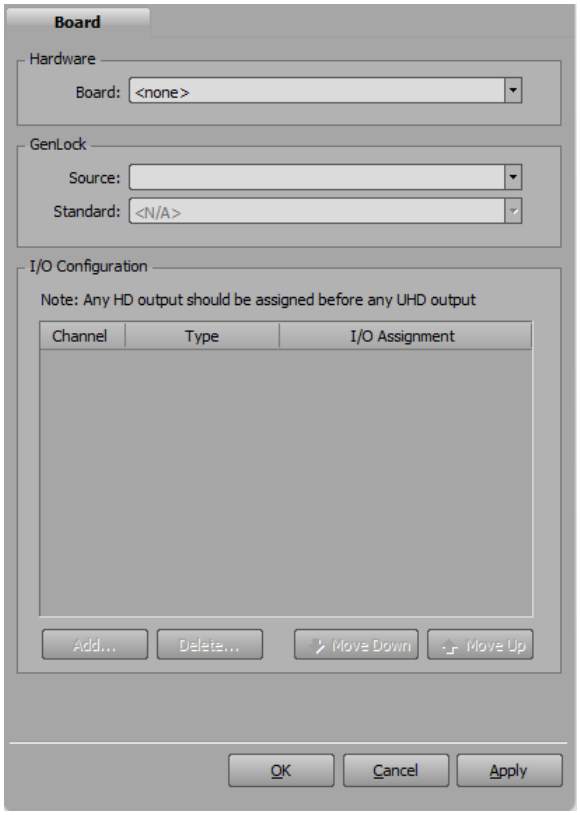
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **Ross GeminiIO** and then select **OK**.

The **Ross Gemini - Framebuffer Setup** dialog opens.



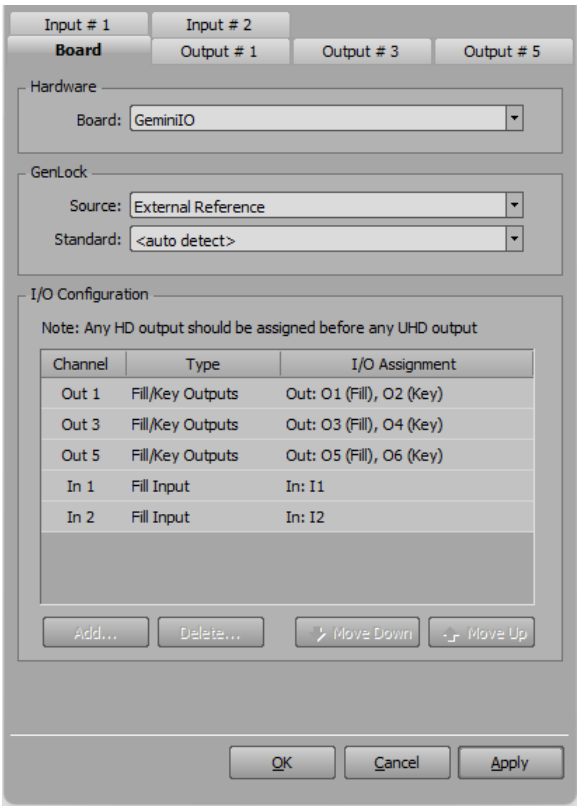
5. Continue with the instructions for configuring the board.

Board

To configure the board:

1. In the **Board** tab, from the **Board** drop-down, select **GeminiIO**.

   The default configuration of three HD outputs and 2 inputs is shown in the **I/O Configuration** section.



2. In the **GenLock** section, from the **Source** drop-down, select the source of the GenLock signal with which to synchronize XPression Clips.

   The available GenLock signal sources are as follows:

   External Reference — Synchronize with a GenLock signal received from an external application through the **GenLock In** port of the XPression Clips computer. Ross Video recommends using an external reference for the GenLock signal source.

   Free Running — Do not synchronize XPression Clips with an external source.

3. From the **Standard** drop-down, select the format of the incoming **GenLock** signal or select **<auto detect>** to allow the correct standard to be automatically selected.

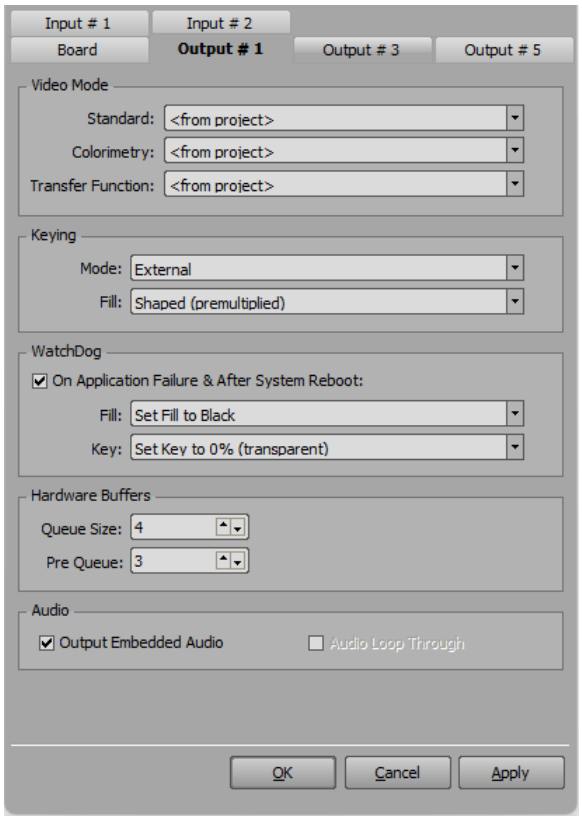
4. In the **I/O Configuration** section, double-click an output to change the configuration if the default isn't appropriate for your project.

5. Continue with configuring an output.

Outputs

To configure an output:

1. Select an **Output** tab to configure the parameters of the selected output.



2. Configure the following parameters:

   Video Mode

   Keying

   Watchdog

   Hardware Buffers

   Audio

   Adding an Output

   Configuring a UHD Output

Video Mode

1. In the **Video Mode** section, from the **Standard** drop-down, select the video format for the output or select **<from project>** to automatically switch the output video format to the video format of the currently loaded project.

   The project video format is ignored when a specific output video format is selected, and the selected video format is used to play out scenes.

   ★When configuring more than one output, they must share the same base frame rate that matches the GenLock reference.

2. From the **Colorimetry** drop-down, select the range of colors that can be represented in the color space:

   <from project> (appears only when <from project> is selected in the **Standard** list)

   ITU-R BT.709 (HD)

   ITU-R BT.2020 (WCG)

3. From the **Transfer Function** drop-down, select the dynamic range standard to use on the output.

   The options are:

   <from project> (appears only when <from project> is selected in the **Standard** list)

   ITU-R BT.1886 (SDR)

   ITU-R BT.2100 (HLG)

Keying

To configure the Keying mode and fill:

1. In the **Keying** section, from the **Mode** drop-down, select a keying mode for the output.

   The available modes are as follows:

   Off (Fill-Only) — select to only output a video signal. In this mode, key is excluded from the output.

   External — select to output video and alpha channels.

   Internal — select to key XPression Clips scenes to the associated input.

   ★If the output mode is set to **Internal**, the **GenLock Source** in the **Board** tab needs to be set to an SDI input.

2. From the **Fill** drop-down, select the fill mode.

   The available fill options are as follows:

   Shaped (premultiplied) — select to use an additive key to cut precise holes for the fill.

   Unshaped — select to use a multiplicative key based on the gradient values of the alpha.

Watchdog

To configure the Watchdog settings:

1. In the **Watchdog** section, select the **On Application Failure & After System Reboot** checkbox to enable the following options in the event of an application failure or a system reboot.
2. From the **Fill** drop-down, select one of the following options:

   Set Fill to Black — clears the screen.

   Route Input to Output — video coming in goes directly to the output.

3. From the **Key** drop-down, select one of the following options:

   Set Key to 0% (transparent) — the input remains visible.

   Set Key to 100% (opaque) — the screen goes to solid white.

   Route Key Input to Key Output — video coming in goes directly to the output.

Hardware Buffers

To configure the Hardware Frame Buffer Queue settings:

1. In the **Queue Size** field, enter or select the number of frames to buffer in memory before sending to the output.

   The framebuffer queue size can be between 2 and 6.

2. In the **Pre Queue** field, enter or select the number of frames to buffer for the pre-queue.

   The pre-queue size can be between 1 and 6.

Audio

To configure the Audio settings:

- In the **Audio** section, select one of the following options:

  Output Embedded Audio — to play out any imbedded audio.

  Audio Loop Through — not currently supported

  This option applies to internal keyer only.

Adding an Output

To add an output:

1. Select each of the two inputs and select **Delete**.
2. Select **Add**.
3. In the **Select I/O Type** dialog, from the **Type** drop-down, select either **Fill Only Output** or **Fill/Key Output**.
4. Then select **OK**.
5. In the **Ross Gemini - Framebuffer Setup** dialog, select **Apply**.

Configuring a UHD Output

To configure a UHD output:

1. Load a UHD project or convert the project mode to UHD.

   (Select **Project > Convert Project Mode** and from the **Editing Mode** drop-down, select either **UHD 2160p** or **2160psf**.)

2. Select any existing HD output and select **Delete**.
3. Select **Add**.
4. In the **Select I/O Type** dialog, from the **Type** drop-down, select either **Fill Only Output** or **Fill/Key Output**.
5. Then select **OK**.

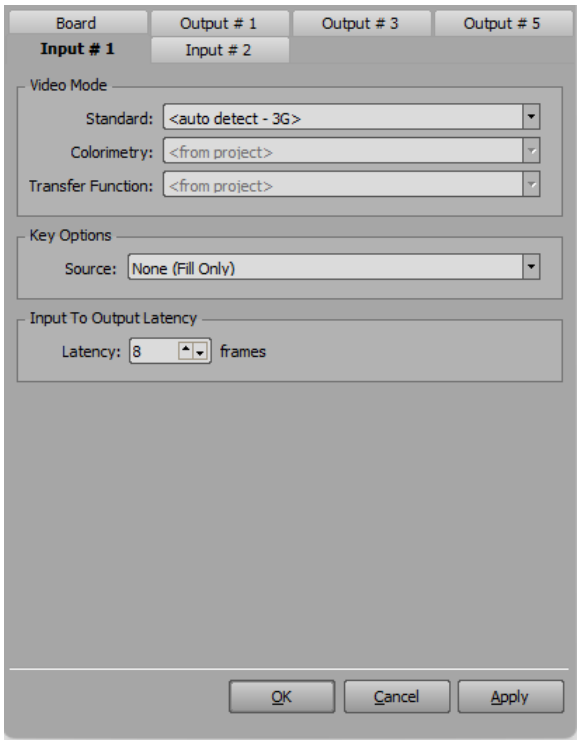
6. In the **Ross Gemini - Framebuffer Setup** dialog, select **Apply**.

Continue with configuring the Input settings.

Inputs

To configure an input:

1. Select an **Input** tab to configure the parameters of the selected input.



2. In the **Video Mode** section, from the **Standard** drop-down, select the video format for the input.

   The **Colorimetry** and **Transfer Function** settings are not currently supported.

3. In the **Key Options** section, from the **Source** drop-down, select the keying options for the input.

   The options are:

   - **None (Fill Only)**
   - **Paired Input (Fill/Key)**

4. In the **Input to Output Latency** section, in the **Latency** field, enter or select a time interval offset, in frames, between the input and output.
5. Select **Apply**.
6. Select **OK** to close the **Ross Gemini Framebuffer Setup** dialog.

Configuring the NewTek™ Network Device Interface (NDI™)

XPression Clips versions 8.5 build 4518 and newer support up to eight channels of audio.

Only one NDI framebuffer can be created on single channel XPression Clips hardware and up to two NDI framebuffers can be created on two-channel XPression Clips hardware.

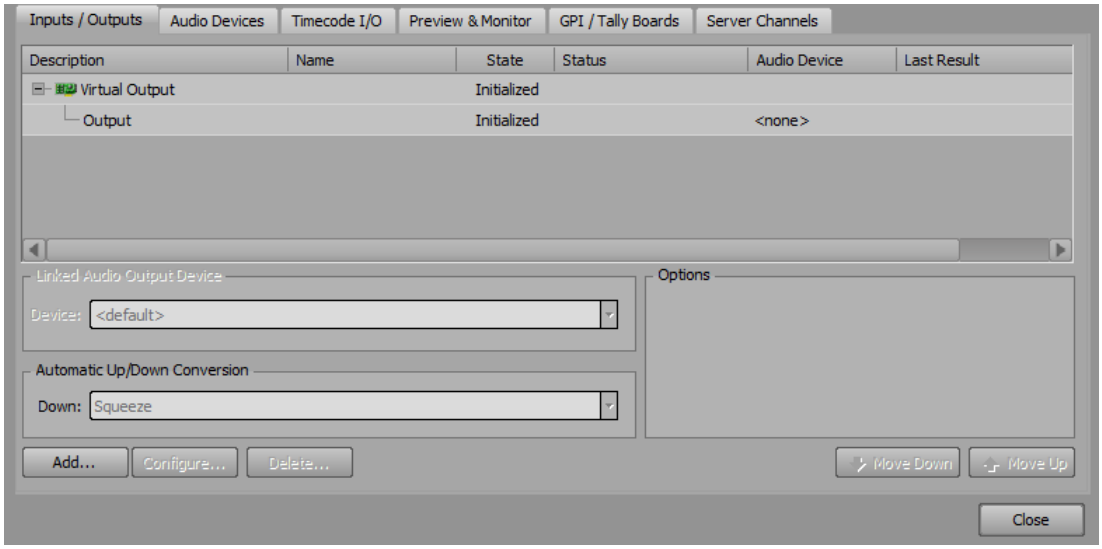
XPression Clips video recordings are in the format and video mode of the input NDI source, not the project mode.

To configure a NewTek Network Device:

1. In XPression Clips, select **Edit > Hardware Setup**.

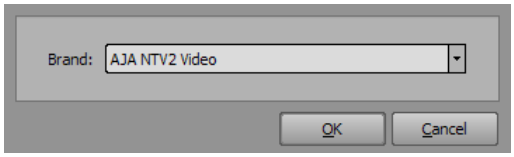
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



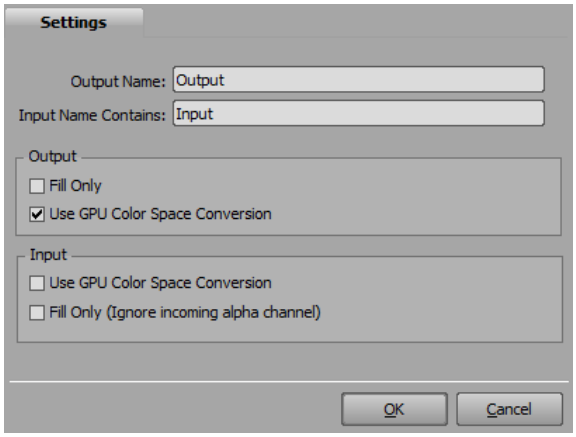
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **NewTek Network Device Interface** and then select **OK**.

The **NewTek Device Interface - Framebuffer Setup** dialog opens.



5. In the **Settings** tab, in the **Output Name** field, enter an output name for the NDI output source (for example, NDI Output 1).

   This output name will be the source to connect the device receiving the output signal.

6. In the **Input Name Contains** field, enter the Host Name and Stream Name.

   For example: **XPN (VLC)**, where **XPN** is the Host Name of the computer where the NDI stream is playing and **VLC** is the name of the NDI source stream.

7. Configure the following settings in the **Output** section as necessary:

   - **Fill-Only** — select this check box to output the video signal with no key.
   - **Use GPU Color Space Conversion** — select this checkbox to use the GPU to perform the color space conversion on the outputs.

8. In the **Input** section, select the **Use GPU Color Space Conversion** checkbox to use the GPU to perform the color space conversion on the inputs.

9. Select the **Fill Only (Ignore incoming alpha channel)** checkbox to view fill only and ignore the incoming alpha channel and select **OK**.

   The configured NDI framebuffer is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

10. Select **Close** to exit the **Hardware Setup** dialog.

To configure a self-contained data source panel for XPression Clips in DashBoard or connect to another XPression Clips as the output for the NDI source:

DashBoard

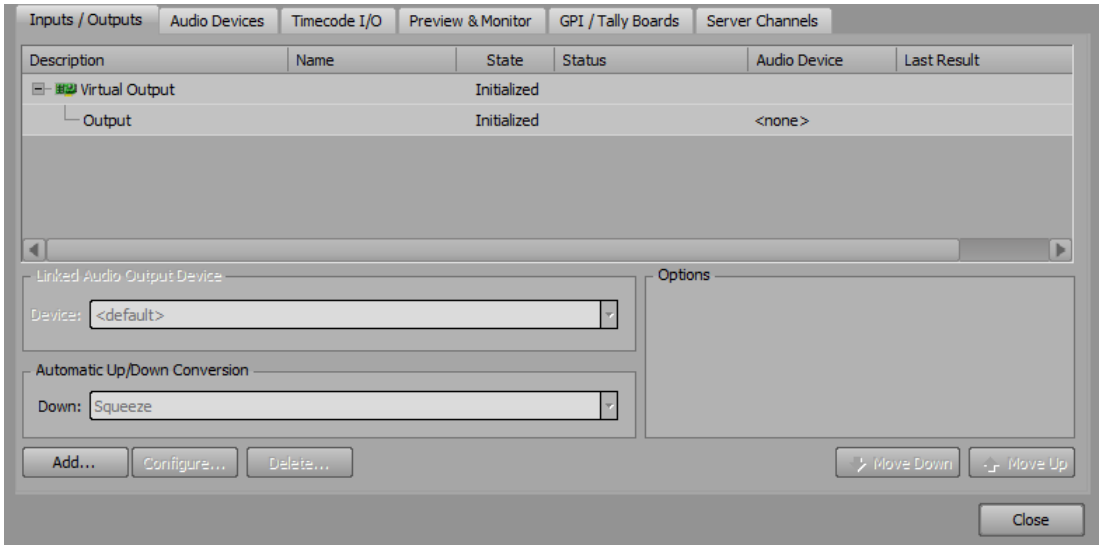
1. In DashBoard, create an NDI data source video monitor for XPression Clips using PanelBuilder.
2. In the **NDI Tag Attributes** section of the **Insert into ABS Component** dialog, from the **Source Name** drop-down, select an NDI output for the NDI data source video monitor in the DashBoard panel.
3. Select **OK**.

   When the source NDI output is online in the **Sequencer** in XPression Clips, it will display in the NDI data source video monitor in the DashBoard panel.

XPression Clips

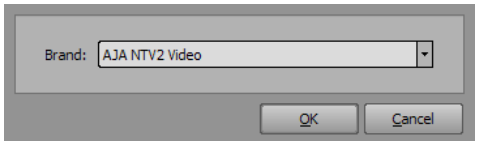
1. In XPression Clips, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.
2. Select the **Inputs / Outputs** tab.



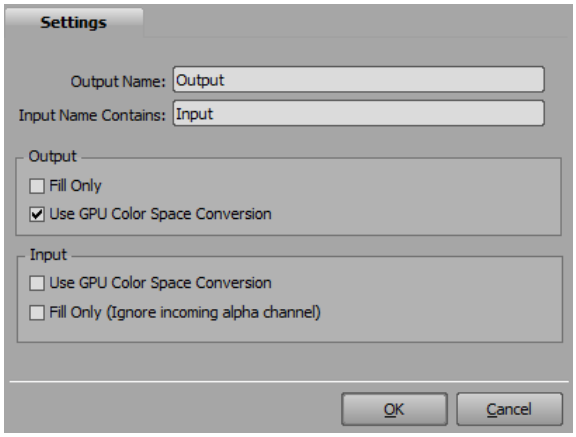
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **NewTek Network Device Interface** and then select **OK**.

The **NewTek Device Interface - Framebuffer Setup** dialog opens.



5. In the **Settings** tab, in the **Input Name Contains** field, enter the name of the NDI input source to use (for example, NDI Output 1).

   This input name is the output name from the device outputting the signal.

6. Select **OK**.

   The configured NDI framebuffer is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

7. Select **Close** to exit the **Hardware Setup** dialog.

Configuring an XPression Desktop Preview Client

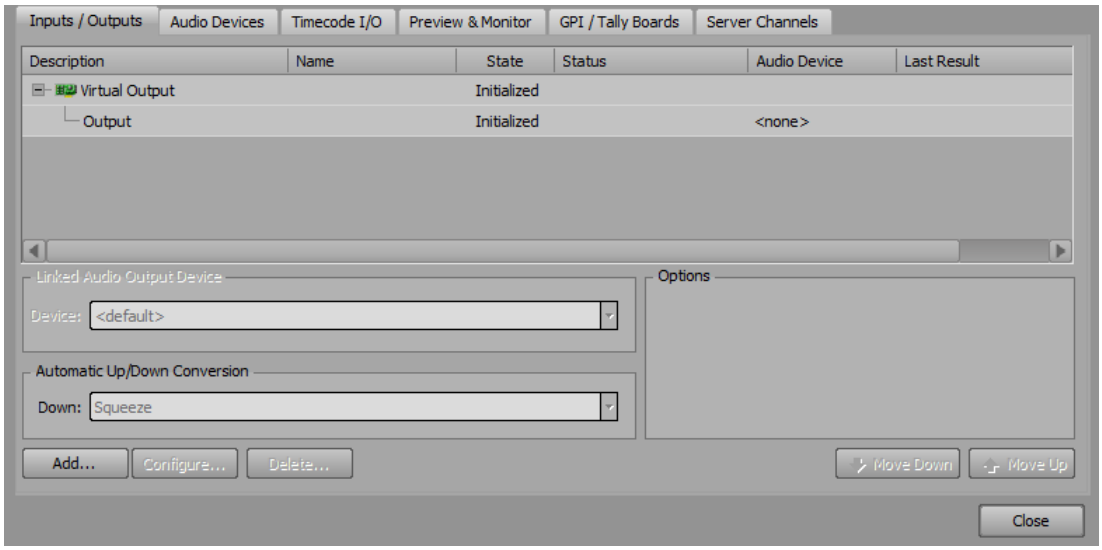
The **XPression Desktop Preview Server** offers an IP based preview server for multi-channel and MOS Remote Sequencer workflows.

To configure an XPression Desktop Preview Server Client:

1. In XPression, select **Edit > Hardware Setup**.

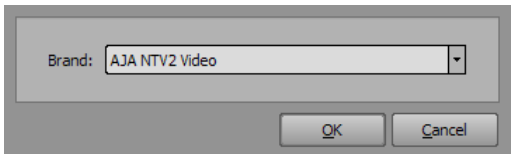
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



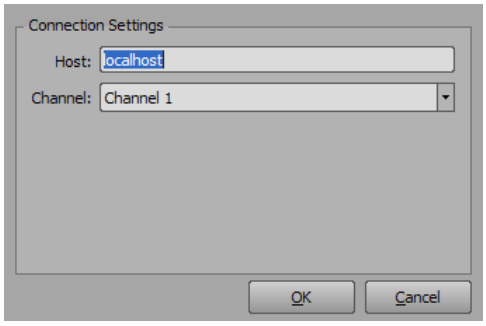
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **XPression Desktop Preview Server Client** and then select **OK**.

   The **Desktop Preview Client - Setup** dialog opens.



5. In the **Host** field, enter the IP address of the XPression Desktop Preview Server.
6. From the **Channel** drop-down, select a preview channel in the XPression Desktop Preview Server for the output and then select **OK**.

A Desktop Preview Client connection is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

7. Select **Close** to exit the **Hardware Setup** dialog.

For More Information on...

- the XPression Desktop Preview Server, refer to the *XPression Desktop Preview Server User Guide*.

Configuring an XPression Direct Display Output

The **XPression Direct Display Output** allows XPression to output directly from the NVIDIA GPUs monitor output or NVIDIA Mosaic display. Direct Display outputs support custom resolutions and 4:4:4 color space and are useful for feeding LED display processors that only support Display Port or HDMI connections and for driving high resolution workflows from a single XPression system.

★Audio is not currently supported.

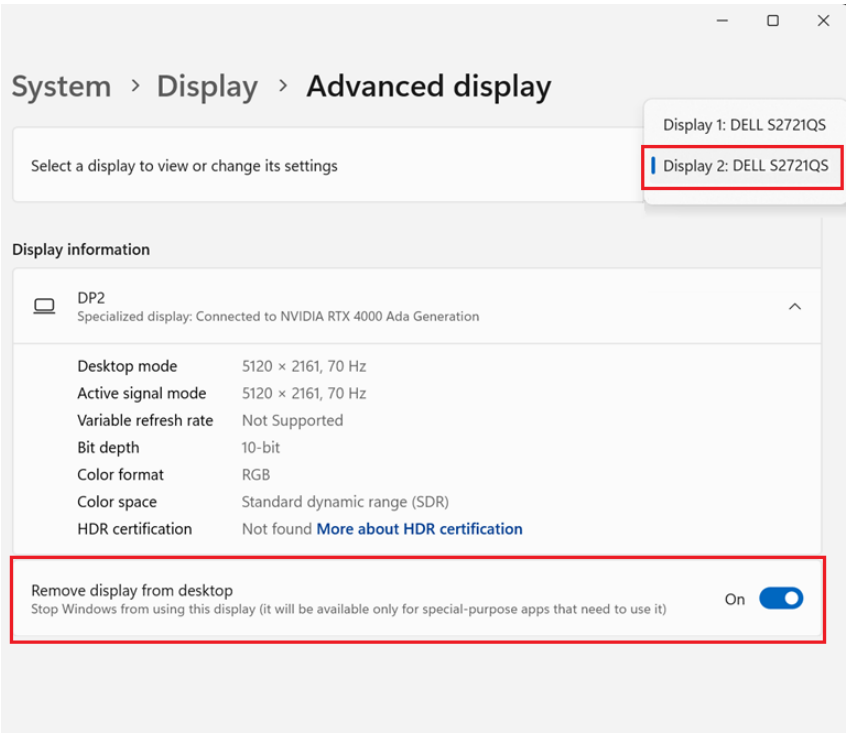
★Ensure that the **Allow Monitor Power Saving** and **Allow Screen Saver** options are NOT enabled in **Edit > Preferences > Advanced**.

Prerequisites:

- Two display monitors connected initially.
- M9 platform or better.
- Windows 11 for Workstation.
- XPression 12.5

To configure display monitors:

1. Right-click on the desktop and select **Display Settings**.
2. Select **Advanced display**.
3. From the **Select a display to view or change its settings** drop-down, select the second display monitor.

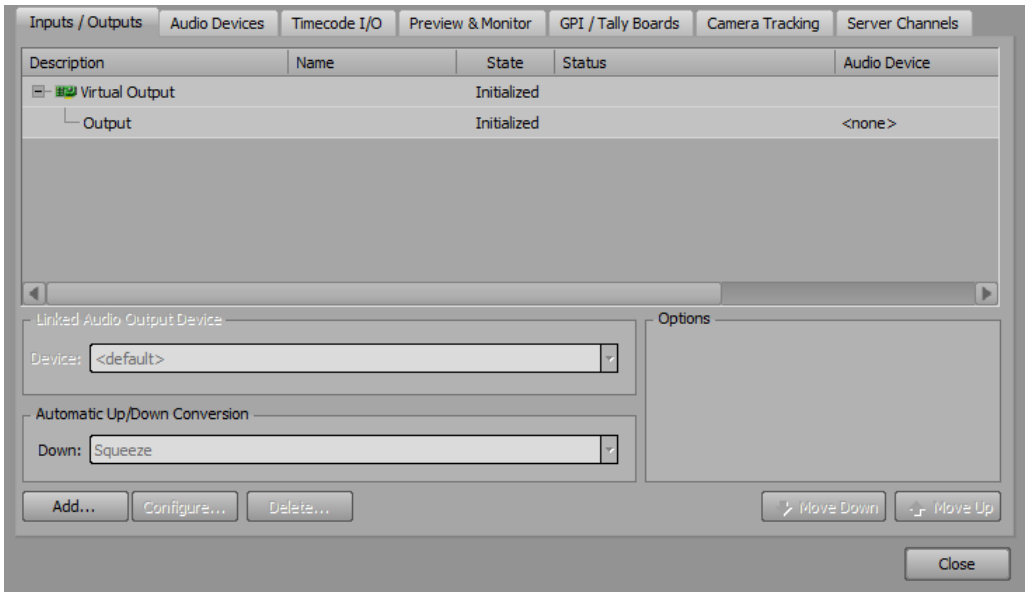


4. Turn the **Remove display from desktop** option off for this monitor.

To configure an XPression Direct Display Output:

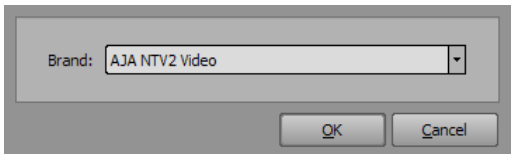
1. Launch your XPression Clips project.
2. Select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.
3. Select the **Inputs / Outputs** tab.



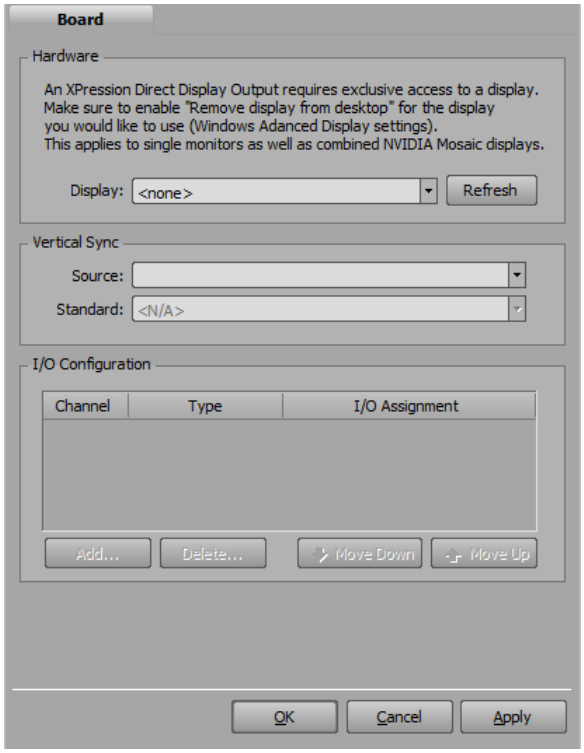
4. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



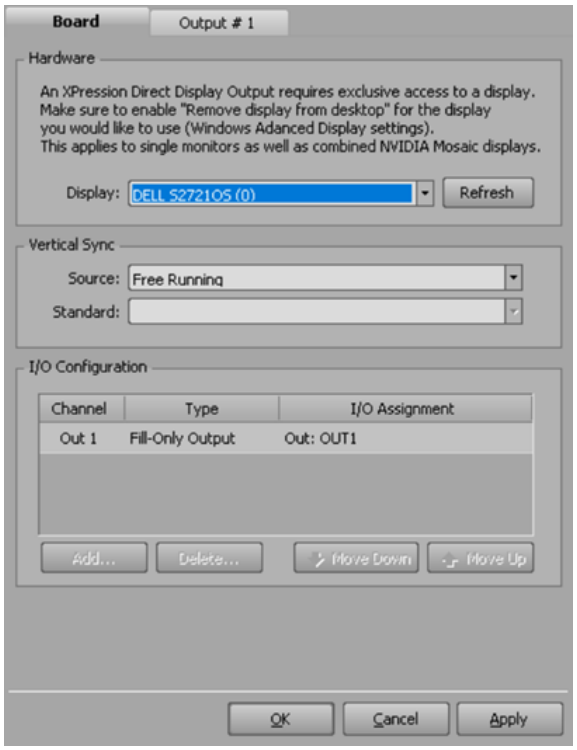
5. From the **Brand** drop-down, select **XPression Direct Display Output** and then select **OK**.

The **XPression Direct Display - Framebuffer Setup** dialog opens.



6. From the **Display** drop-down, select **XPression Direct Display Output**.
7. In the **Vertical Sync** section, from the **Source** drop-down, select **Vertical Sync: Free Running**.

   In the **I/O Configuration** section, you will see **Out 1 - Fill Only Output**.



8. Select **OK**.

   An XPression Direct Display Output is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

9. Select **Close** to exit the **Hardware Setup** dialog.

To view the output:

1. Drag a clip from the **Clip Browser** into the **Sequencer**.
2. In the **Take Inspector**, in the **Take Item** tab, from the **Framebuffer** drop-down, select **Framebuffer 1**.

Configuring an XPression RossLinq Connector

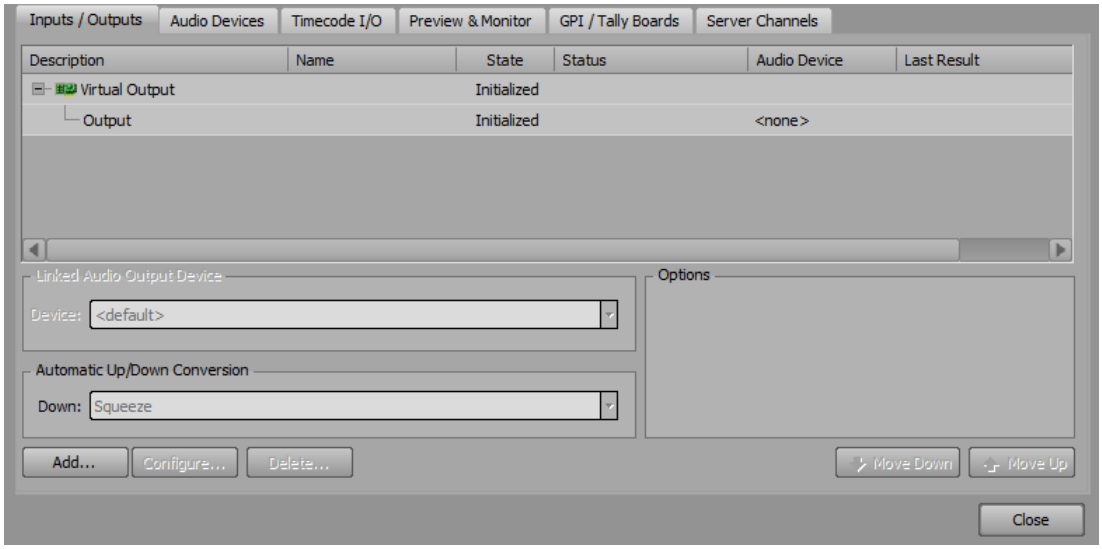
The **XPression RossLinq Connector** feature allows you to connect XPression Clips directly to RossLinq compatible devices over Ethernet and have XPression Clips render images and graphics to the RossLinq compatible devices without using any of the video input BNC.

To configure an XPression RossLinq Connector:

1. In XPression Clips, select **Edit > Hardware Setup**.

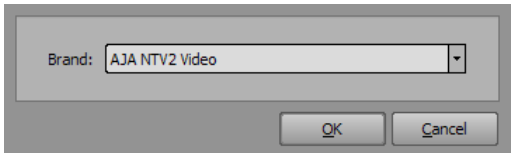
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



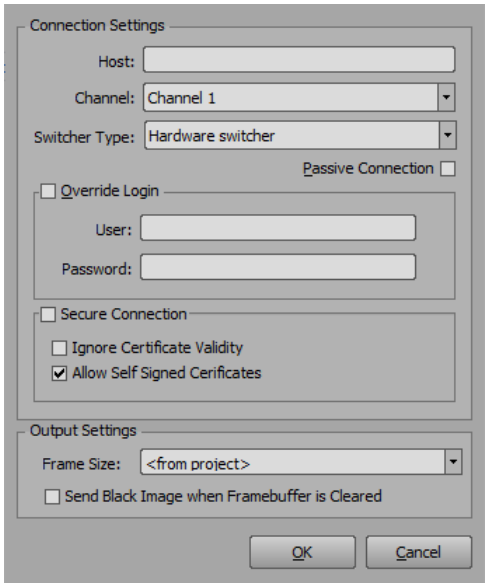
3. Select **Add**.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **XPression RossLinq Connector** and then select **OK**.

The **RossLinq Setup** dialog opens.



5. In the **Connection Settings** section, do the following:
   - In the **Host** field, enter the IP address of the RossLinq compatible device.
   - From the **Channel** drop-down, select the channel on the device that you want to upload images to.
   - From the **Switcher Type** drop-down, select either **Hardware switcher** or **Software switcher**, as appropriate.
   - Select **Passive Connection** to establish a passive FTP connection.
6. In the **Override Login** section, do the following:
   - Select **Override Login** to override the username and password for the connection.
   - In the **User** field, enter a username for the connection to the RossLinq compatible device.
   - In the **Password** field, enter a password for the connection to the RossLinq compatible device.
7. In the **Secure Connection** section, do the following:
   - Select the **Secure Connection** checkbox to enable File Transfer Protocol Secure (FTPS).
   - Select the **Ignore Certificate Validity** checkbox to allow certificates certificates that have not been vetted by a certificate authority (not recommended).
   - Select the **Allow Self Signed Certificates** checkbox to allow certificates that have verified by the user, rather than by a certificate authority.

8. In the **Output Settings** section, do the following:

   - From the **Frame Size** drop-down, select the resolution of the images rendered and sent to the compatible RossLinq device.

     The available options are:

     - **<from project>** — use the same format as the project.
     - **PAL, 720x576**
     - **NTSC, 720x486**
     - **HD 720p, 1280x720**
     - **HD 1080i, 1920x1080**
     - **HD 1080p, 1920x1080**
     - **UHD 2160p, 3840x2160**

   - Select **Send Black Image when Framebuffer is Cleared** to display a black screen when the framebuffer is cleared and then select **OK**.

   An XPression RossLinq connection is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

9. Select **Close** to exit the **Hardware Setup** dialog.

Configuring an XPression Clips Virtual Output

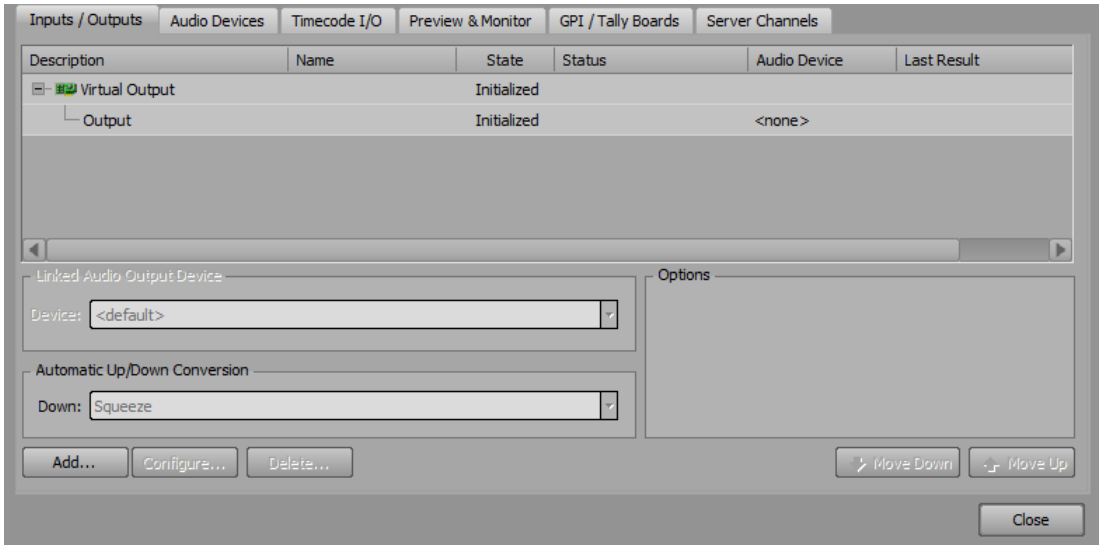
The **XPression Clips Virtual Output** enables XPression software to run without any framebuffer cards installed in the XPression Clips computer. In this case, the **Virtual Output** is used to display output in a window on the XPression Clips computer.

To configure an XPression Clips Virtual Output:

1. In XPression Clips, select **Edit > Hardware Setup**.

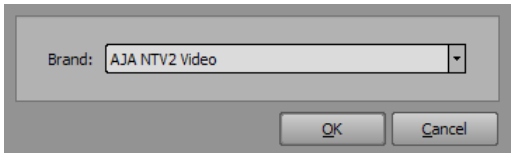
   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



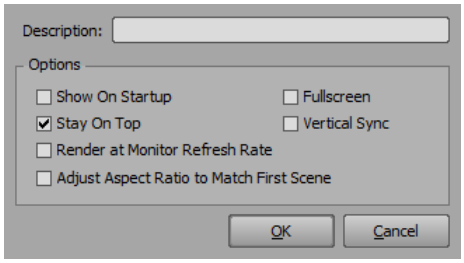
3. Select the **Add** button.

   The **Add New FrameBuffer Board** dialog opens.



4. From the **Brand** drop-down, select **XPression Clips Virtual Output** and then select **OK**.

   The **Virtual Output Settings** dialog opens.



5. In the **Description** field, enter a name or brief description for the virtual output.
6. In the **Options** section, configure the following:
   - **Show On Startup** — select to have the virtual output open when XPression Clips is launched.
   - **Fullscreen** — make the virtual output window fullscreen.

- **Stay On Top** — select to always display the virtual output on top of all other open and/or active windows on the screen.
- **Vertical Sync** — currently not implemented.
- **Render at Monitor Refresh Rate** — currently not implemented.
- **Adjust Aspect Ratio to Match First Scene** — change the aspect ratio of the virtual framebuffer to match the scene played on it as opposed to the format of the project.

7. Select **OK**.

   An **XPression Clips Virtual Output** is added to the **Inputs / Outputs** tab of the **Hardware Setup** dialog.

8. In the **Hardware Setup** dialog, select **Close**.

Changing the Order of Video Inputs / Outputs

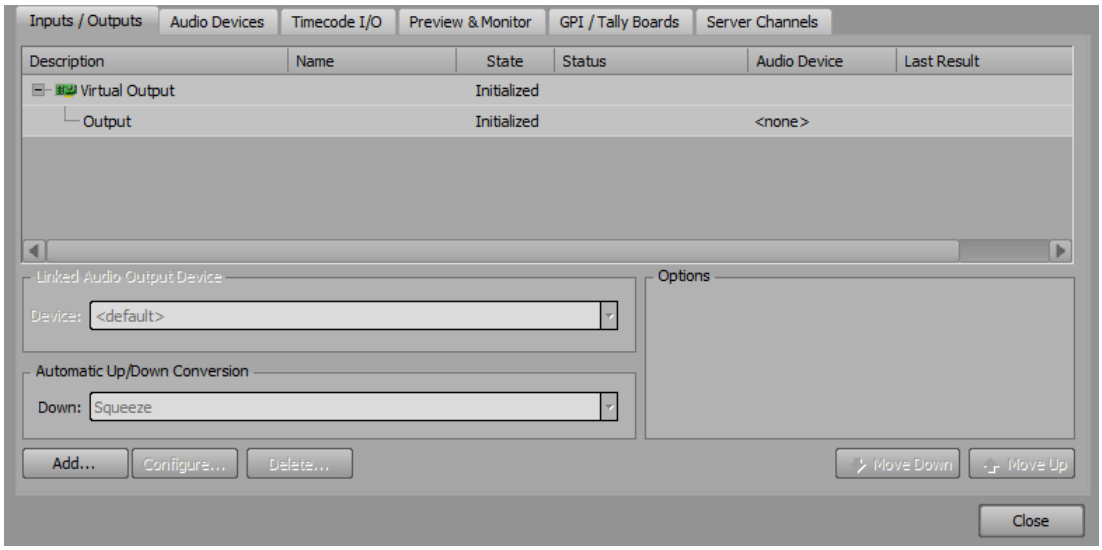
With several inputs and outputs configured, you may prefer to have certain inputs or outputs at the top of the list to make them easy to find. The inputs and outputs can be reordered to suit your needs.

To change the order of video inputs and outputs:

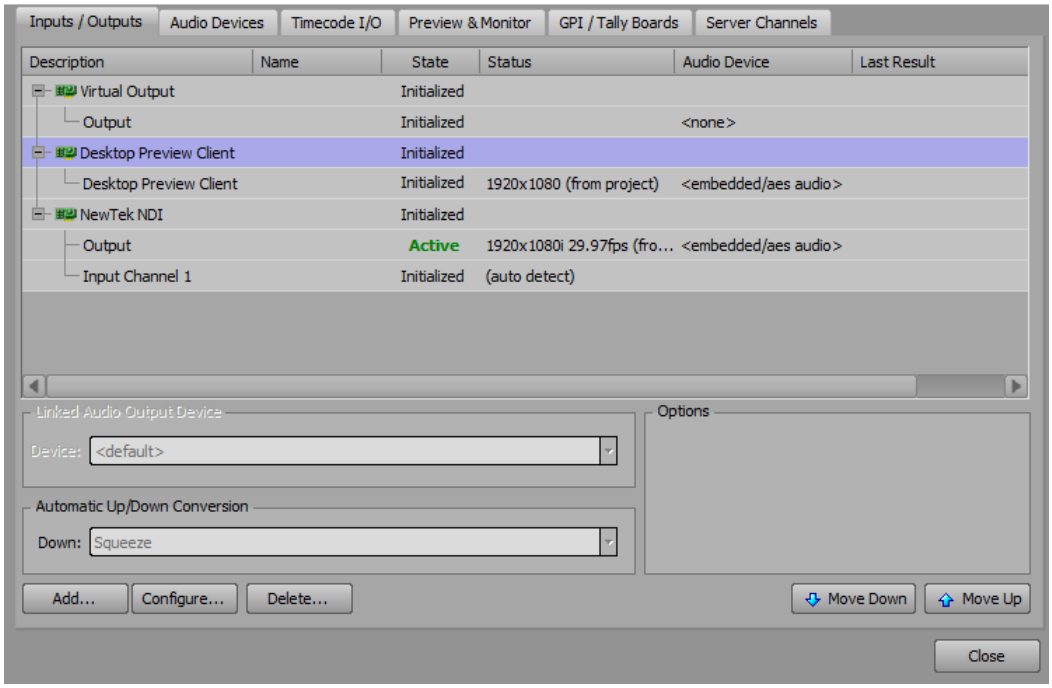
1. In XPression, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. In the **Inputs / Outputs** list, select an input or output to move in the list.



4. At the bottom of the dialog, select **Move Down** to move the selected device down one position in the **Inputs / Outputs** list, or **Move Up** to move up one position in the list.

The **Move Up** button is not available when the selected device is positioned at the top of the list. The **Move Down** button is not available when the selected device is positioned at the bottom of the list.

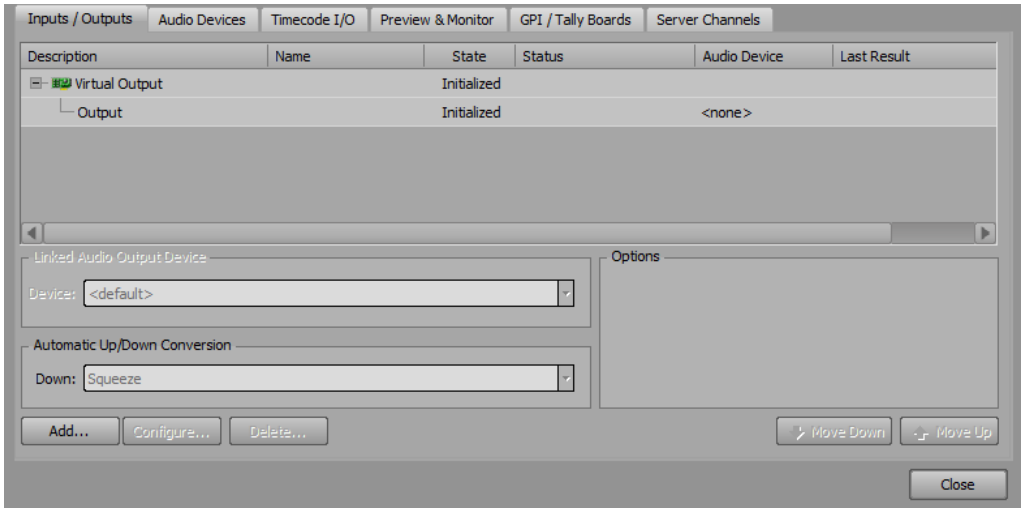
5. Select **Close** to exit the **Hardware Setup** dialog.

