XPression

Tessera User Guide

VERSION 14.0



ROSS

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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 Tessera User Guide

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- Version: 14.0
- Document Revision: 1
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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.

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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.

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"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.

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

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

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   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.

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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.

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    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.

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    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.

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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

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(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 Tessera systems to be free from defects under normal use and service for the following time periods from the date of shipment:

- XPression Tessera Server — 12 months
- XPression Tessera 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 Tessera 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.

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E-mail for Technical Support:	techsupport@rossvideo.com
E-mail for General Information:	solutions@rossvideo.com
Website:	http://www.rossvideo.com

*If the local support specialist is not available, your call will be transferred automatically to our North America center.

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Introduction

Thank you for choosing a Ross Video XPression Tessera system.

Ross Video designed XPression Tessera with the needs of live production in mind. XPression Tessera is part of Ross Video's broad line of real-time graphics products and workflow tools. It is a multi-display real-time graphics designer/controller for sports venues & studio video walls.

Tessera enables users to link together multiple XPression engines to create a scalable matrix of channels for seamless output of scenes across large or irregularly assembled display panels. Perfect for sports scoreboards, ribbon boards, and studio video walls, Tessera's resolution can scale just by adding more XPression engines or "Tessera nodes" and adding to the mapping.

Frame-accurate, non-tearing recall of graphics and clips across any or all nodes is made possible with XPression's Multi-Engine Sync technology. More importantly, XPression's unlimited scene layering on output is preserved across Tessera nodes for incredibly dynamic animations and transitions.

The Tessera Region Manager allows operators to divide scenes into regions and assign those regions to specific nodes. The Tessera Node Manager allocates the XPression engines and channels to be used as render nodes. And, the XPression Project Server handles the automatic one-click publishing of scene updates and resources to all nodes for ultimate efficiency.

Whether you need to drive large displays in sports venues or build a studio video wall, XPression Tessera is the most powerful and cost-effective solution available.

We appreciate your business and sincerely hope that you have a great experience with your new XPression Tessera system. As always, if there is anything we at Ross Video can do to assist you, please do not hesitate to contact us.

About This Guide

This guide covers the use of the XPression Tessera system.

If, at any time, you have questions pertaining to the operation of XPression Tessera, please contact us at the numbers listed in the section Getting Help. Our technical staff is 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

XPression Tessera documentation is available online at Product Documentation and is also accessible on the product USB key and by selecting the **Help** icon in the user interface.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

Technical Support:

- 1-613-686-1557
- 1-833-859-0499 (Toll free within North America)
- +800 3540 3545 (Toll free International)
- +91-22-5016-6177 (India)
- 1300 007 677 (Australia/Sydney)*
- E-mail: techsupport@rossvideo.com
- Website: http://www.rossvideo.com

*If the local support specialist is not available, your call will be transferred automatically to our North America center.