Deleting a Video Input / Output

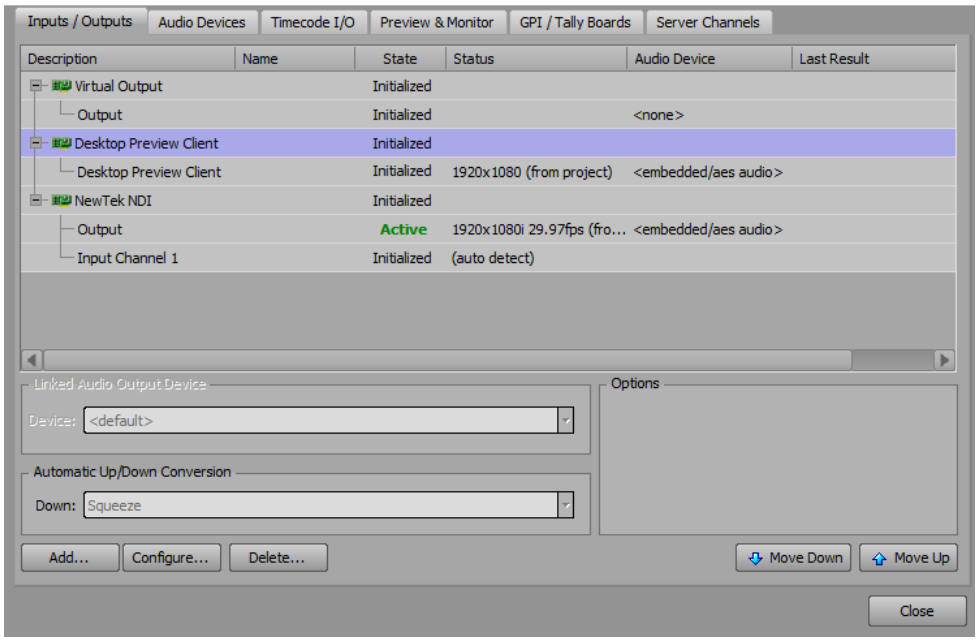
1. In XPression, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.

2. Select the **Inputs / Outputs** tab.



3. In the **Inputs / Outputs** list, select the input or output to delete.



4. Select **Delete** at the bottom of the dialog.

   A **Warning** dialog opens.

5. Select **Yes**.

   The selected video device is deleted from **Inputs / Outputs** list.

6. Select **Close**.

Configuring an Audio Device

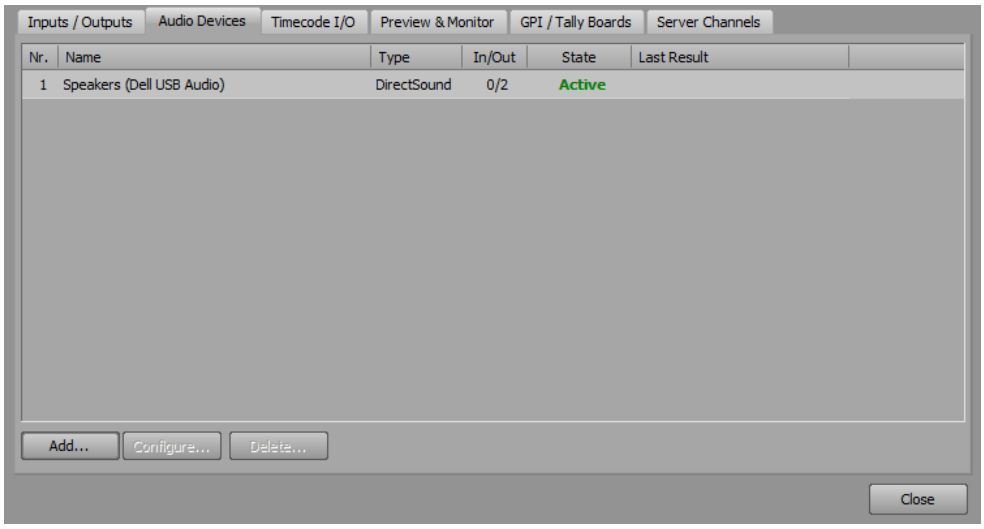
★Adding an audio device is not required to output embedded or AES audio.

To configure an audio device:

1. In XPression, select **Edit > Hardware Setup**.

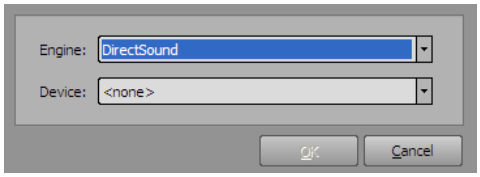
   The **Hardware Setup** dialog opens.

2. Select the **Audio Devices** tab.



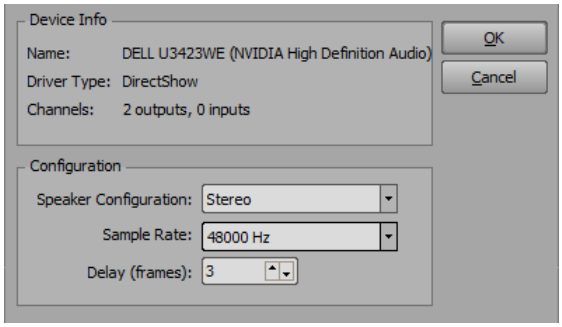
3. Select **Add**.

   The **Add Audio Device** dialog opens.



4. From the **Engine** drop-down, select the engine to use to produce audio.
5. From the **Device** drop-down, select the sound card to use to output audio.
6. Select **OK**.

   The **Audio Engine Setup** dialog opens. The **Configuration** settings may differ slightly depending on the audio device selected.



7. In the **Configuration** section, do the following:
   - From the **Speaker Configuration** drop-down, select the speaker type.
   - From the **Sample Rate** drop-down, select the sample rate for the audio signal.

     The selected sample rate defines the number of samples per second taken from an analog signal to make a digital signal. A sample rate of 48 kHz is the recommended setting, but 44.1 kHz can also be used.
   - In the **Delay (frames)** field, enter or select the number of frames to delay the audio signal.
8. Select **OK**.

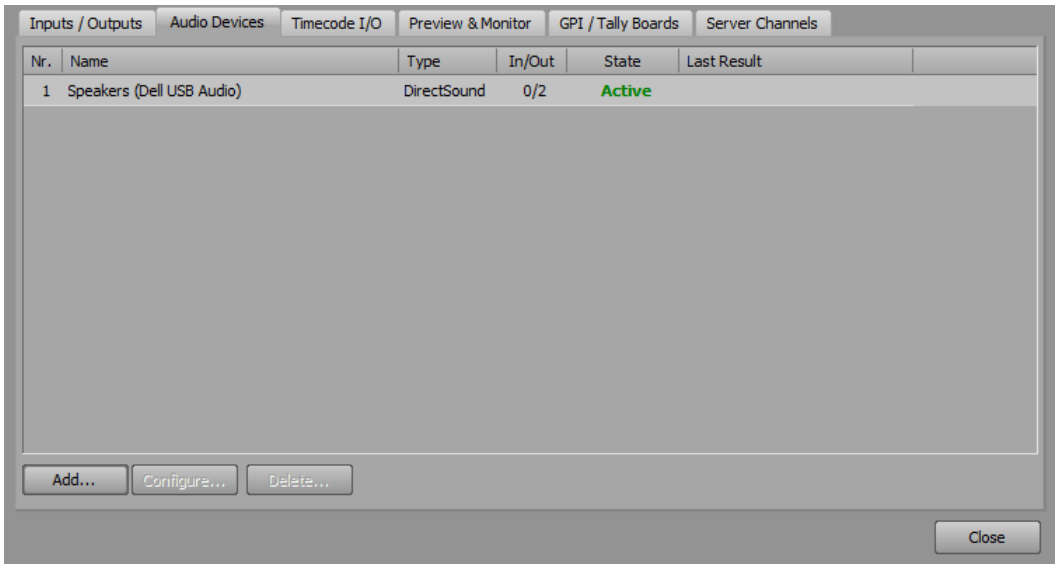
   The configured audio device is added to the **Audio Devices** tab of the **Hardware Setup** dialog.
9. In the **Hardware Setup** dialog, select **Close**.

Deleting an Audio Device

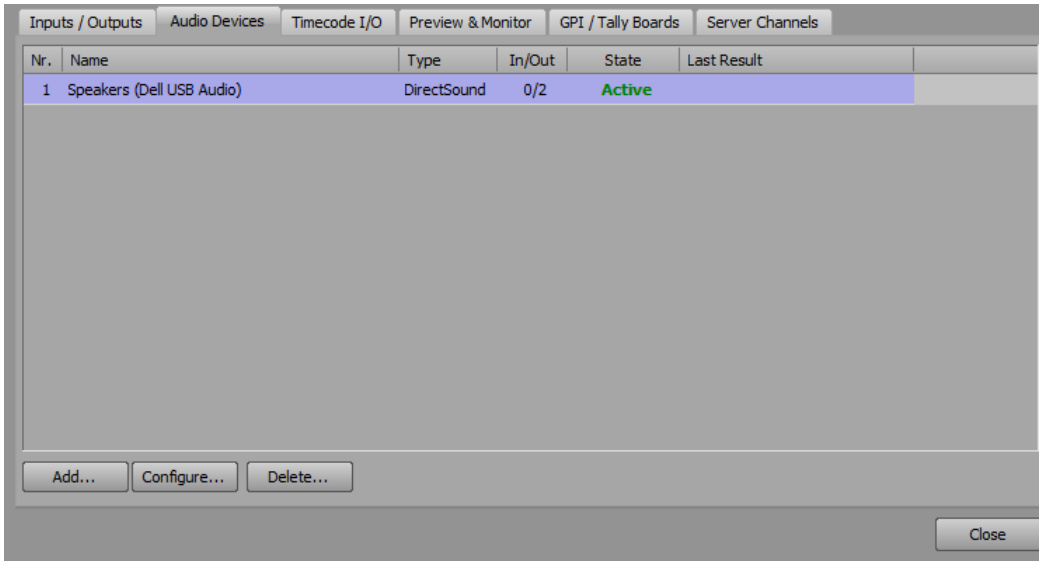
1. In XPression Clips, select **Edit > Hardware Setup**.

   The **Hardware Setup** window opens.

2. Select the **Audio Devices** tab.



3. From the **Audio Devices** list, select the **Audio Device** to delete.



4. Select **Delete** at the bottom of the window.

   A **Warning** dialog opens.

5. Select **Yes**.

   The selected audio device is deleted from the **Audio Devices** list.

6. Select **Close**.

   The **Hardware Setup** window closes.

Adding a Timecode Source

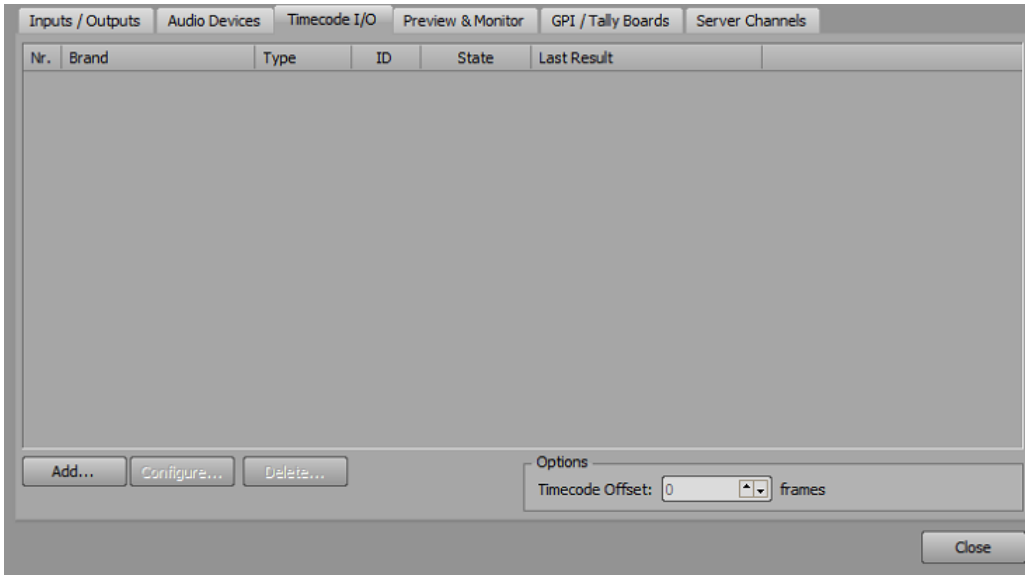
In XPression Clips you can select and configure a timecode source for your project.

To add a timecode source:

1. In XPression Clips, select **Edit > Hardware Setup**.

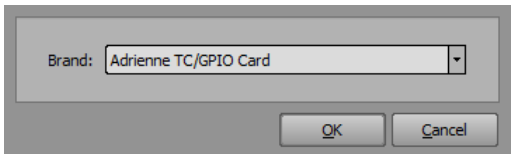
   The **Hardware Setup** window opens.

2. Select the **Timecode I/O** tab.



3. Select **Add**.

4. The **Add New TimeCode Source** dialog opens.



5. From the **Brand** drop-down, select a timecode source.

   The possible options include:

   Adrienne TC/GPIO Card — if installed, select the Adrienne TC/GPIO card as the timecode source.

   Blackmagic Design (Legacy) — if installed, select the Blackmagic Design (legacy) card as the timecode source.

   Countdown Timer Broadcast — send countdown clocks via UDP to DashBoard or other devices.

   Free Running Timecode — use the system clock of the machine or a custom preset time as the timecode source.

6. Select **OK**.

   The setup dialog for the selected timecode source opens.

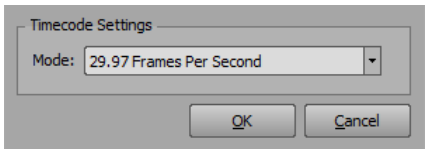
7. Select the timecode source from the following list to see the configuration instructions for that source:

   - **Adrienne TC/GPIO Card**

- In the **Timecode Settings** section, from the **Mode** drop-down, select the frame rate to use for the timecode.

  The options are:

  - **24 Frames Per Second**
  - **25 Frames Per Second**
  - **29.97 Frames Per Second**
  - **30 Frames Per Second**

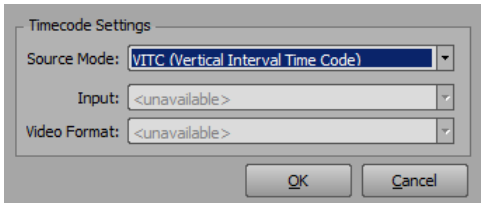


Blackmagic Design (Legacy) Card

1. In the **Timecode Settings** section, from the **Source Mode** drop-down, select a source mode for the timecode data.

   The options are:

   - **VITC** (Vertical Interval Time Code)
   - **HANC** (Horizontal Ancillary Data)
   - **RS-422** (Serial)

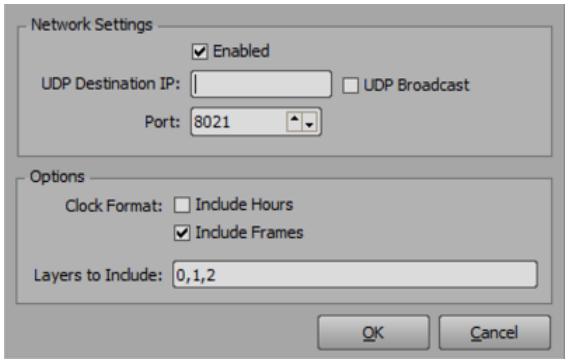


2. From the **Input** drop-down, select an input on the card to receive the timecode data.
3. From the **Video Format** drop-down, select the video format of the received video signal.

Countdown Timer Broadcast Card

1. In the **Network Settings** section, select the **Enabled** checkbox to send countdown clocks via UDP to DashBoard or other devices.

   It is enabled by default.



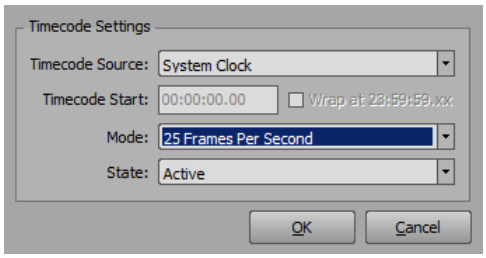
2. In the **UDP Destination IP** field, enter the IP address of the device to receive the countdown timer.
3. Select the **UDP Broadcast** checkbox to send UDP countdown timer packets to a range of IP addresses within a subnet.

   When the **UDP Broadcast** checkbox is selected, the **UDP Destination IP** field changes to **Broadcast Address**.
4. In the **Port** field, enter or select the port number to use for the connection.
5. In the **Options** section, use the **Clock Format** checkboxes to select the format of the timer to send to the receiving device:

   - **Include Hours** — use hours in the clock format.
   - **Include Frames** — use frames in the clock format.
6. In the **Layers to Include** field, enter the framebuffer layers to include in the clock format.

XPression - Free Running Timecode Card

1. In the **Timecode Settings** section, from the **Timecode Source** drop-down, select a source mode for the timecode.



   The options are:

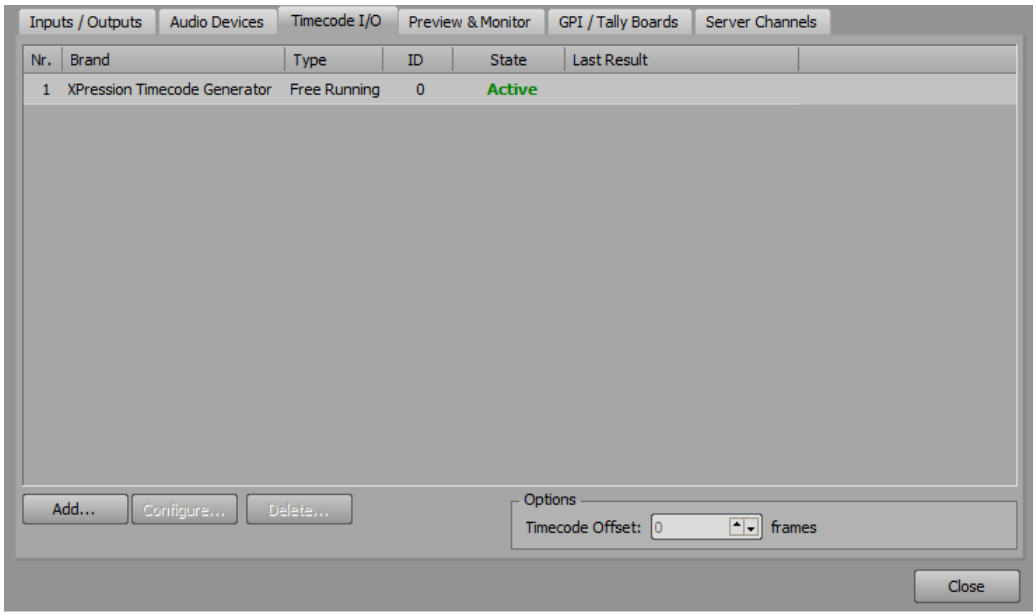
   - **System Clock** — use the internal system clock for the timecode.
   - **Preset Time** — use a custom start time for the timecode.

   If using a preset time, in the **Timecode Start** field, enter a start time for the timecode.
2. Select the **Wrap at 23:59:59.xx** checkbox to restart at the configured preset start time when the time has reached 23:59:59:xx.

3. From the **Mode** drop-down, select the frame rate to use for the timecode.
4. From the **State** drop-down, select a status for the timecode:
   - **Active** — use the selected timecode.
   - **Inactive** — disable the selected timecode.

8. When you have finished configuring the timecode source, select **OK**.

   The timecode source is added to the list in the **Timecode I/O** tab.



9. In the **Options** section, enter or select a number of frames to offset the timecode when playing out a scene or clip and select **Close**.

Configuring the Video Preview and Audio Monitor

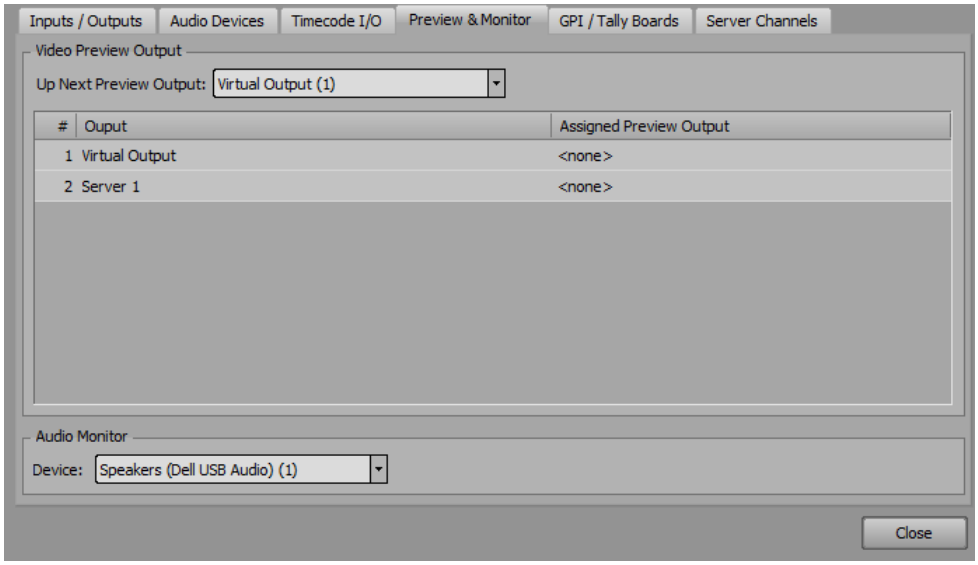
In the **Preview & Monitor** tab, you can select a framebuffer on an output to preview video and select an audio output device from which to monitor audio.

To configure video preview and audio monitor:

1. In XPression Clips, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.

2. Select the **Preview & Monitor** tab.



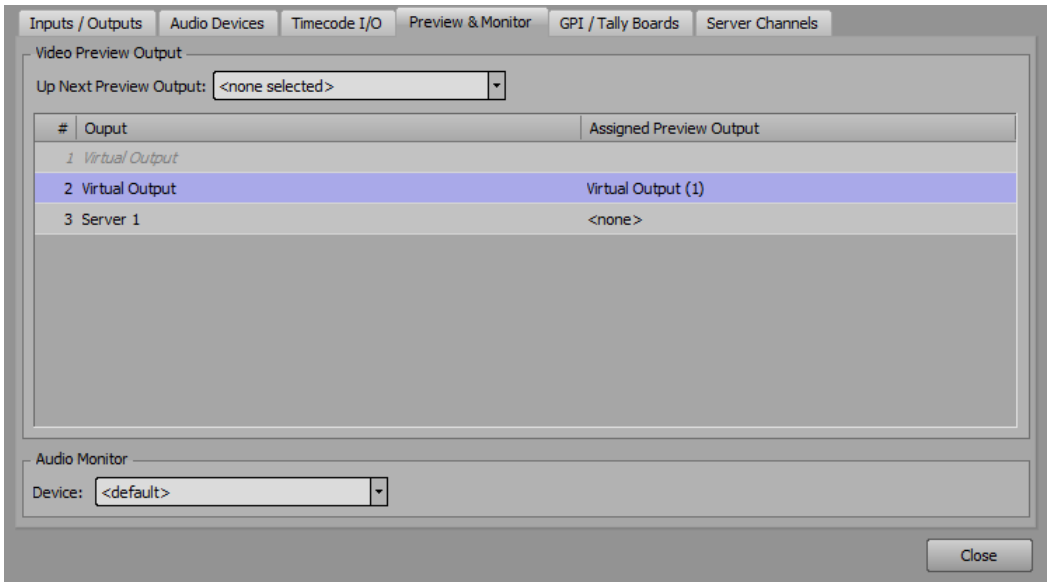
3. In the **Video Preview Output** section, from the **Up Next Preview Output** drop-down, select the video output device on which to preview video.

   All framebuffers can be used to preview video.

   When **<none selected>** is the selected preview output, video preview is only possible within XPression Clips.

   ★If a configured framebuffer from the **Inputs / Outputs** tab is used as a preview output, the **Hardware Setup** dialog must be closed and reopened before the configured framebuffer is available in the **Output** list.

4. In the **Output** list, click inside the **Assigned Preview Output** column and from the **Assigned Preview Output** drop-down, select a framebuffer as the individual preview output for the selected framebuffer.



5. In the **Audio Monitor** section, from the **Device** drop-down, select the audio output device from which to monitor audio.

   The audio monitor device monitors audio from the **Scene Director** in the scene loaded in the layout. It is not used for any scenes on framebuffer outputs, etc.

6. Select **Close** to exit the **Hardware Setup** dialog.

Configuring RS232 CTS/DSR GPI for Contact Closures

Ensure that a USB-232 dongle is installed and assigned to a Communication port or that the system has a built-in RS232 port before configuring GPI for RS232.

Not all USB to serial converters support contact closures.

When enabled, RS232 GPI (General Purpose Interface) is used to control functions of XPression in sequencer mode. RS232 GPI can trigger the state of the next take of scenes and scene groups from top to bottom of a sequence.

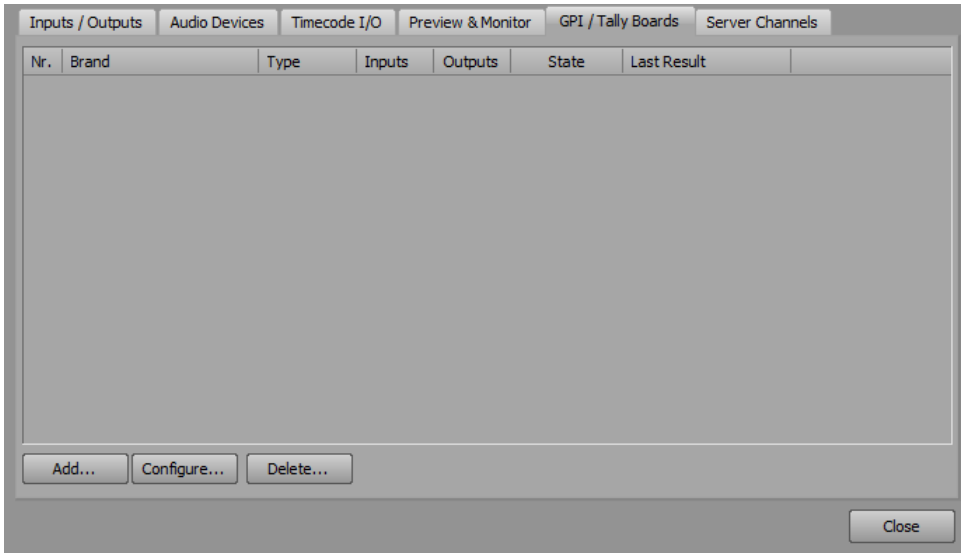
A standard RS232 serial port can support two GPI signals using the CTS and DSR pins. Connect Pins 6 and 7 for GPI 1 and connect Pins 7 and 8 for GPI 2.

To configure an RS232 CTS/DSR GPI for contact closures:

1. In XPression, select **Edit > Hardware Setup**.

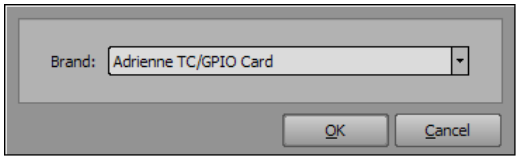
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



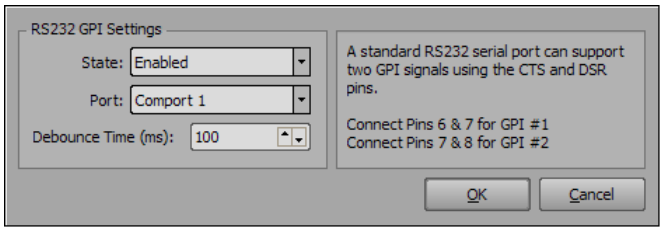
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **Serial GPI (CTS/DSR)** and then select **OK**.

   The **Serial GPI Setup** dialog opens.



5. In the **RS232 GPI Settings** section, from the **State** drop-down, select **Enabled**.

   Select **Disabled** to turn off RS232 GPI.

6. From the **Port** drop-down, select the **Communication** port that receives RS232 GPI signals.

7. In the **Debounce Time** field, enter or select the number of milliseconds between sequential GPI pulses.

   When using a contact closure GPI on the CTS/DSR lines, some devices might send GPI signals that are noisy. Connecting the GPI to a mechanical push-button may also exhibit this problem. If the connection is noisy, it could generate multiple triggers that cause the sequence to advance by two or three events at a time. Setting a **Debounce Time** can help filter out any noise during the GPI trigger. This value is the amount of time XPression will wait before acting upon a second GPI trigger. A value of **50-100 milliseconds** should be sufficient.

8. Select **OK**.

   The **Serial GPI Setup** dialog closes and the configuration appears in the **GPI / Tally Boards** list.

For More Information on...

- configuring and working with GPIs, refer to the *GPI White Paper* available from Ross Video.

Configuring a 25-Pin GPIO Port

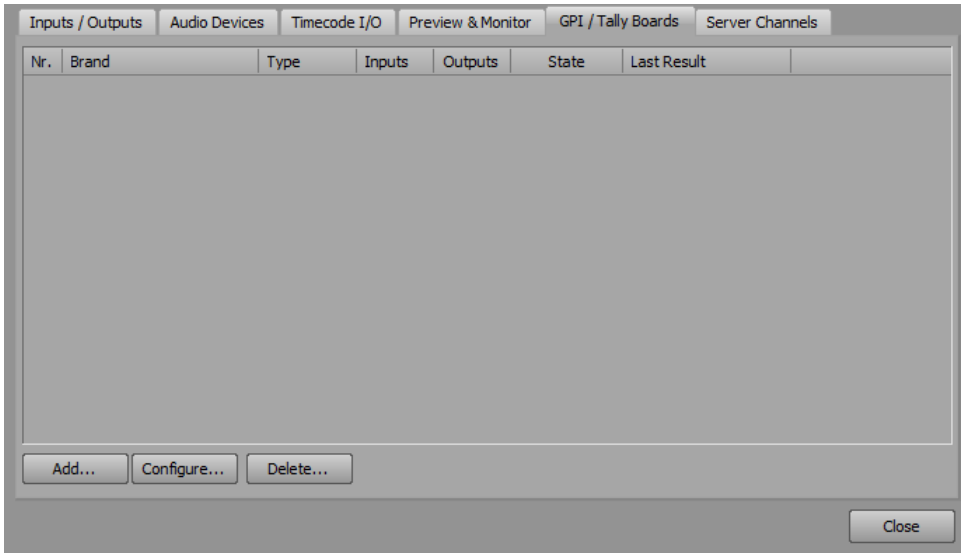
The **Adrienne TC/GPIO** card is installed in Ross Video Turnkey systems. The 25-pin GPIO port can be accessed through .NET applications or by using the **Keyboard / GPI Mapping** dialog to configure functions.

To configure a 25-pin GPIO port:

1. In XPression, select **Edit > Hardware Setup**.

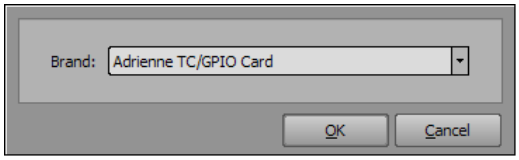
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



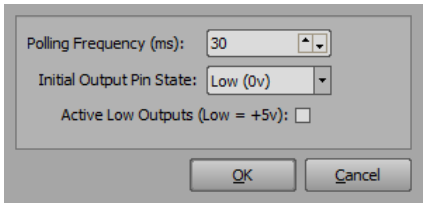
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **Adrienne TC/GPIO Card** and then select **OK**.

   The **Adrienne Setup (GPI)** dialog opens.



5. In the **Polling Frequency** field, enter or select a polling frequency in milliseconds for checking the GPI inputs.

6. From the **Initial Output Pin State** drop-down, select the state of the pins when XPression is launched.

   The options are:

   - **Low (0v)**

- **High (+5v)**

7. Select **Active Low Outputs** to use the active low status (0v) when the GPI is activated in XPression.

   If not enabled, the GPI is +5v when the GPI is activated in XPression.

8. Select **OK**.

   The **Adrienne TC/GPIO** card is displayed in the **GPI / Tally Board** list.

9. Select **Close** to exit the **Hardware Setup** dialog.

For More Information on...

- configuring and working with GPIs, refer to the *GPI White Paper* available from Ross Video.
- creating a custom GPI, refer to the section Creating a Custom GPI Map.

Configuring a SeaLevel GPIO Board

SeaLevel 8004e and SeaLevel 8012 GPIO cards are customer-supplied.

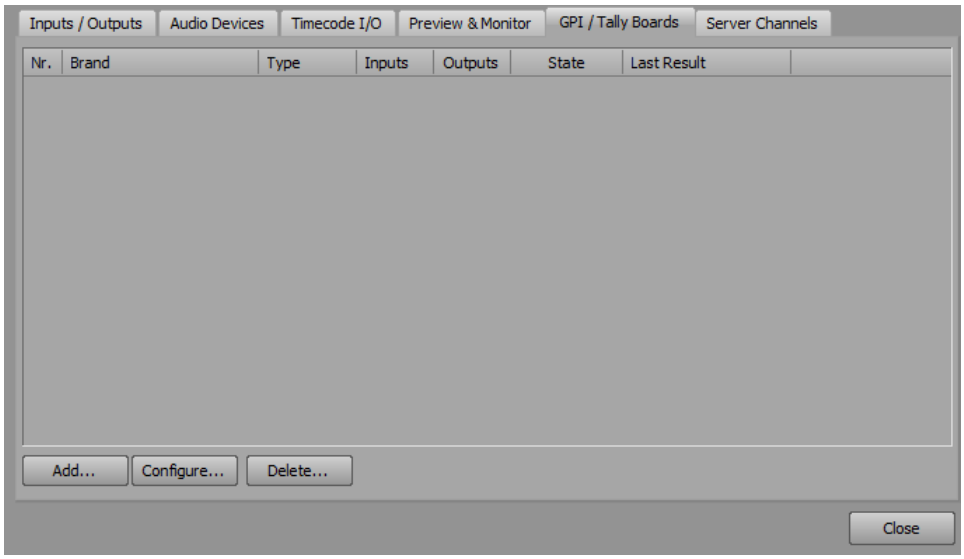
The 32 pin GPIO port can be accessed through .NET applications or by using the **Keyboard / GPI Mapping** dialog to configure functions.

To configure a SeaLevel GPIO Board:

1. In XPression Clips, select **Edit > Hardware Setup**.

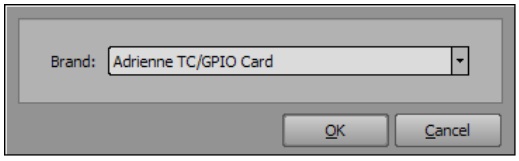
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



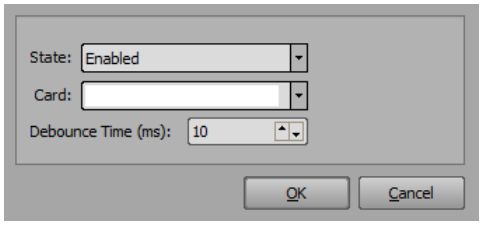
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **Sealevel GPIO** and then select OK.

   The **SeaLevel I/O Setup** dialog opens.



5. From the **State** drop-down, select **Enabled**.
6. From the **Card** drop-down, select the SeaLevel GPIO card to use.

7. In the **Debounce Time (ms)** field, enter or select the number of milliseconds between sequential GPI pulses.
8. Select **OK**.

   The **SeaLevel 8004e** card is displayed in the **GPI / Tally Board** list.
9. Select **Close** to exit the **Hardware Setup** dialog.

For More Information on...

- configuring and working with GPIs, refer to the *GPI White Paper* available from Ross Video.
- creating a custom GPI, refer to the section Creating a Custom GPI Map.

Configuring Smart GPI / RossTalk

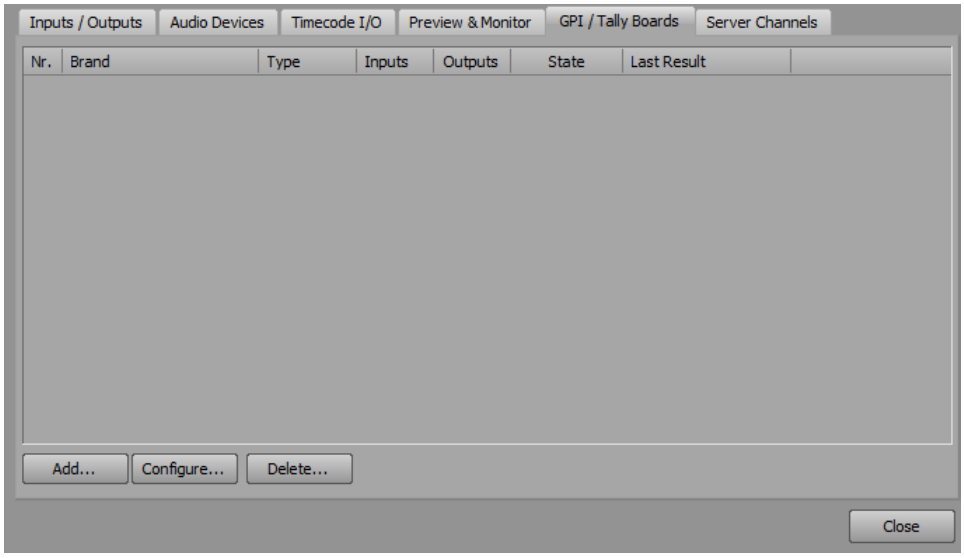
Smart GPI/RossTalk is an ASCII based protocol that can be sent over TCP/IP, UDP or RS232 to trigger various actions in XPression Clips. For more information on configuring and working with GPIs, refer to the *GPI White Paper* available from Ross Video tech support.

To configure Smart GPI / RossTalk:

1. In XPression Clips, select **Edit > Hardware Setup**.

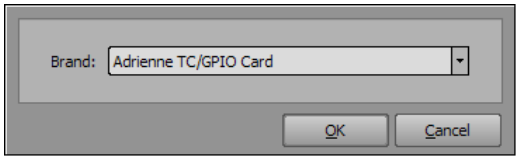
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



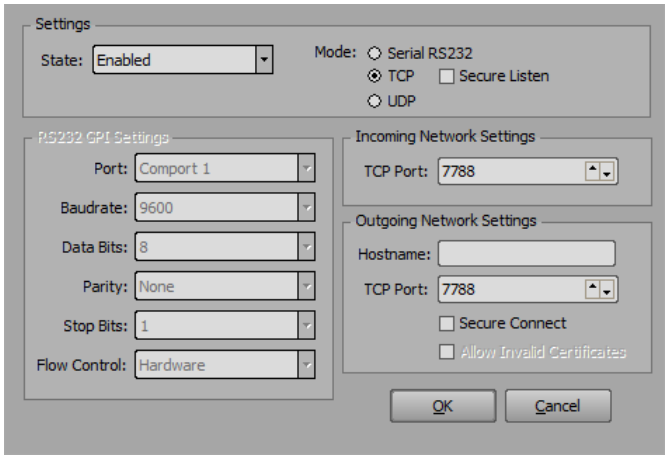
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **Smart GPI / RossTalk** and then select **OK**.

   The **Smart GPI / RossTalk Setup** dialog opens.



5. In the **Settings** section, from the **State** drop-down, select **Enabled**.

   Select **Disabled** to turn off Smart GPI/RossTalk.

6. Select a network connection **Mode**:

   - **Serial RS232** — use RS232 to send Smart GPI/RossTalk signals to XPression Clips.
   - **TCP** — use TCP to send Smart GPI/RossTalk signals to XPression Clips.

     If **TCP** is selected, you can also select **Secure Listen** to secure communications between TCP and Smart GPI/RossTalk, making them unreadable by other machines.

   - **UDP** — use UDP sockets to send Smart GPI/RossTalk signals to XPression Clips.

7. Configure the selected GPI mode.

   Serial RS232

   - From the **Port** drop-down, select the communication port that receives GPI signals.
   - From the **Baudrate** drop-down, select the communication speed for GPI signals.
   - From the **Data Bits** drop-down, select the number of bits used to represent one character of data for GPI signals.
   - From the **Parity** drop-down, select the method used to check for lost data in a GPI signal.
   - From the **Stop Bits** drop-down, select the number of bits used to indicate the end of a byte in a GPI signal.
   - From the **Flow Control** drop-down, select the data transmission rate controller for a GPI signal.

     Flow Control can be set to **Hardware** or **None**, but it must be set the same in both XPression Clips and the transmitting device.

   TCP

   - In the **Incoming Network Settings** section, in the **TCP Port** field, enter or select the communication port that receives GPI signals.
   - In the **Outgoing Network Settings** section, in the **Hostname** field, enter the host name of a remote device that is to receive RossTalk messages.
   - In the **TCP Port** field, enter or select the communication port that receives the signals.
   - If **Secure Listen** was selected in the **Network Mode** section, then select the **Secure Connect** checkbox to secure communications between TCP and Smart GPI/RossTalk, making them unreadable by other machines.
   - If **Secure Connect** has been selected, you have the option to select the **Allow Invalid Certificates** checkbox to allow certificates that have not been vetted by a certificate authority (not recommended).

   UDP

   - In the **Incoming Network Settings** section, in the **UDP Port** field, enter or select the communication port that receives GPI signals.
   - In the **Outgoing Network Settings** section, in the **Hostname** field, enter the host name of a remote device that is to receive RossTalk messages.
   - In the **UDP Port** field, enter or select the communication port that receives the signals.

8. Select **OK**.

   The **Smart GPI/RossTalk** GPI board is displayed in the **GPI / Tally Board** list.

9. Select **Close** to exit the **Hardware Setup** dialog.

Configuring a TSL Tally Input

A TSL Tally Input allows a device to send or receive tally information, such as "on-air" or "preview" status, to indicate which camera, source, or output is currently live or queued for live.

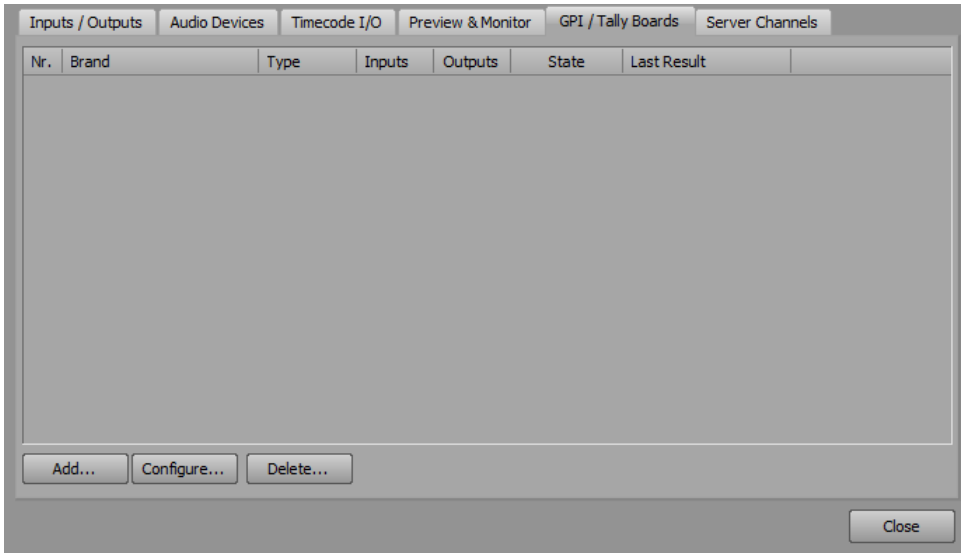
★TSL Version 3.1 and 4.0 are supported.

To configure a TSL Tally input:

1. In XPression Clips, select **Edit > Hardware Setup**.

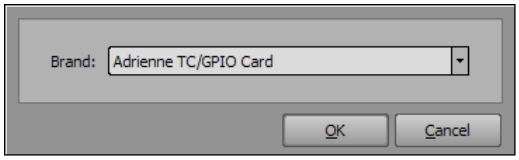
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



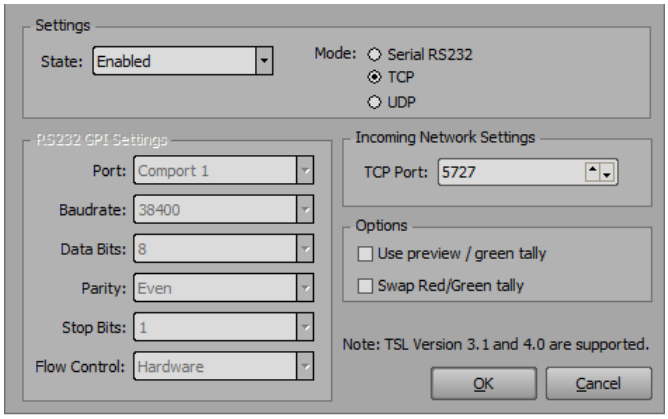
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **TSL Tally** and then select **OK**.

   The **TSL Tally Input Settings** dialog opens.



5. In the **Settings** section, from the **State** drop-down, select **Enabled**.

   Select **Disabled** to turn off **TSL Tally Input**.

6. Select a network connection **Mode**:

   - **Serial RS232** — use RS232 to send **TSL Tally Input** signals to XPression Clips.
   - **TCP** — use TCP/IP to send **TSL Tally Input** signals to XPression Clips.
   - **UDP** — use UDP sockets to send **TSL Tally Input** signals to XPression Clips.

7. Configure the selected GPI mode.

   Serial RS232

   - From the **Port** drop-down, select the communication port that receives GPI signals.
   - From the **Baudrate** drop-down, select the communication speed for GPI signals.
   - From the **Data Bits** drop-down, select the number of bits used to represent one character of data for GPI signals.
   - From the **Parity** drop-down, select the method used to check for lost data in a GPI signal.
   - From the **Stop Bits** drop-down, select the number of bits used to indicate the end of a byte in a GPI signal.
   - From the **Flow Control** drop-down, select the data transmission rate controller for a GPI signal.

     Flow Control can be set to **Hardware** or **None**, but it must be set the same in both XPression Clips and the transmitting device.

   TCP

   - In the **Incoming Network Settings** section, in the **TCP Port** field, enter or select the communication port that receives GPI signals.

   UDP

   - In the **Incoming Network Settings** section, in the **UDP Port** field, enter or select the communication port that receives GPI signals.

8. In the **Options** section, configure the following:
   - Select the **Use preview / green tally** checkbox to use the green tally to indicate previews (red will be used for on-air).
   - Select the **Swap Red/Green tally** checkbox to reverse the colors (e.g., use red for previews and green for on-air).
9. Select **OK**.

Configuring an X-Keys Device

X-Key devices are customer-supplied programmable devices, that are ideal for use with 1RU and 2RU systems. They can be accessed by using the **Keyboard / GPI Mapping** dialog to configure functions.

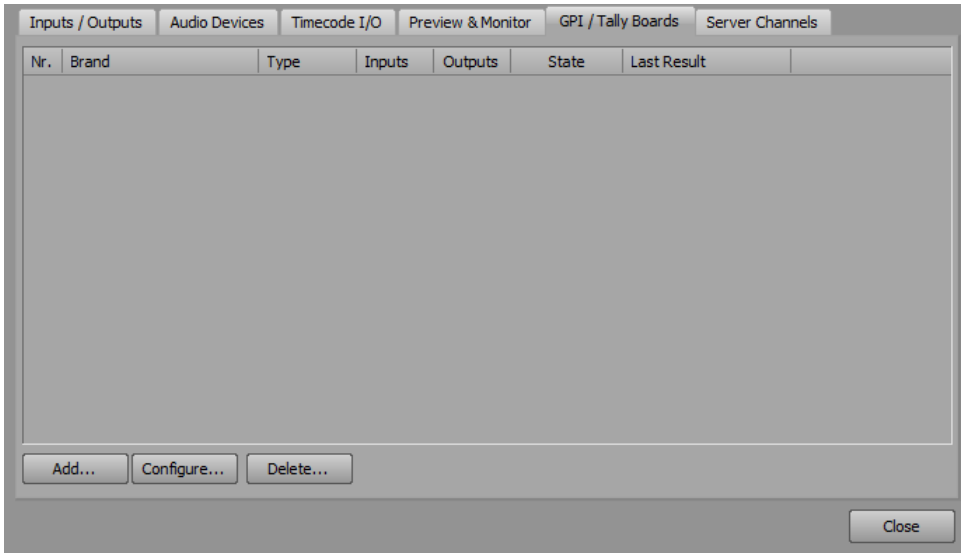
The X-Keys GPIO supports:

- USB 3.0 and USB 3.1.
- Inputs and Outputs
- X-Keys Software Modes PID 1351 and PID 1354.

To configure an X-Keys device:

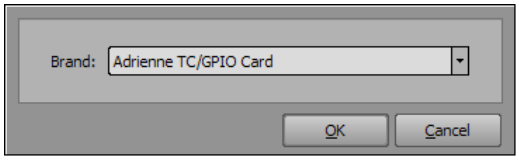
1. Using the official X-Keys software, configure the **Unit ID** and all pins.
2. In XPression Clips, select **Edit > Hardware Setup**.

   The **Hardware Setup** window opens.
3. Select the **GPI / Tally Boards** tab.



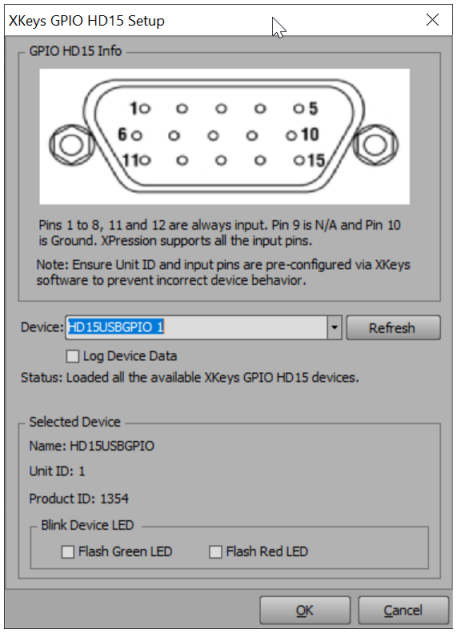
4. Select **Add**.

   The **Add New GPI Board** dialog opens.



5. From the **Brand** drop-down, select **P I Engineering**.

   The **XKeys GPIO HD15 Setup** dialog opens.



6. From the **Device** drop-down, select the connected X-Keys device.

   If you don't see your device in the drop-down, select **Refresh** to update the list.

7. Select the **Log Device Data** to show logging in the **XPression Live Log** and save logging in the XPression logs.

   The XPression Clips logs are located in **C:\ProgramData\Ross Video\XPression\XPression Clips\logs**.

8. In the **Selected Device** section, select the **Flash Green LED** or **Flash Red LED** checkbox to aid in identifying the selected device in a server room.

   The device will blink the selected colored LED.

   In the **Device Pins Status** section, colored LEDs indicate how each pin is configured.

9. Select **OK** to save the configuration and close the setup dialog.

Configuring the PBus Interface and PBus Recalls

PBus is an industry standard protocol designed to allow production switchers to communicate with external devices.

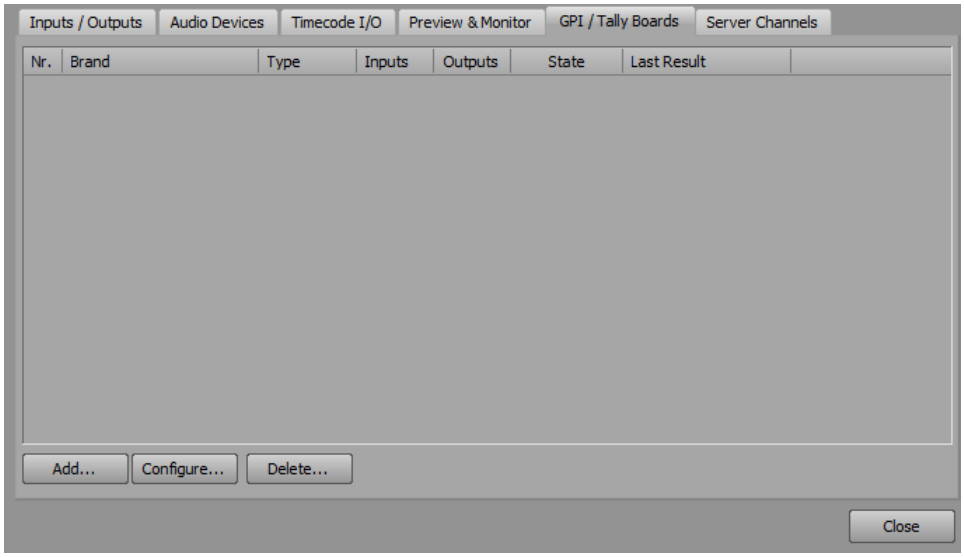
XPression normally does not perform any action when a PBus recall command is issued. Instead, it stores the recall ID to be used later when a PBus trigger command is issued.

To configure the PBus interface and PBus recalls:

1. In XPression Clips, select **Edit > Hardware Setup**.

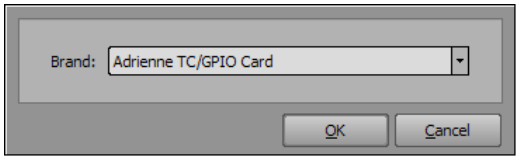
   The **Hardware Setup** window opens.

2. Select the **GPI / Tally Boards** tab.



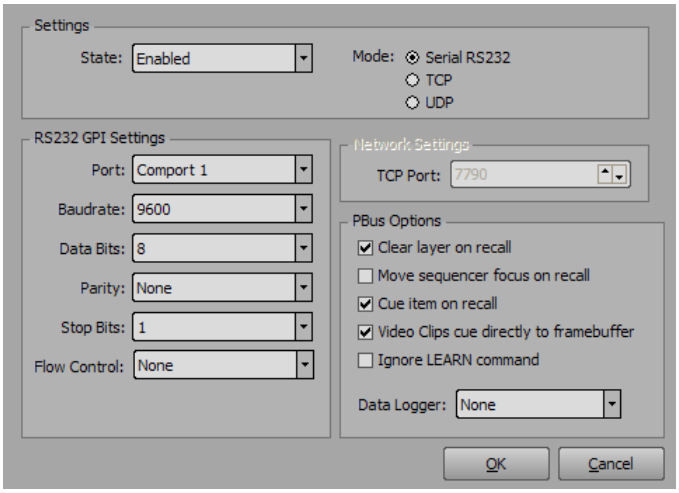
3. Select **Add**.

   The **Add New GPI Board** dialog opens.



4. From the **Brand** drop-down, select **PBus** and then select **OK**.

   The **PBus Setup** dialog opens.



5. In the **Settings** section, from the **State** drop-down, select **Enabled**.

   Select **Disabled** to turn off PBus.

6. Select a network connection **Mode**:

   - **Serial RS232** — use RS232 to send PBus signals to XPression.
   - **TCP** — use TCP/IP to send PBus signals to XPression.
   - **UDP** — use UDP sockets to send PBus signals to XPression.

7. Configure the selected mode.

   Serial RS232

   - From the **Port** drop-down, select the communication port that receives signals.
   - From the **Baudrate** drop-down, select the communication speed for signals.
   - From the **Data Bits** drop-down, select the number of bits used to represent one character of data for the signals.
   - From the **Parity** drop-down, select the method used to check for lost data in a signal.
   - From the **Stop Bits** drop-down, select the number of bits used to indicate the end of a byte in a signal.
   - From the **Flow Control** drop-down, select the data transmission rate controller for a signal.

     Flow Control can be set to **Hardware** or **None**, but it must be set the same in both XPression and the transmitting device.

   TCP and UDP

   - In the **Network Settings** section, in the **TCP** or **UDP Port** field, enter or select the communication port that receives the signals.

8. In the **PBus Options** section, configure the PBus recall options.

   Clear layer on recall — when a PBus recall command is received, XPression Clips will check to which channel and layer the take item being recalled has been assigned. It will then immediately clear that layer and channel. However, the take item will not be read to air until such time as a **PBus Trigger** command is received to put the item on air. This configuration option is recommended in situations where XPression Clips might be used to play back clips/graphics and to ensure that as soon the recall command is issued, any previous graphic that might have been left over on the layer will be removed.

   Move sequencer focus on recall — moves the sequencer focus to the item that is being recalled. This can be useful as a means of generating a preview output that will show a rendered frame from the item that will be put on air when the PBus trigger command is received.

   Cue item on recall — places the take item into a cued state when the recall command is received. This is useful when using video clips which might take a few frames to cue.

   Video Clips cue directly to framebuffer — video clips from the Clip Store that are assigned to a PBus register will be cued directly onto the hardware output of XPression Clips in a paused state. When the play command is received, they will begin playing.

   Ignore LEARN command — ignores the LEARN command. LEARN stores the clip currently loaded into a server channel into the PBus register list when the LEARN command is received.

9. From the **Data Logger** drop-down, select an encoding scheme for the data log.

   The options are:

   None — do not use data logging.

   ASCII — use ASCII encoding for the data log.

   HEX — use HEX file formatting for the data log.

   Both — use both ASCII encoding and HEX file formatting for the data log.

10. Select **OK**.

    PBus is displayed in the **GPI / Tally Board** list.

11. Select **Close** to exit the **Hardware Setup** dialog.

For More Information on...

- configuring and working with GPIs, refer to the *GPI White Paper* available from Ross Video.

Setting Up Server Channels

The **Server Channels** are used for previewing and playing out clips.

Before using the server channels, they must be configured in the XPression Clips **Hardware Setup**. Once outputs have been configured in XPression Clips, use the following procedure to set up the server channels.

A virtual channel should be assigned a real physical output onto which the clip will be played. It is these virtual channels that the **AMP/VDCP Media Control Gateway** is controlling.

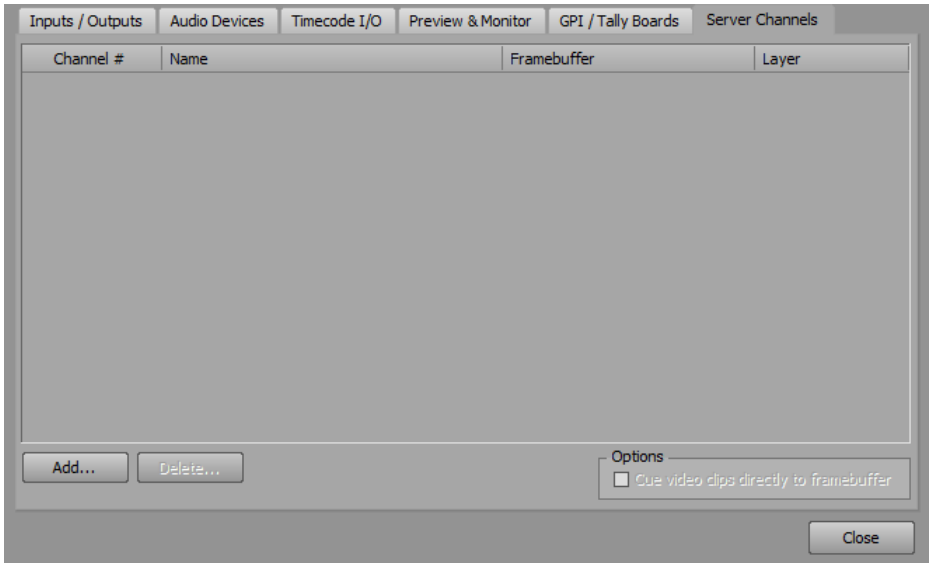
To set up server channels:

1. In XPression Clips, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.

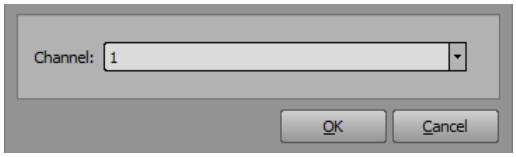
2. Select the **Server Channels** tab.

   The **Server Channels** tab opens.



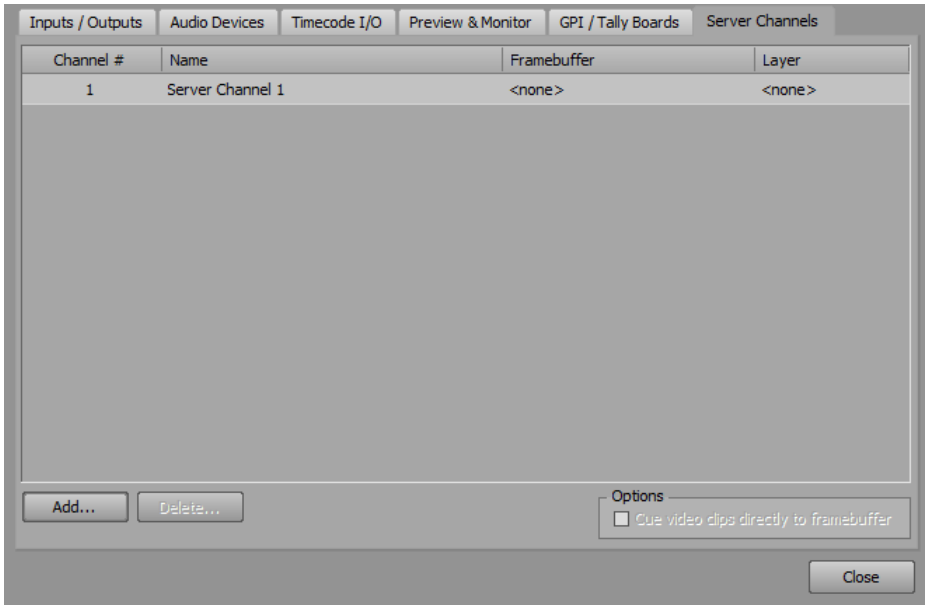
3. Select **Add**.

   The **Select Server Channel #** dialog opens.



4. From the **Channel** drop-down, select a server channel number and then select **OK**.

   The server channel is added to the list.



5. Configure the following as necessary:
   - In the **Name** column, enter a name for the server channel. The default is Server Channel #.
   - In the **Framebuffer** column, use the list to select an output framebuffer for the server channel.
   - In the **Layer** column, enter or select a layer for rendering. The default is 0 (middle).
   - In the **Options** section, select **Cue video clips directly to framebuffer** to cue clips to air immediately when dropped on a server channel from the Clip Browser.
6. Repeat steps 3 to 6 to add more server channels as necessary.
7. Select **Close** to exit the **Hardware Setup** dialog.

For More Information on...

- configuring outputs, refer to Configuring an AJA Video FrameBuffer (Legacy), Configuring a Blackmagic Design FrameBuffer (Legacy), or Configuring an XPression Virtual Output.

Clips

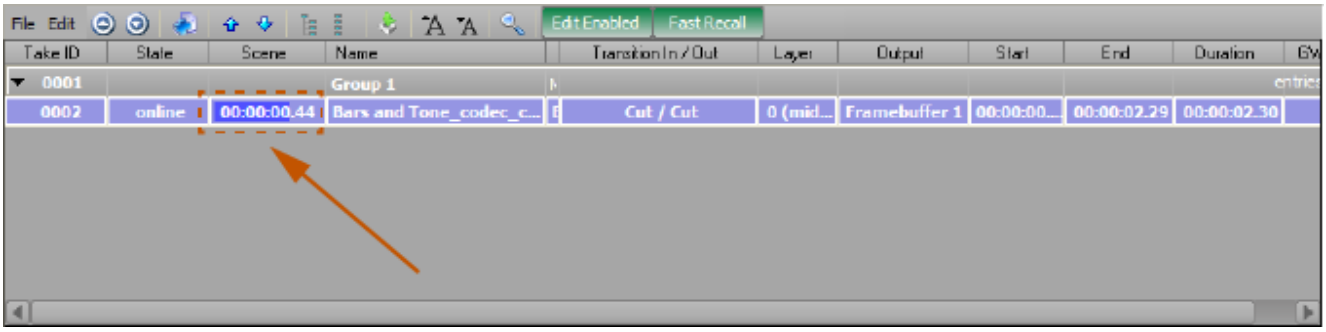
The following topics are discussed in this section:

XPression Clips Playback Overview

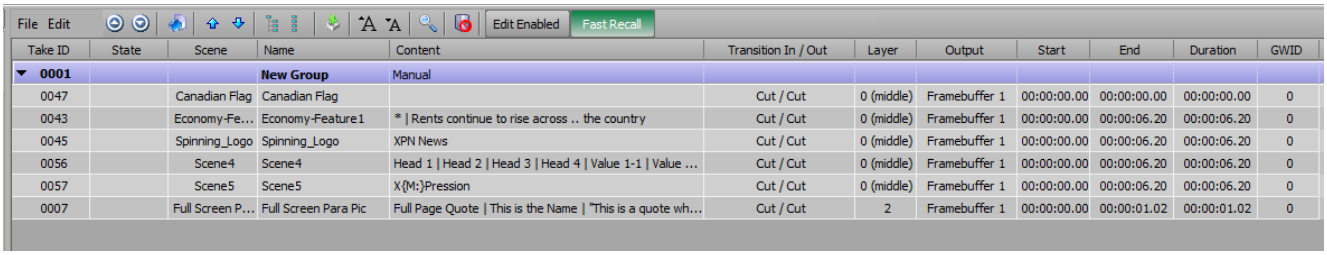
Clip playback within XPression Clips can be performed in many ways. The most basic is to drag clips from the **Clip Browser** and drop them into the **Sequencer**. This creates a take item which can be assigned an output framebuffer and layer, or server channel, and then played back as a regular take item or placed into a cued state using the number pad period key [**Num pad .**].

The number of clips that can be played back simultaneously falls under the same performance limitations as normal XPression scenes with clips (e.g. play back will be dependent on current generation hardware).

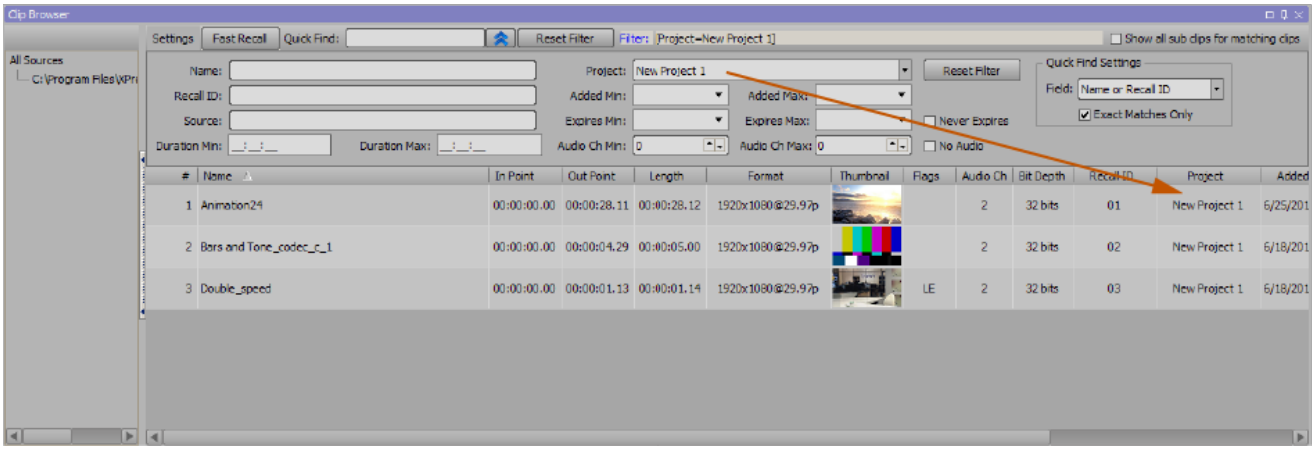
While playing back, a timer counts down the remaining time in the clip and a time bar indicates the playback amount completed:



Many clips can be dragged into a timed sequence group for a pseudo-playlist capability. Dissolves can even be set on the take items for transitions between the playlist items:



Clips within the **Clip Browser** can be sorted and filtered using the options in the **Advanced Search Options**. In the example image below they were filtered by **Project Name**.



Creating a Project

Once your preferences and system setup have been configured, you can get started with creating a new project. You can use any of the many presets that are provided or you can create a custom preset.

To create a project:

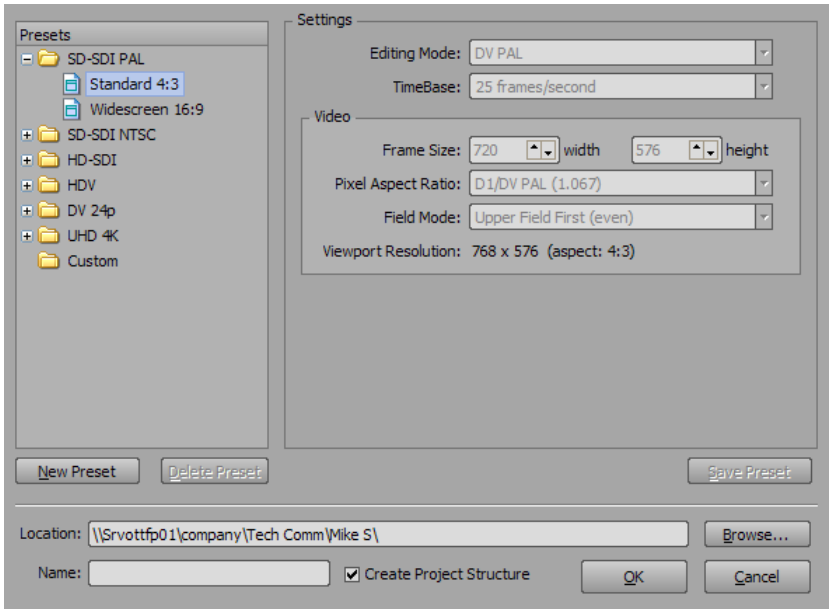
1. In XPression, select **File > New**.

   If there is a project currently open, the **Confirm** dialog opens.

2. Select one of the following options for the current project:

   - **Yes** — save changes to the current project, then close the project.
   - **No** — close the project without saving changes.
   - **Cancel** — continue working on the project.

3. After selecting **Yes** or **No**, the **New Project** dialog opens.



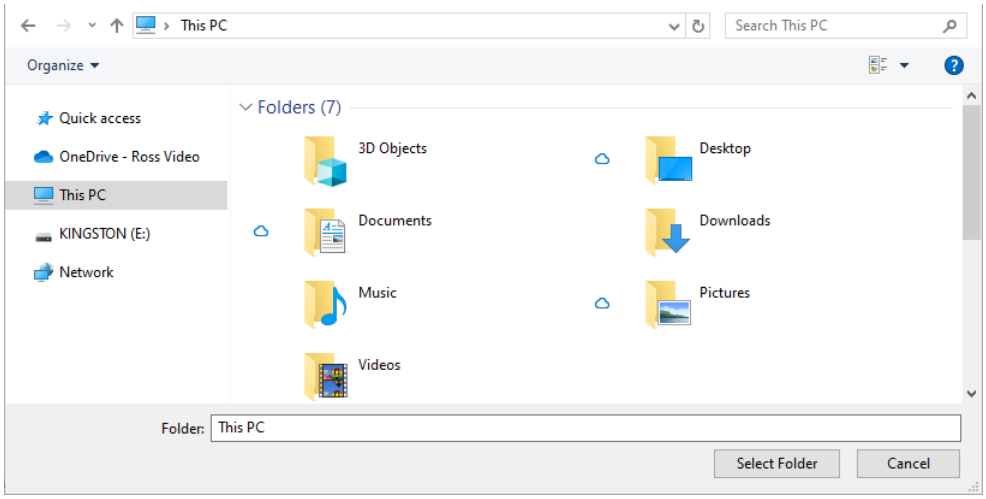
4. In the **Presets** tree view, expand any video format node to view the available presets for the selected video format.

   The available presets for the selected video format are displayed in the **Settings** section on the right side of the dialog.

5. Select the preset to use for the new project.

6. Select **Browse** to the right of the **Location** field to select a folder in which save the new project.

The **Select Project Folder** dialog opens.



7. In the **Folder** tree view, locate and select a folder in which save the new project and choose **Select Folder**.

   In the **New Project** dialog, the full path of the selected folder is displayed in the **Location** field.

8. In the **Name** field, enter a name for the new project.

   Project names may only contain letters, numbers, spaces, hyphens, or underscores.

   Project files are saved with the extension **.xpf**.

9. Select **Create Project Structure** to automatically create folders within the project folder to store project items (audio, video, dedicated fonts, images. models, etc.) and select **OK**.

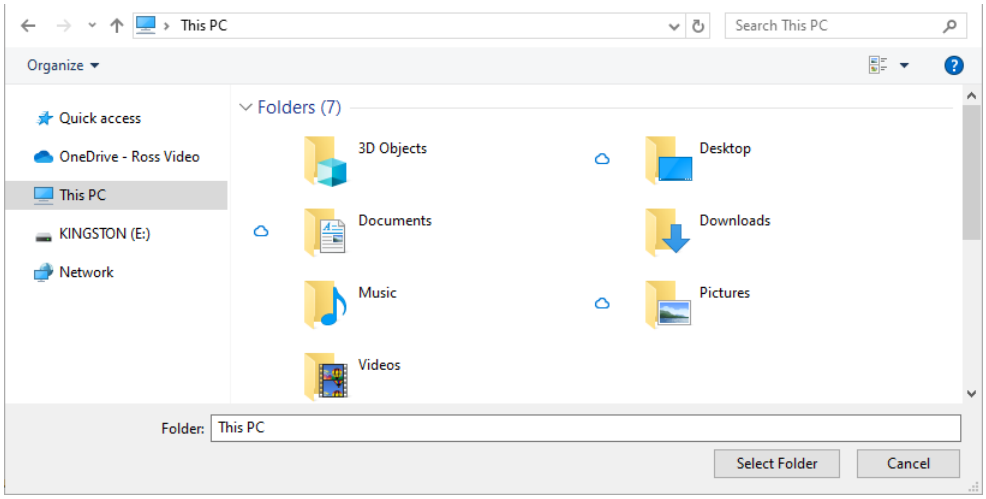
   The new project is saved in the project folder.

To create a custom preset:

1. Select **New Preset**.
2. In the **New Preset** field, enter a name for the preset.
3. In the **Settings** section configure the new preset.
4. Select **Save Preset**.

5. Select **Browse** to the right of the **Location** field to select a folder in which save the new project.

   The **Select Project Folder** dialog opens.



6. In the **Folder** tree view, locate and select a folder in which save the new project and choose **Select Folder**.

   In the **New Project** dialog, the full path of the selected folder is displayed in the **Location** field.

7. In the **Name** field, enter a name for the new project.

   Project names may only contain letters, numbers, spaces, hyphens, or underscores.

   Project files are saved with the extension **.xpf**.

8. Select **Create Project Structure** to automatically create folders within the project folder to store project items (audio, video, dedicated fonts, images. models, etc.) and select **OK**.

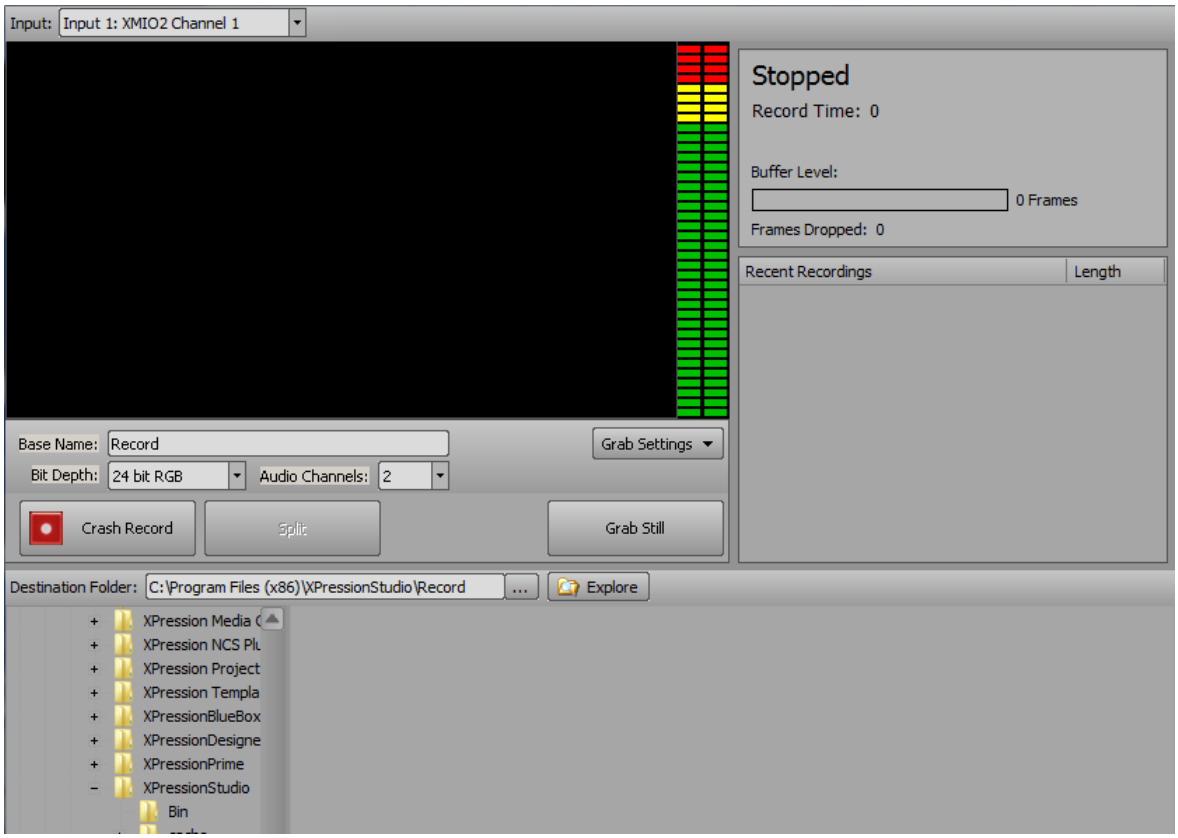
   The new project is saved in the project folder.

Adding Clips to the Clip Store

To add a clip to the clip store:

1. In **XPression Clips**, select **Tools > Record Client**.

   The **Record Client** dialog opens.



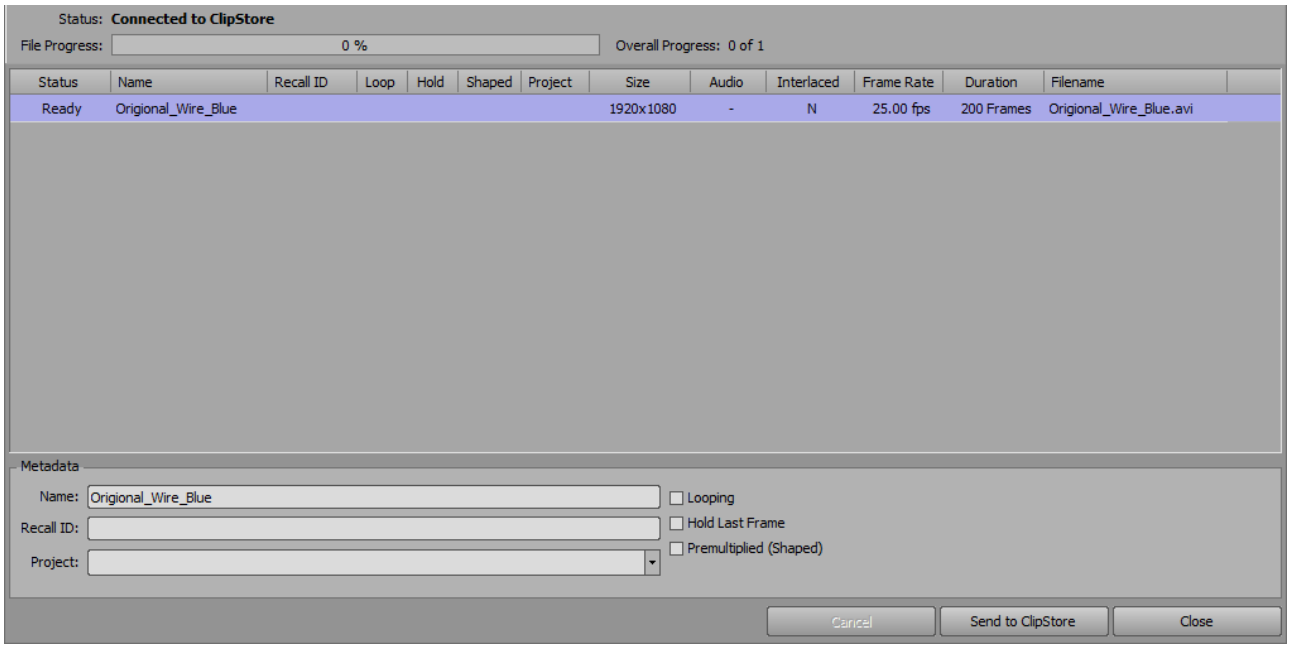
2. In the **Destination Folder** field, select **Browse (...)** navigate to the folder containing the clips you want to add to the clip store.

   Alternatively, you can navigate to the folder in the folder tree in the left column.

   The folder you selected opens in the **Record Client** and the clips are displayed.

3. In the folder containing your clips, right-click on a clip file and select **Send to Clip** Store.

   The **Send to Clip Store** dialog opens with the clip file selected.



4. In the **Metadata** section, the **Name** field is automatically populated with the name of the video file, but you can change it if you want.
5. In the **Recall ID** field, if it hasn't been automatically populated, enter a **Recall ID** (typically this is the same as the name).
6. In the **Project** field, enter the name of the project or use the drop-down to select a project.
7. Then select **Send to Clip Store**.

   You can see the progress of the import in the **File Progress** bar and when the import is complete, the **Status** will indicate **Import Complete**.
8. Select **Close** to exit the **Send to Clip Store** dialog.

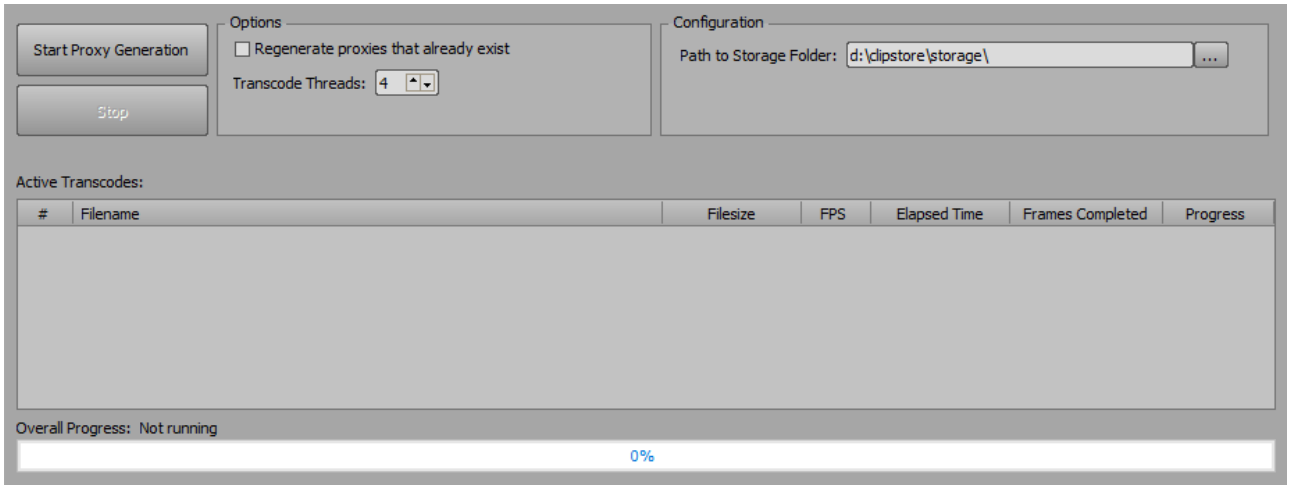
Generating Proxies for Clips

You will need to generate proxies (browser-friendly video files) for your clips in order to play them in the HTML5 plugin.

To generate proxies for clips:

1. Go to **C:\Program Files (x86)\XPression Clip Store\bin** and double-click the **xpCSProxyTool.exe** file.

   The **XPression ClipStore Proxy Generator** tool opens.



2. Select **Start Proxy Generation** to generate proxies for any clips in the clip store that do not already have proxies.

   In the **Active Transcodes** section, you will see the clip(s) being transcoded and the progress is indicated in the **Overall Progress** bar.

3. When the **Overall Progress** bar indicates 100%, select the **X** in the top-right corner to close the **Proxy Generator**.

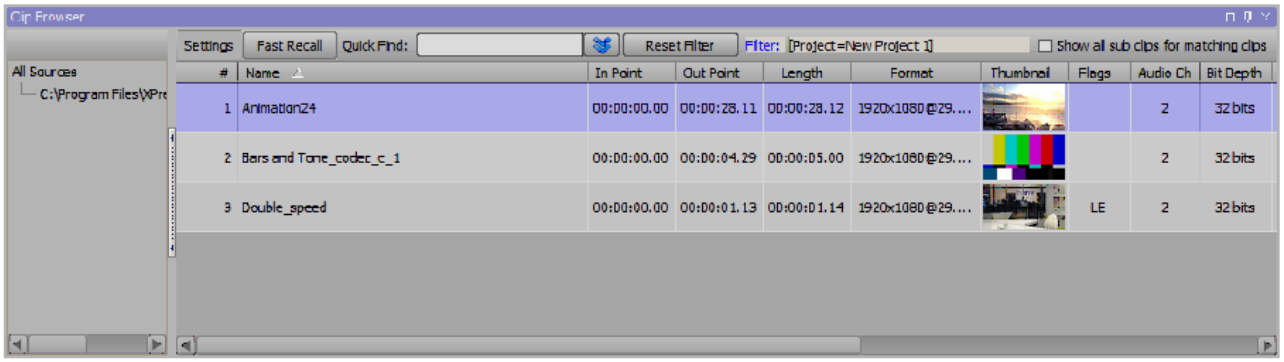
   The clip is now ready to be used in the HTML5 plugin.

Loading a Clip in the Server Channels

For clips to load in the **Server Channels** window, server channels must be configured in the **Server Channels** tab of the XPression Clips **Hardware Setup**. See Setting Up Server Channels .

To load a clip in the server channels:

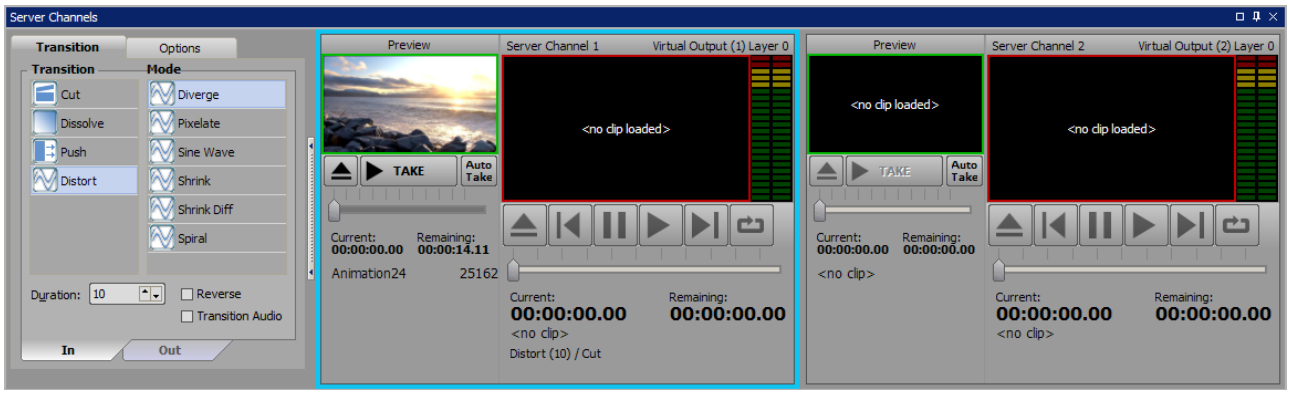
1. In the **Clip Browser**, select a clip.



   If clips have been sent to the Clip Browser from the **Record Client**, or if clips have been transcoded by the INcoder into the **Watch** Folder, clips will automatically load into the Clip Browser.

2. Drag and drop a clip from the Clip Browser onto a **Server Channel** in the **Server Channels** window.

   The clip is added to the **Preview** channel for the **Server Channel** (or directly to the **Server Channel** if the preview has been disabled in the options).



   The clip will be loaded to its pre-configured in point.

3. If loaded in the **Preview**, select **Take** to play the clip on air on the **Server Channel**.

   While a clip is on air, clips can be cued on the **Preview** channel while still allowing the on air clip to be controlled and have its timecode and countdown visible.

   Server Channel playback controls are provided or the space bar can be used to pause and start playback.

   A realtime proxy of the clip is shown as it plays in the server channel along with audio meters and a time remaining counter.

   Take items or timed groups in the **Sequencer** can also be dragged onto a server channel for playback. To preserve the original server channel assignment of a take item, press and hold **Ctrl** while dragging and dropping from the **Sequencer** to a server channel.

★Clips can also be loaded to a channel by double-clicking them in the Clip Browser. They will be loaded onto the active server channel, as shown by a cyan outline around the channel. Once a clip is loaded to a server channel, it can be dragged and dropped from one server channel to another as a duplicate. The active channel can be changed by double-clicking any other server channel.

Clips can also be dragged and dropped directly from Windows Explorer for situations where the clip is not loaded into the Clip Store (or there is no Clip Store present).

4. Select the **Transition** tab to set the in and out transitions for the clip in the active server channel:
5. In the **In** tab, select a **Transition** style and **Mode**:

   The options are:

   - **Cut** — select to use an instantaneous transition from the take item to the next take item.
   - **Dissolve** — select to use a gradual transition where a take item dissolves into the next take item.

     Configure the mode for the dissolve:

     - **Fade** — select to fade in to, or out from, the clip.
     - **Over Black** — select to fade in or out from black.
     - **Additive** — select to gradually add light to the clip when transitioning in or out.
     - **Saturate** — select to saturate the clip when transitioning in or out.
     - **Desaturate** — select transition to desaturate the clip when transitioning in or out.
     - **Invert** — select to invert the clip when transitioning in or out.
   - **Push** — select to use a sliding transition where the take item pushes out the previous take item.

     Configure the mode for the push:

     - **Right To Left** — select to push from right to left.
     - **Left To Right** — select to push from left to right.
     - **Top To Bottom** — select to push from top to bottom.
     - **Bottom To Top** — select to push from bottom to top.
     - **Bottom Right** — select to push to the bottom right.
     - **Top Right** — select to push to the top right.
     - **Bottom Left** — select to push to the bottom left.
     - **Top Left** — select to push to the top left.
   - **Distort** — select to use a transition where a take item is warped out.

     Configure the mode for the distortion:

     - **Diverge** — select to use multiple splits in the image in the clip.
     - **Pixelate** — select to pixelate the clip.
     - **Sine Wave** — select to apply a sine wave pattern to the clip.

- **Shrink** — shrink the clip in a **uniform** manner from full screen down to a single pixel when transitioning from online to offline; expand the clip in a **uniform** manner from a single pixel to full screen when transitioning from offline to online.
- **Shrink Diff** — shrink the clip in a **non-uniform** manner from full screen down to a single pixel when transitioning from online to offline; expand clip in a **non-uniform** manner from a single pixel to full screen when transitioning from offline to online.
- **Spiral** — select to spin the clip.

6. Select the **Reverse** checkbox to reverse a **Dissolve**, **Push**, or **Distort** transition.
7. Select the **Transition Audio** checkbox to transition the audio along with the **Take Item**.
8. Use the **Duration** field to enter or select the duration of the transition in number of frames.
9. Select the **Out** tab and repeat steps 5 to 7 to configure the **Transition** style and **Mode** for the out transition.
10. Select the **Cue video clips directly to framebuffer** checkbox to cue clips to air immediately when dropped on a server channel from the Clip Browser or Sequencer.

For More Information on...

- setting up server channels and virtual outputs, refer to Setting Up Server Channels.
- sending clips from the **Record Client** to the Clip Browser, refer to Sending a Video or Image to the Clip Store.
- configuring a **Watch** Folder for the INcoder, refer to the *INcoder User Guide*.

Using the Clip Browser

To use the Clip Browser:

1. In the **Clip Browser**, select a clip in the clip list to play out.

   To search for a specific clip or sub clip, use one of the following methods:

   - Select the **Fast Recall** button (the button is green when turned on).

     When turned on, fast recall enables searching clips by recall ID by entering a recall ID number using the number pad on the keyboard.

     The clip will be automatically selected in the **Clip Browser**. Pressing **Enter** will cue the clip, and pressing **Enter** a second time will play the clip.

     Clear a recall ID from the **Quick Find** field by pressing **Esc**.

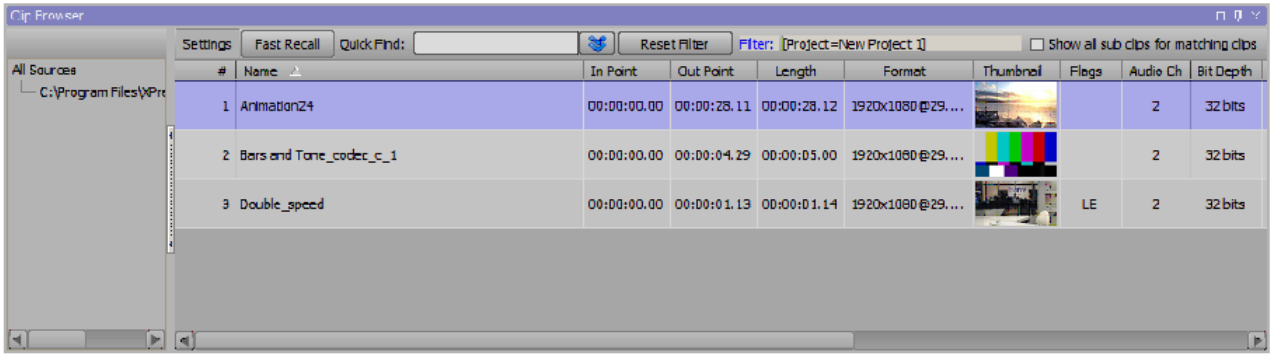
     A clip can be cued by entering the recall ID and pressing cue [.].

   - In the **Quick Find** field, enter a clip name or keyword to search for a specific clip in the Clip Browser.

     Press **Esc** to clear the field.

   - Select the **Show/Hide** advanced search options button () to enter more criteria to search for a specific clip.

   - Select the **Show all sub clips for matching clips** checkbox to display any sub clips of a clip in the clip list when performing a **Quick Find**.



2. Right-click on a clip and select one of the following options:

   - **Edit** — select this command to open the **Edit Clip** dialog.
   - **Add Sub Clip** — select this command to open the **Add Sub Clip** dialog to create a sub clip from the selected clip.
   - **Set Recall ID** — use the **Set Recall ID** dialog to enter a recall ID to assign to a selected clip or the starting recall ID for the range of selected clips.
   - **Adjust Loop / Hold Last > Enable Looping** — enable looping for a clip or a range of selected clips.
   - **Adjust Loop / Hold Last > Disable Looping** — disable looping for the clip or a range of selected clips if looping is enabled.
   - **Adjust Loop / Hold Last > Enable Hold Last Frame** — hold the last frame of the clip or a range of selected clips when playout ends.

     ★Do not select this function if taking the clip(s) offline automatically using an out transition.

   - **Adjust Loop / Hold Last > Disable Hold Last Frame** — disable holding the last frame of the clip or a range of selected clips when playout ends if holding the last frame is already enabled.

- **Add to Sequencer** — add selected clip or range of clips to the Sequencer.

3. Add the clip to one of the following locations:

   Server Channels

   Sequencer

Server Channels

- Drag and drop the selected clip onto a **Server Channel** in the **Server Channels** window.