Tessera User Interface Overview

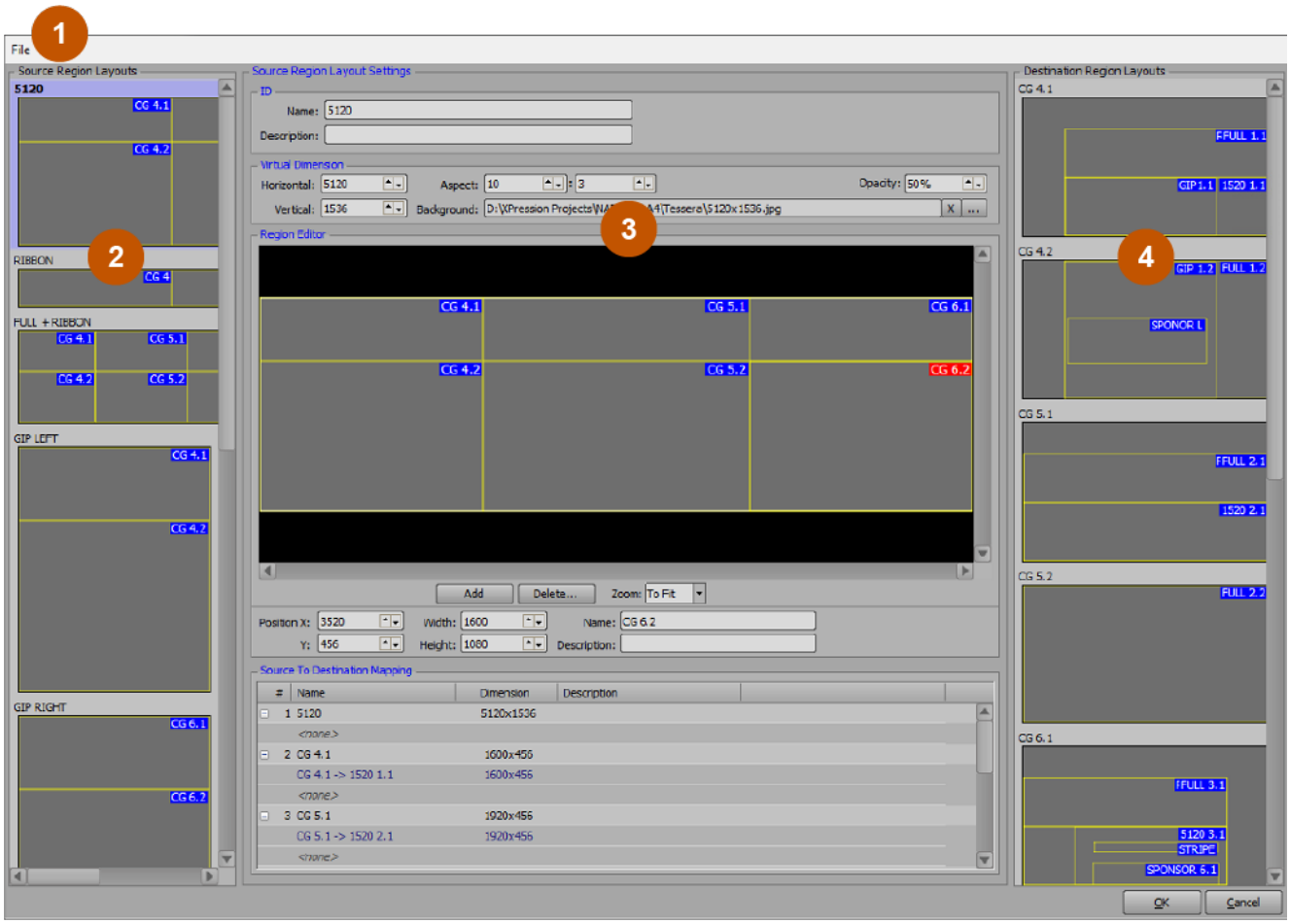
This section provides a user interface overview for the XPression Tessera Region Mapper. It includes the following:

XPression Tessera Region Mapper - Source Region Layout Settings

XPression Tessera Region Mapper - Destination Region Layout Settings

XPression Tessera Region Mapper - Source Region Layout Settings

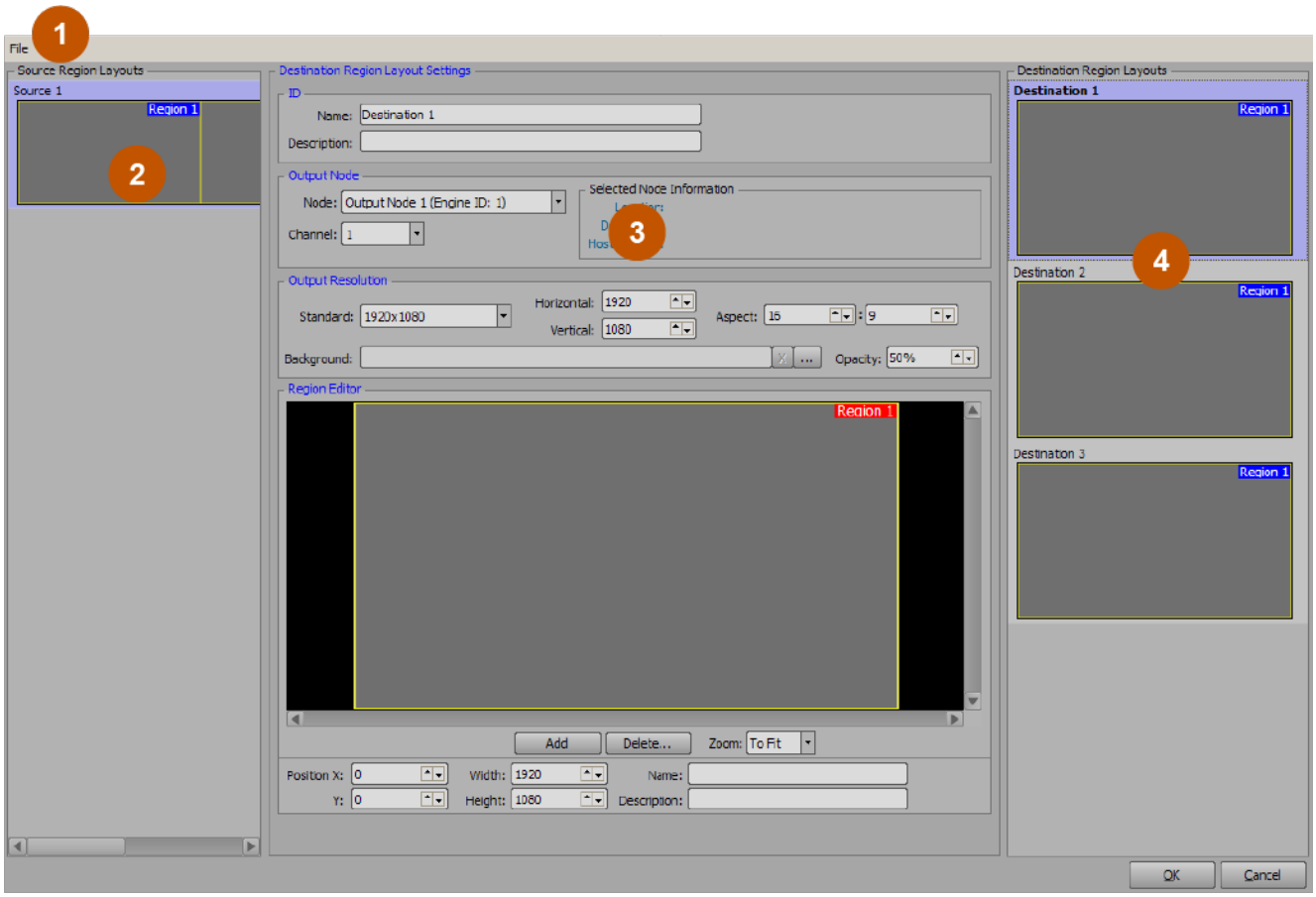
The following screen capture displays the main elements of the XPression Tessera Region Mapper window in XPression with the Source Region Layout section of the selected source region.



1. **Menu Bar** — use the **File** menu to load a configured region map from a saved file or save a configuration.
2. **Source Region Layouts** — use this section to add and delete source outputs of specific resolution and regions across multiple channels of XPression on multiple render engines.
3. **Source Region Layout Settings** — use this section to configure the settings for a selected source, including defining the region and mapping sources to destinations.
4. **Destination Region Layouts** — use this section to add and delete destination framebuffer outputs with rendered regions that are mapped to source outputs.

XPression Tessera Region Mapper - Destination Region Layout Settings

The following screen capture displays the main elements of the XPression Tessera Region Mapper window in XPression with the **Destination Region Layout** section of the selected destination region.



1. **Menu Bar** — use the File menu to load a configured region map from a saved file or save a configuration.
2. **Source Region Layouts** — use this section to add and delete source outputs of specific resolution and regions across multiple channels of XPression on multiple render engines.
3. **Destination Region Layout Settings** — use this section to configure the settings for a selected destination, including defining the region.
4. **Destination Region Layouts** — use this section to add and delete destination framebuffer outputs with rendered regions that are mapped to source outputs.