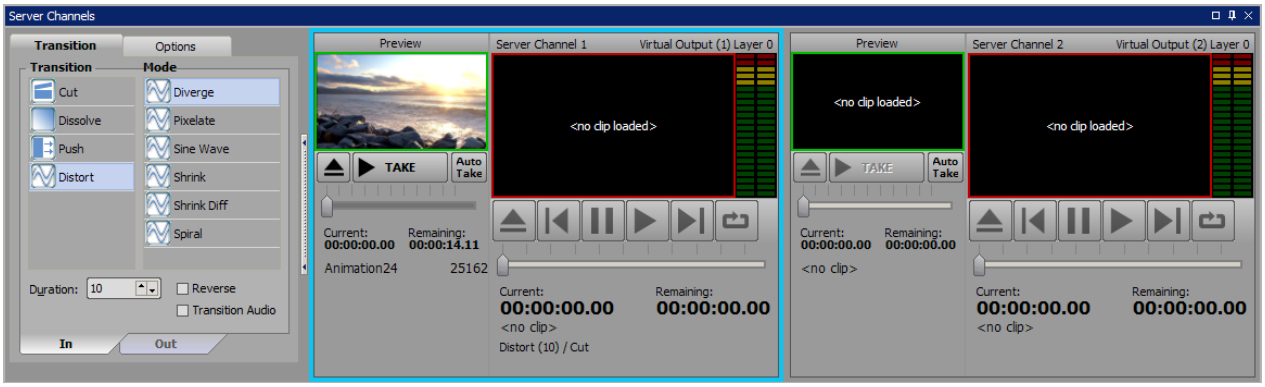
  OR

  Double-click the clip.

  OR

  Right-click the clip and select **Cue on Server Channel**.

  The clip is added to the selected **Server Channel**.



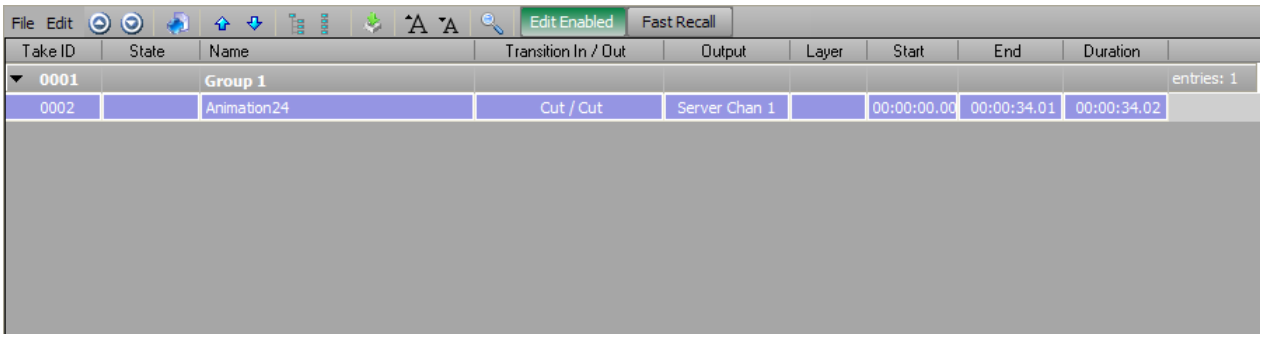
Sequencer

- Drag and drop the selected clip into the **Sequencer**.

  When dragging a clip into the **Sequencer** from the **Clip Browser**, the take ID assigned uses the recall ID or the next higher available number.

- **Shift-click** or **Ctrl-click** to select, drag and drop multiple clips into the **Sequencer**.

  The clip is added to the **Sequencer**.



For More Information on...

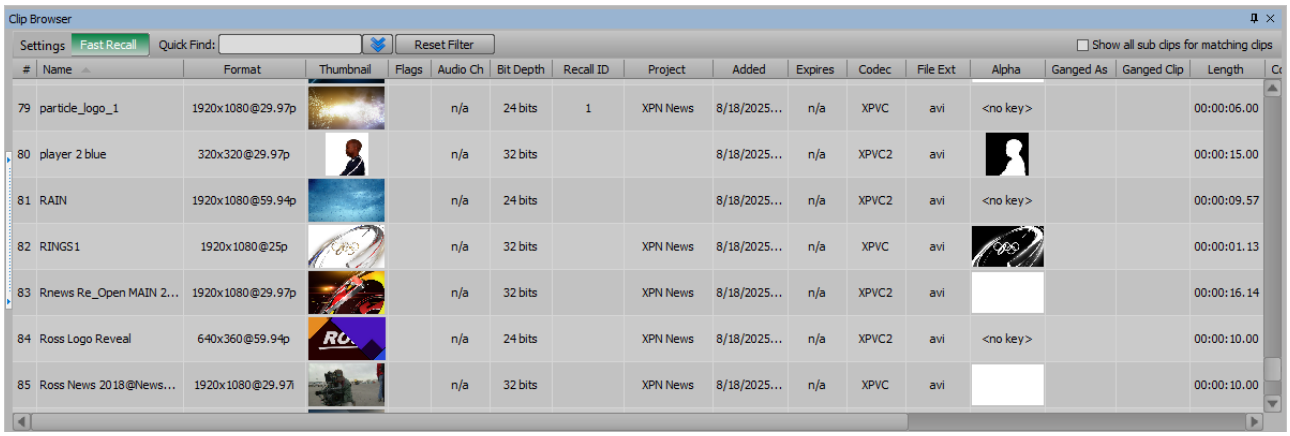
- the **Sequencer**, refer to Sequences.

Ganging Fill and Key Clips in the Clip Browser

In XPression Clips, you can combine or "gang" two clips together, using the fill of one clip with the second clip used as its key (alpha).

1. In XPression Clips, open the **Sequence** layout.
2. In the **Menu** bar, select **Display > Clip Browser**.

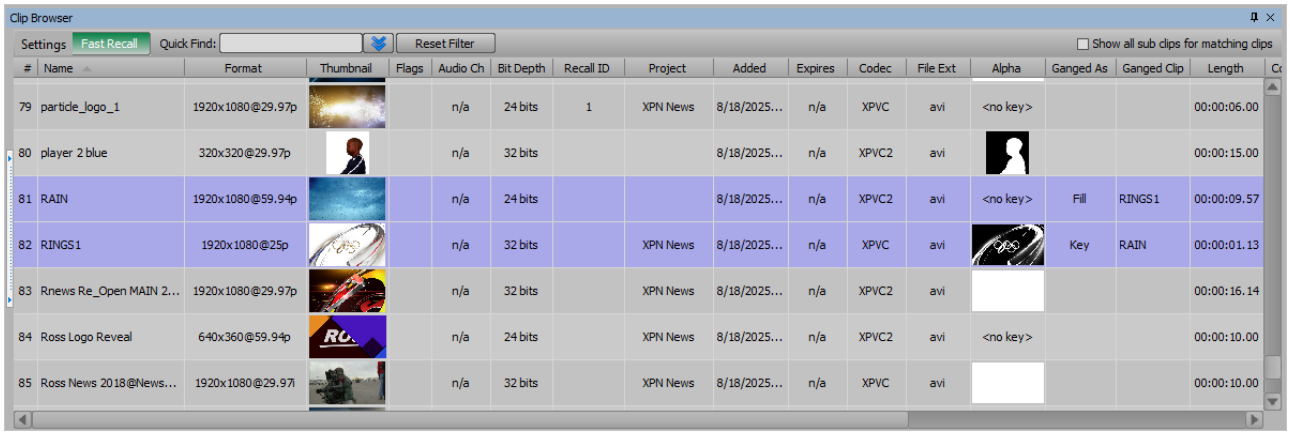
   The **Clip Browser** window opens.



3. Select the clip you want to use as fill, then press **Ctrl** and select the clip you want to use as its key.

   Alternatively, you can left-click on each clip to select it.

4. Right-click and from the shortcut menu, select **Gang Fill (name of the fill clip)**.



   After the association is made, the names of the clips being ganged will be displayed in the **Ganged Clip** column and their usage (**Fill** or **Key**) will be displayed in the **Ganged As** column.

To edit ganged clips:

- Right-click on the clip in the **Ganged Key** column and from the shortcut menu, select **Edit** to edit the key.
- Right-click anywhere else in the clip row and from the shortcut menu, select **Edit** to edit the fill.

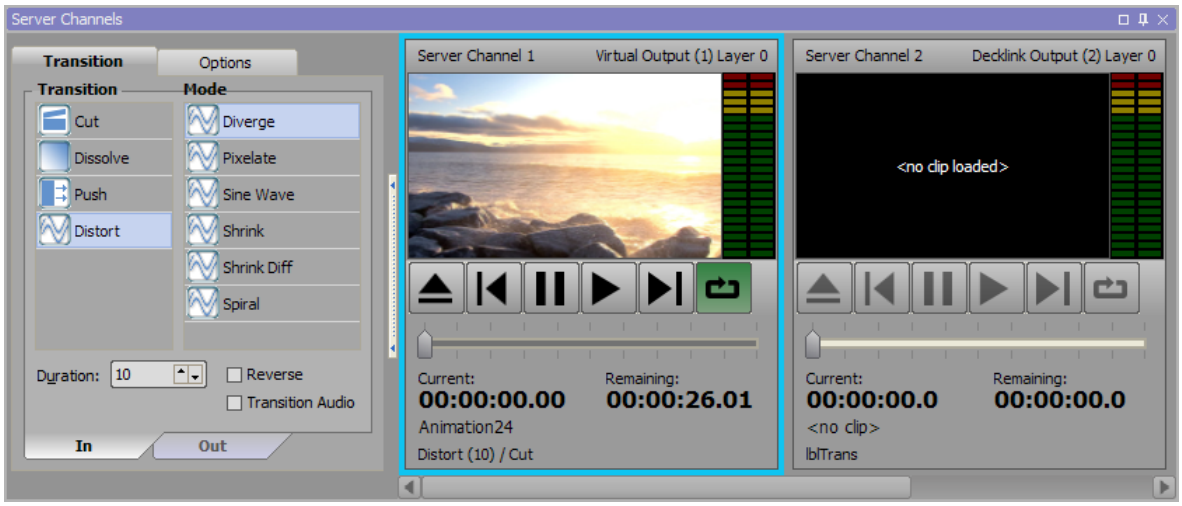
To separate ganged clips:

1. Select either of the ganged clips.
2. Right-click and select **Ungang Selected Clips**.

Using the Server Channels

To use the server channels:

1. In the **Server Channels** window, load a clip onto a **Server Channel**.



2. Select the **Transition** tab and configure the in and out transition for the clip:

   In the **In** and **Out** tabs, select an in and out transition for the clip:

   - **Cut** — transition instantaneously to and from the clip.
   - **Dissolve** — the clip gradually dissolves in or out.
   - **Push** — the clip slides in or out.
   - **Distort** — the clip is warped in or out.

3. In the **Mode** section, configure the **Dissolve**, **Push**, and **Distort** transition mode:

   Dissolve

   - **Fade** — fade in to, or out from, the clip.
   - **Over Black** — fade in or out from black.
   - **Additive** — gradually add light to the clip when transitioning in or out.
   - **Saturate** — saturate the clip when transitioning in or out.
   - **Desaturate** — desaturate the clip when transitioning in or out.
   - **Invert** — invert the clip when transitioning in or out.

   Push

   - **Right To Left** — push from right to left.
   - **Left To Right** — push from left to right.
   - **Top To Bottom** — push from top to bottom.
   - **Bottom To Top** — push from bottom to top.
   - **Bottom Right** — push toward the bottom right.
   - **Top Right** — push toward the top right.

- **Bottom Left** — push toward the bottom left.
- **Top Left** — push toward the top left.

Distort

- **Diverge** — use multiple splits in the image in the clip.
- **Pixelate** — pixelate the clip.
- **Sine Wave** — apply a sine wave pattern to the clip.
- **Shrink** — expand the clip from a shrunken image.
- **Shrink Diff** — expand the clip from a shrunken image.
- **Spiral** — spin the clip.
- **Duration** — enter or select the duration of the transition in number of frames.

4. Select the **Reverse** checkbox to reverse a **Dissolve**, **Push**, or **Distort** transition.
5. Select the **Transition Audio** checkbox to transition the audio along with the **Take Item**.
6. Use the **Duration** field to enter or select the duration of the transition in number of frames.
7. In the **Options** tab, select the **Cue video clips directly to framebuffer** checkbox to cue clips to air immediately when dropped on a server channel from the **Clip Browser** or **Sequencer**.
8. Use the playback controls to play out the clip:


Eject remove a loaded clip from the server channel.


Back return to the beginning of a clip.


Pause pause the clip.


Play play out the clip.


Forward go to the end of the clip.

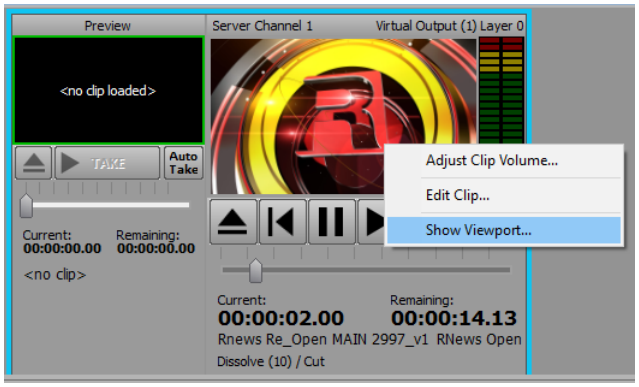

Loop continuously play the clip. When this button is green, the loop function is turned on. Pressing it again will turn off the loop function.

Scrub Bar select and hold the marker to drag it forward or backward along the time bar to move the clip position to a particular location.

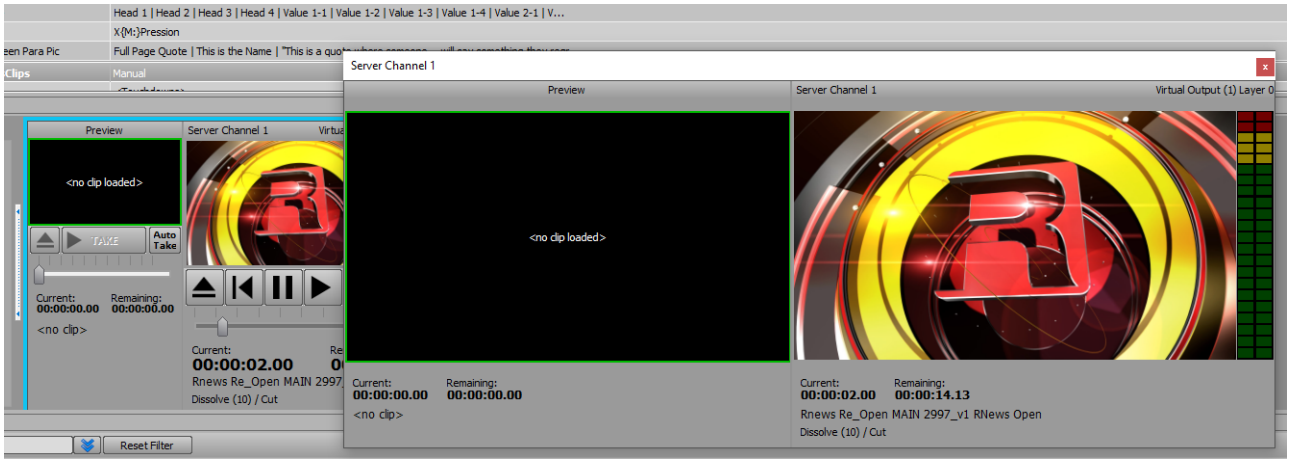
9. Right-click inside the **Server Channel** and:
   - select **Adjust Clip Volume** to open the **Adjust Clip Volume** dialog box and adjust the clip volume, if necessary.
   - select **Edit Clip** to open the **Edit Clip** dialog and edit a clip, if necessary.
   - select **Show Viewport** to open a separate server channel window.

To see a larger preview:

1. Right-click on the **Server Channel** and select **Show Viewport**.

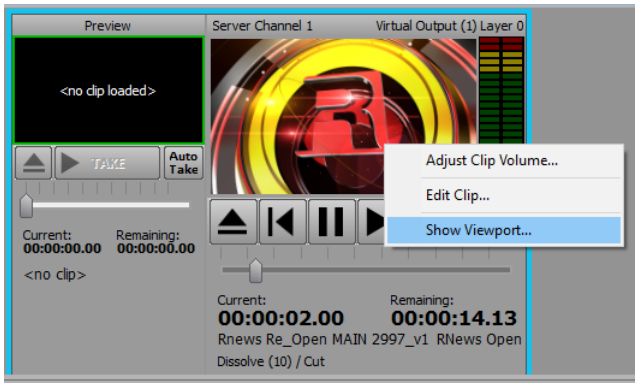


2. Drag out from the sides, top, or bottom of the viewport to enlarge it.



To dock a server channel on a secondary display:

1. Right-click on the **Server Channel** and select **Show Viewport**.



2. Select the viewport and drag it onto another display.

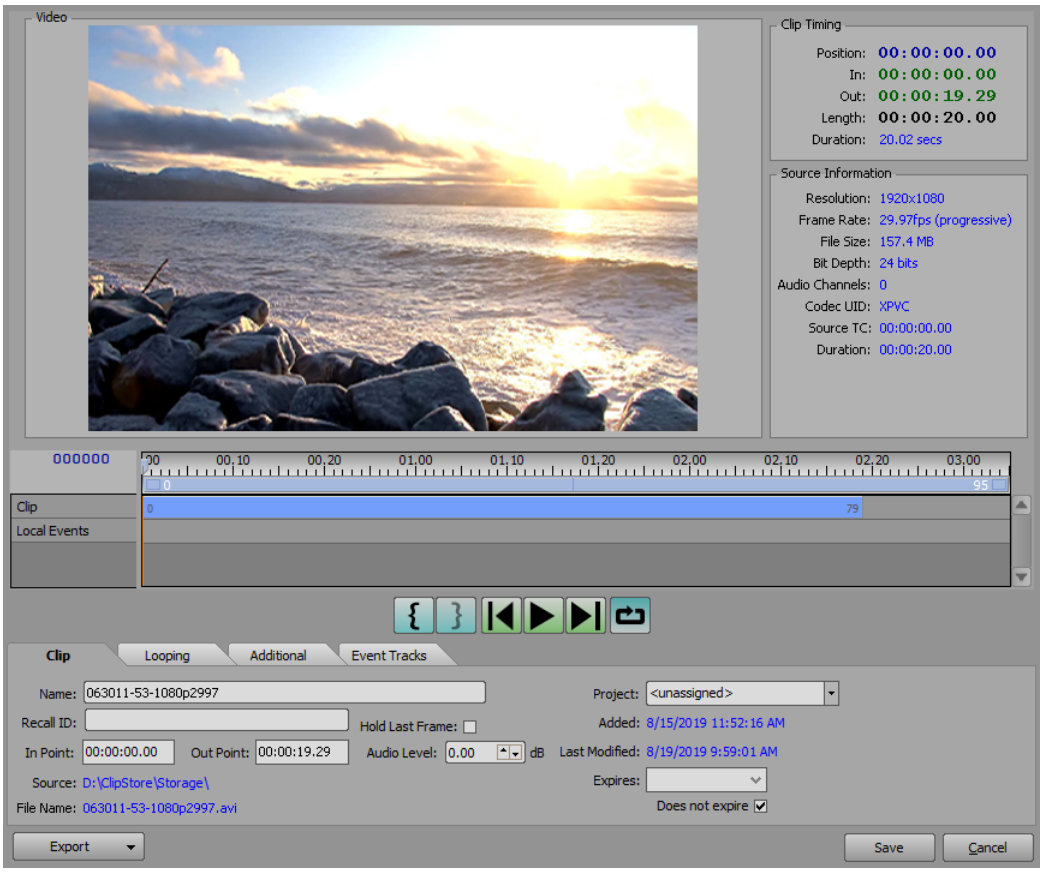
For More Information on...

- loading a clip on a server channel, refer to Loading a Clip in the Server Channels.
- editing a clip, refer to Editing a Clip/Adding a Sub Clip.

Editing a Clip / Adding a Sub Clip

Use the **Edit Clip** and **Add Sub Clip** dialogs to configure metadata for a clip. The **Add Sub Clip** dialog has the same interface as the **Edit Clip** dialog but is used to create a trimmed clip from an existing clip. A video can have multiple sub-clips defined within it, each with distinctive in/out points. Loading a sub-clip for playout is identical to loading a normal clip.

- The **Edit Clip** dialog can be accessed by right-clicking in the **Clip Browser** window and **Server Channels** window.
- The **Add Sub Clip** dialog can only be accessed by right-clicking in the **Clip Browser** window.



Video

This section displays the clip that has been selected for editing or creating a sub clip. The clip is rendered over a checkerboard pattern so that the alpha channel is visible unless the clip is full frame.

The following actions and commands can be performed:

- Use the timeline marker to select a specific frame in the timeline.
- The video can be scrubbed using the timeline bar; or using common NLE shortcuts like H,J,K to play/rewind at different speeds.
- During scrubbing, audio can be heard by configuring an **Audio Monitor** device in the **Hardware Setup**.
- Right-click inside the **Clip**, **Local Events**, or **Event Track** timeline to access the shortcut menu.

★Event Track timelines are available if global event tracks have been configured in the **Clip Store Manager** and added as a processor in the **INcoder**. They will appear in the timeline as named in the **Clip Store Manager**. They can be assigned as local events by selecting **Preset Event Track > Copy Events to Local Event Track** from the shortcut menu.

- **Looping > Set Loop Start** — select the current position of the timeline marker as the start of the video loop.
- **Looping > Set Loop End** — select the current position of the timeline marker as the end of the video loop.
- **Looping > Reset Loop** — clear the loop settings.
- **Clear In Point** — clear a configured start time for the clip.
- **Clear Out Point** — clear a configured end time for the clip.
- **Clear In and Out Points** — clear the configured start and end times for the clip.
- **Update Clip Thumbnail** — update the thumbnail for the clip to reflect any edits or to use a specific frame as the thumbnail in the Clip Browser.
- **Add Event > Rosstalk Event** — add a RossTalk event directly onto the clip timeline.
- **Add Event > Scene Director Trigger** — add a Scene Director trigger event directly onto the clip timeline.
- **Rename Event** — rename a selected RossTalk or Scene Director trigger event on the clip timeline.
- **Delete Event** — delete a selected RossTalk or Scene Director trigger event on the clip timeline.

For More Information on...

- using global event tracks, refer to the *XPression Clips Workflow User Guide*.
- setting up an audio monitor device, refer to Configuring the Video Preview and Audio Monitor .
- updating the thumbnail in the Clip Browser, refer to Updating the Thumbnail in the Clip Browser .
- looping, refer to Looping Tab.

Video Controls

	**Set In Point**	Set the start time of the clip where the timeline marker has been positioned. Keyboard shortcut 'I' can be used to mark an in point.
	**Set Out Point**	Set the end time of the clip where the timeline marker has been positioned. Keyboard shortcut 'O' can be used to mark an out point.
	**Move current position to in point**	Return to the in point of the clip.
	**Start playback**	Play the clip.
	**Move current position to end point**	Go to the end of the clip.
	**Loop**	Loop the playback of the clip. Press the button a second time to turn off looped playback.

Clip Timing (read-only)

Position — indicates the position of the timeline marker in the timeline for the clip.

In — displays the in point for the clip.

Out — displays the displays the out point for the clip.

Length — displays the total duration of the clip in frames.

Duration — displays the time length of the clip.

Source Information (read-only)

Resolution — displays the video format of the source clip.

Frame Rate — displays the frame rate of the source clip.

File Size — displays the file size of the source clip.

Bit Depth — displays the quality of the signal quantization of the source clip.

Audio Channels — displays the amount of embedded audio channels used in the source clip.

Codec UID — displays the type of encoding used for the source clip.

Source TC — displays the timecode of the source clip.

Duration — displays the total duration in frames of the source clip.

Clip Tab

Name — enter or edit a name for the clip.

Recall ID — enter an ID number for the clip when it is recalled.

Hold Last Frame — hold the last frame of the clip when playout ends. Do not select this checkbox if taking the clip offline automatically using an out transition.

In Point — enter a starting point for the clip.

Out Point — enter an ending point for the clip.

Audio Level — enter or select a volume level for the clip in decibels. Changing the audio level in the Edit Clip dialog box will not affect live clips on a Server Channel. However, it will apply to the audio monitor if an audio monitor is configured in the Hardware Setup.

Source (read-only) — lists the location where the clip is stored.

File Name (read-only) — lists the name and file extension of the clip.

Project — select a project for the clip.

Added (read-only) — lists the date the clip was added to the clip store.

Last Modified (read-only) — lists the date the clip was last edited.

Expires — use the calendar to select an expiry date for the clip, if necessary.

Does not expire — use no expiry date for the clip.

Looping Tab

Enable Looping — enable looping for the clip.

Multi-Point — enable the multi-point loop settings.

Multi-Point Loop Settings

Use the multi-point loops to create free running 4-point and 3-point loops:

- 4-point loops use a frame in point, a loop section of start and end frames, and a frame out point.
- 3-point loops use a loop section of start and end frames with either a frame in point the same as the loop start frame or a frame out point the same as the loop end frame.

Loop Start	Enter a starting frame for the loop within the clip time.
Loop End	Enter an end frame for the loop within the clip time.
Loop Count	Enter or select an amount of playbacks the clip will loop before stopping. Use 0 for infinite looping.
	Set the start time or end time of the loop at the position of the timeline marker.
	Skip to the start of the loop.

 Skip to the end of the loop.

For More Information on...

- creating a 4-point loop, refer to Creating a 4-Point Loop .
- creating a 3-point loop, refer to Creating a 3-Point Loop .

Additional

Original File Name (read-only) — displays the original name of the file as uploaded.

Premultiplied / Shaped — select this checkbox to multiply/shape the fill signal color information by the luminance information in the key signal.

Event Tracks

Event tracks are configured in the **Clip Store Manager**, added as processors in the **INcoder**, and then available to use when editing clips from the **Clip Browser**. The **Event Tracks** tab provides a list of available global event tracks.

Assigned Event Tracks — lists the event tracks assigned to the clip.

Available Event Tracks — lists the available event tracks that can be assigned to the clip.

Add Track — select an available event track and select this button to assign it to the clip.

Remove Track — select an assigned event track and select this button to remove it from the clip.

For More Information on...

- using global event tracks, refer to the *XPression Clips Workflow User Guide*.

Other

Export — use this list to select one of the following options for exporting a clip:

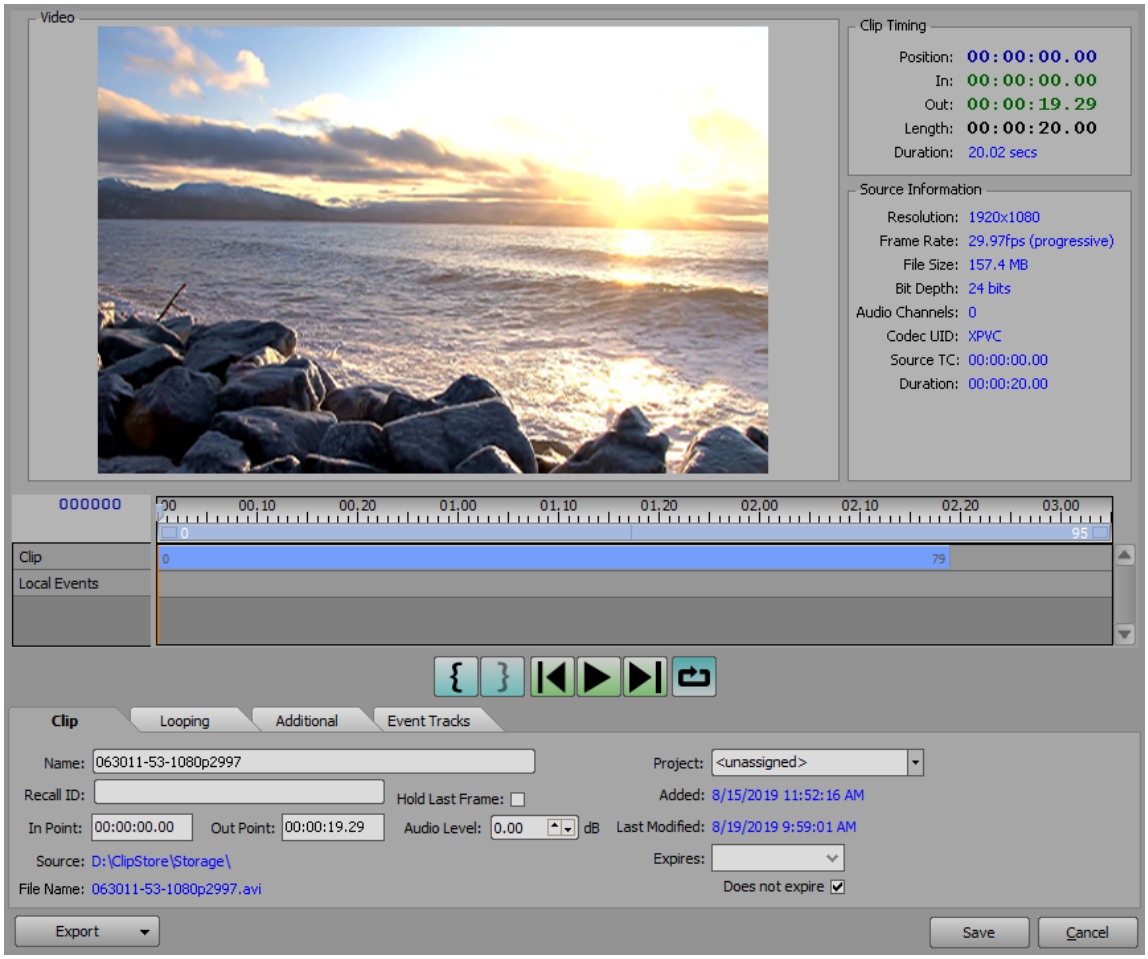
- **To Video** — open the **Export to Video** dialog to save the clip as an AVI or MOV video file.
- **Still to Disk** — open a save dialog to save a still as a Targa (.TGA), Targa (RLE Compressed) (.TGA), Portable Network Graphic (.PNG), or JPEG (.JPG) format image file.
- **Still to Clipstore** — open the **Send to Clip Store** dialog to send a still to the Clip Store database to be used within the Clips workflow.
- **Interlaced Settings > Frame Based** — capture the image file without deinterlacing. This setting works best for scenes with minimal motion.
- **Interlaced Settings > Field (line doubled)** — capture the image file with each line doubled. For example, it will replace field two with a duplicate of field one.
- **Interlaced Settings > Field (line interpolated)** — capture the image file by interpolating between odd lines to form even lines.

Updating the Thumbnail in the Clip Browser

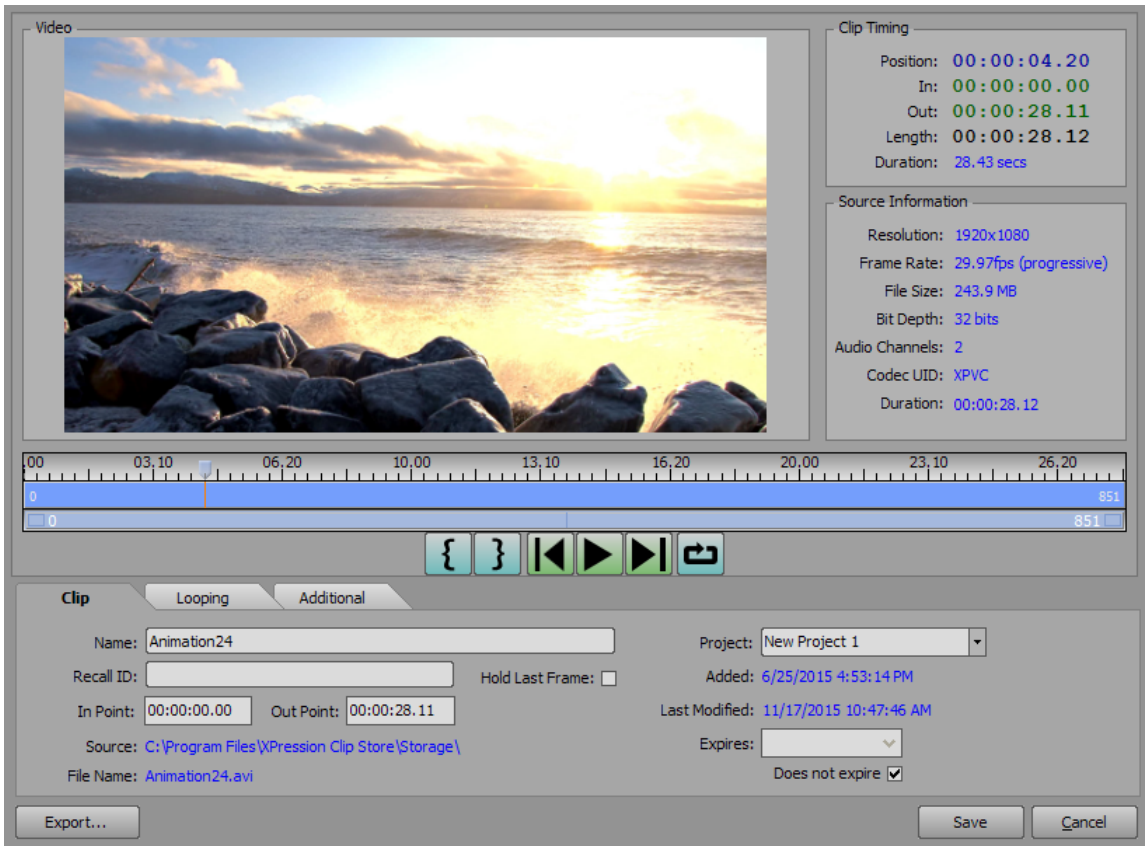
You can update the thumbnail in the **Clip Browser** to provide a more representative or preferred image to illustrate the content of the clip.

1. In the **Clip Browser**, right-click on a clip and select **Edit Clip** or **Add Sub Clip**.

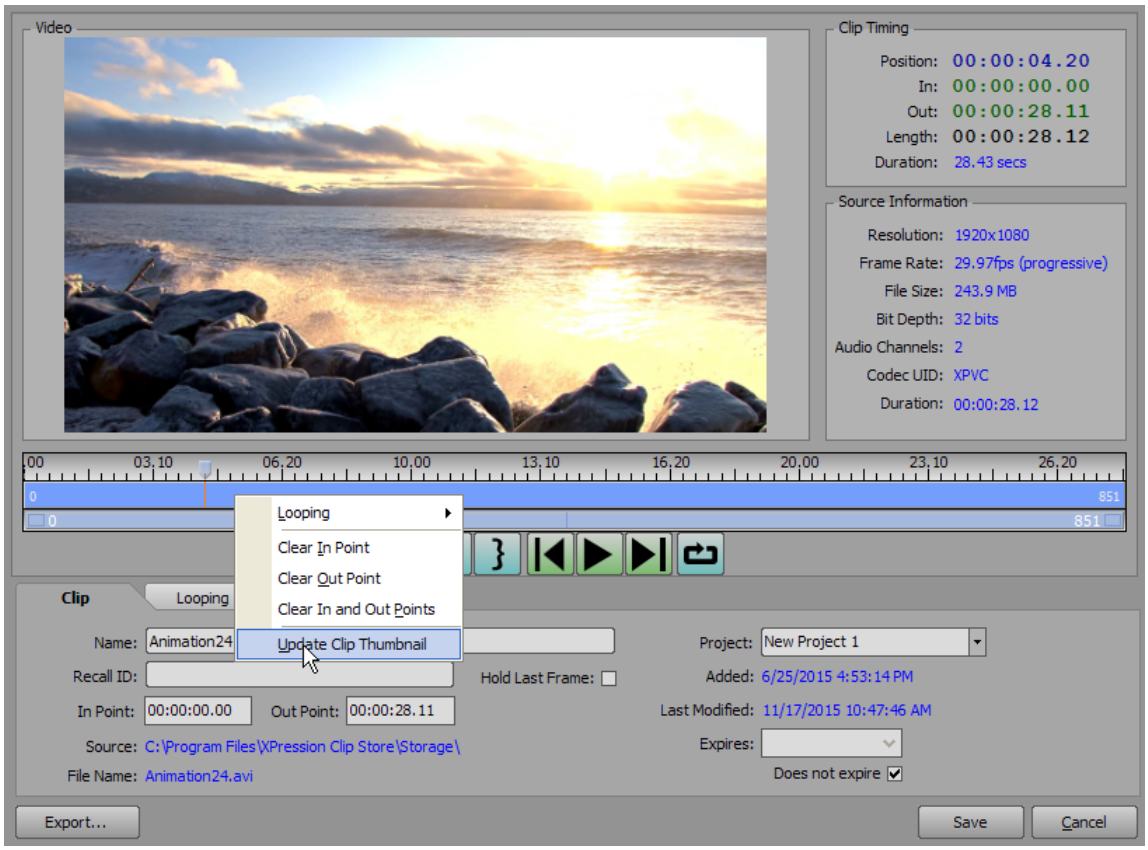
   The **Edit Clip / Add Sub Clip** dialog opens.



2. In the **Edit Clip** or **Add Sub Clip** dialog, move the timeline marker to a desired frame in the timeline.

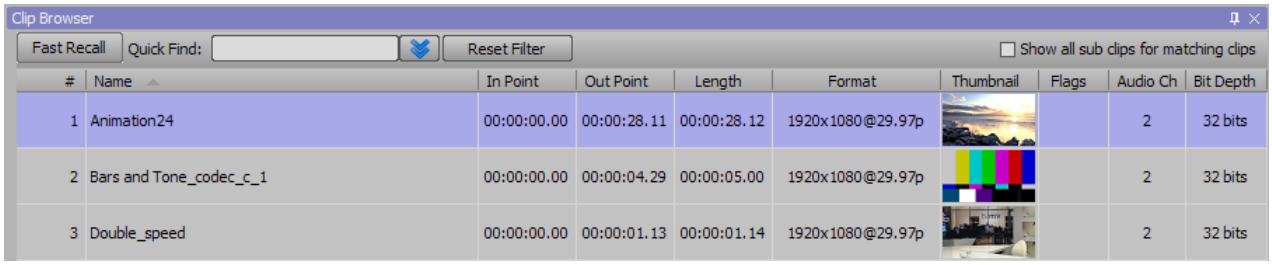


3. Right-click inside the timeline and select **Update Clip Thumbnail** from the shortcut menu.



4. Click **Save**.

   The thumbnail for the clip is updated in the **Clip Browser**.



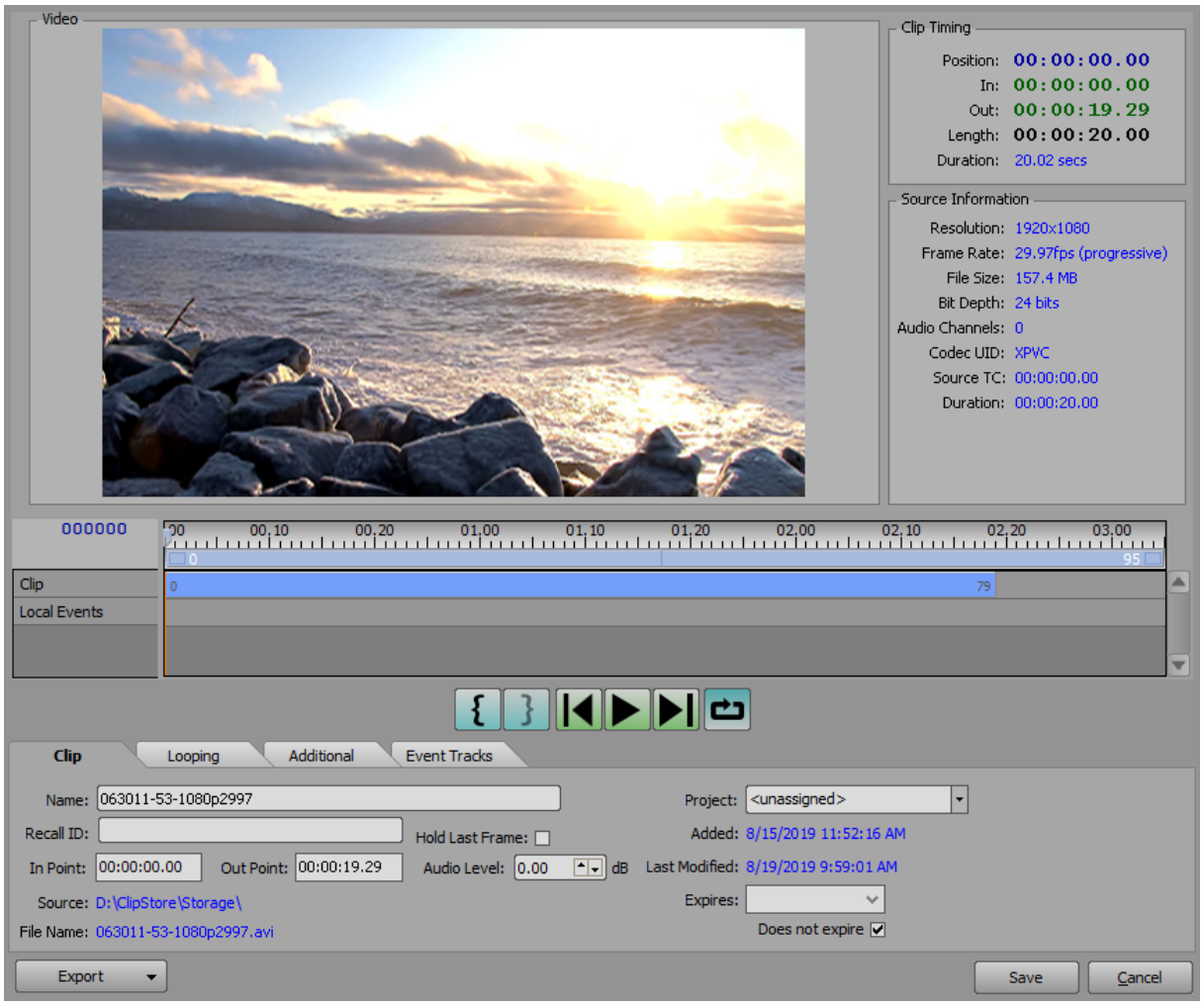
Creating a 4-Point Loop

4-point loops use a frame in point, a loop section of start and end frames, and a frame out point.

To create a 4-point loop:

1. In the **Edit Clip / Add Sub Clip** dialog, select the **Clip** tab.

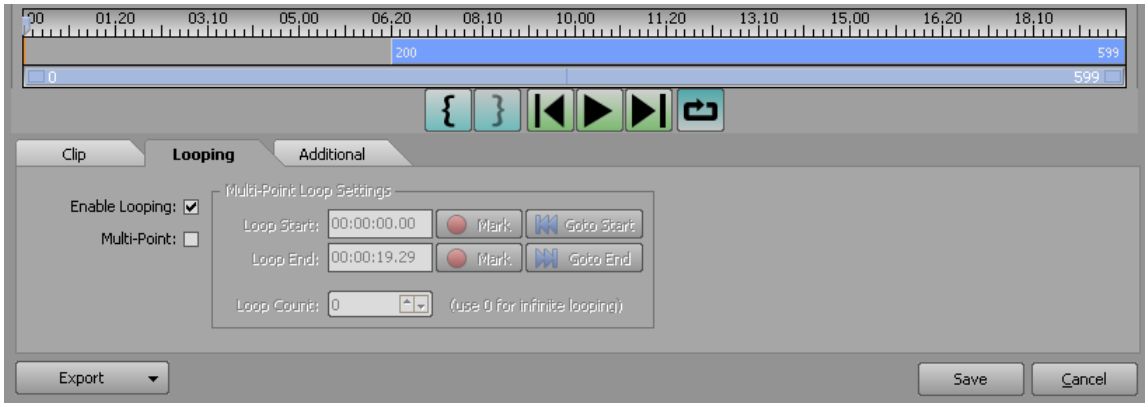
   The **Clip** tab opens.



2. In the **In Point** field, enter a frame in point.
3. In the **Out Point** field, enter a frame out point.

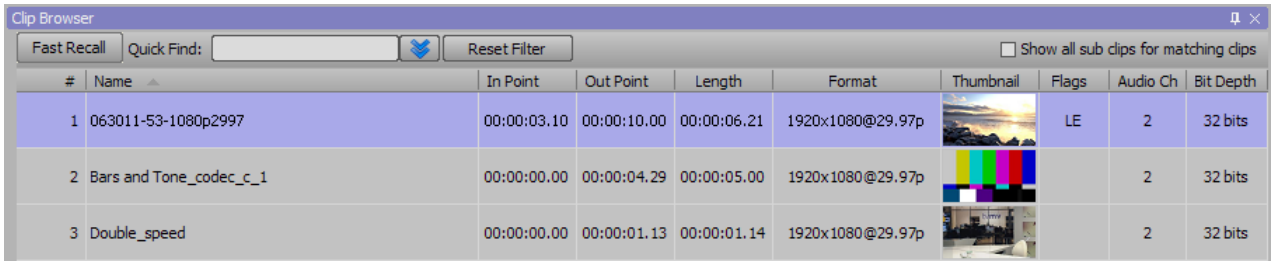
4. Select the **Looping** tab.

   The **Looping** tab opens.



5. In the **Looping** tab, select the **Enable Looping** checkbox.
6. Select the **Multi-Point** checkbox.
7. In the **Multi-Point Loop Settings** section:
   - In the **Loop Start** field, enter a frame start for the loop.
   - In the **Loop End** field, enter a frame stop for the loop.
   - In the **Loop Count** field, enter or select the number of times to play out the loop. Enter **0** for infinite looping.
8. Select **Save**.

   The edited clip is updated in the **Clip Browser**.



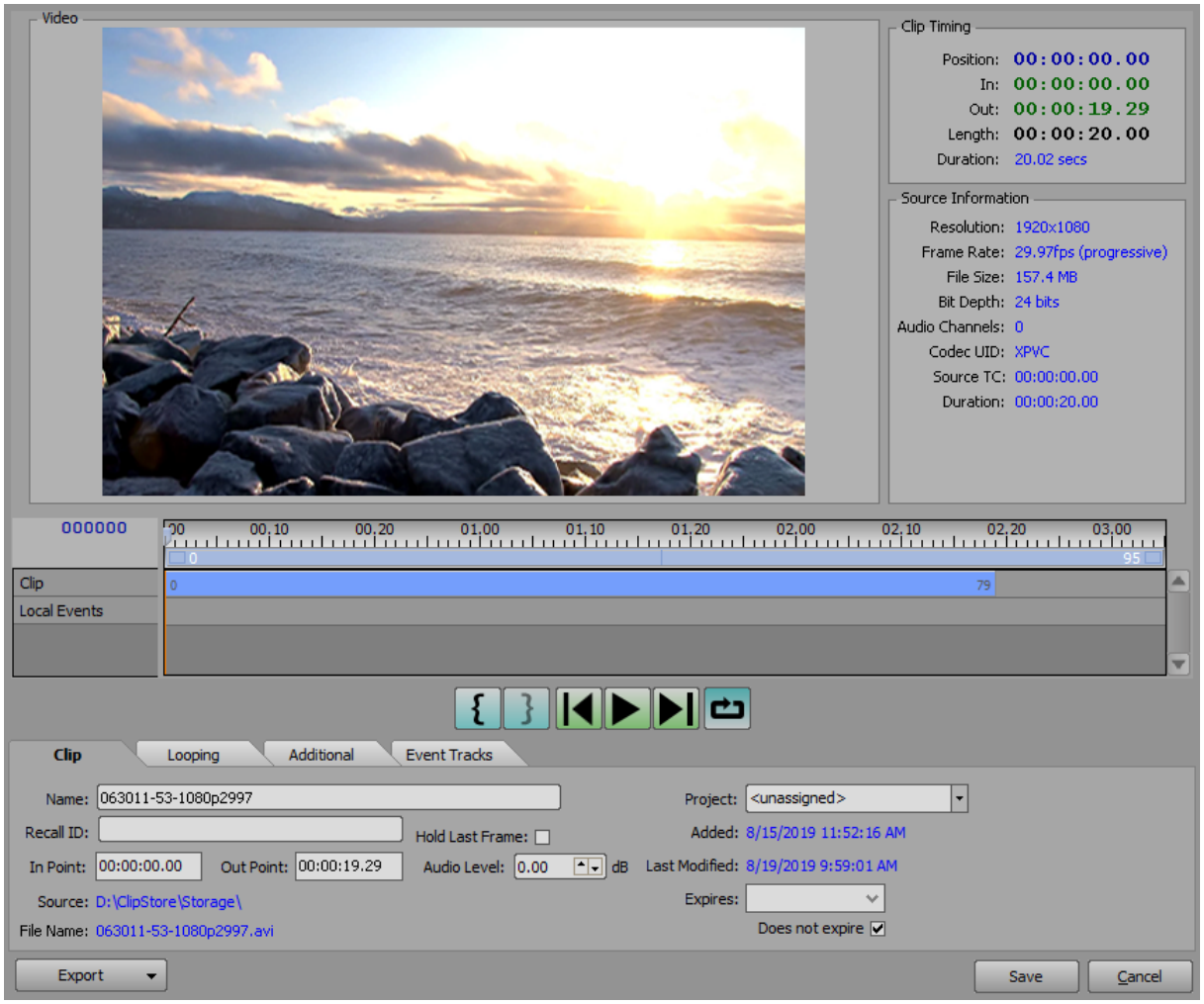
Creating a 3-Point Loop

3-point loops use a loop section of start and end frames with either a frame in point the same as the loop start frame or a frame out point the same as the loop end frame.

To create a 3-point loop:

1. In the **Edit Clip / Add Sub Clip** dialog, select the **Clip** tab.

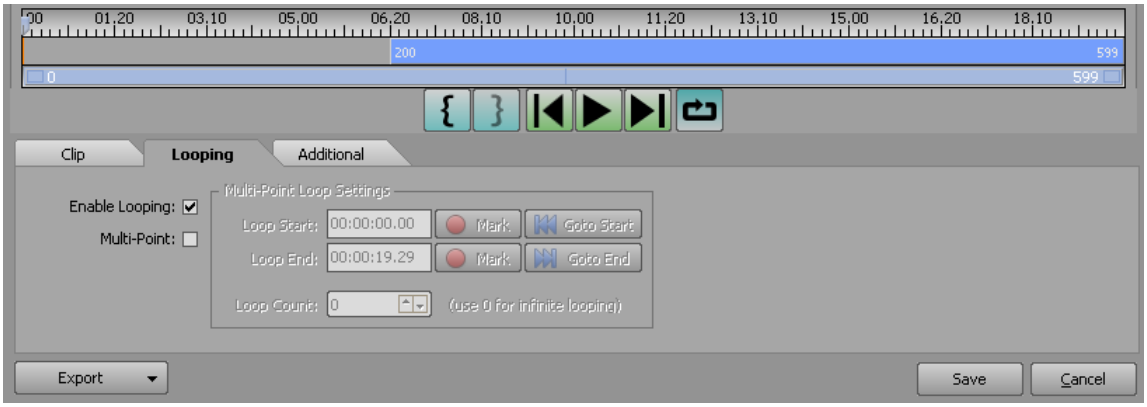
   The **Clip** tab opens.



2. In the **In Point** field, enter a frame in point.
3. In the **Out Point** field, enter a frame out point.

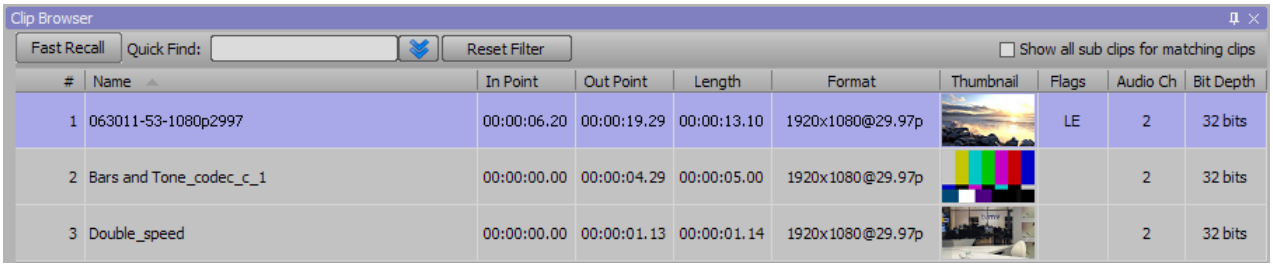
4. Select the **Looping** tab.

   The **Looping** tab opens.



5. In the **Looping** tab, select the **Enable Looping** checkbox.
6. Select the **Multi-Point** checkbox.
7. In the **Multi-Point Loop Settings** section:
   - In the **Loop Start** field, enter a frame start for the loop.
   - In the **Loop End** field, enter a frame stop for the loop.
   - In the **Loop Count** field, enter or select the number of times to play out the loop. Enter **0** for infinite looping.
8. Select **Save**.

   The edited clip is updated in the **Clip Browser**.



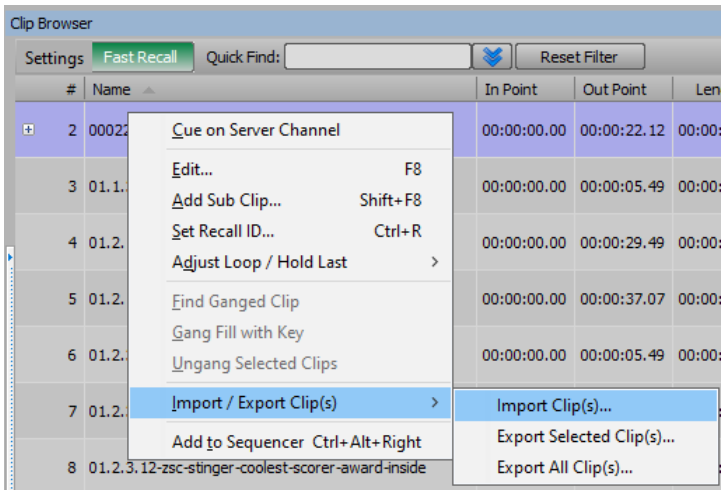
Importing / Exporting Clips

Clips and subclips can be imported from another project or exported to a **.XCP** file and saved to be used in another project.

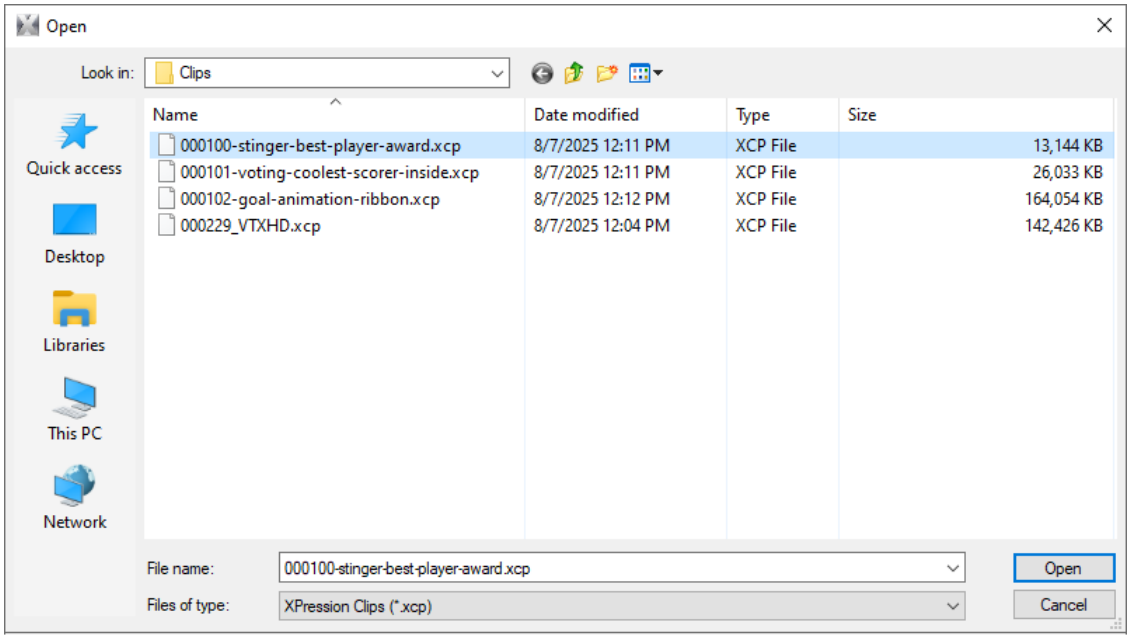
You can bulk export multiple clips and subclips.

To import clips:

1. In XPression Clips, select any spot in the **Clip Browser**, right-click and select **Import / Export Clip(s) > Import Clip(s)**.



2. In the **Open** window, navigate to the folder containing your clips and select the clip to import.



3. Then select **Open**.

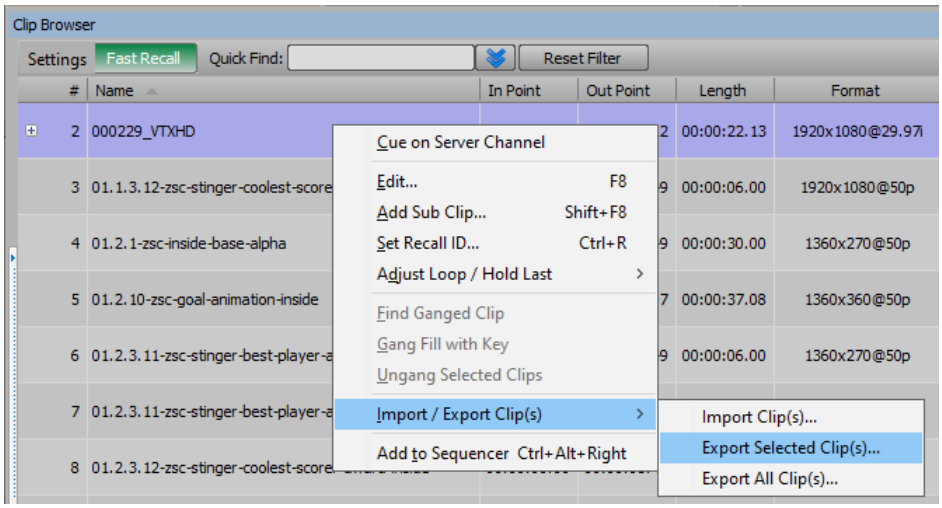
   If the clip you selected is a duplicate of one currently in the **Clip Browser**, you have the option to import the clip with a new GUID or skip the import.

   If you import a duplicate clip, the new clip will assume the **Recall ID** of the original clip and the original clip will have no **Recall ID**.

To export clips:

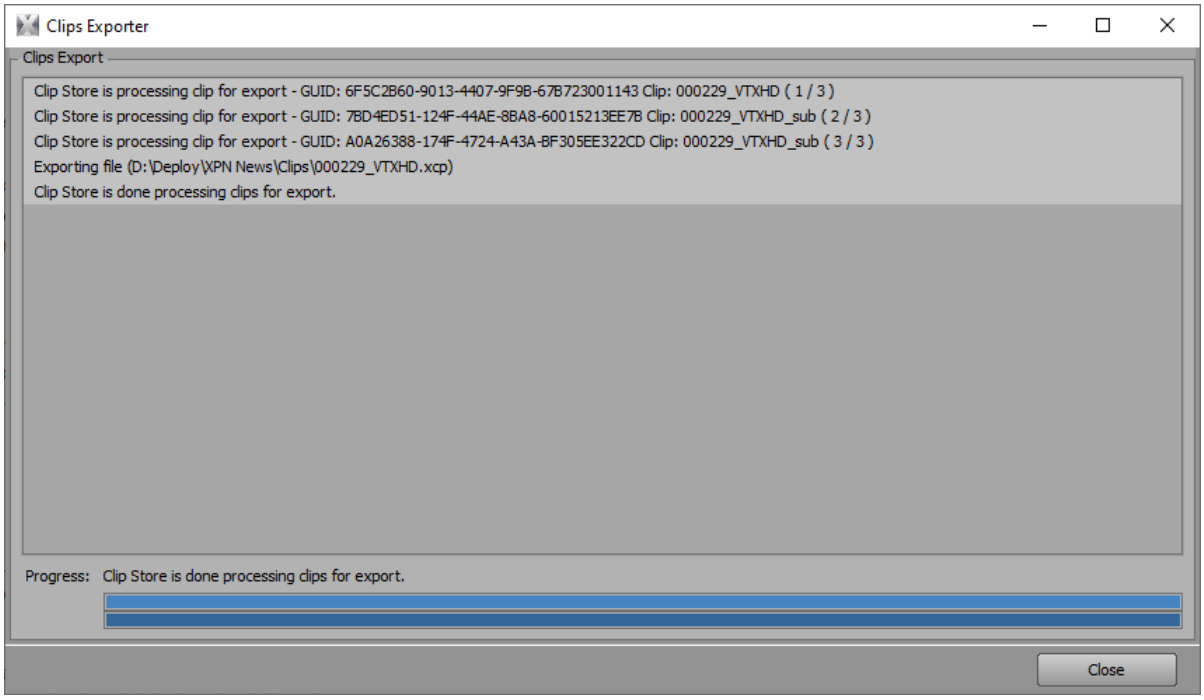
1. In XPression Clips in the **Clip Browser**, right-click a clip and select **Import / Export Clip(s) > Export Selected Clip(s)**.

   Alternatively, press **Shift** and select the first and last clip, or press **Ctrl** and select individual clips to export multiple clips.



2. In the **Save XPression Clips** window, navigate to the folder where you want to save the clip.
3. In the **File name** field, enter a name for the clip and select **Save**.

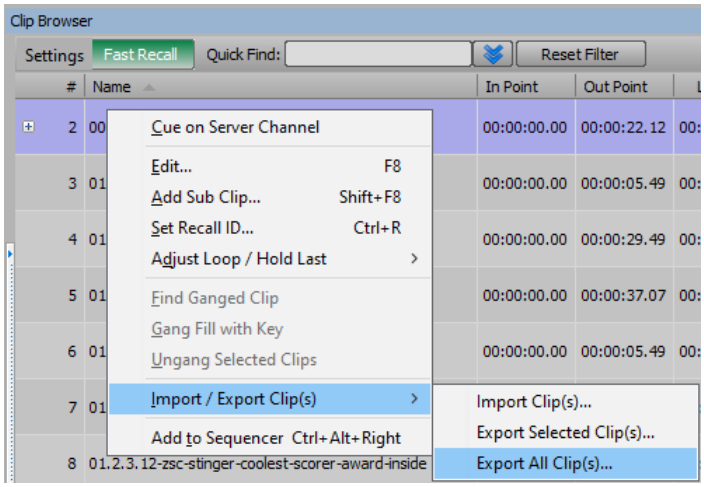
   The **Clip Exporter** window opens displaying the progress of the export.



4. When the Clip Store has completed processing the clip, select **Close**.

To export all clips in the clip browser:

1. In XPression Clips, select any spot in the **Clip Browser**, right-click and select **Import / Export Clip(s) > Export All Clip(s)**.



2. In the **Save XPression Clips** window, navigate to the folder in which to save your clips.
3. In the **File name** field, enter a name for the group of clips and select **Save**.

   The **Clip Exporter** window opens displaying the progress of the export.
4. When the Clip Store has completed processing the clip, select **Close**.

Sequences

XPression Clips uses the Sequencer to play out the scenes in a project.

The following topics are discussed in this section:

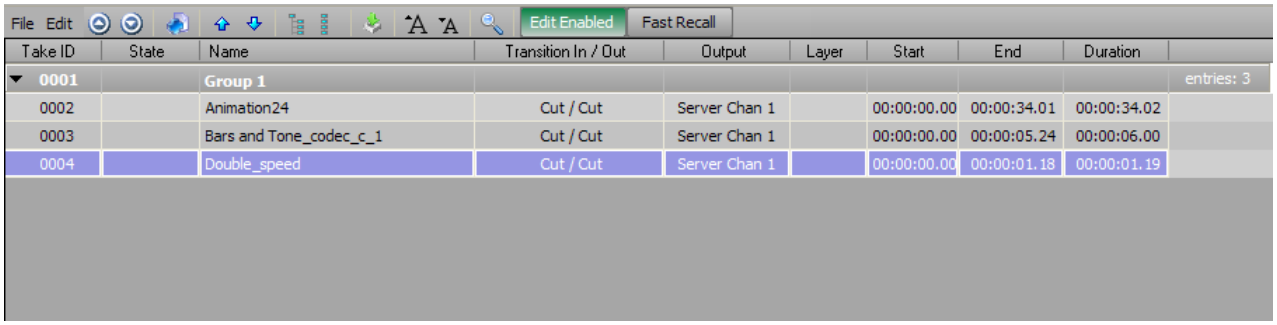
Creating a Sequence

After you have created all the necessary clips for your project, you can organize them for playout in the **Sequencer**. Clips can be organized into groups and the groups can be configured to automatically play out the take items in the group.

To create a sequence:

1. Load clips into the **Clip Browser**.
2. In the **Clip Browser**, select and drag the clips to play out into the **Sequencer**.

   Each clip added to the **Sequencer** list is given a **Take ID** and becomes a take item.



To reorder take items in the Sequencer

- Select and drag a take item to a new position in the **Sequencer** list.

Toolbar tools, shortcut menu commands, and keyboard shortcuts can also be used to reorder take items.

To group take items in the sequencer:

1. Select the **Create a New Group** button in the toolbar.

   A take item group is added to the **Sequencer**.
2. Click in the **Name** column for the group and enter a new name for the group.
3. Select and drag take items from the **Sequencer** list into the new group.

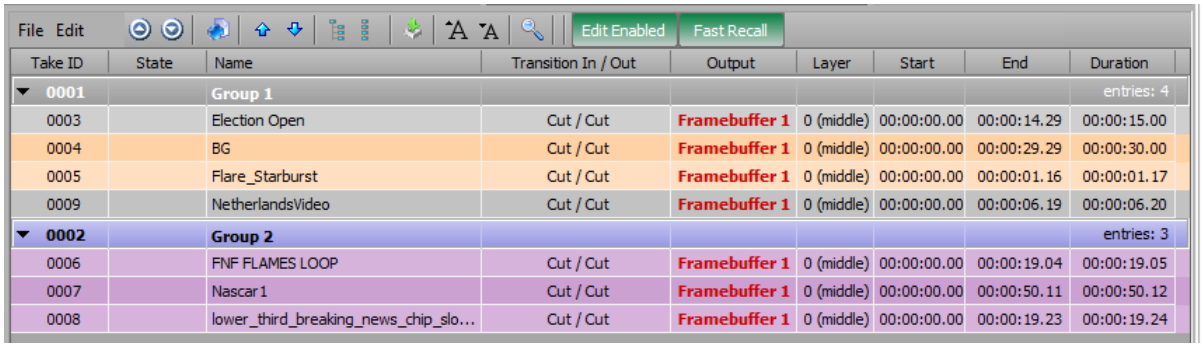
To color code take items:

1. Select one or more take items and/or take item groups.
2. Right-click and select **Color**.

   The **Color** menu opens.
3. Select a highlight color from the **Color** menu.

4. The background of the selected take items in the **Sequencer** list is shaded with the selected color.

   Coloring the background of a take item group colors each take item in the group.



Take ID	State	Name	Transition In / Out	Output	Layer	Start	End	Duration
0001		**Group 1**						entries: 4
0003		Election Open	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:14.29	00:00:15.00
0004		BG	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:29.29	00:00:30.00
0005		Flare_Starburst	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:01.16	00:00:01.17
0009		NetherlandsVideo	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:06.19	00:00:06.20
0002		**Group 2**						entries: 3
0006		FNF FLAMES LOOP	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:19.04	00:00:19.05
0007		Nascar1	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:50.11	00:00:50.12
0008		lower_third_breaking_news_chip_slo...	Cut / Cut	Framebuffer 1	0 (middle)	00:00:00.00	00:00:19.23	00:00:19.24

To adjust the font size of take items:

- Select the **Increase the size of the sequencer font** button to make the font size larger.
- Select the **Decrease the size of the sequencer font** button to make the font size smaller.

For More Information on...

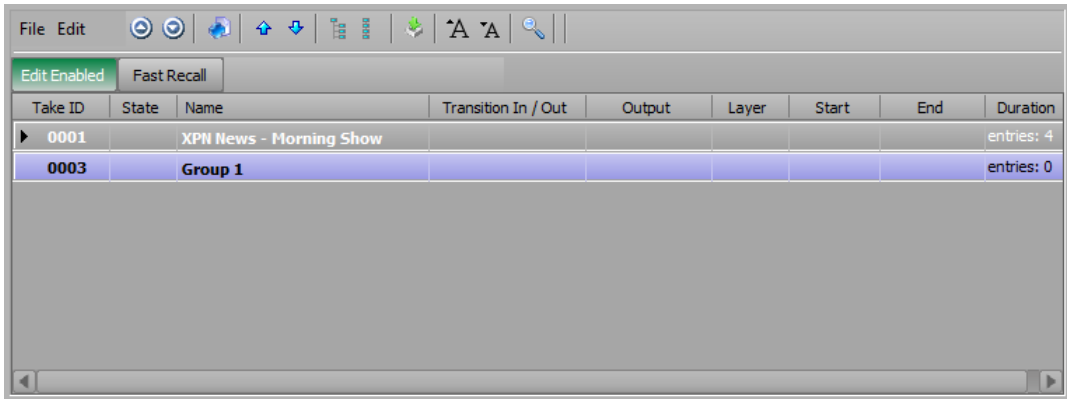
- controlling sequence playout, refer to Controlling Sequence Playout.

Controlling Sequence Playout

Use the **Sequencer** to organize and control the playout of scenes and scene groups in XPression Clips.

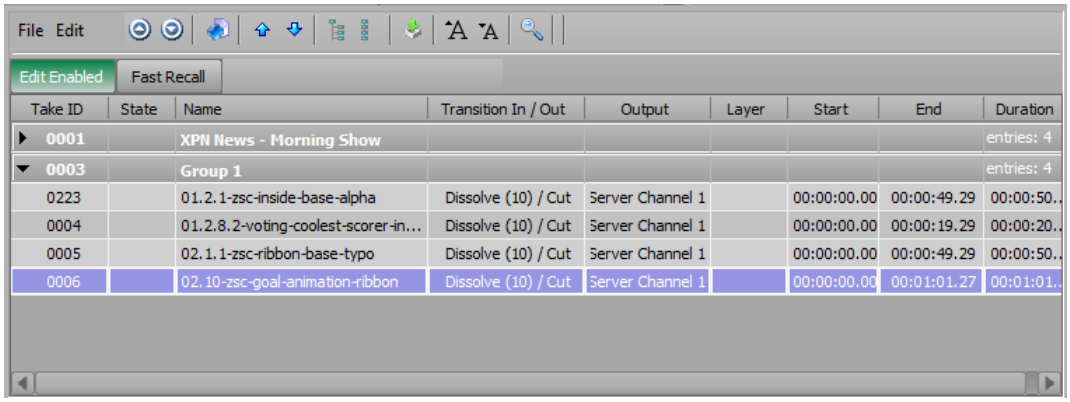
To control sequence playout:

1. In the **Sequencer**, select the **Create a New Group** button in the toolbar to create a take item group to contain the take items to play out.



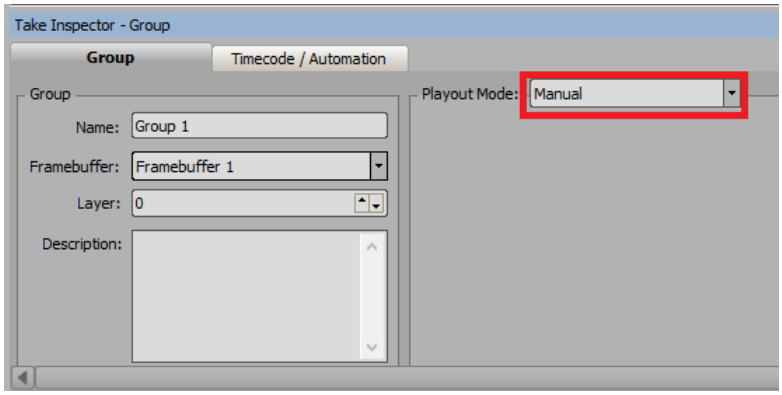
2. From the **Clip Browser**, select and drag clips into the new take item group in the **Sequencer**.

   The selected clips are added to the take item group.



3. Select and drag a take item to a new position in the group to create the playout order.
4. Select the take item group that contains the take items to play out.

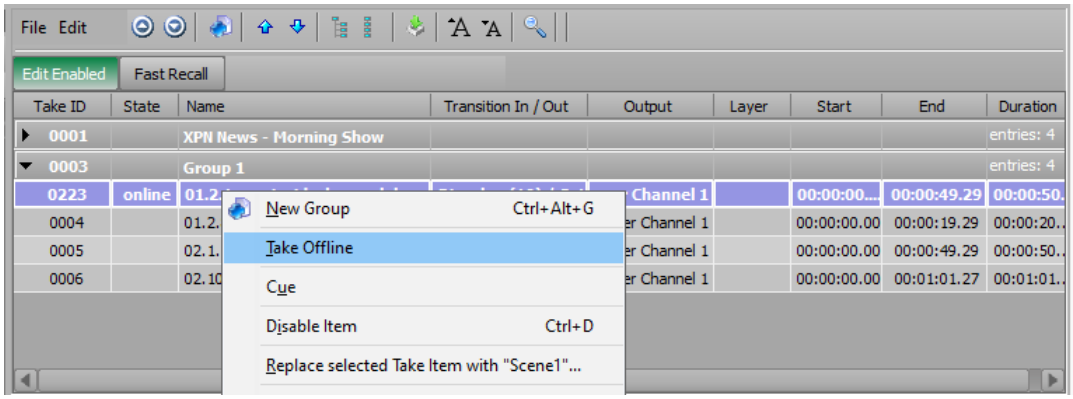
5. In the **Take Inspector**, in the **Group** tab, from the **Playout Mode** drop-down, select **Manual**.



6. In the **Sequencer**, double-click a take item to play out the selected take item.

   The selected take item plays out through the default output, and the **State** changes to **online** for take items or **Active** for take item groups.

7. To stop playout of an **online** or **Active** take item, right-click the take item and from the shortcut menu, select **Take Offline**.



Keyboard Control

The keyboard number pad can also be used to control the playout of a sequence.

The following keyboard shortcuts are available in the **Sequencer**:

- **Cursor Up Arrow** — select the previous take item in the sequence.
- **Cursor Down Arrow** — select the next take item in the sequence.
- **Cursor Left Arrow** — collapse an expanded sequence group.
- **Cursor Right Arrow** — expand a collapsed sequence group.
- **Home** — select the first take item in the sequence.
- **End** — select the last take item in the sequence.
- **Ctrl-Cursor Up Arrow** — move the selected take item up one position in the sequence.
- **Ctrl-Cursor Down Arrow** — move the selected take item down one position in the sequence.
- **Delete** — remove the selected take item from the sequence.
- **Number Pad Enter** — play out the selected take item. This shortcut requires the **Fast Recall** button to be enabled.
- **Number Pad +** — play out the selected take item and select the next take item in the sequence.
- **Number Pad -** — take the current take item offline if it is online.
- **Number Pad .** — cue a selected take item prior to putting them online by pressing the decimal key on the number pad. Cueing them will pre-cache all video clips in the scene. Multiple items can be cued and brought to air simultaneously.
- **Number Pad *** — focus a take item. This shortcut requires the **Fast Recall** button to be enabled.

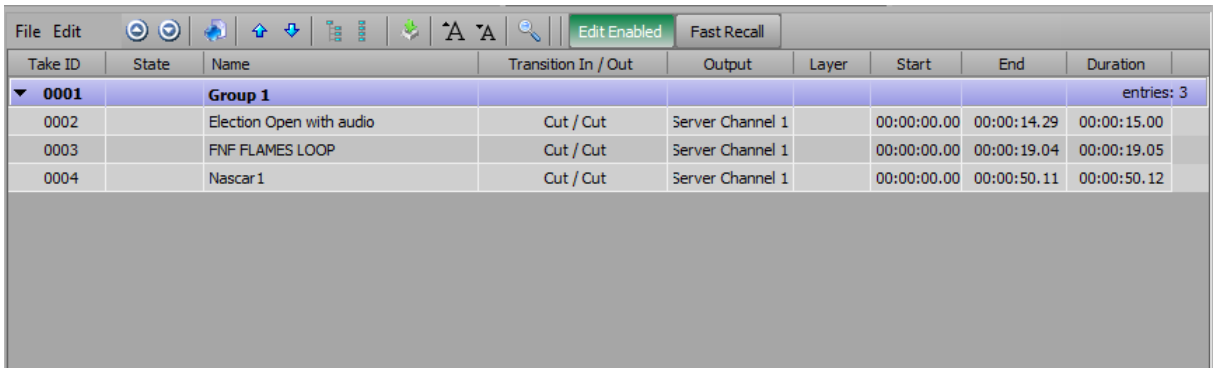
Playing Out a Sequence in Manual Mode

Sequences can be played out in **Manual** or **Automatic** mode. These instructions describe how to use **Manual** mode.

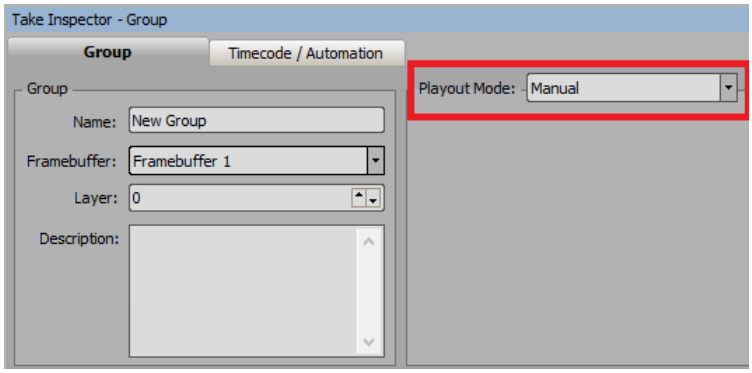
See Playing Out a Sequence in Automatic Mode for instructions for that mode.

To play out a sequence in Manual mode:

1. In the **Sequencer**, select the take item group that contains the take items to play out.



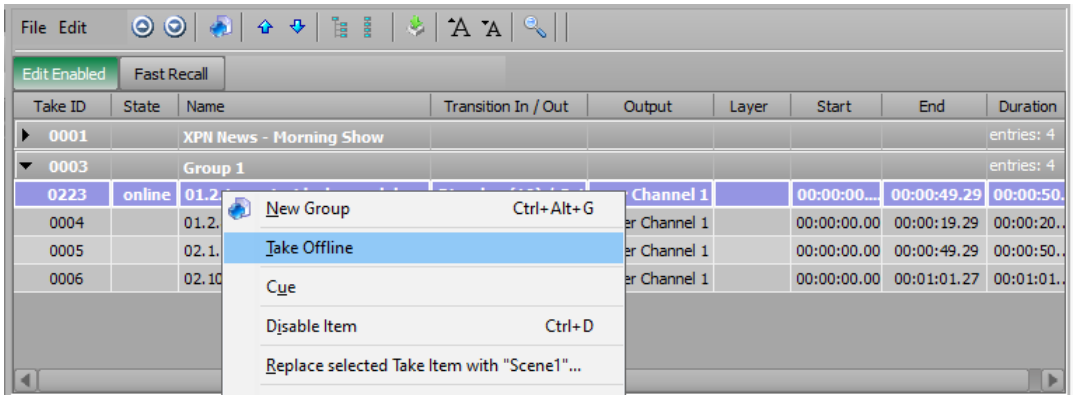
2. In the **Take Inspector**, from the **Playout Mode** drop-down, select **Manual**.



3. In the **Sequencer**, select the take item to play out.

   The selected take item plays out through the default output.

4. To stop playout of a take item, right-click the take item and select **Take Offline** from the shortcut menu.



For More Information on...

- creating sequences, refer to Creating a Sequence.
- controlling sequence playout, refer to the procedure Controlling Sequence Playout.

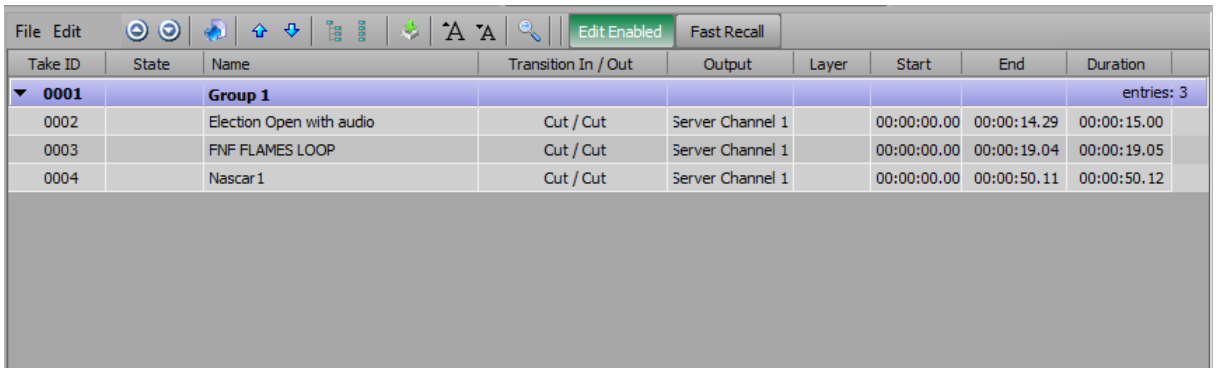
Playing Out a Sequence in Automatic Mode

Sequences can be played out in **Manual** or **Automatic** mode. These instructions describe how to use **Automatic** mode.

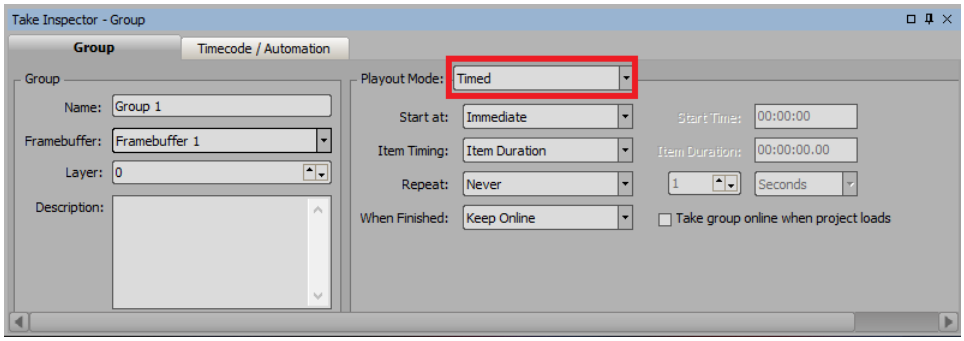
See Playing Out a Sequence in Manual Mode for instructions for that mode.

To play out a sequence in automatic mode:

1. In the **Sequencer**, select the take item group that contains the take items to play out.



2. In the **Take Inspector**, from the **Playout Mode** drop-down, select **Timed**.



3. From the **Start at** drop-down, select the playout start time for the group.

   The options are:

   - **Immediate** — start playout immediately upon selecting a take item group for playout.
   - **Clock Time** — start playout at the time set in the **Start Time** field after selecting a take item group for playout.

4. From the **Item Timing** drop-down, select the item level on which to base playout duration.

   The options are:

   - **Item Duration** — use the playout durations set for the items in the group.

     The playout duration for the item group equals the total of all the item durations.

   - **Group Duration** — set a playout duration for the entire group.

     Set the duration in the **Group Duration** field.

   - **Fixed Item Duration** — use the specified playout duration for each of the items in the group regardless of the durations of the individual take items.

     Set the duration in the **Item Duration** field.

- **Scene Director** — use the default scene director of a scene to control when an item group should advance.
- **Advance Manually** — double-click the scene group or use a script to advance the item group.

5. From the **Repeat** drop-down, select the number of times to playout the item group.

   The options are:

   - **Never** — do not repeat playout; only play out the item group once.
   - **When Done** — repeat the playout of an item group when the playout ends.

     With this option, playout repeats until it is manually stopped.
   - **After** — repeat the playout of an item group after the time set in the **Time Value** field and **Time Unit** drop-down.

     With this option, playout repeats until it is manually stopped.
   - **Every** — repeat the playout of an item group at the time interval set in the **Time Value** field and **Time Unit** drop-down.

6. From the **When Finished** drop-down, set the action to complete after finishing the playout of the take item group.

   The options are:

   - **Keep Online** — leave the take item group status as **Active**, making the group available for immediate playout.
   - **Take Offline** — change the take item group status to **Offline**.

7. In the **Sequencer**, double-click the take item group that contains the take items to playout.

   The selected take item group plays out through the default output, and the **State** changes to **Active**.

For More Information on...

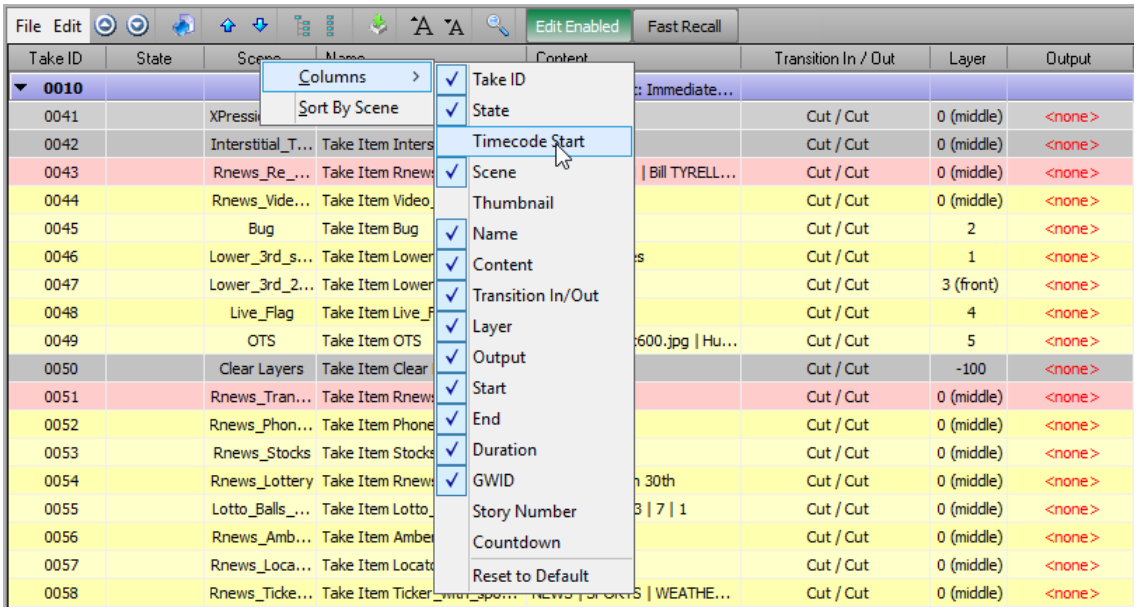
- creating sequences, refer to Creating a Sequence.
- controlling sequence playout, refer to the procedure Controlling Sequence Playout.

Playing Out a Take Item or Take Item Group Using Timecode

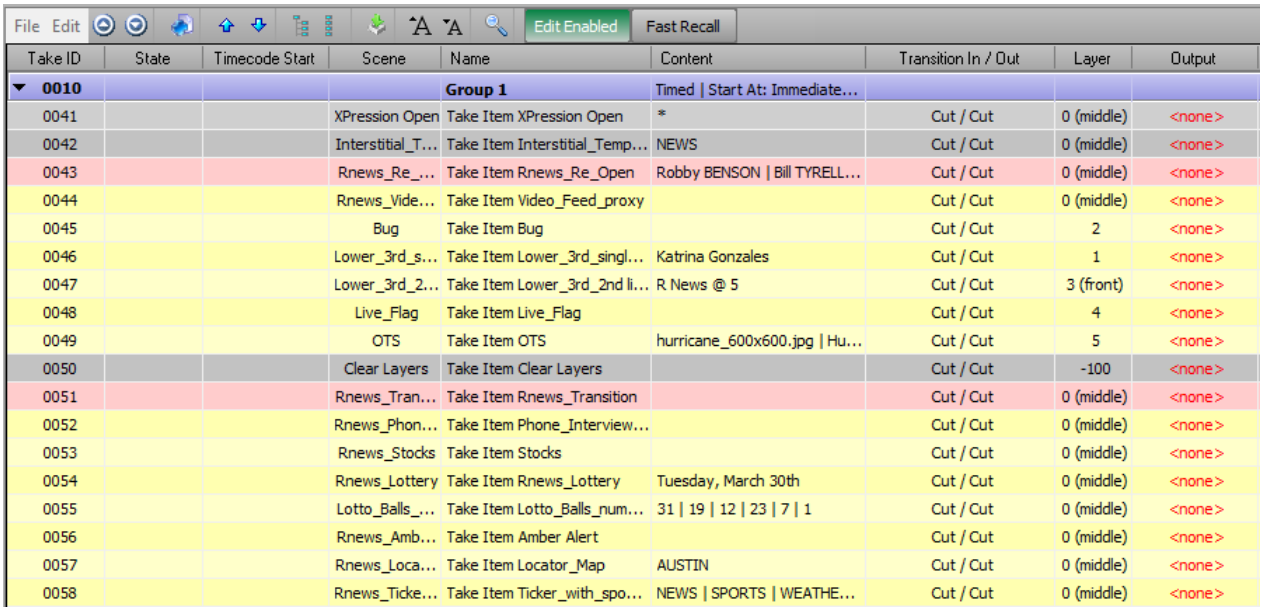
You can play out take items or take item groups in the Sequencer using a timecode source. A timecode source needs to be configured in the **Hardware Setup** before using timecode with a take item group.

To play out a take item or group using a timecode source:

1. In the **Sequencer**, enable timecode by right-clicking inside the column headers of the sequence list and selecting **Columns > Timecode Start**.



The **Timecode Start** column is added to the displayed columns of the sequence list.

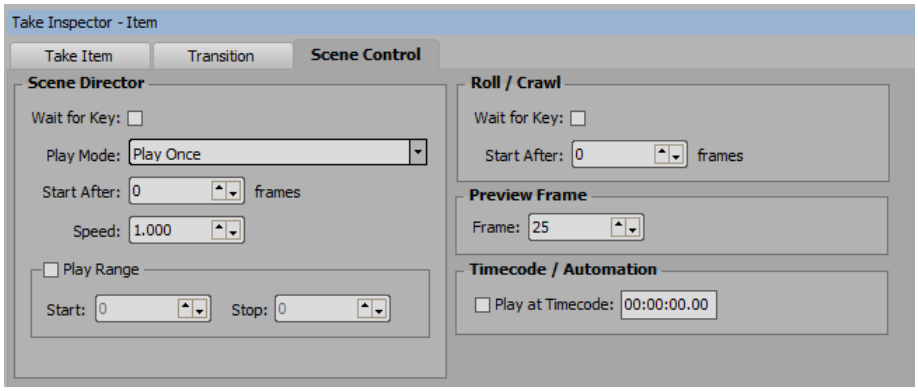


2. Select a take item or take item group in the sequence list.

3. If you select a take item, do the following:

   a. In the **Take Inspector**, select the **Scene Control** tab.

      The **Scene Control** tab opens.



   b. In the **Timecode / Automation** section, select the **Play at Timecode** checkbox to enable a timecode start for the selected take item.

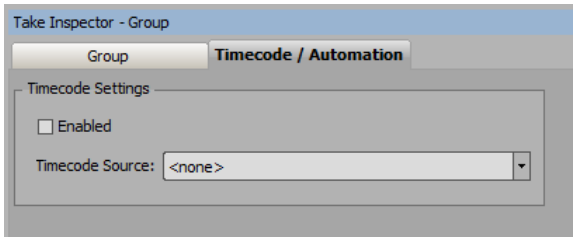
   c. In the **Play at Timecode** field, enter or select a specific timecode start time for the selected take item.

   OR

   If you select a take item group, do the following:

   a. In the **Take Inspector**, select the **Timecode / Automation** tab.

      The **Timecode / Automation** tab opens.



   b. In the **Timecode Settings** section, select the **Enabled** checkbox to enable a timecode source for the selected take item group.

   c. From the **Timecode Source** drop-down, select an available timecode source.

      This menu is populated with the internal clock of the XPression Clips system and the timecode sources that have been configured in the **Timecode Sources** tab of the **Hardware Setup** dialog.

For More Information on...

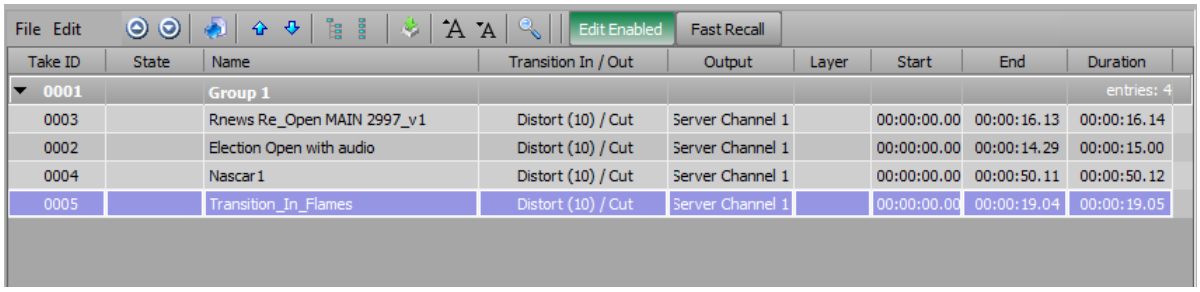
- configuring a timecode source, refer to Adding a Timecode Source.

Rendering Take Items to Video

Export take items in the **Sequencer** to video and store in a folder or in the Clip Store. Sequencer clip items automatically apply the HDR color space that is native to the clip, when that information is available.

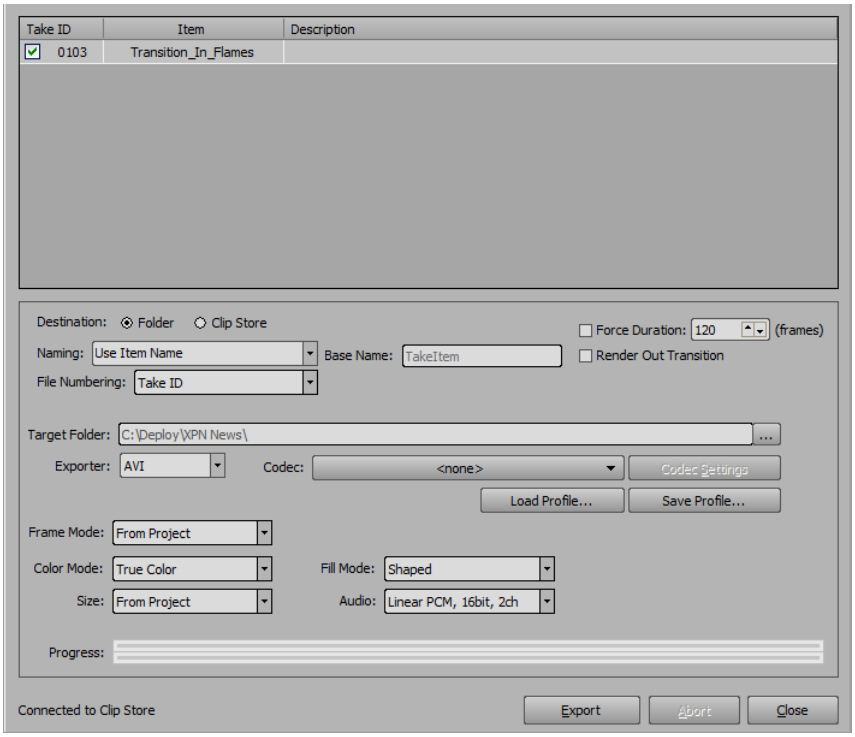
To render a take item to video:

1. Select a take item in the **Sequencer**.



2. Right-click the take item and select **Export Take Item To > Video**.

   The **Export to Video** dialog opens.



3. In the **Export to Video** dialog, select the checkbox(es) of the **Take ID(s)** to export.
4. Select a **Destination** for the video(s):
   - **Folder** — save the video(s) to a target folder.
   - **Clip Store** — save the video(s) to the Clip Store for use within a clips workflow.
5. If you selected **Folder**, see Folder for further instructions.