XPression Tessera Setup

- The XPression Tessera setup consists of the following concepts and workflow:
- Tessera can consist of either a master controller and output node engines, or a single engine setup. The master controller has no actual physical outputs. Output nodes are render devices which do not require a user interface. In single engine mode, the single engine acts as the master controller and output engine.
- Scenes are typically created at the actual size (resolution) that they are to be displayed, but do not have to be.
- There are two elements to a Tessera mapping: Source Region Layouts and Destination Region Layouts.
- Source Region Layouts are "region masks" applied to an XPression scene, and in turn these regions are mapped to destination regions.
- Destination Region Layouts can be viewed as if they are framebuffer outputs. Each destination has regions that will be rendered to, allowing for the slicing of pieces of the overall full resolution canvas should non-standard resolution displays be rendered to.
- Source Region Layouts are eventually mapped to Destination Region Layouts. For example, a destination could have two regions from two sources that would be stitched together.
- Every engine must have GenLock. All engines must be locked to the same GenLock/reference.
- Each XPression turnkey engine has two network cards. One network interface can link to a public network for internet, and the other can link to the private Tessera network. The network synchronization is accomplished using UDP.

  Note: managed networks may prioritize TCP over UDP, affecting the performance of the synchronization.
- When using multiple engines, projects are centrally located on an XPression Project Server. Every Tessera graphics project MUST be uploaded once to the project server and then re-deployed to the local disk. If the project is simply saved, it will not be synced.

The following topics are discussed in this section:

Tessera Multiple Engine Mode

Tessera Single Engine Mode

Region Mapping

Scenes

Saving a Project

Saving Region Mappings

Tessera Backup System

Assigning a Source Output to a Scene or Scene Group in the Object Inspector

Tessera Multiple Engine Mode

Using the **Tessera Settings** (XPression Studio) or **Tessera Setup** (XPression BlueBox) dialog, the output node engines, preview node engines, and the master engine can be defined and configured. Use the following sections to configure a multiple engine Tessera setup:

Setting up an Output Node Engine

Setting up a Preview Node Engine

Setting up the Master Engine

Tessera Output Nodes

Using Clips with Tessera Multiple Engine Mode

Using DataLinq with Tessera Multiple Engine Mode

Preconditions

The following items should be completed before setting up an XPression Tessera project:

- The master XPression engine, the output node XPression render engines, and the XPression Project Server are connected within the network. All render engines must be linked to the same Project Server or else the render engines will not be able to retrieve the master project.
- If using multiple engines, projects have been centrally located on the XPression Project Server where they can be deployed from the master engine.

Setting up an Output Node Engine

Output node engines can be configured in XPression Studio and/or XPression BlueBox. Setting up the output render engines first allows for a one-stop configuration of the controlling master engine after.

★Output node channels should only be hardware channels; server channels or virtual outputs should not be used.

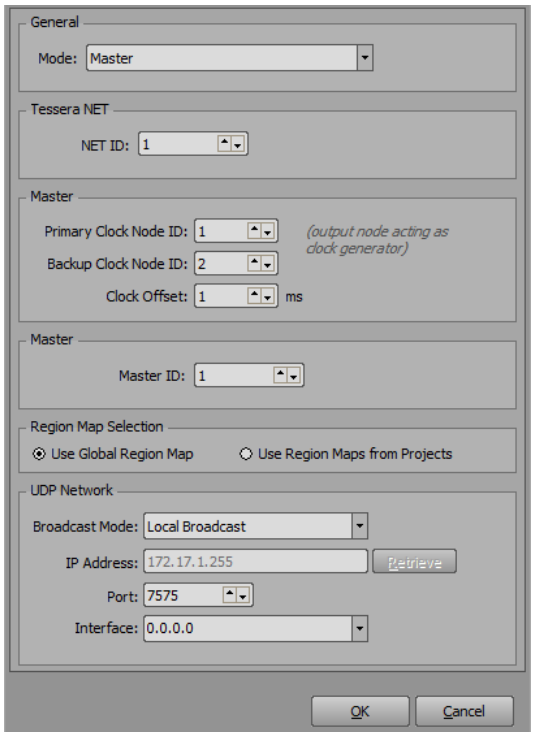
★Ensure in the **Editor** section of the **Preferences** menu (in Studio) and the **BlueBox** section of the **Preferences** menu (in BlueBox) that the **Do Not Create Untitled Project** checkbox is selected.

★For the Tessera Master Duo edition, you can only have two nodes, either one primary node and one backup node, or two primary nodes.