   If you selected **Clip Store**, see Clip Store for further instructions.

Folder

To save the video file to a folder:

1. From the **Naming** drop-down, select the name to use for the video.

   The options are:

   - **Base Name** — use a fixed base name for the video.

     If selected, in the **Base Name** field, enter a base name for the file or files to be exported. Unicode is supported for file names.

   - **Use Item Name** — use the take item name(s) for the file(s) to be exported.

2. From the **File Numbering** drop-down, select the numbering convention for the file(s) to be exported.

   The options are:

   - **Take ID** — save the file or files by **Take ID** number.
   - **Incremental** — save the file or files by incremental numbers.

3. Select the **Force Duration** checkbox to make the video conform to the number of frames set in the adjacent field.

4. Select the **Render Out Transition** checkbox to render the take item using the transition in/out effect in the **Take Inspector - Transition** settings for the take item.

5. In the **Target Folder** field, enter a file path for the target folder where the video will be saved, or select the **Browse** button to locate and select a folder.

To select the video format and codec:

1. From the **Exporter** drop-down, select the video format for the file or files.

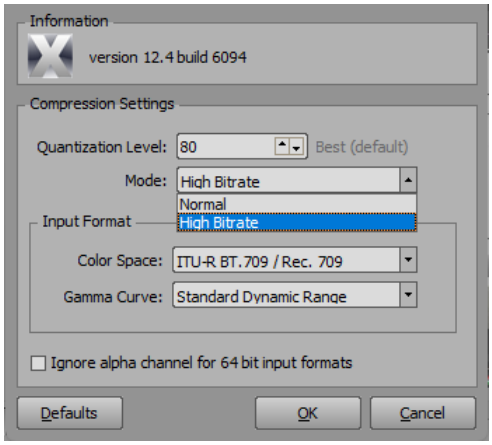
   The options are:

   - **MOV (QuickTime encoder required)**
   - **AVI**

2. From the **Codec** drop-down, select an encoder.

3. If the **XPression Video Encoder** is selected, select **Codec Settings**.

   The **XPression Video Codec 2** dialog opens.



a. In the **Compression Settings** section, in the **Quantization Level** field, enter or select the percentage of the color sampling.

   The higher the percentage, the better the color sampling quality. The default of 80 is recommended.

b. From the **Mode** drop-down, select the encoding mode, either **Normal** or **High Bitrate**.

   Consider using the **High Bitrate** option for high resolution clips (like UHD).

   ★Files that are encoded in **High Bitrate** mode require an XPression Video Codec 2 of build 12.0 6094 or later.

c. In the **Input Format** section, from the **Color Space** drop-down, select the specific organization of colors for the compression

   The options are:

   - **Standard RGB (sRGB)**
   - **ITU-R-BT.601 / Rec. 601**
   - **ITU-R BT.709 / Rec. 709**
   - **ITU-R BT.2020 / Rec. 2020**

d. From the **Gamma Curve** drop-down, select the method for optimizing the usage of bits for encoding the video.

   The options are:

   - **Standard Dynamic Range**
   - **Hybrid Log Gamma (HLG)**
   - **Perceptual Quantization (PQ)**

e. Select the **Ignore alpha channel for 64 bit input formats** checkbox to ignore the alpha channel in the encoding when using 64-bit input formats.

f. Select **OK**.

   The XPression Video Codec 2 dialog closes.

4. The video settings can be saved to a file by selecting the **Save Profile** button.

5. Select **Load Profile** to open a file browser to locate and select previously saved video settings.

To configure the remaining settings:

1. From the **Frame Mode** drop-down, select the frame mode for the video(s).

   The options are:

   - **From Project** — use the project frame mode.
   - **Upper Field First** — render in upper field first video.
   - **Lower Field First** — render in lower field first video.
   - **Frame Based** — render the video(s) as frame based.

2. From the **Color Mode** drop-down, select a color mode for the video file.

   The options are:

   - **True Color** — use 24-bit color.
   - **True Color + Alpha** — use 24-bit color with alpha.

3. From the **Size** drop-down, select a frame size for the video(s).

   The options are:

   - **From Project** — use the project dimensions.
   - **From Project (virtual)** — use the viewport resolution. This is only applicable to video formats with non-square pixels.
   - **From Scene** — use the scene dimensions.

4. From the **Fill Mode** drop-down, select the method used to process fill before output.

   The options are:

   - **Shaped** — shape the fill signal color information by the luminance information in the key signal.
   - **Unshaped** — output the fill and key signals "as is".

5. From the **Audio** drop-down, select an audio setting for the video(s).

   The options are:

   - **None** — do not use audio for the video(s).
   - **Linear PCM, 16bit, 2ch** — export with two-channel audio.

Clip Store

To save the video file to the clip store:

1. From the **Naming** drop-down, select the name to use for the video.

   The options are:

   - **Base Name** — use a fixed base name for the video.

     If selected, in the **Base Name** field, enter a base name for the file or files to be exported. Unicode is supported for file names.

   - **Use Item Name** — use the sequence item name(s) for the file(s) to be exported.

2. From the **File Numbering** drop-down, select the numbering convention for the file or files to be exported.

   The options are:

   - **Take ID** — save the file or files by **Take ID** number.
   - **Incremental** — save the file or files by incremental numbers.

3. From the **Project** drop-down, select a project in the Clip Store in which to save the video, or enter a new project name to add to the Clip Store.
4. Select the **Looping** checkbox to save the video with looping enabled by default.
5. Select the **Hold Last Frame** checkbox to hold the last frame of the saved video by default.
6. Select the **Force Duration** checkbox to make the file or files the number of frames specified in the adjacent field.
7. Select the **Render Out Transition** checkbox to render the take item using the transition in/out effect in the **Take Inspector - Transition** settings for the take item.

To configure the remaining settings:

1. From the **Frame Mode** drop-down, select the frame mode for the video(s).

   The options are:

   - **From Project** — use the project frame mode.
   - **Upper Field First** — render in upper field first video.
   - **Lower Field First** — render in lower field first video.
   - **Frame Based** — render the video(s) as frame based.

2. From the **Color Mode** drop-down, select a color mode for the video file.

   The options are:

   - **True Color** — use 24-bit color.
   - **True Color + Alpha** — use 24-bit color with alpha.

3. From the **Size** drop-down, select a frame size for the video(s).

   The options are:

   - **From Project** — use the project dimensions.
   - **From Project (virtual)** — use the viewport resolution. This is only applicable to video formats with non-square pixels.
   - **From Scene** — use the scene dimensions.

4. From the **Fill Mode** drop-down, select the method used to process fill before output.

   The options are:

   - **Shaped** — shape the fill signal color information by the luminance information in the key signal.
   - **Unshaped** — output the fill and key signals "as is".

5. From the **Audio** drop-down, select an audio setting for the video(s).

   The options are:

   - **None** — do not use audio for the video(s).
   - **Linear PCM, 16bit, 2ch** — export with two-channel audio.

6. Select **Export**.

   The take item is exported to video. The **Progress** bar displays the progress of the video(s) being saved.

Record Client

Use the Record Client dialog to record an input as a video file or as a still image.

The following topics are discussed in this section:

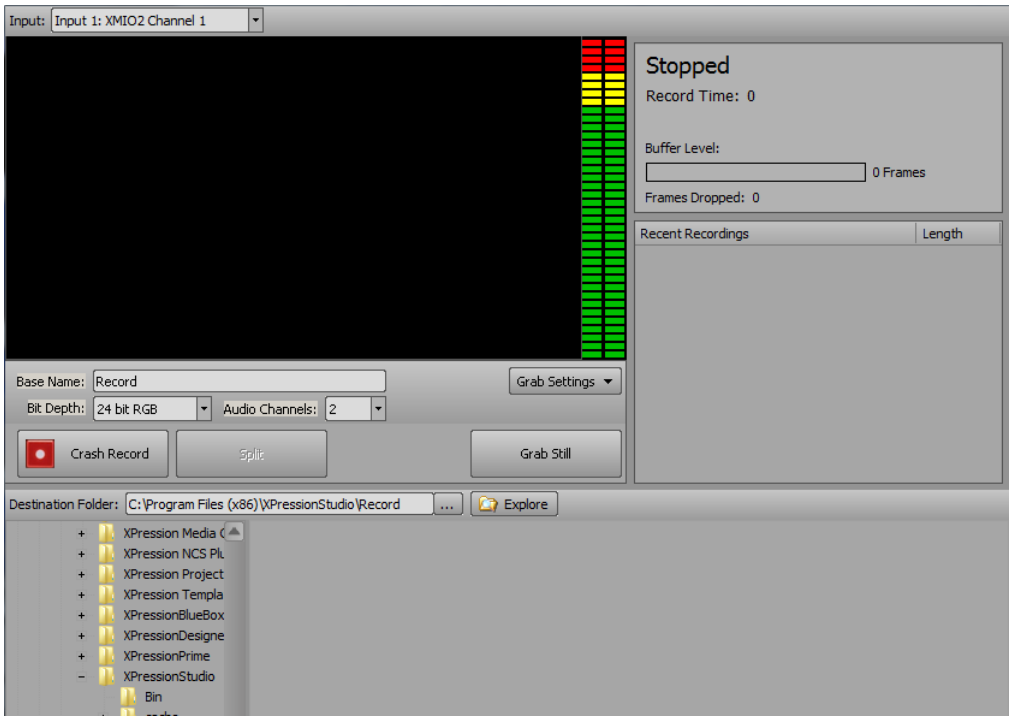
Recording a Video from an Input

Use the **Record Client** to record and save input video as a video file. The recordings will be made into the XPression Video Codec AVI format.

★When using a NewTek™ Network Device Interface (NDI™), XPression Clips video recordings are in the format and video mode of the input NDI source, not the project mode.

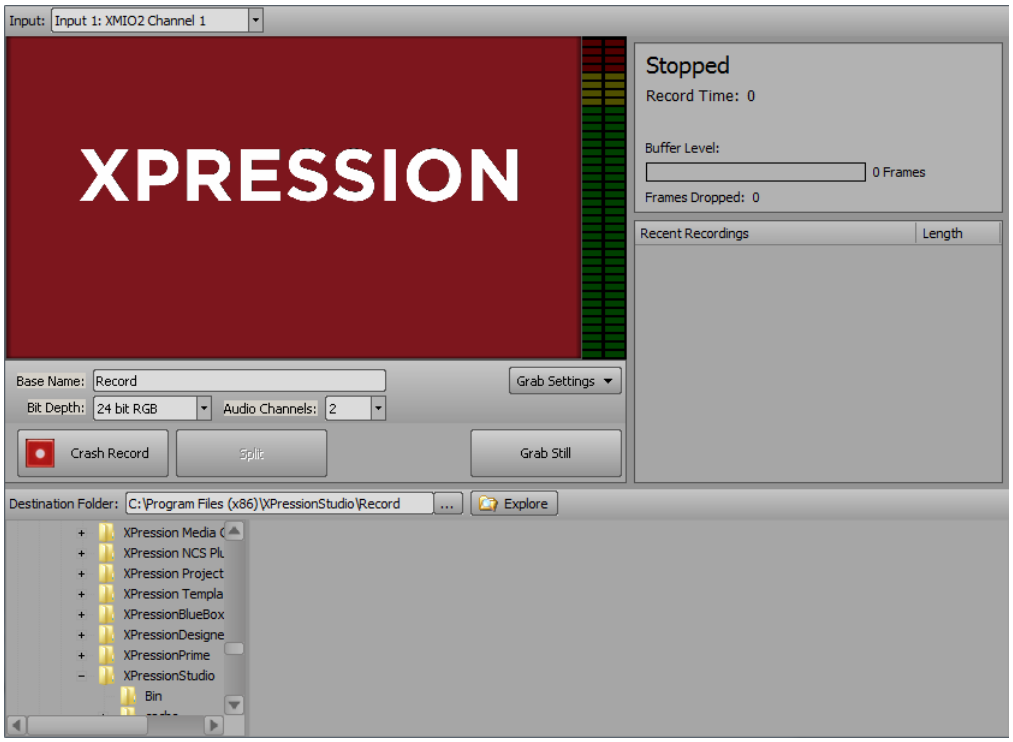
1. In XPression Clips, select the **Record Client** ( ) toolbar icon.

   The **Record Client** dialog opens.



2. From the **Input** drop-down, select the input that contains the source video for the file to be recorded.

   The video loads in the preview window.



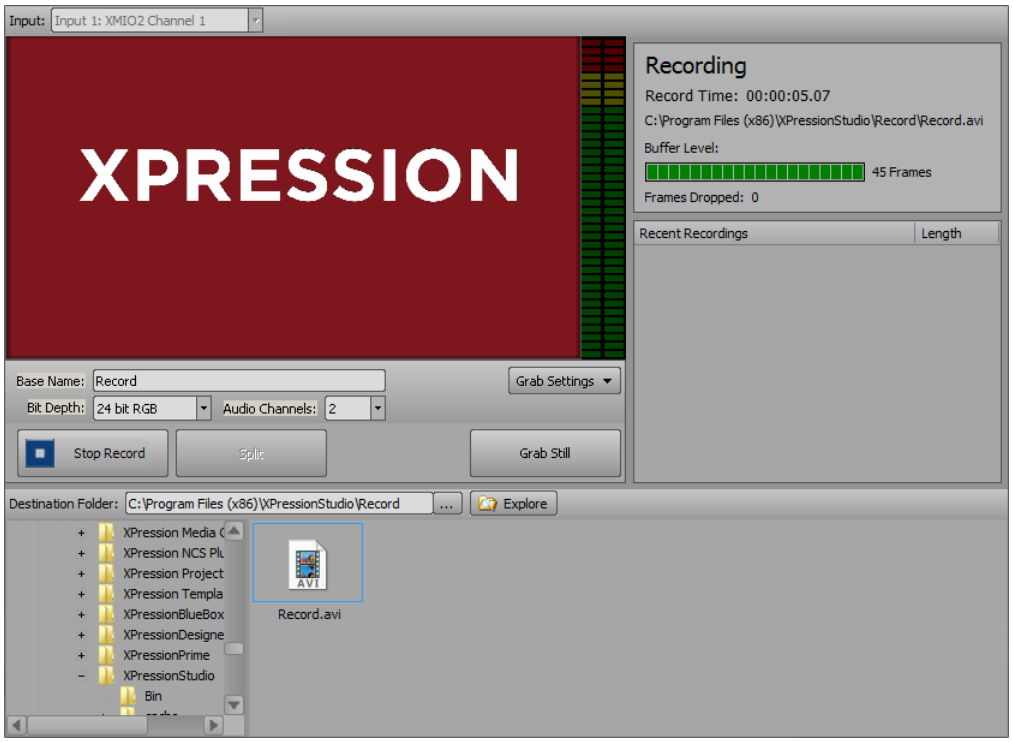
3. In the **Base Name** field, enter a name for the video file to be recorded.
4. From the **Bit Depth** drop-down, select the quality of the signal quantization for the clip:
   - **24 bit RGB** or
   - **32 bit RGBA** to include the alpha.
5. From the **Audio Channels** drop-down, select the number of active audio channels to use with the recording.
6. In the **Destination Folder** field, enter a file path for the destination folder where the video will be stored or select **Browse (...)** to open a file browser and select a file path.

   Any videos or images that have been previously stored in the selected destination folder will appear as AVI and TGA thumbnails next to the folder tree.

   ★A default record folder can be configured in the **Folders** section of the **Preferences** dialog.

7. Select **Crash Record** to start recording the video.

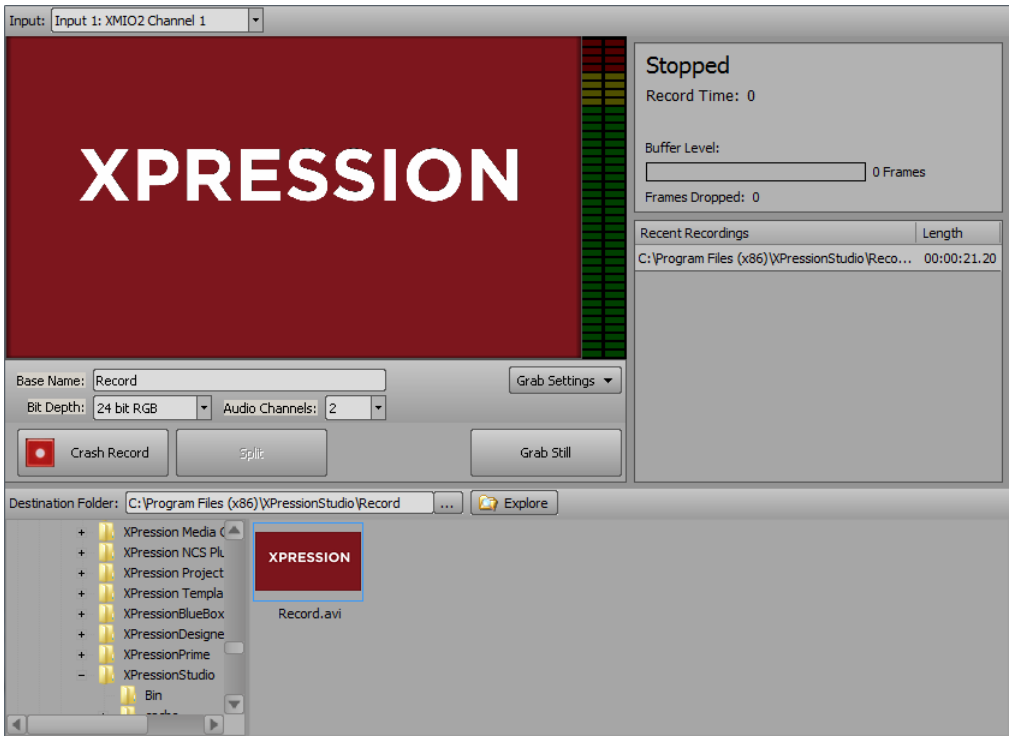
   The video begins recording and an **.avi** video file thumbnail is displayed.



   An indicator appears at the top of XPression Clips that lists the active recording.

8. Select **Stop Record** to stop recording the video.

   The **.avi** video thumbnail is completed and the video is added to the **Recent Recordings** list.



To view the video file:

- Select **Explore** to locate and open the video file for viewing in a media player.

To manage the Record Client dialog:

- Select the **Split** button to stop the recording and begin recording a new video from the input.

  This is helpful when recording a lengthy video feed, such as a live feed. The filename for the new recording increments automatically.
- If the **Record Client** dialog has been closed or minimized, select the **Active Recording** indicator to open the **Record Client** dialog.
- If using the **XPression Clips Clip Server** option, multiple **Record Clients** can be active and the **Active Recording** indicator will display multiple active recordings.

  In this case, selecting the **Active Recording** indicator will open the **Record Monitor** window where the multiple recordings can be tracked and managed.

For More Information on...

- using multiple **Record Clients**, refer to Using Multiple Record Clients.
- configuring a default record folder, refer to Folders.

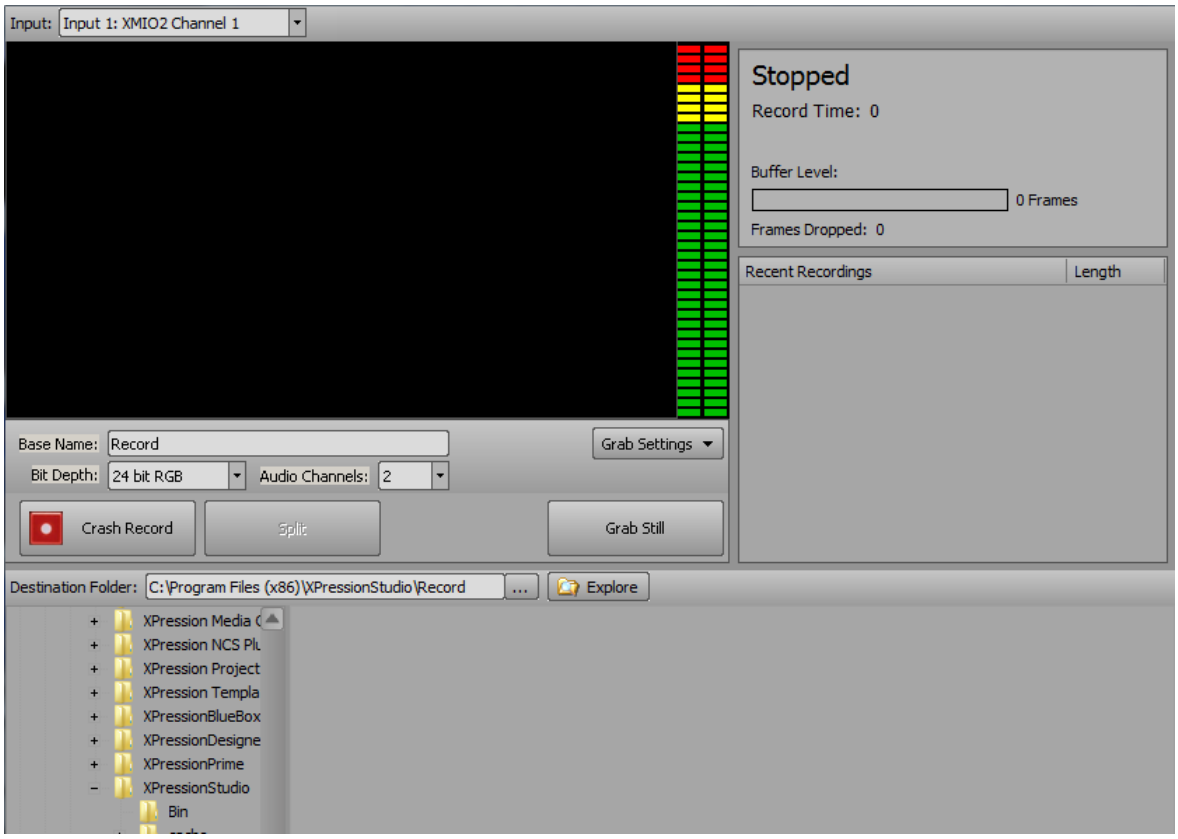
Capturing a Still Image from an Input

Use the **Record Client** to capture and save input video as a still image.

To capture a still image from an input:

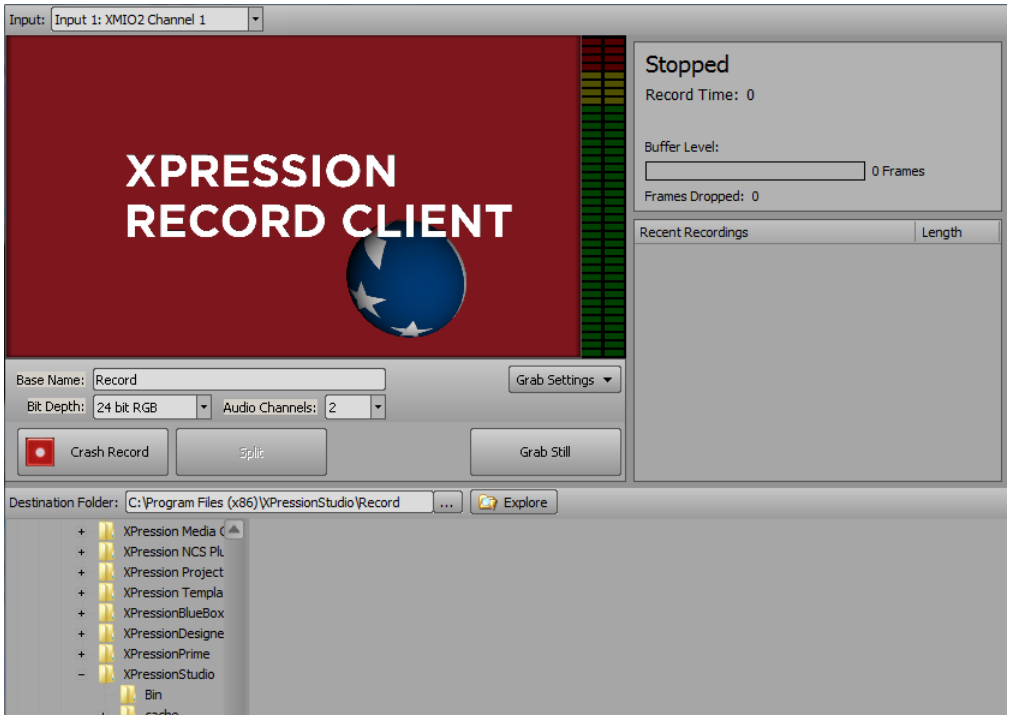
1. In XPression Clips, select the **Record Client** ( ) toolbar icon.

   The **Record Client** dialog opens.



2. From the **Input** drop-down, select the input that contains the video to be captured as a still image file.

   The video loads in the preview window.



3. In the **Base Name** field, enter a name for the image file to be captured.
4. From the **Bit Depth** drop-down, select the quality of the signal quantization for the image:
   - **24 bit RGB** or
   - **32 bit RGBA** to include the alpha.
5. From the **Grab Settings** menu, select one of the following interlace options for the image file:
   - **Interlaced Settings > Frame Based** — capture the image file without deinterlacing. This setting works best for scenes with minimal motion.
   - **Interlaced Settings > Field (line doubled)** — capture the image file with each line doubled. For example, it will replace field two with a duplicate of field one.
   - **Interlaced Settings > Field (line interpolated)** — capture the image file by interpolating between odd lines to form even lines.
6. From the **Grab Settings** menu, select one of the following image file formats for the image:
   - **TGA** (Targa)
   - **PNG** (Portable Network Graphic)
   - **JPG**

7. In the **Destination Folder** field, enter a file path for the folder where the image will be stored or select **Browse (...)** to open a file browser and select a file path.

   Any videos or images that have been previously stored in the selected destination folder will appear as AVI and TGA, PNG, or JPG thumbnails next to the folder tree.

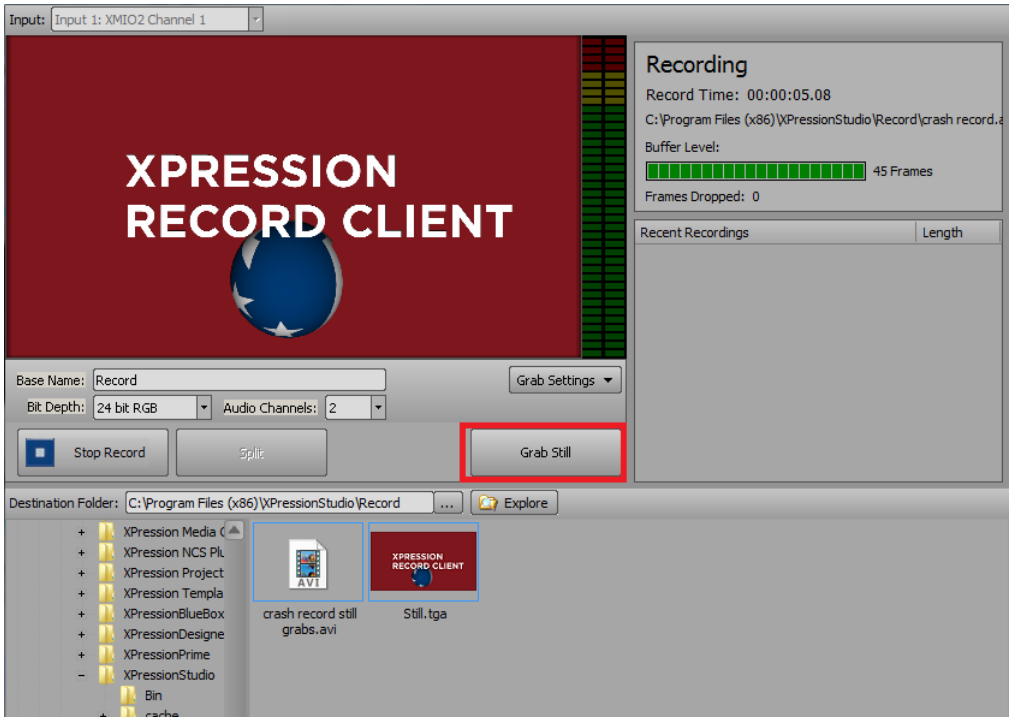
   ★A default record folder can be configured in the **Folders** section of the **Preferences** dialog.

8. Select **Grab Still** to capture a frame from the input video as a still image.

   Still images can be captured without recording the video or while the video is being recorded. Field-based still images can also be captured.

   A **.tga**, **.png**, or **.jpg** image thumbnail is displayed.

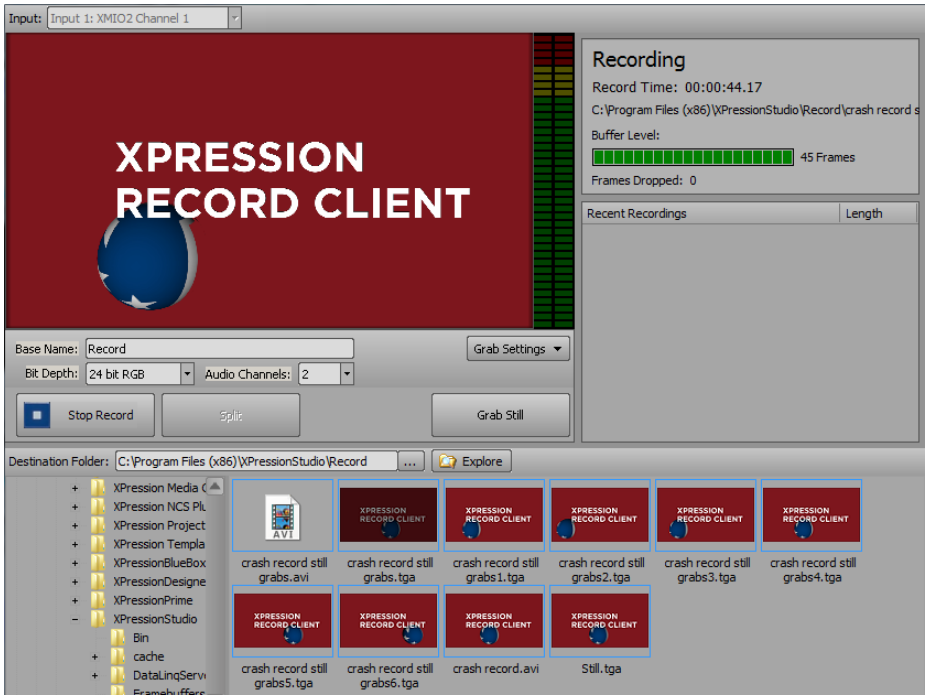
   In this procedure, the **Base Name** for the recording and still images has been changed to "crash record still grabs" for demonstrative purposes.



To capture still images while recording the input video:

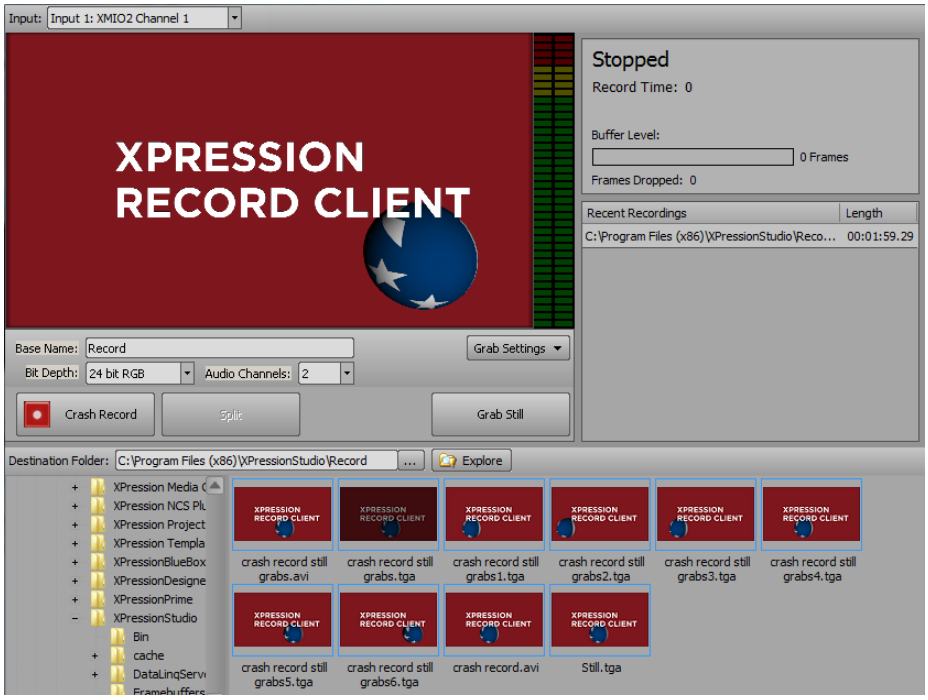
1. While recording the input video, select **Grab Still** as many times as necessary for the desired still images.

   Multiple .tga, .png, or .jpg image thumbnails are displayed.



2. Select **Stop Record** to stop recording the video once you have finished grabbing still images.

   The **.avi** video thumbnail(s) is completed and the video is added to the **Recent Recordings** list.



To view the video file:

- Select **Explore** to locate and open the video file for viewing in a media player.

For More Information on...

- configuring a default record folder, refer to Folders.

Using Multiple Record Clients

Multiple **Record Clients** can be opened and used simultaneously to record videos and capture still images.

★There is no limit to how many **Record Clients** can be open, but it is highly recommended that no more than 4 recordings occur at a time providing there is nothing being sent to output during recording. Otherwise, performance issues could occur. Recording to network locations (NAS/SAN) may or may not be possible depending on the bandwidth available.

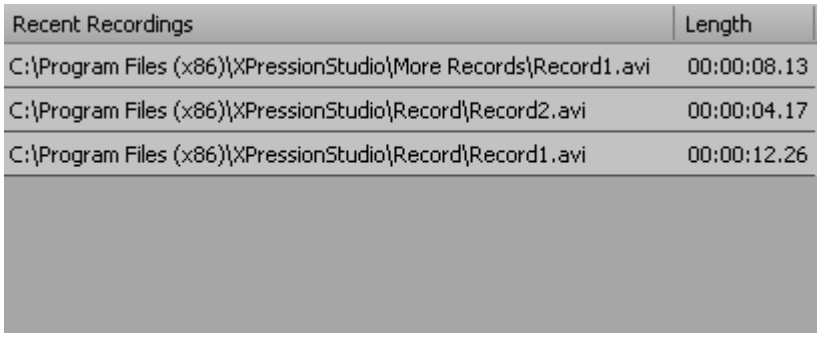
To configure multiple Record Clients:

1. In XPression Clips, select the **Record Client** ( ) icon to open the **Record Client** dialog.
2. Select the **Record Client** ( ) toolbar icon again to open a second **Record Client** dialog, select it a third time to open a third, etc.
3. From the **Input** drop-down, select the input from which you will record a video file.
4. In the **Base Name** field in each **Record Client**, enter a name for the video file to be recorded.
5. From the **Bit Depth** drop-down in each **Record Client**, select the quality of the signal quantization for the clip:
   - **24 bit RGB** or
   - **32 bit RGBA** to include the alpha.
6. From the **Audio Channels** drop-down in each **Record Client**, select the number of active audio channels to use with the recording.
7. From the Grab Settings drop-down, select the **Interlaced Settings** and **File Format** to use for the still image to be taken (if one will be taken).
8. In the **Destination Folder** field in each **Record Client**, enter a file path for the destination folder where the video will be stored or select **Browse (...)** to locate and select a folder.

   When selecting a **Destination Folder** to store videos and images, if the selected folder already has stored videos or images, these previously created files will appear next to the folder tree as **AVI** and **TGA** thumbnails.

   If the same folder has been selected across multiple **Record Clients**, these files will appear in the area next to the folder tree in all the open **Record Clients** that are using that file path, as well as any currently recording video using that file path.

   All recent recordings, regardless of the selected file path, will appear in each of the open **Record Clients** in the **Recent Recordings** list.



   When recording a video using the **Record Client**, an indicator appears at the top of the UI that lists the number of active recordings.

To record a video:

1. Select **Crash Record** to begin recording from the input.
2. Select **Stop Record** to stop recording.

   If a selected recording has been stopped in its respective **Record Client**, the **Active** status will be listed as **Stopped**.
3. Select **Grab Still** to save an image to go with the recording.

To view all active recordings in all open Record Clients:

- Select the **Active Recordings** indicator to open the **Record Monitor** window.

To open an active Record Client:

- Select an active recording and select **Open Record Client**.

To delete an active recording:

- Select an active recording and select **Delete** to discard the selected recording.

For More Information on...

- recording an input video, refer to Recording a Video from an Input.
- capturing an input still image, refer to Capturing a Still Image from an Input.

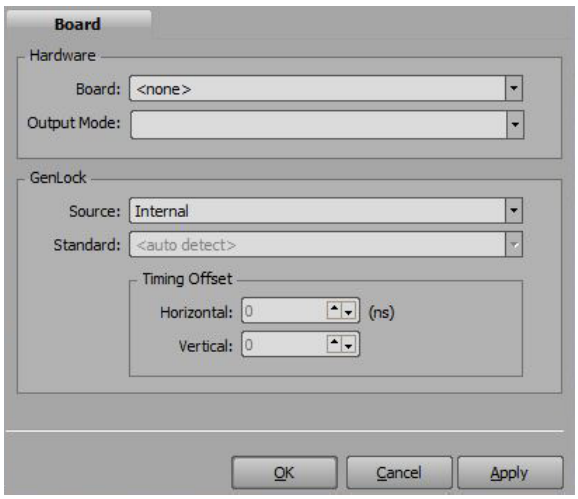
Using Fill/Key Simultaneously

★This option is only available if using the Matrox XMIO board with XPression Clips.

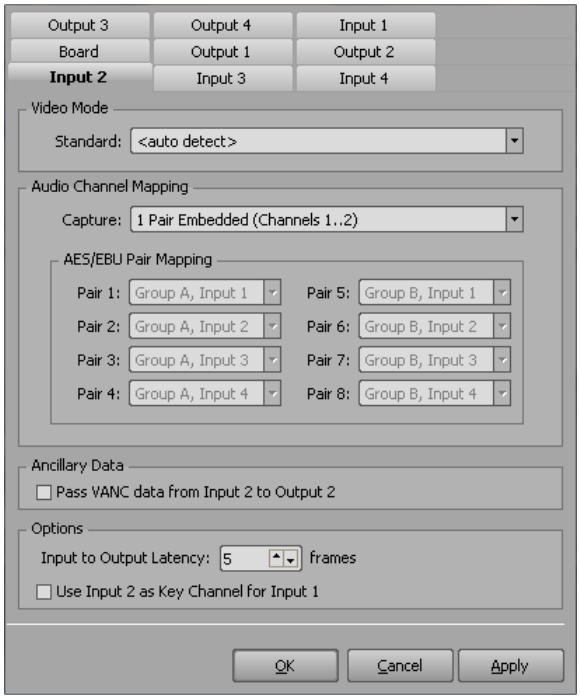
Using the **Record Client**, a video plus alpha can be recorded simultaneously by configuring the option in the **Input** tab in the **Matrox XMIO - Framebuffer Setup** dialog.

1. In XPression Clips, select **Edit > Hardware Setup**.
2. In the **Inputs / Outputs** tab, select the **Matrox Video X.mio2 FrameBuffer** board and then select **Configure**.

   The **Matrox XMIO - Framebuffer** dialog opens.

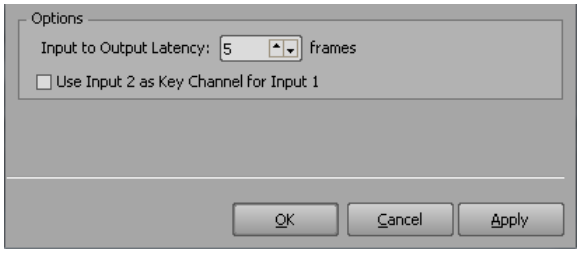


   The **Matrox XMIO - Framebuffer** dialog opens.



3. Select the **Input 2** tab.

4. In the **Options** section, select the **Use Input 2 as Key Channel for Input 1** checkbox to use key/fill simultaneously.



For More Information on...

- configuring the Matrox XMIO board, refer to Configuring a Matrox Video X.mio2 FrameBuffer.

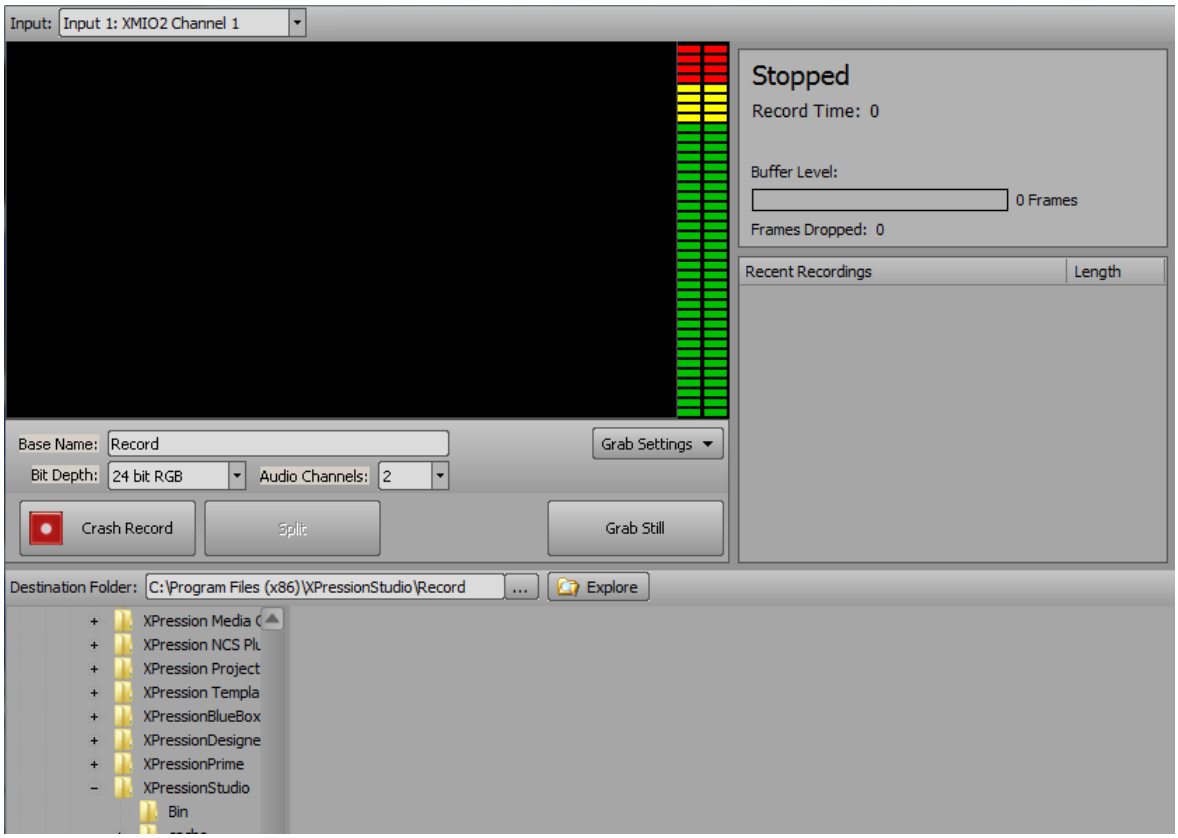
Sending a Video or Image to the Clip Store

Once a recording has been completed it can be sent to the **Clip Store** database to be used within the **Clips** workflow. Proxies of video clips are automatically generated when sent to the Clip Store.

1. In XPression Clips, select the **Record Client** ( ) toolbar icon.

   Alternatively, select **Tools > Record Client**.

   The **Record Client** dialog opens.



2. Create a video in the **Record Client**.

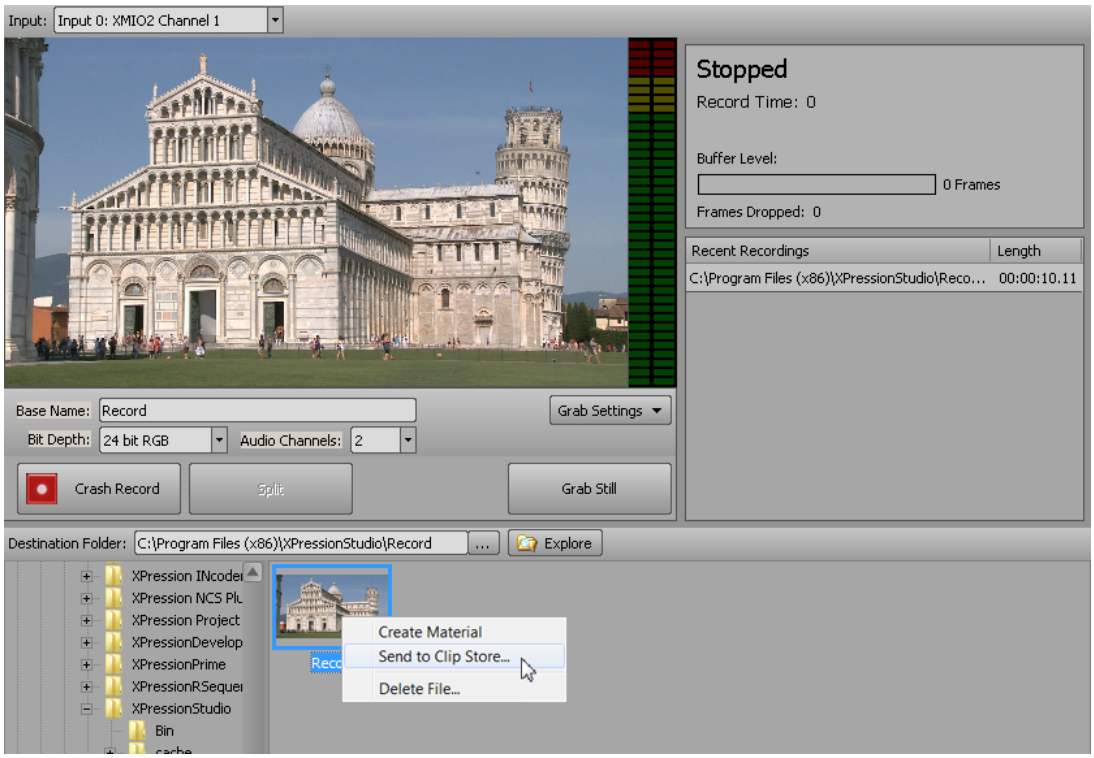
   OR

   In the folder tree, select the video or image you want to send to the Clip Store.

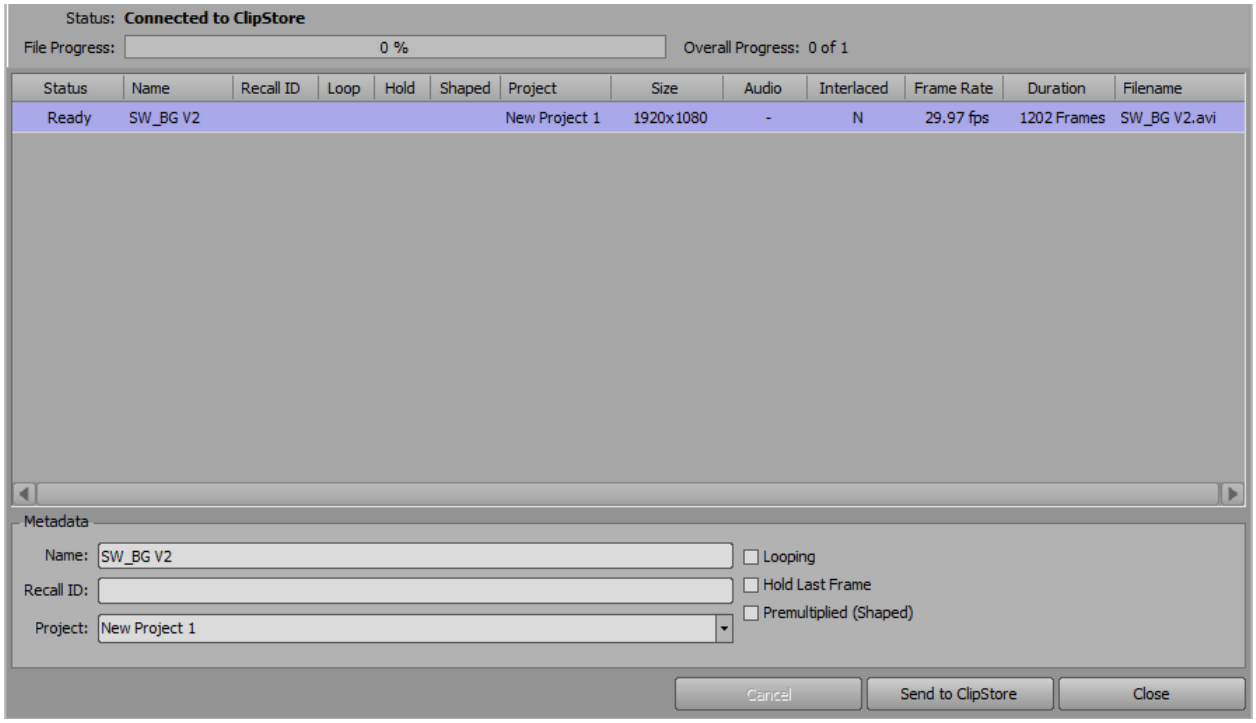
3. Right-click on the video or image thumbnail and select **Send to Clip Store** from the shortcut menu.

   Multiple videos and images can be selected by using **Shift + click** or holding **Ctrl** and selecting individual videos and images.

   ★Only XPression codec clips should be sent to the Clip Store.



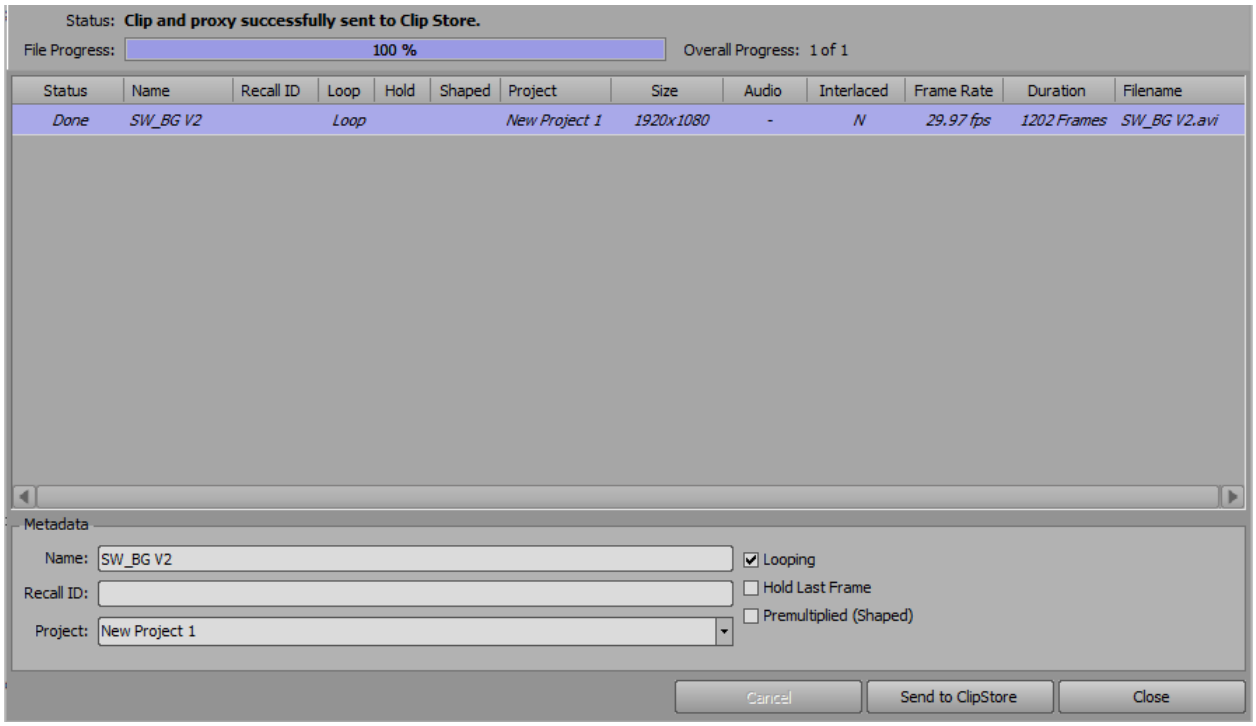
The **Send to Clip Store** dialog opens.



4. In the **Metadata** section, configure the following items:
   - **Name** — enter a new name for the video or image in Clip Store, if necessary.
   - **Recall ID** — enter an identifier to recall the video or image from an external device.
   - **Project** — from the drop-down, select any existing projects from Clip Store or enter a new project name for the video or image. New projects are automatically added to the Clip Store.
   - **Looping** — select to infinitely replay the video each time it reaches the end.
   - **Hold Last Frame** — select to freeze the video on the last frame after playing.
   - **Premultiplied (Shaped)** — select to multiply/shape the fill signal color information by the luminance information in the key signal.

5. Select **Send to ClipStore**.

   The video or image is transferred to the Clip Store. Once the transfer has successfully completed, the **Status** is listed as **Clip and proxy successfully sent to Clip Store**, the **Progress** bar is at 100%, and **Destination** details are listed.



6. Select **Close** to exit the dialog.

For More Information on...

- creating a video file in the **Record Client**, refer to Recording a Video from an Input.
- creating an image file in the **Record Client**, refer to Capturing a Still Image from an Input.

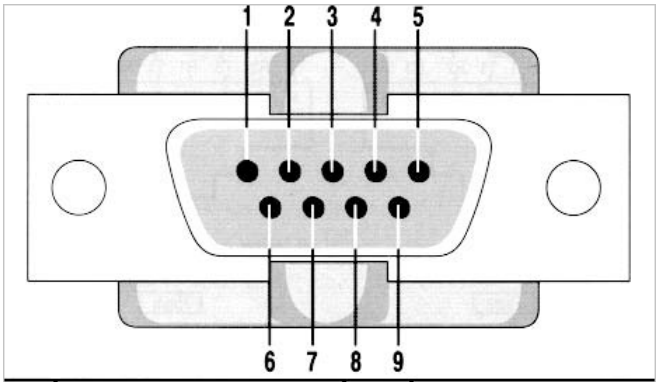
PBus Interface

The following topics are discussed in this section:

PBus Overview

PBus (Peripheral Bus) is an industry standard protocol designed to allow production switchers to communicate with external devices. Most large production switchers have some capability of sending PBus commands to a device.

XPression Clips supports PBus over standard RS232 or TCP/UDP sockets.



Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

The chassis of some turnkey XPression Clips systems might not include a standard RS232 port. However, it is possible to use an RS232-USB adapter.

If the production switcher has an RS422 serial port, then you will require an RS232 to RS422 adapter. This adapter will require its own power supply. Generally, the adapters that are port-powered will not function for these purposes.

★On an XPression Clips Bluebox system, a limited subset of PBus functionality is available. PBus commands can be used to trigger take items that have been pre-built in an XPression Clips sequence using either XPression Clips Designer or Studio. It is not possible to customize the PBus registers actions using Bluebox. Each register number corresponds to a specific take item number and can not be changed. It is not possible to load the PBM or PBMS PBus mapping files on Bluebox.

For More Information on...

- configuring the PBus interface and PBus recalls, refer to Configuring the PBus Interface and PBus Recalls.

PBus Triggers

XPression Clips supports many PBus Trigger commands.

PBus Trigger Command	Description
Trigger 0 – Play Item	This trigger can be overridden in the PBus mapping. Trigger 0 is normally used to play a take item to air. However, this can be overridden to perform other actions on a per-register basis. These actions can be configured in the PBus mapping menu.
Trigger 1 – Take Sequence Item Off-Air	Trigger 1 is used to take an item off air (assuming it was already on air). The item taken off air will be the take item that was previously recalled using a PBus recall command.
Trigger 2 – Execute GPI	Trigger 2 is used to emulate a standard GPI input. In the XPression Clips Keyboard/GPI Mapping, various actions can be configured to be executed on a GPI input being triggered. It is possible to trigger up to 99 different GPIs through PBus. The GPI number that will be triggered is the number that was previously recalled using a PBus recall command.
Trigger 3 – Clear Framebuffer	Trigger 3 will clear the framebuffer assigned to the device in the PBus channel configuration. If the channel is set to <default>, this trigger will clear Channel 1.
Trigger 4 – Clear Framebuffer Channel 2	Trigger 4 will clear the framebuffer assigned to the device in the PBus channel configuration. If the channel is set to <default>, this trigger will clear Channel 2.
Trigger 5 – Read Current Sequence Item to Air	Trigger 5 will take the currently selected sequence item from the sequencer to air. It ignores the PBus recall command and uses whichever item currently has focus in the XPression Clips sequencer.
Trigger 6 – Resume Channel	Trigger 6 will resume all paused graphics currently on the framebuffer assigned to the device in the PBus Channel Configuration. If the framebuffer is set to <default>, this will resume Channel 1.
Trigger 7 – Resume Channel	Trigger 7 will resume all paused graphics currently on the framebuffer assigned to the device in the PBus Channel Configuration. If the framebuffer is set to <default>, this will resume Channel 2.
Trigger 8 – Resume Take Item	Trigger 8 will resume a single paused take item. The take item will be the item previously recalled by a PBus recall command.
Trigger 10 – Bank 0	Trigger 10 will change the last recall command into an ID in the 0-99 range (refer to the Bank 1 command below for more details).

PBus Trigger Command	Description
Trigger 11 – Bank 1	Trigger 11 is used to allow switchers that can only send PBus recall commands up to 99 to be able to recall take items with values of between 100 and 199. This "bank 1" command will add 100 to the last recalled item using a PBus recall command. For example; to recall take ID 135 and put it on air, a switcher could send: • Recall 035 • Trigger 11 (changes the 035 into 135) • Trigger 0 It is not necessary to switch back to bank 0 after sending a bank 1 command. XPression Clips will automatically revert to bank 0 for the next PBus recall command.
Trigger 12 – Bank 2	Changes the last PBus recall command into an ID in the 200-299 range.
Trigger 13 – Bank 3	Changes the last PBus recall command into an ID in the 300-399 range.
Trigger 14 – Bank 4	Changes the last PBus recall command into an ID in the 400-499 range.
Trigger 15 – Bank 5	Changes the last PBus recall command into an ID in the 500-599 range.

For More Information on...

- configuring the PBus interface and PBus recalls, refer to Configuring the PBus Interface and PBus Recalls.

PBus LEARN Commands

When a PBus LEARN command is received from a remote device, XPression Clips will look to the configured server channel for the PBus device, and if there is a clip currently cued on that server channel it will assign that clip into the PBus register via the recall ID, if assigned.

There is an option **Ignore LEARN command** in the **PBus Setup** dialog in **Hardware Setup**. This option is useful if you are manually assigning clips to PBus registers and you do not want to change/overwrite them when storing memories on the production switcher. Most production switchers automatically send the PBus LEARN command when storing the memory.

For More Information on...

- the PBus LEARN command, refer to the appropriate switcher documentation.

PBus Mapping

Enter topic text here.Use PBus mapping to assign clips, functions, scenes, scripts, and other actions and functions to device registers, and then save and load the maps.

The following procedures are covered in this section:

Configuring PBus Mapping

Assigning an Action to a PBus Register

Remapping a PBus Register

Loading and Saving Maps

For More Information on...

- configuring the PBus interface and PBus recalls, refer to Configuring the PBus Interface and PBus Recalls.

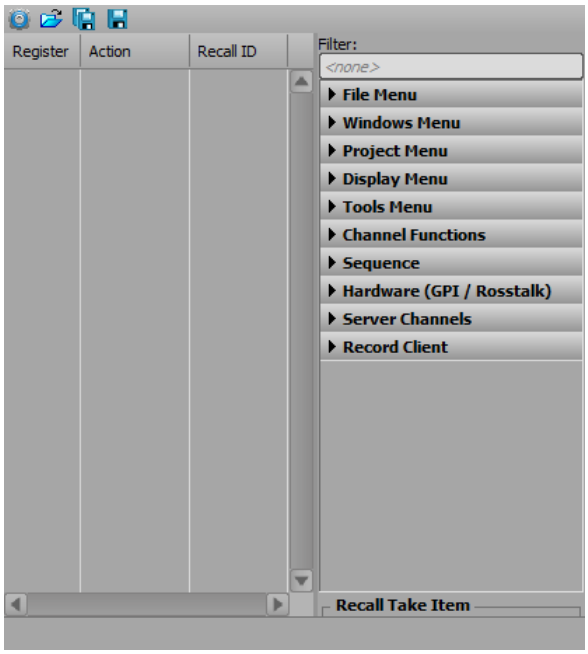
Configuring PBus Mapping

Use the **PBus Device Configuration** dialog to configure the **Device IDs** and server channels.

To configure PBus Mapping:

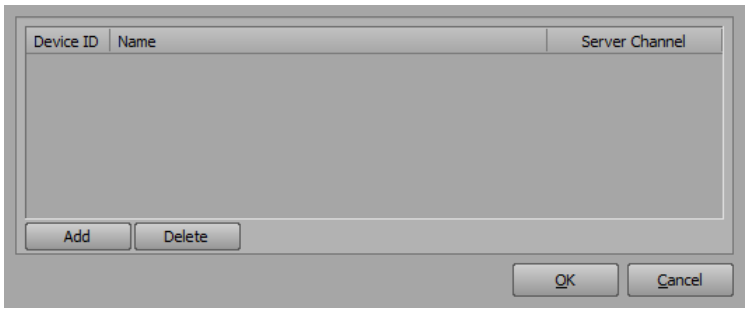
1. In XPression Clips, select **Display > PBus Mapping**.

   The **PBus Mapping** window opens.



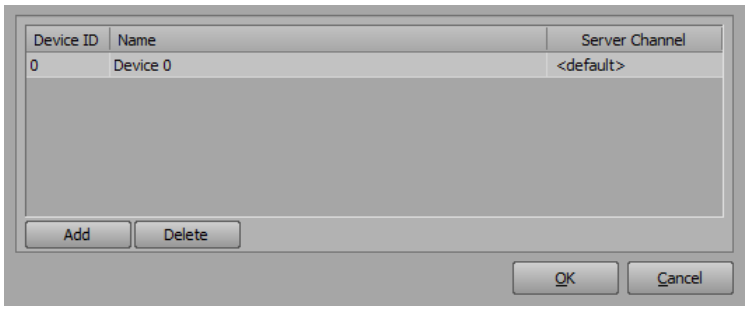
2. Select the **Setup Device Configuration** ( ) icon.

   The **PBus Device Configuration** dialog box opens.



3. Select **Add** to add a **Device ID**.

   A device ID is added to the **PBus Device Configuration** list. At least one **Device ID** must be added. The **Device ID** is the ID number that will be sent in PBus messages transmitted from the production switcher.



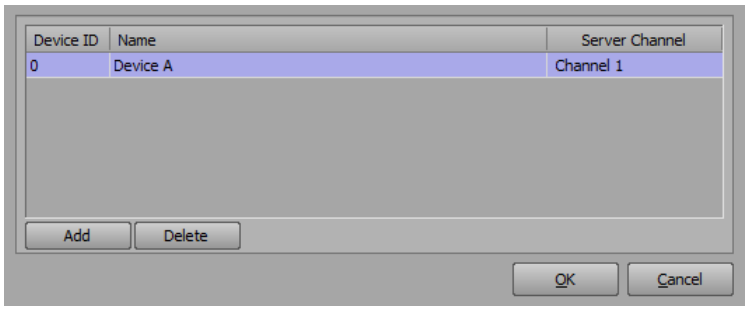
4. Click inside the **Device ID** column of the ID and enter or select a different ID number from the default number, if necessary.

   PBus **Device IDs** must be between 0 and 23.

5. Click inside the **Name** column of the ID and enter a name to refer to the **Device ID**. For example, **Device D**.

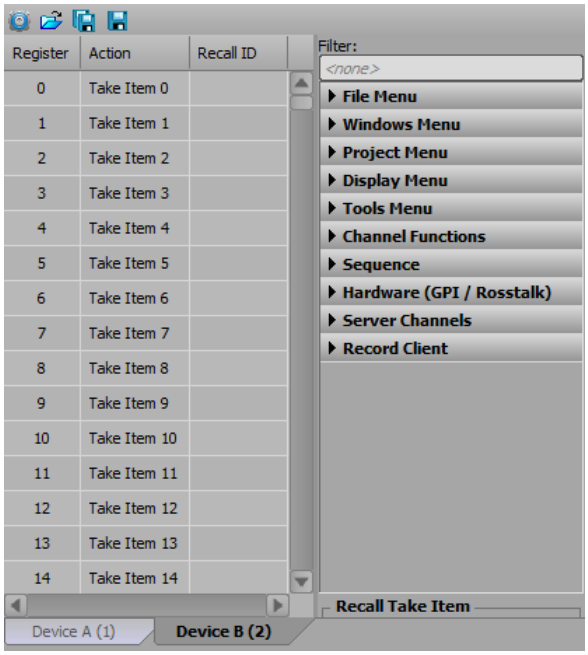
6. Click inside the **Server Channel** column of the ID and from the drop-down, select a specific output framebuffer or use the **<default>** framebuffer.

   If the framebuffer is set to anything other than **<default>** when a PBus recall command is received for a specific **Device ID**, the item will be played on the selected framebuffer. If **<default>** is selected, the item will be played on the framebuffer for which the original take item was configured. When a clip from the Clip Store is assigned to a register and **<default>** was selected for the **Server Channel**, the first device configured will use **Server Channel 1**, the next will use **Server Channel 2**, etc.



7. Repeat steps 3 to 6 to add additional PBus devices as necessary.
8. When all PBus devices have been added and configured, select **OK**.

   The **Device IDs** are added as tabs at the bottom of the **PBus Mapping** window under the assigned device names. If there are no tabs added, then a **Device ID** was not added to the **PBus Device Configuration** list.



Assigning an Action to a PBus Register

Each device has a list of 4095 registers which can be recalled through PBus.

★Some switchers can only support the first 99 registers.

Each PBus register can be assigned an action that will be executed after the register is recalled and **Trigger 0** is received. The default action for each register is to play the corresponding **Take Item** with the same number as the PBus register.

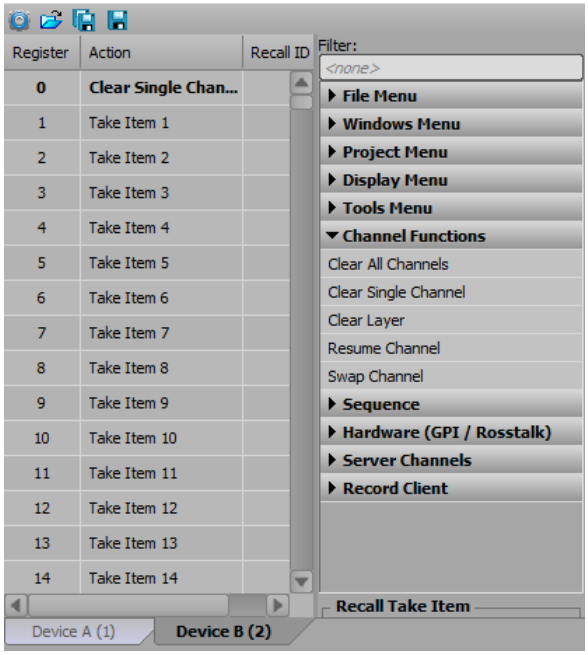
To assign an action to a PBus register:

1. In the **PBus Mapping** window, select an action from the actions list to the right of the devices.


Register
Action
Recall ID
0
Take Item 0
1
Take Item 1
2
Take Item 2
3
Take Item 3
4
Take Item 4
5
Take Item 5
6
Take Item 6
7
Take Item 7
8
Take Item 8
9
Take Item 9
10
Take Item 10
11
Take Item 11
12
Take Item 12
13
Take Item 13
14
Take Item 14
15
Take Item 15
Filter:
<none>
File Menu
Windows Menu
Project Menu
Display Menu
Tools Menu
Channel Functions
Clear All Channels
Clear Single Channel
Clear Layer
Resume Channel
Swap Channel
Sequence
Hardware (GPI / Ros...
Server Channels
Record Client
Recall Take Item
Take ID:
17
Device A (1)
Device B (2)

2. Drag and drop the action onto a register.

The action is added to the register.



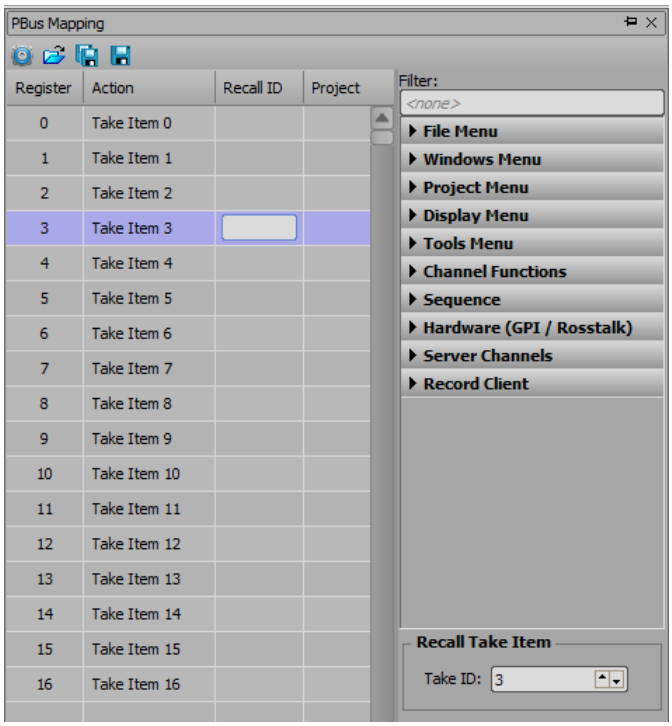
Adding a Global Macro to a Take Item

XPression supports the use of global macros, allowing user to dynamically replace clips associated with a register, based on macro values like team names or network IDs.

To add a global macro to a Take Item:

1. In the XPression Clips **Sequence** editor, select **Display > PBus Mapping**.

   The **PBus Mapping** window opens.



2. Select the take item for which you want to add a global macro.
3. Left-click in the **Recall ID** column for that take item and enter the macro.

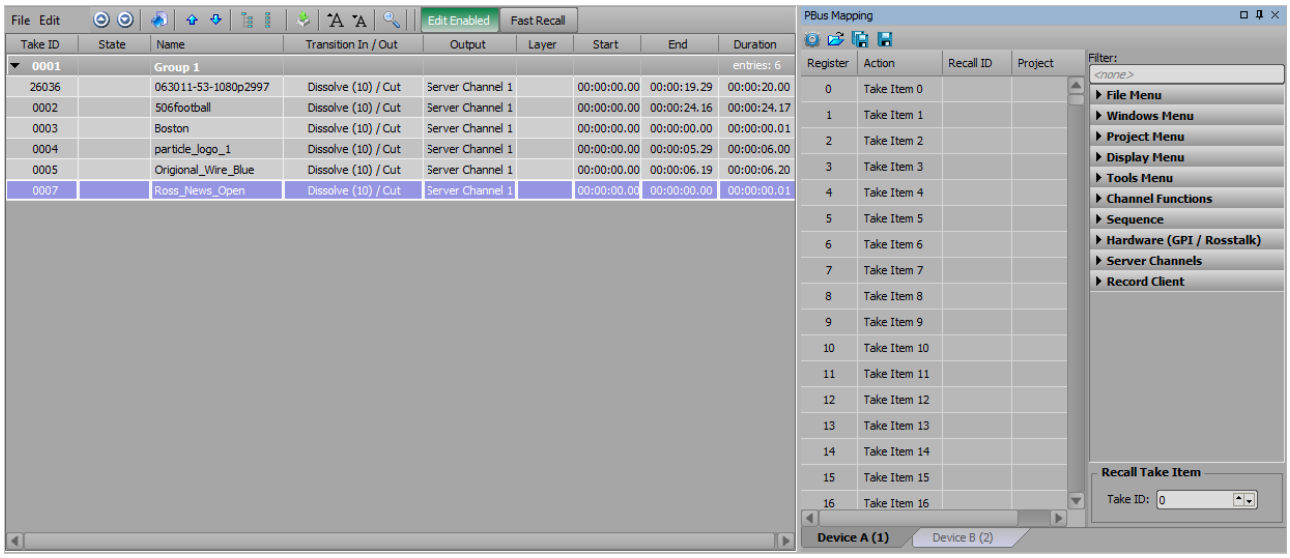
Remapping a PBus Register

To remap a PBus register to play a different take item, the take item can be dragged and dropped from the **Sequencer** or the **Clip Browser** onto the register in the **PBus Mapping** window or you can enter or select a different take ID using the **Take ID** field in the **Recall Take Item** section of the **PBus Mapping** window.

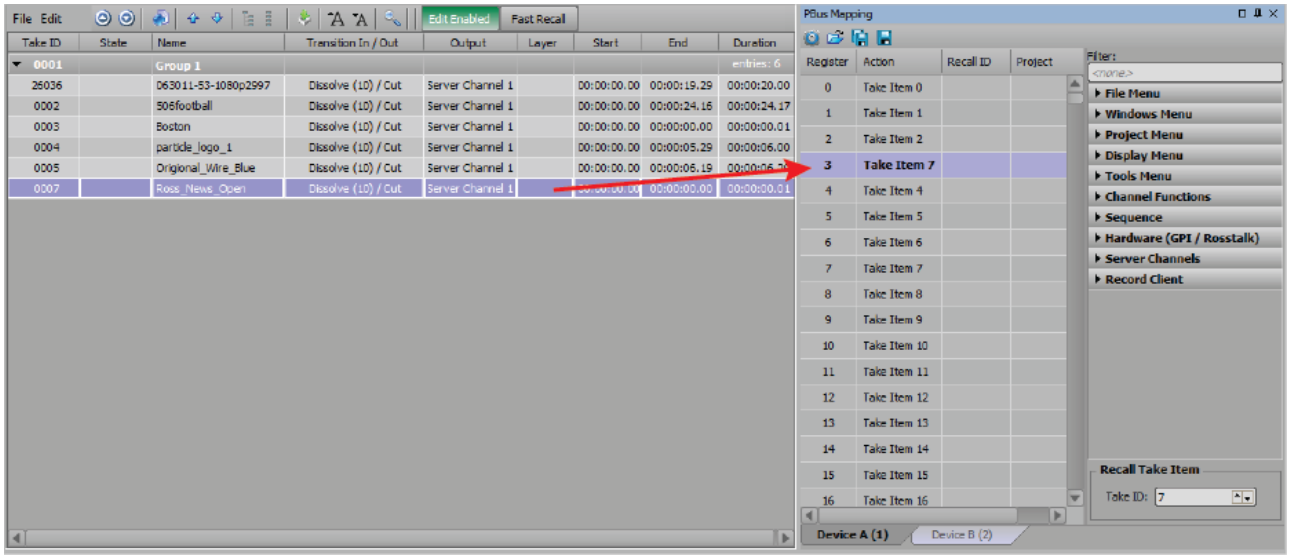
Duplicate Recall Ids are supported. If two clips with the same Recall ID are added to the register, in the **Project** column, you can enter which project the clip comes from. Global macros are supported in the **Project** column.

To remap a PBus register using drag and drop from the Sequencer:

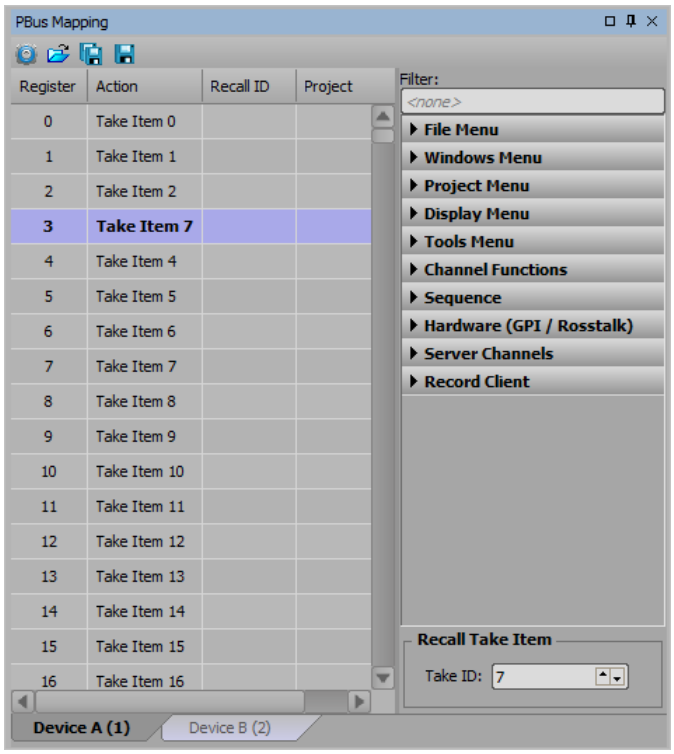
1. In the **Sequencer**, select a take item from the **Take ID** list.



2. Drag and drop the take item onto a register in the **PBus Mapping** window.

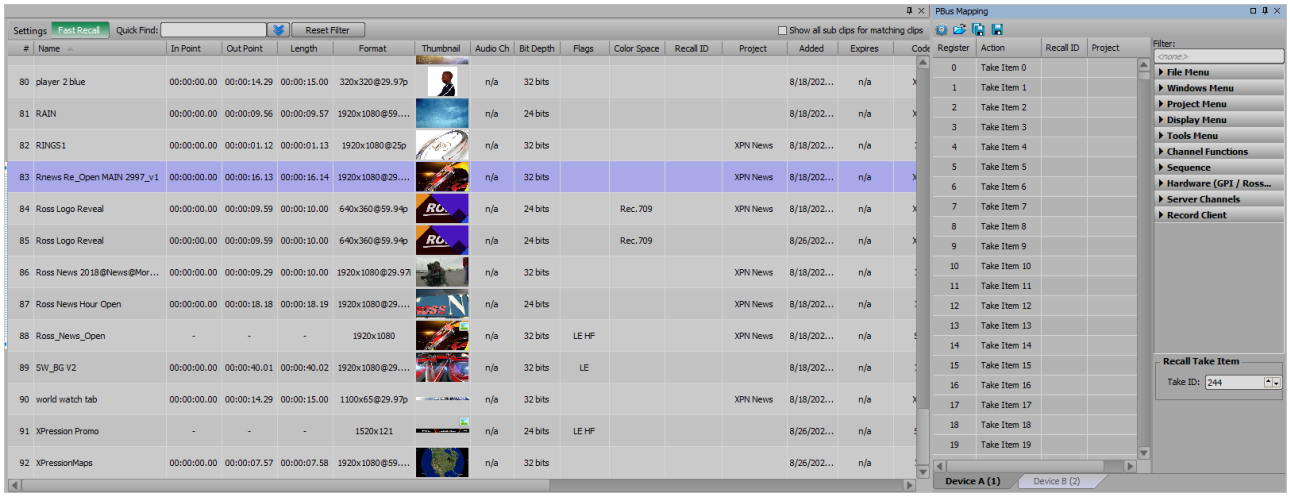


The take item is added to the register.

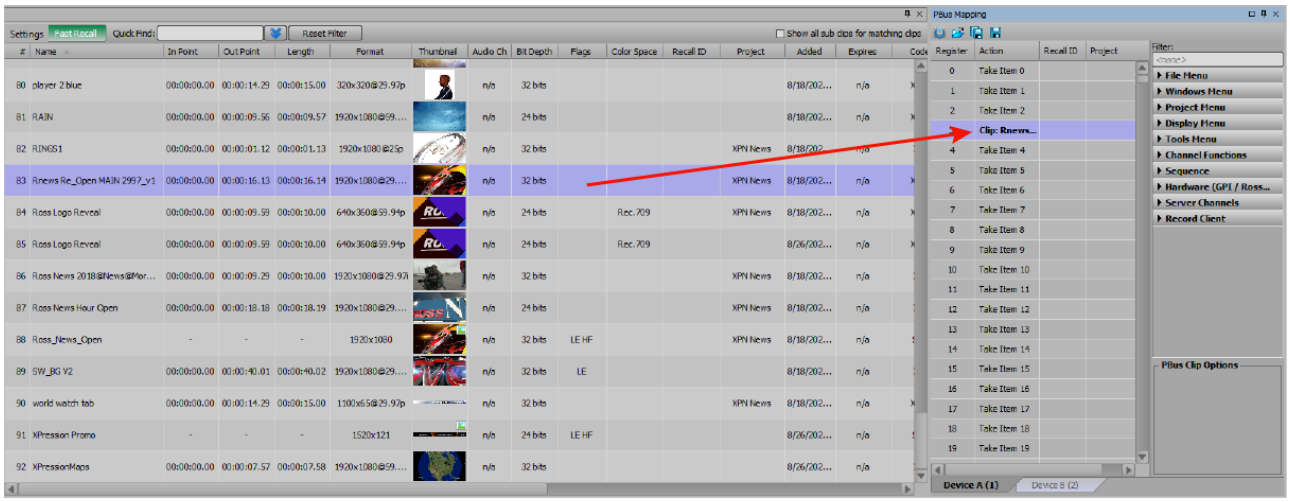


To remap a PBus register using drag and drop from the Clip Browser:

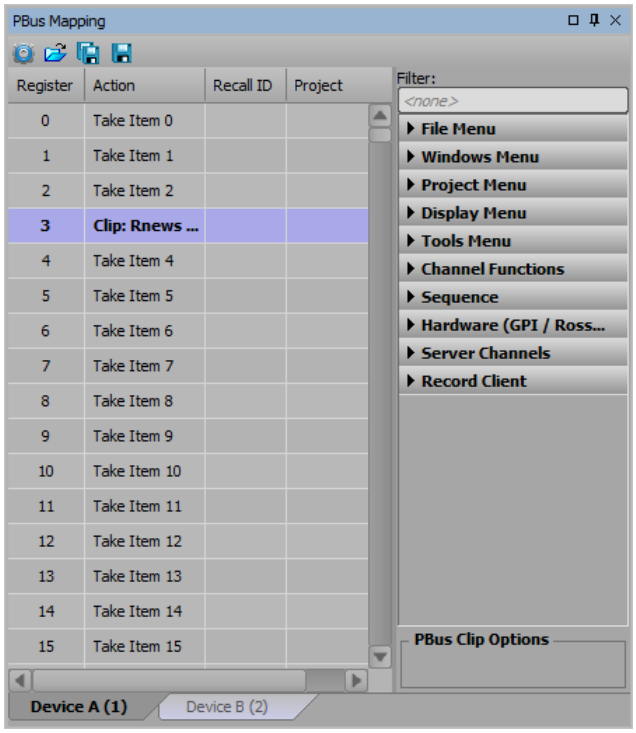
1. In the **Clip Browser**, select a clip from the list.



2. Drag and drop the clip onto a register in the **PBus Mapping** window.

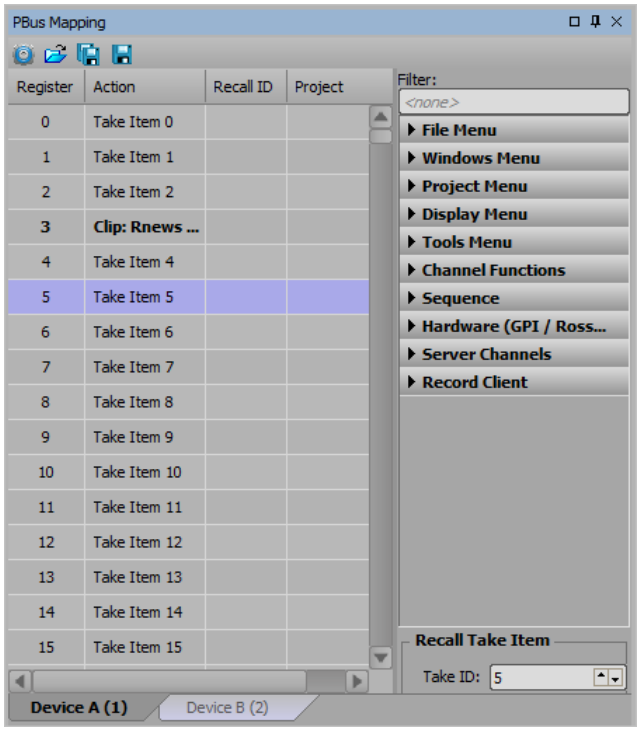


The clip is added to the register.

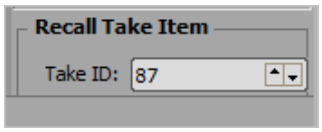


To remap a register using the Take ID field:

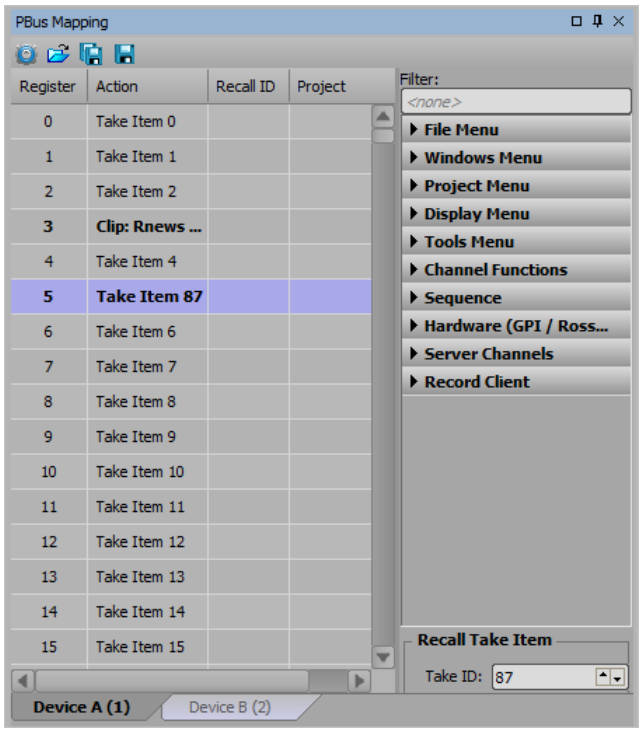
1. In the **PBus Mapping** window, select a register number from the devices to the left of the actions list.



2. In the **Recall Take Item** section, in the **Take ID** field, enter or select a take item to add to the selected register.



The take item is added to the selected PBus register.



Loading and Saving Maps

PBus maps are not loaded and saved with XPression Clips projects. They are loaded and saved to disk as .pbm or .pbms files using the PBus Mapping window. The .pbm file extension is used for a single PBus map and the .pbms file extension is used for multiple PBus maps.

Use the following PBus Mapping window toolbar icons to load and save PBus maps:

Load — open a file browser to select a PBus map or multiple PBus maps to load.

Save All — save multiple PBus maps to disk.

Save — save a single PBus map to disk.

Using PBus from a Switcher to Recall Items

★Consult the switcher documentation for a complete description of how to use PBus with your particular manufacturer/model. This section is only intended to provide some background information and tips.

Normally switchers will send a PBus recall command when an EMEM is recalled. The following procedure is an example using take item 0005.

For More Information on...

- configuring the PBus interface and PBus recalls, refer to Configuring the PBus Interface and PBus Recalls .

To recall and play a specific take item from XPression:

1. In XPression, in the **Sequencer**, create a take item and give it an ID of **0005**.
2. Create an **EMEM/Memory** on the switcher and store it as **EMEM 5**.
3. Within **EMEM 5**, ensure that you have enabled the sending of PBus commands.
4. Within the timeline for **EMEM 5**, issue a **PBus Trigger 0** command.
5. When **EMEM 5** is recalled, it will send a PBus recall 5 command to XPression.

   This command will not yet do anything (unless the configuration options discussed in the Configuring the PBus Interface and PBus Recalls section are enabled).

   When the timeline is run, the switcher will send a **PBus Trigger 0** command. At this time, XPression will put take item #5 on the output channel/layer previously assigned to that item in the sequencer.

   ★There may be several frames of delay between issuing the **Trigger 0** command and when the video for the item appears on the SDI output of XPression. This is normal and should be accounted for inside of the timeline on the switcher. For example, you will need a delay between the issuing of **Trigger 0** and when the keyer containing the XPression is keyed onto the PGM output.
6. To recall different take items, copy the timeline on the switcher into different switcher registers.

For More Information on...

- PBus triggers, refer to PBus Triggers.

Using PBus for Clips

Firstly, the PBus configuration must be set to assign a PBus device ID to a specific server channel. This controls the server channel onto which PBus commands to a device will load the clip. Valid device IDs are from 0 to 23.

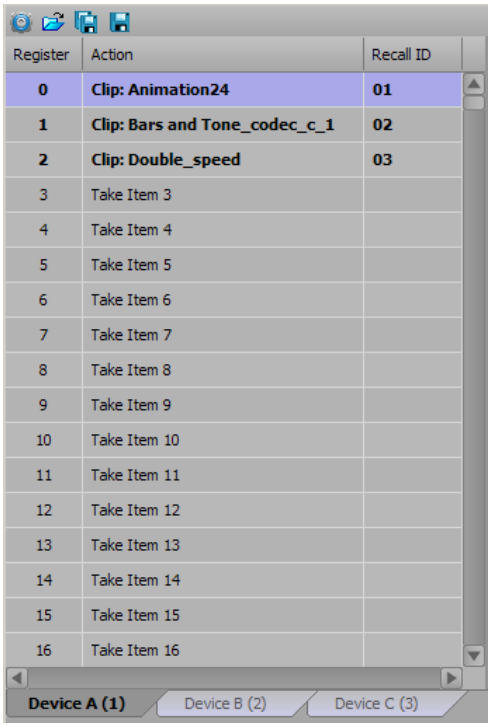
By default, every PBus register (0 to 4095) will cue/play the corresponding take item with that ID number. However, clips from the Clip Browser can be assigned to a PBus register simply by dragging them from the **Clip Browser** onto a PBus register. Alternatively, various actions (same ones accessible in the keyboard mapping menu) can be assigned to a PBus register by dragging them from the action list on the right to a PBus register. This is useful for assigning scripts or actions like **Take Next/Clear Channel**, etc. to a PBus register.

Right-click on a register with a clip and select **Find Clip in Clip Browser** to find a clip or select a different clip in the **Clip Browser**.

A PBus register map can be saved to disk to a file using the .PBM extension, or maps for all devices can be saved to a .PBMS file. Maps can be loaded from these PBM files or from a specific format of XML file. When using the XML file import, it will assign clips to PBus registers using their recall ID from the clip database.

Using PBus for Clips with Recall IDs

The PBus map contains a column named **Recall ID**.



If a clip in the Clip Store exists with that recall ID, it will be assigned to that PBus register. A clip's recall ID can also be entered into the column to assign it to the respective register. The PBus register will always recall the clip with that specific recall ID, so if a new clip is ingested with a matching recall ID, the PBus register will recall the new clip instead. If the clip is manually edited and the recall ID is changed or removed, the PBus register will no longer recall that clip.

A similar behavior exists when dragging a clip with a recall ID into the PBus register; meaning that the PBus register is bound to a specific recall ID and not to a specific clip. Holding **Ctrl-Shift** and dragging a clip onto a PBus register will link the clip with the PBus register, and it will not be replaced even if a clip with a duplicate recall ID is ingested.

Output

The output of an XPression Clips project can be sent to preview in a virtual output.

The following topic is discussed in this section:

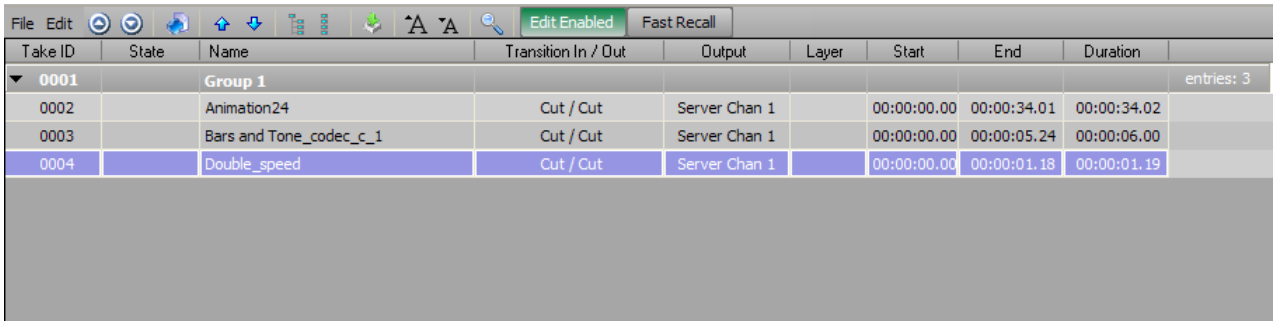
Previewing Output in a Virtual Output

To preview output in a Virtual Output:

1. In **Edit > Hardware Setup**, configure an **XPression Virtual Output**.

   See Configuring an XPression Virtual Output for instructions.

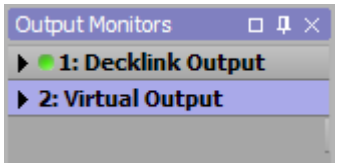
2. In the **Clip Browser**, select and drag the clip to output into the **Sequencer**.



3. Double-click the clip to take it online.

   Alternatively, right-click the clip and select **Take Online** from the shortcut menu.

4. In the **Output Monitors** window, note the framebuffer number of the **Virtual Output** output monitor.



5. Use the drop-down in the **Output** column of the **Sequencer** to select the framebuffer number of the **Virtual Output** for clip to output.

6. Double-click the clip in the **Sequencer** to take it online.

   The **XPression Virtual Output** window opens to display the output of the selected clip.

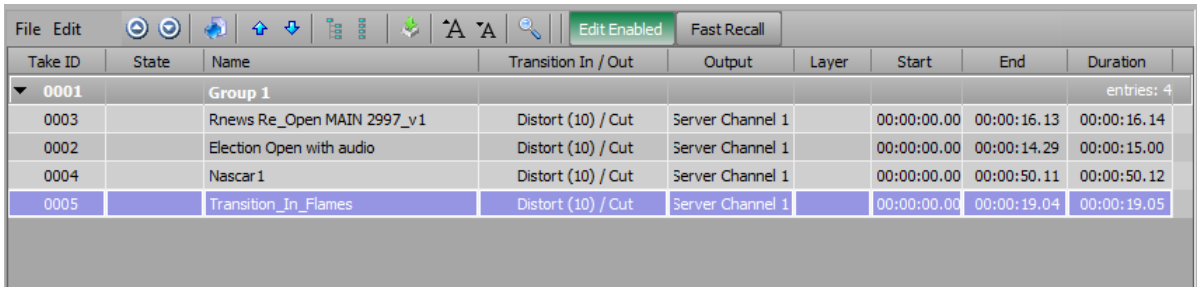
7. Right-click the output in the **XPression Virtual Output** window and select **Full Screen** to use full screen display.

Rendering Output to an AVI File

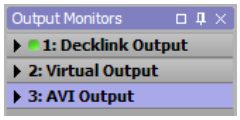
It is necessary to render the output of a take item or take item group as an .AVI file in order to play it in XPression.

To add a scene or scene group to the Sequencer:

1. Select the **Sequence** tab.
2. Select a clip or clips from the **Clip Browser** and drag it into the **Sequencer**.



3. In the **Output Monitors** window, note the framebuffer number of the **AVI Output**.

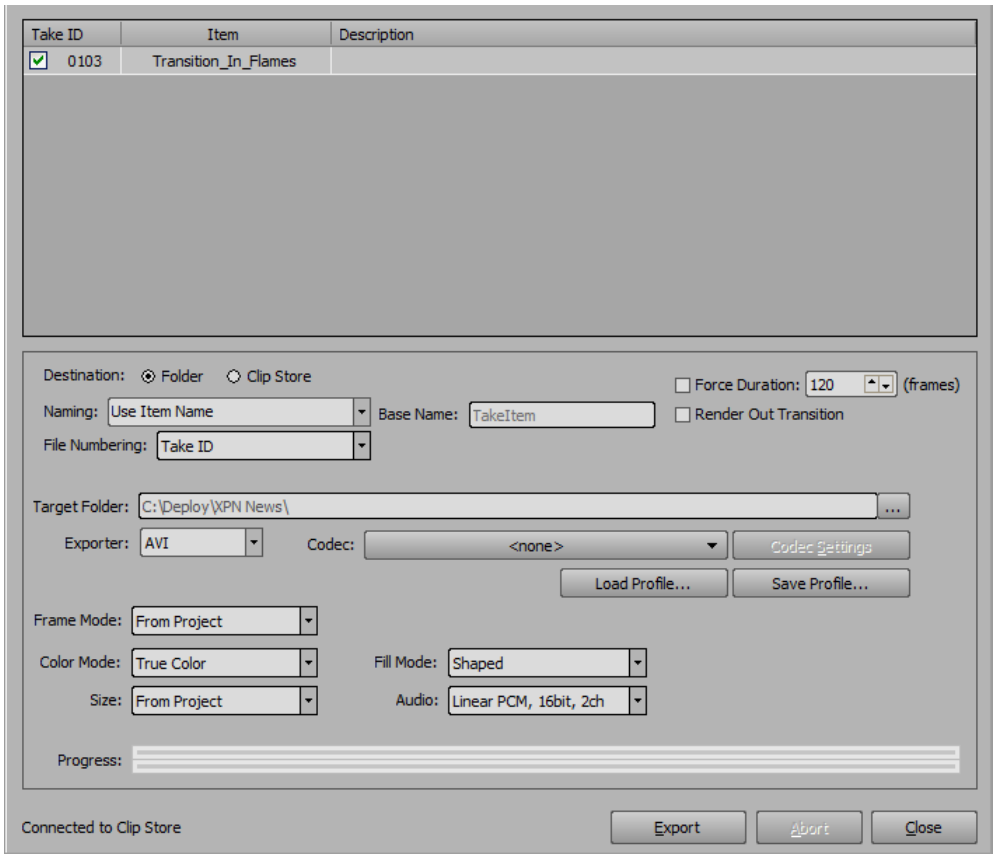


4. In the **Output** column of the **Sequencer**, click in the row for the scene or scene group to output to AVI and from the drop-down, select the **Framebuffer** number shown in the **Output Monitors** window.
5. Continue with the instructions for exporting the output.

To save the AVI file:

1. Right-click the selected take item or take item group in the **Sequencer** and select **Export Take Item To > Video**.

   The **Export To Video** dialog opens.



2. In the **Export to Video** dialog, select the checkbox of the **Take ID** to export.

   Select the respective checkboxes of **Take IDs** if exporting multiple videos.

3. Select a **Destination** for the video(s):

   - **Folder** — save the video(s) to a target folder.
   - **Clip Store** — save the video(s) to the Clip Store for use within a clips workflow.

4. Select the **Force Duration** checkbox to make the video conform to the number of frames set in the adjacent field.

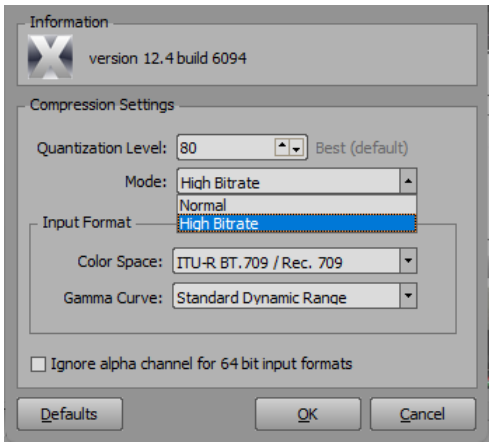
5. Select the **Render Out Transition** checkbox to render the take item using the transition in/out effect in the **Take Inspector - Transition** settings for the take item.

6. In the **Target Folder** field, enter the path to the folder in which to save the AVI file or select **Browse** to locate and select the folder.

To select the video format and codec:

1. From the **Exporter** drop-down, select **AVI**.
2. From the **Codec** drop-down, select an encoder.
3. If the **XPression Video Encoder** is selected, select **Codec Settings**.

   The **XPression Video Codec 2** dialog opens.



   a. In the **Compression Settings** section, in the **Quantization Level** field, enter or select the percentage of the color sampling.

      The higher the percentage, the better the color sampling quality. The default of 80 is recommended.

   b. In the **Input Format** section, from the **Color Space** drop-down, select the specific organization of colors for the compression

      The options are:

      - **Standard RGB (sRGB)**
      - **ITU-R-BT.601 / Rec. 601**
      - **ITU-R BT.709 / Rec. 709**
      - **ITU-R BT.2020 / Rec. 2020**

   c. From the **Gamma Curve** drop-down, select the method for optimizing the usage of bits for encoding the video.

      The options are:

      Standard Dynamic Range

      Hybrid Log Gamma (HLG)

      Perceptual Quantization (PQ)

   d. Select the **Ignore alpha channel for 64 bit input formats** checkbox to ignore the alpha channel in the encoding when using 64-bit input formats.

   e. Select **OK**.

   The XPression Video Codec 2 dialog closes.

4. The video settings can be saved to a file by selecting the **Save Profile** button.
5. Select **Load Profile** to open a file browser to locate and select previously saved video settings.

To configure the remaining settings:

1. From the **Frame Mode** drop-down, select the mode to use.

   The options are:

   - **From Project** — use the project frame mode.
   - **Upper Field First** — render in upper field first video.
   - **Lower Field First** — render in lower field first video.
   - **Frame Based** — render the video as frame based.

2. From the **Color Mode** drop-down, select a color mode for the video file.

   The options are:

   True Color — use 24-bit color.

   True Color + Alpha — use 24-bit color with alpha.

3. From the **Size** drop-down, select a frame size for the video(s).

   The options are:

   From Project — use the project dimensions.

   From Project (virtual) — use the viewport resolution. This is only applicable to video formats with non-square pixels.

   From Scene — use the scene dimensions.

4. From the **Fill Mode** drop-down, select the method used to process fill before output.

   The options are:

   Shaped — shape the fill signal color information by the luminance information in the key signal.

   Unshaped — output the fill and key signals "as is".

5. From the **Audio** drop-down, select an audio setting for the video(s).

   The options are:

   - **None** — do not use audio for the video(s).
   - **Linear PCM, 16bit, 2ch** — export with two-channel audio.

6. Select **Export**.

   The take item is exported to an AVI file. The **Progress** bar displays the progress of the video(s) being saved.

Keyboard and GPI Mapping

Enter topic text here.Keyboard and GPI mapping enables many of the XPression functions to be assigned to keyboard shortcuts or GPI input triggers. Many of XPression's existing default keyboard shortcuts can also be customized.

The following topics are discussed in this section:

Creating a Custom Keyboard Map

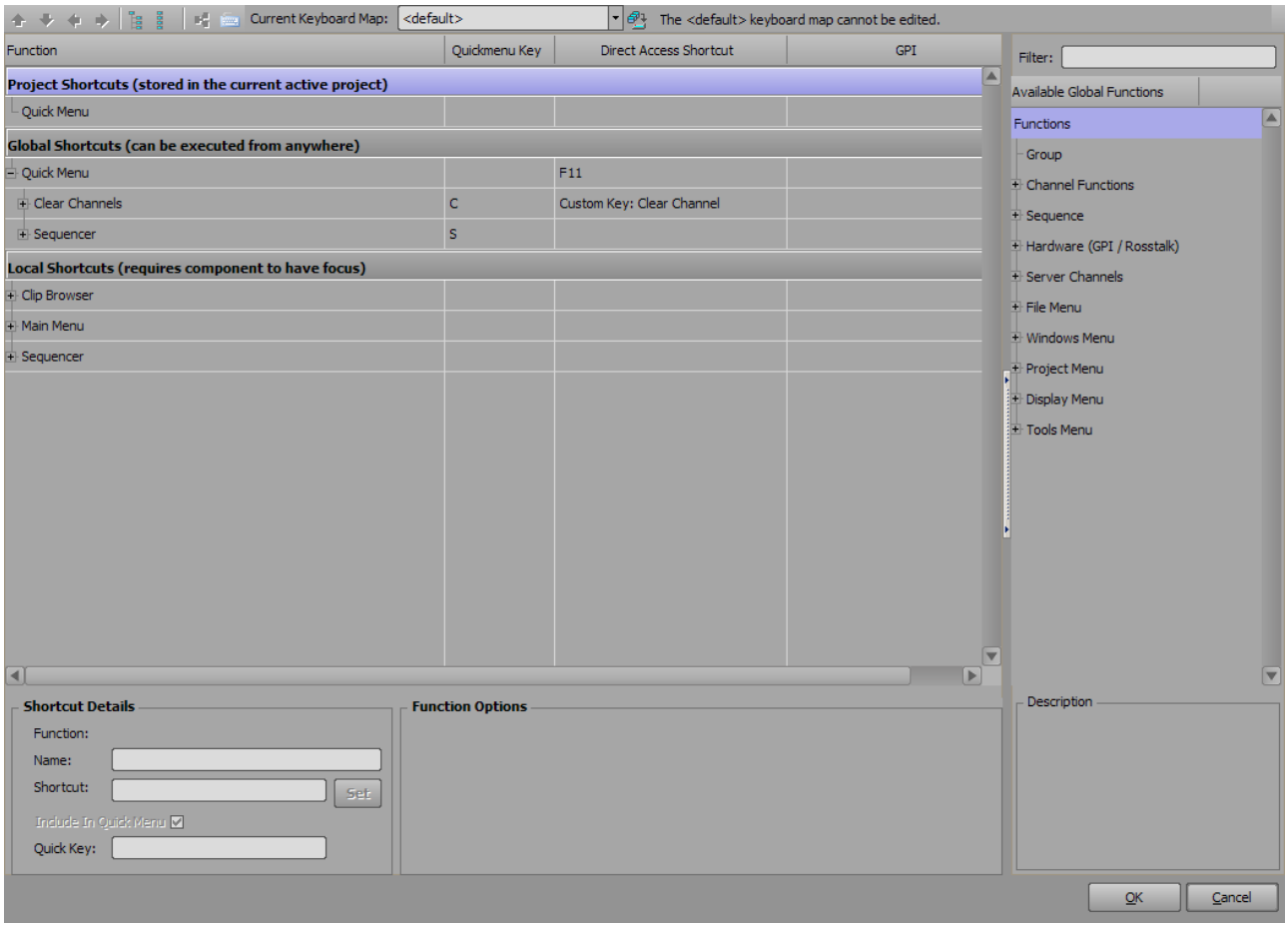
You can use the default keyboard map as a basis for creating a custom keyboard map, specific to your needs.

★The default keyboard map cannot be edited.

To create a custom keyboard map:

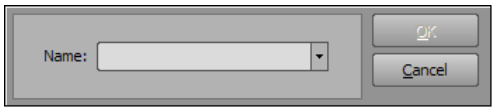
1. In XPression, select **Edit > Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog opens.



2. Select the **Save Keyboard Mapping** button to create a new custom keyboard mapping.

   The **Save Keyboard Mapping** dialog opens.



3. In the **Save Keyboard Mapping** dialog, enter a name for the new custom keyboard mapping.
4. Select **OK**.

   The added custom keyboard mapping appears in the **Current Keyboard Map** list and is saved as a **.kbd** file.

For More Information on...

- assigning a Global Shortcut, refer to Assigning a Global Shortcut.
- assigning a Local Shortcut, refer to Assigning a Local Shortcut.

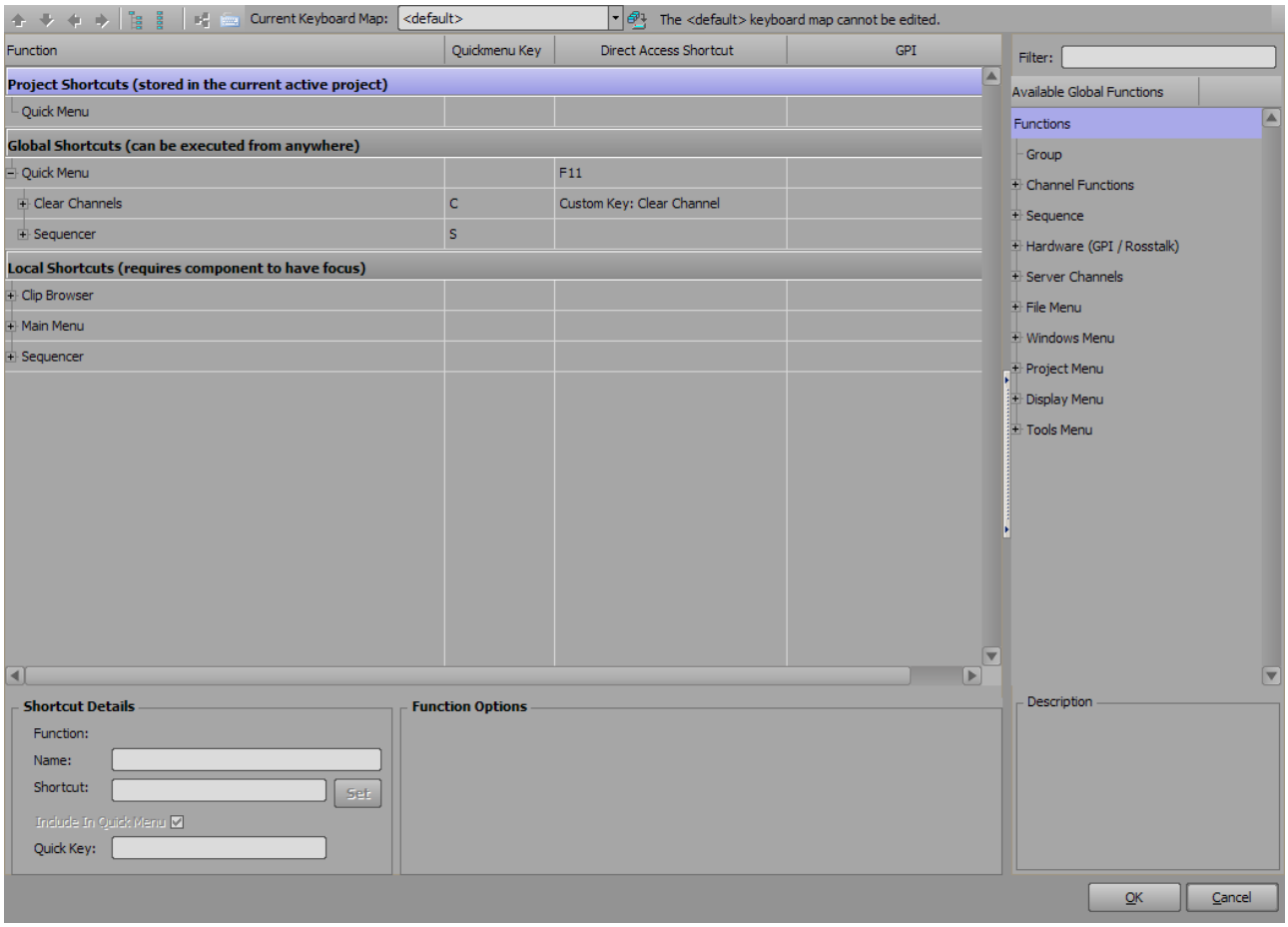
Assigning a Project Shortcut

Project shortcuts represent keyboard hotkeys that apply to a specific XPression project.

To assign a project shortcut:

1. In XPression, select **Edit > Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog opens.



2. From the **Current Keyboard Map** drop-down, select a a keyboard map or create a custom keyboard map.
3. Drag an item from the **Global Functions** list into the **Project Shortcuts** table as necessary.
4. In the **Project Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.
5. In the **Shortcut Details** section, do the following:

   - In the **Name** field, edit the name of the selected item if necessary.
   - In the **Shortcut** field, enter a keyboard shortcut to assign to the selected item by entering the command on the keyboard.

   The assigned keyboard shortcut appears in the **Shortcut** field and in the **Project Shortcuts** table, in the row for the selected item in the **Direct Access Shortcut** column.

   If the assigned keyboard shortcut is already in use by another function, a warning icon ⚠ will appear next to the command in the **Direct Access Shortcut** column.

6. Place the cursor over the warning icon to view where the conflict occurs and select another shortcut for one of the items.
7. Select **OK**.

For More Information on...

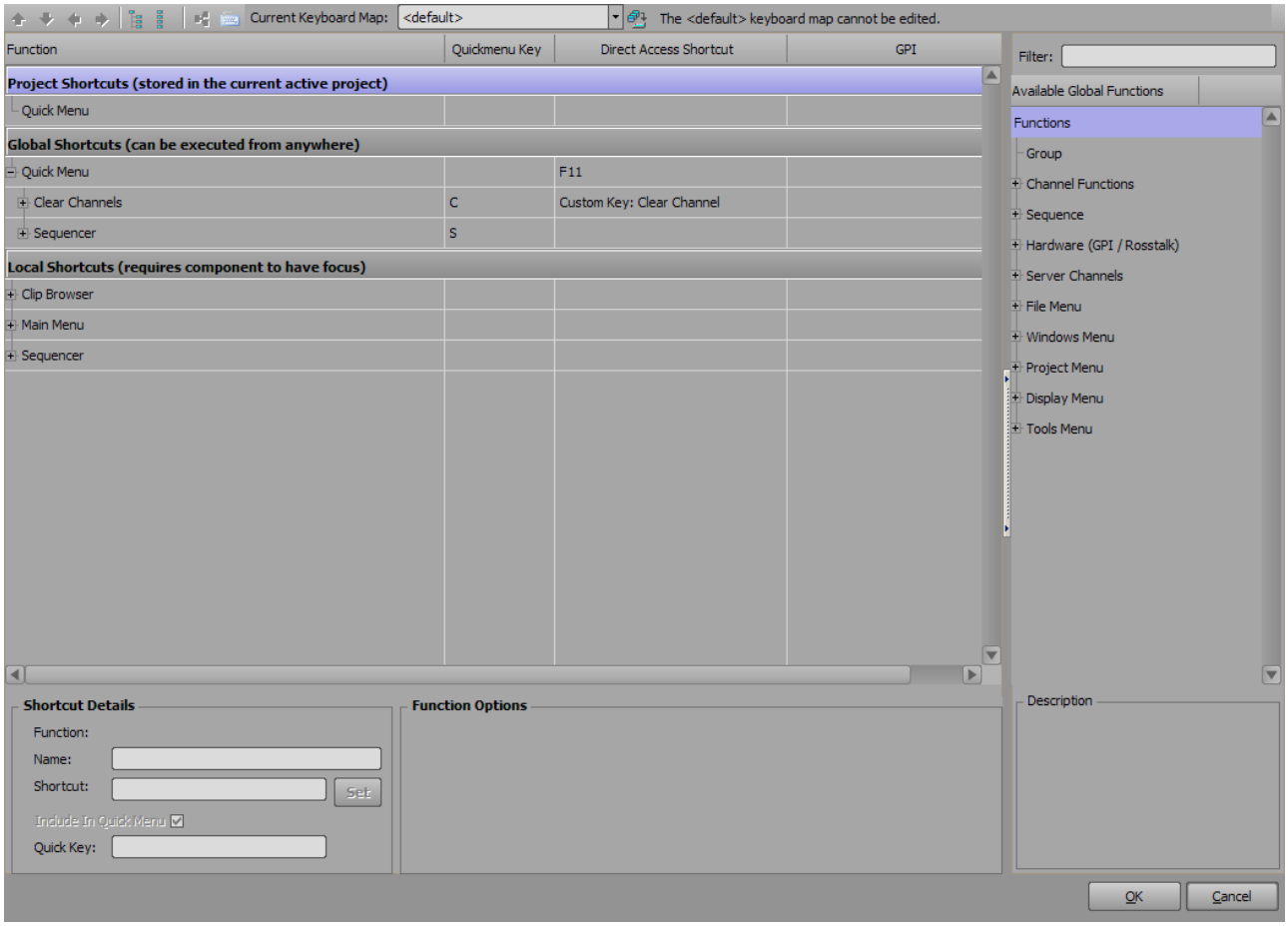
- creating a custom keyboard map, refer to Creating a Custom Keyboard Map.

Assigning a Global Shortcut

Global shortcuts represent functions that can be assigned to keyboard hotkeys that are active at any time while XPression is running.

1. In XPression, select **Edit > Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog opens.



2. From the **Current Keyboard Map** drop-down, select a keyboard map or create a custom keyboard map.

   ★The default keyboard map cannot be edited.

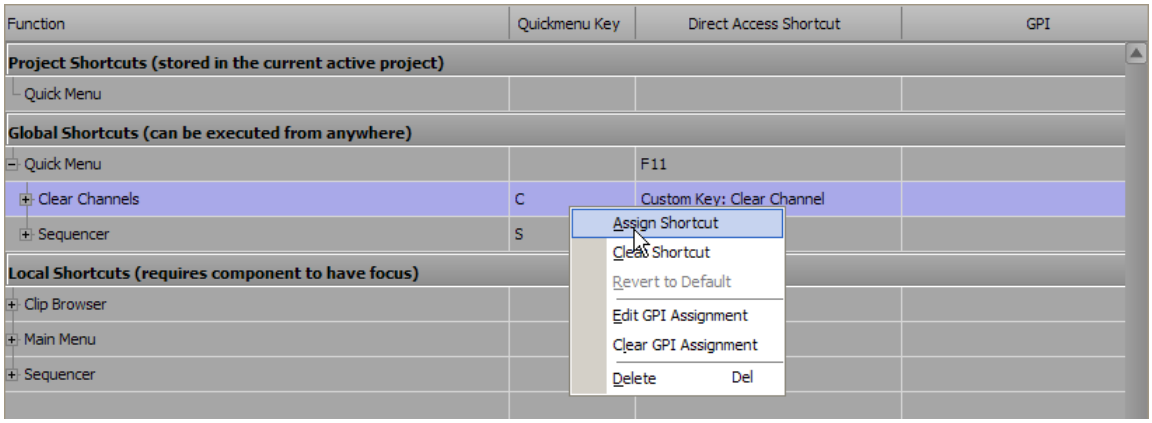
3. In the **Available Global Functions** list, drag and drop the **Group** function onto the **Quick Menu** item in the **Global Shortcuts** tree.

   Alternatively, select the **Quick Menu** item in the **Global Shortcuts** tree and then select the **Add Group** button in the toolbar.

4. From the **Available Global Functions** list, select a function and drag and drop it into the new group you created in the **Global Shortcuts** tree to add the function.

   You can also enter a function in the **Filter** field to find a specific function.

5. In the **Global Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.



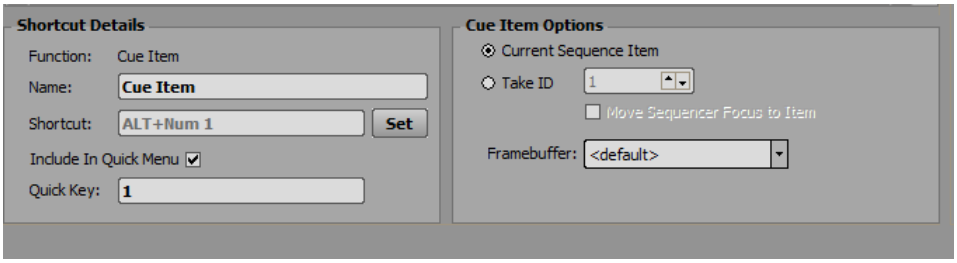
6. In the **Shortcut Details** section, do the following:

   - In the **Name** field, edit the name of the selected item if necessary.
   - In the **Shortcut** field, select the **Set** button and then enter a keyboard shortcut to assign to the selected item.

     The assigned keyboard shortcut appears in the **Shortcut** field and in the **Global Shortcuts** table, in the row for the selected item in the **Direct Access Shortcut** column.

     If the assigned keyboard shortcut is already in use by another item, a **Warning** icon ⚠ will appear next to the command in the **Direct Access Shortcut** column. Place the cursor over the warning icon to view where the conflict occurs and select another shortcut for one of the items.
   - Select the **Include In Quick Menu** checkbox to include the keyboard shortcut in a **Quick Menu**.

     Quick Menus are shortcut menus that appear when a **Quick Key** for a **Global Shortcut** is entered. The keyboard shortcuts available for the selected **Global Shortcut** are listed in the **Quick Menu** that appears. This feature only applies to **Global Shortcut** branches that contain child nodes.
   - In the **Quick Key** field, enter a letter or number as the **Quick Menu** command.



     The **Function Options** section will be populated with the options for the selected function.

7. In the **Function Options** section, configure the options for a selected function:

Clear Layer Options

Framebuffer	From the drop-down, select a framebuffer for clearing the layer.
Layer	In the **Layer** field, enter or select the number of the layer to clear.

Clear Single Channel Options

Framebuffer	From the drop-down, select the framebuffer for clearing the layer.

Clip Browser Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Clip Browser** group is triggered.

Color Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Color** group is triggered.

Cue Item Options

Current Sequence Item	Apply the shortcut to the item currently in focus in the sequencer.
Take ID	Enter or select a **Take ID** number to which to apply the shortcut.
Move Sequencer Focus to Item	Set the **Sequencer** focus to the **Take ID**.
Framebuffer	Select a framebuffer for the item.

Debug Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Debug** group is triggered.

Display Menu Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Display Menu** group is triggered.

Group Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a group is triggered.

Project Menu Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Project Menu** group is triggered.

Project Server Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Project Server** group is triggered.

Send RossTalk Message Options

GPI Board	From the **GPI Board** drop-down, select a GPI board for sending RossTalk messages.
RossTalk Message	From the **RossTalk Msg** drop-down, select a message to send using the assigned shortcut.
	The options are:
	CLFB [channel]:[layer] — clear a single layer on the channel.
	CLRA — clear all framebuffers.
	CUE [takeid]:[channel]:[layer] — cue a Take Item on a specified layer of a channel.
	DOWN — move the current selection in the sequencer to the item below it.
	FOCUS [takeid] — set sequencer focus to a specific Take Item.
	GPI [gpi num] — used to trigger a simulated GPI input. RossTalk/Smart GPI supports up to 64 simulated inputs.v
	LAYEROFF [channel]:[layer] — clear a single layer on the framebuffer specified by the channel. If the layer is not specified, every layer on the channel will be cleared.
	NEXT — read the current selection in the sequencer to air and advance the current selection to the next item.
	READ — read the current selection in the sequencer to air.
	RESUME [channel]:[layer] — resume a single layer on the framebuffer specified by the channel. If the layer is not specified, every layer on the channel will resume.
	EQI [takeid]:[layer] — loads a template to air on the specified layer and the template-defined output channel.
	SEQO [takeid] — takes the template off air.
	SWAP [channel] — switches from the current channel to the one specified in the message.
	TAKE [takeid]:[channel]:[layer] — takes a template to air on the specific framebuffer and layer without moving the sequencer focus to that item.

	TEMPLATEDATA [takeid]:[object name]:[property]:[value] — set the value of a specified object in a specified take item.
	UP — move the current selection in the sequencer to the item above it.
	UPNEXT — set the preview in the sequencer without moving the focus bar.

Set Framebuffer Options

Framebuffer	From the **Framebuffer** drop-down, select a framebuffer or select <none>.

Set GPI Output Options

GPI Board	From the drop-down, select a GPI board for sending the GPI command.
GPI#	Enter or select a **GPI** pin number.
State	From the **State** drop-down, select the state of the signal.
	Low (Inactive) — Use low voltage for the signal.
	Low (Active) — Use high voltage for the signal.

Set Layer Options

Layer	Enter or select the layer number.

Set Transition Options

Current Sequence Item	Use the transition options for the currently selected take item in the sequencer.
Take ID	Use the transition options for the specified **Take ID**.
Server Channel	From the drop-down, select the channel on which the transition will occur.
Transition In/Out	Select the in and out transitions for a take item. The available options are:
	Cut — Use and instantaneous transition from the selected take item to the next take item.
	Dissolve — Use a gradual transition where the selected take item dissolves into the next take item.
	Push — Use a sliding transition where the next take item pushes out the selected take item.
	Distort — Use a transition where the selected take item is warped out.
Duration	Enter or select the duration of the transition.

Take Offline Options

Current Sequence Item	Apply the shortcut to the item currently in focus in the sequencer.
Take ID	Enter or select a **Take ID** number to which to apply the shortcut.
Entire Framebuffer	Take all layers off of the framebuffer selected from the drop-down.

Take Options

Current Sequence Item	Apply the shortcut to the item currently in focus in the sequencer.
Take ID	Enter or select a **Take ID** number to which to apply the shortcut.
Move Sequencer Focus to Item	Set the **Sequencer** focus to the **Take ID**.
Framebuffer	Select a framebuffer for the item.
Advance Sequence After Take	Advance to the next Take Item in the sequence after the current or selected **Take Item** has finished playing.

Tools Menu Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Tool Menu** group is triggered.

Windows Menu Options

Run all children actions when group triggered	Run all of the keyboard shortcuts of the children when the **Quick Key** assigned to a **Windows Menu** group is triggered.

8. When you have finished configuring the function options, select **OK**.

For More Information on...

- creating a custom keyboard map, refer to Creating a Custom Keyboard Map.
- using a **Quick Menu**, refer to Using the Quick Menu.

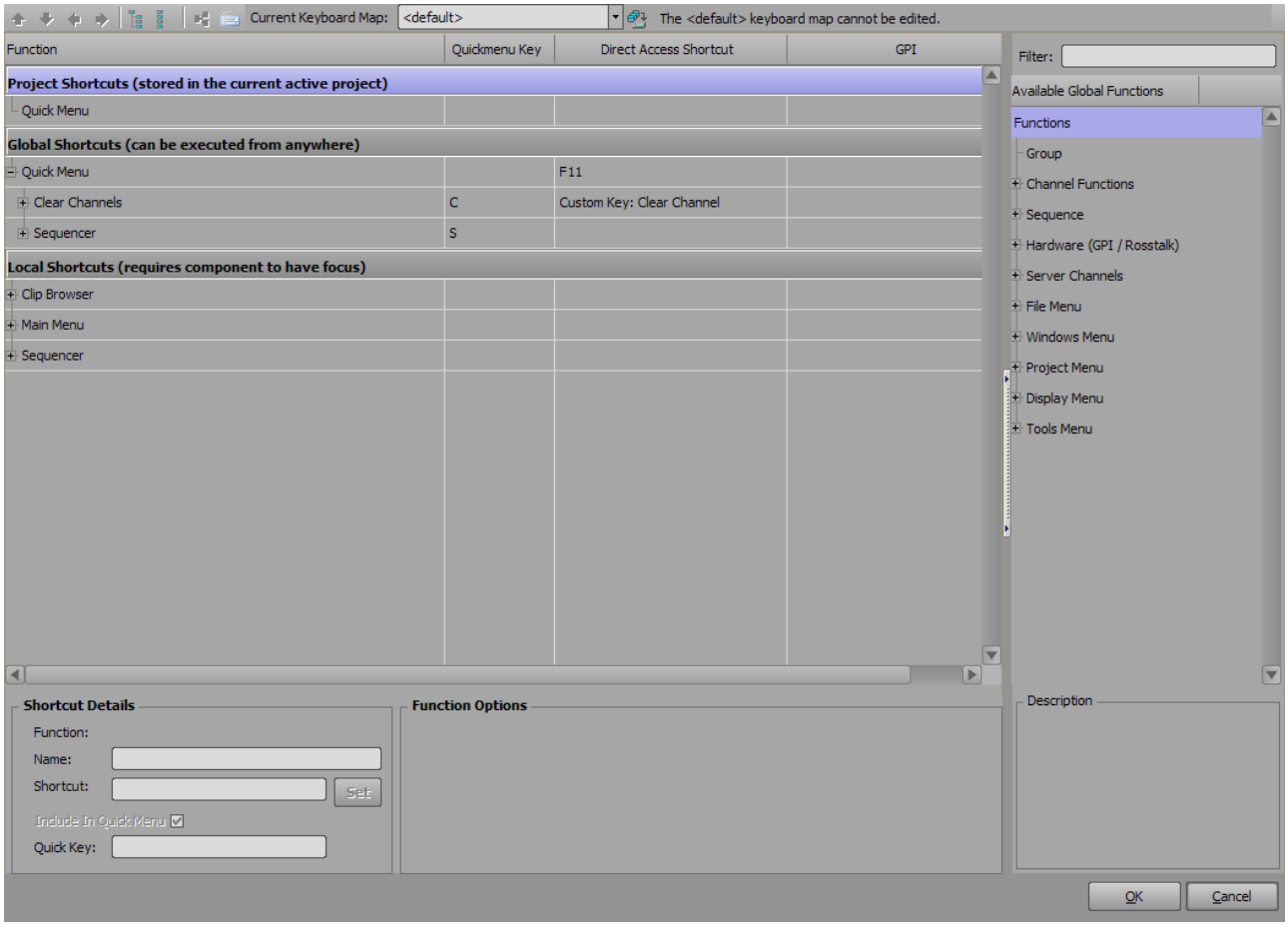
Assigning a Local Shortcut

Local shortcuts represent keyboard hotkeys that apply to one particular component of XPression, such as the **Sequencer**, and are only active when the particular component of XPression has keyboard/mouse focus.

To assign a local shortcut:

1. In XPression, select **Edit > Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog opens.



2. From the **Current Keyboard Map** drop-down, select a a keyboard map or create a custom keyboard map.
3. In the **Local Shortcuts** table, right-click on an item in the shortcuts tree and select **Assign Shortcut** to assign a custom keyboard control to the selected item.
4. In the **Shortcut Details** section, do the following:
   - In the **Name** field, edit the name of the selected item if necessary.
   - In the **Shortcut** field, enter a keyboard shortcut to assign to the selected item.

     The assigned keyboard shortcut appears in the **Shortcut** field and in the **Local Shortcuts** table, in the row for the selected item in the **Direct Access Shortcut** column.

     If the assigned keyboard shortcut is already in use by another item, a **Warning** icon ⚠ will appear next to the command in the **Direct Access Shortcut** column.

5. Place the cursor over the warning icon to view where the conflict occurs and select another shortcut for one of the items.
6. Select **OK**.

For More Information on...

- creating a custom keyboard map, refer to Creating a Custom Keyboard Map.

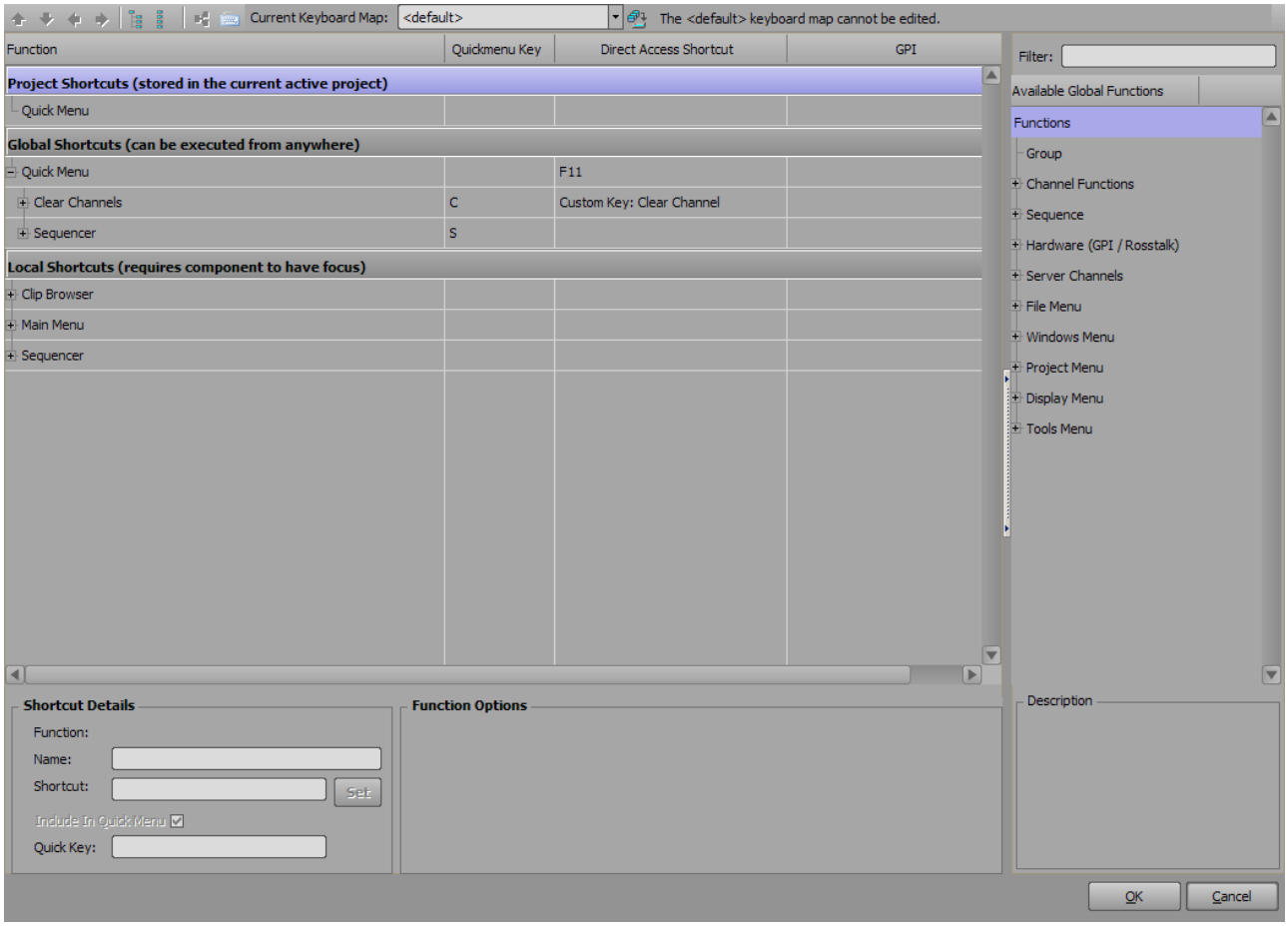
Creating a Custom GPI Map

You can create a custom GPI map to use GPI triggers to execute events.

To create a custom GPI map:

1. In **Hardware Setup**, configure a GPI board for XPression.
2. Then select **Edit > Keyboard / GPI Mapping**.

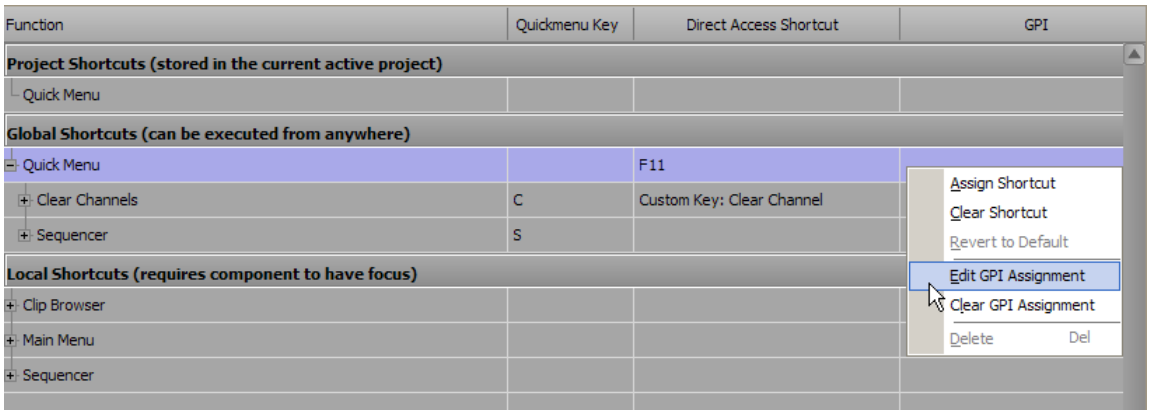
   The **Keyboard / GPI Mapping** dialog opens.



3. Create a custom keyboard mapping that includes global shortcuts.

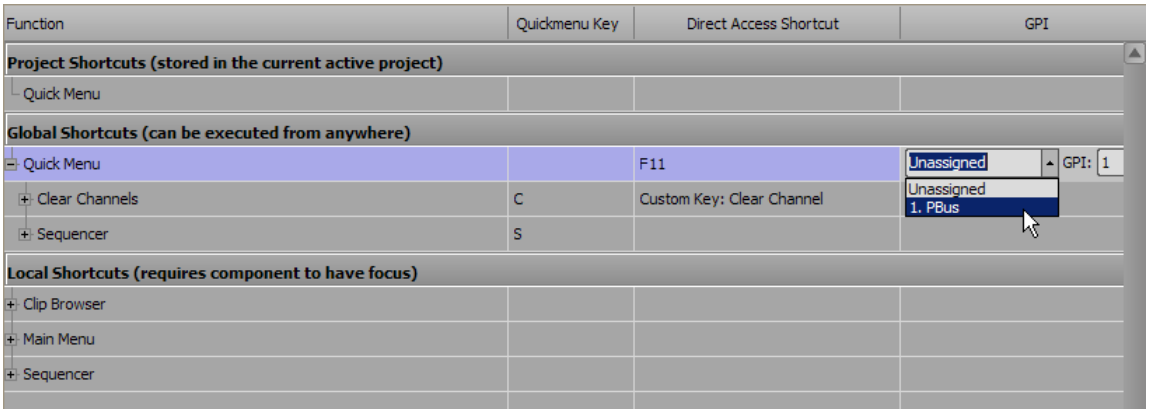
4. In the **Global Shortcuts** tree, right-click on a global shortcut and select **Edit GPI Assignment**.

   The same GPI trigger can be assigned to multiple global functions to execute them in order.



5. In the **GPI** column of the **Global Shortcuts** table, perform the following to the selected global shortcut:

   - Select a GPI board from the drop-down.



   - In the **GPI** field, enter or select a GPI input to assign to the selected global shortcut.

     If the assigned keyboard shortcut is already in use by another item, a **Warning** icon ⚠ will appear next to the command in the **Direct Access Shortcut** column.

     Place the cursor over the warning icon to view where the conflict occurs and select another shortcut for one of the items.

6. Select **OK**.

For More Information on...

- adding an Adrienne TC/GPIO card, refer to Configuring a 25-Pin GPIO Port.
- adding a Serial GPI board, refer to Configuring RS232 CTS/DSR GPI for Contact Closures.
- adding a Smart GPI/RossTalk board, refer to Configuring Smart GPI / RossTalk.
- creating a custom keyboard, refer to Creating a Custom Keyboard Map.

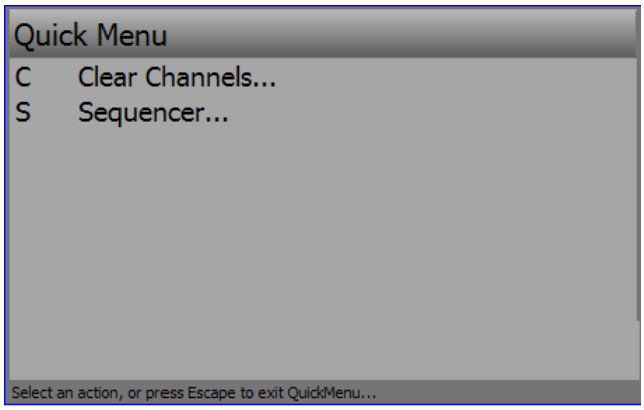
Using the Quick Menu

When you have created shortcuts and included them in the **Quick Menu**, they can be selected from the associated **Global Shortcuts** branch in User Guide.

To use the Quick Menu:

1. Create a custom keyboard mapping that includes **Global Shortcuts**.
2. In XPression, enter the keyboard shortcut for a **Global Shortcut** branch.

   The **Quick Menu** for the **Global Shortcut** branch opens.



3. In the **Quick Menu** perform one of the following:
   - Press a **Quick Key** on the keyboard to select an item from the **Quick Menu**.

     OR

   - Use the keyboard arrows to select an item and press **Enter**.

   The selected **Quick Menu** item action is triggered.
4. Press **Esc** at any time to close the **Quick Menu**.

For More Information on...

- creating a custom keyboard, refer to Creating a Custom Keyboard Map.
- assigning a **Global Shortcut**, refer to Assigning a Global Shortcut.

Project Manager

The Project Manager window is used to manage XPression Clips projects.

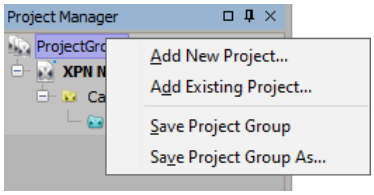
The following topics are discussed in this section:

Opening Multiple Projects in the Project Manager

To open multiple projects in the project manager:

1. In the **Project Manager**, right-click on the **Project Group**  node.

   The **Project Group** shortcut menu opens.



2. Select one of the following options:

   - **Add New Project** — select to open the **New Project** dialog and create a new project to add to the **Project Group**.
   - **Add Existing Project** — select to open the browser and select an existing project to open in the **Project Group**.

   The new or existing project displays as a project node in the Project Group and opens in XPression Clips.

3. Repeat the above steps to add more projects.

For More Information on...

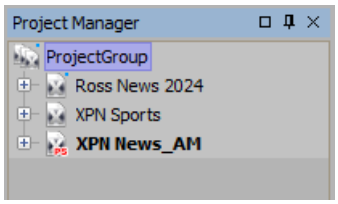
- creating a new project in XPression, refer to the procedure Creating a Project.

Activating a Project from a Project Group

To activate a project from a project group:

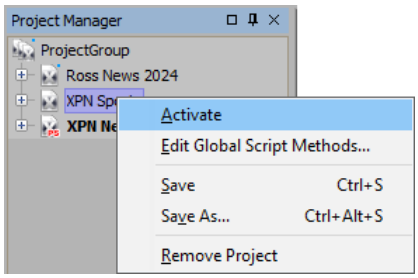
1. Open multiple projects in XPression Clips.

   The projects appear in the **Project Manager**.



2. In the **Project Manager**, right-click on the **Project**  node of the project to be activated.

   The project shortcut menu opens.



3. Select **Activate** from the shortcut menu.

   The selected project is activated in the XPression Clips **Editor** and **Sequencer**.

For More Information on...

- opening multiple projects in XPression Clips, refer to Opening Multiple Projects in the Project Manager.
- creating a new project in XPression Clips, refer to Creating a Project.

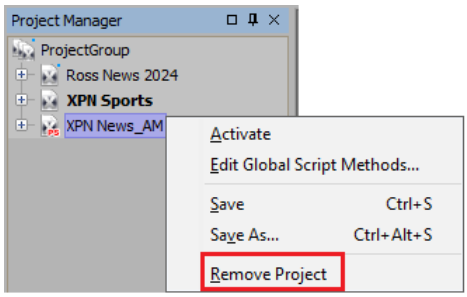
Removing a Project from a Project Group

You can remove unwanted projects from a project group.

To remove a project from a project group:

1. In the **Project Manager**, right-click on the **Project**  node of the project to be removed from the project group.

   The project shortcut menu opens.



2. Select **Remove Project** from the shortcut menu.

   The selected project is removed from the **Project Group**.

For More Information on...

- opening multiple projects in XPression, refer to the procedure Opening Multiple Projects in the Project Manager.

Appendix A: Keyboard Shortcuts

Use the keyboard shortcuts in this section to perform various functions in XPression Clips.

Menu Shortcuts

Menu	Keyboard Shortcut	Function
File	CTRL + ALT + N	New project
	CTRL + O	Open project
	F9	Revert project
	CTRL + S	Save project
	CTRL + ALT + S	Save project as...
	CTRL + SHIFT + ALT + S	Increment and save project
Project	CTRL + ALT + E	Display project path in Windows Explorer
Help	F1	Display Online Help

Sequencer Shortcuts

Keyboard Shortcut	Function
UP ARROW	Select previous take item
DOWN ARROW	Select next take item
CTRL + UP ARROW	Move selected take item up the list
CTRL + DOWN ARROW	Move selected take item down the list
HOME	Select first take item
END	Select last take item
CTRL + Fn KEY	Remove selected take item from the framebuffer represented by the Fn key
NUMPAD *	Scroll the Sequencer list to the currently focused item and, if applicable, expand the group containing the focused item. Requires the Fast Recall button to be enabled.

Clip Browser Shortcuts

Keyboard Shortcut	Function
ALT + Q	Enable Quick Find
ESC	Clear Quick Find
ENTER	Cue/Play when Fast Recall is enabled.

Server Channel Shortcuts

Keyboard Shortcut	Function
ALT + #	Select a Server Channel number as the focused Server Channel.

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