To set up an output node engine:

1. Depending on whether the output node engine is being configured on Studio or BlueBox, do one of the following:
   - In XPression Studio on an output node engine, select **Edit > Tessera > Settings** to open the **Tessera Settings** dialog.
   - On an XPression BlueBox machine, right-click on the **XPression BlueBox** icon ( ) in the Windows system tray and select **Tessera Setup** from the menu to open the **Tessera Setup** dialog.

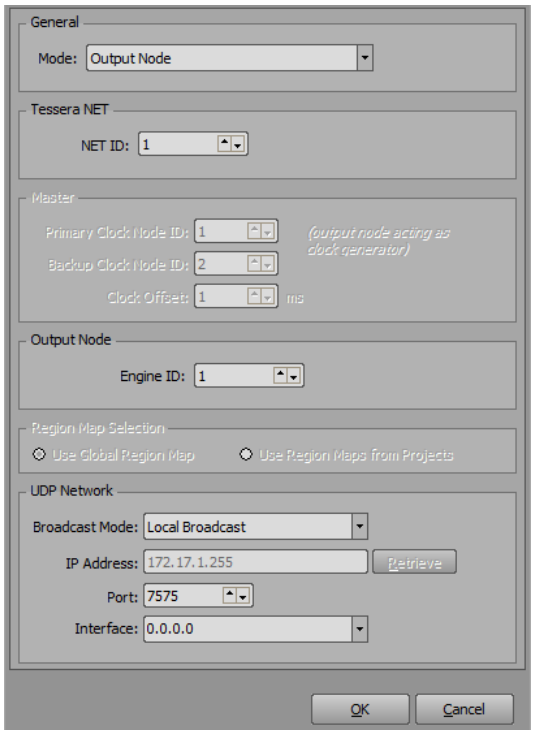
   The **Tessera Settings / Tessera Setup** dialog opens.



   ★The **Master** section with the **Clock Node ID** field is only available on Studio versions.

2. In the **General** section, from the **Mode** drop-down, select **Output Node**.

   The **Tessera NET**, **Output Node**, and **UDP Network** sections become available for configuration.



3. In the **Tessera NET** section, in the **NET ID** field, enter or select a NET ID if using multiple master/node combinations in parallel on the same network.
4. In the **Output Node** section, in the **Engine ID** field, enter or select an engine ID to use to indicate to other machines which output device this output node engine is, relative to the rest of the system.

   A different engine ID is required for each output node engine in the system.
5. In the **UDP Network** section, from the **Broadcast Mode** drop-down, set the broadcast mode to one of the following and then follow the instructions in the link to configure the IP address and port:

   - Local Broadcast — broadcast packets to all local network addresses.
   - Broadcast IP — broadcast packets to a specific subsection of the network, for example, 192.168.1.255.

   ★Some routers prevent broadcasting packets as a local broadcast. For example, 255.255.255.

   - Multicast — allow Tessera to subscribe and send data to a Multicast group using any source multicast.

Local Broadcast

If using the **Local Broadcast** option, do the following:

- In the **IP Address** field, enter 255.255.255.255 as the IP broadcast address to broadcast packets to all of the local network addresses.
- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

Broadcast IP

If using the **Broadcast IP** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  This address is used as an IP filter. For example, if the system is set up to function in a 192.168.1.XXX space, use 192.168.1.255 as the IP address to indicate that devices could be located anywhere between 192.168.1.1 and 192.168.1.254. This also ensures that if dual network cards are used, and one of the cards is on a different network address range, Tessera synchronization traffic will not be broadcast to the public side of the network.

  OR

  Select **Retrieve** to have XPression determine the subnet to use for broadcasting.

- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

Multicast

If using the **Multicast** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  OR

  Select **Retrieve** to have XPression determine the subnet to use for broadcasting.

- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

- In the **Interface** field, enter the IP address of the machine from which the broadcast will come.

6. Select **OK**.

   The output node engine settings are applied and the dialog closes.

7. Repeat steps 1 to 6 for any other output node engines in the system.

Setting up a Preview Node Engine

Preview node engines can be configured in XPression Studio and/or XPression BlueBox. Setting up the preview render engines first allows for a one-stop configuration of the controlling master engine after.

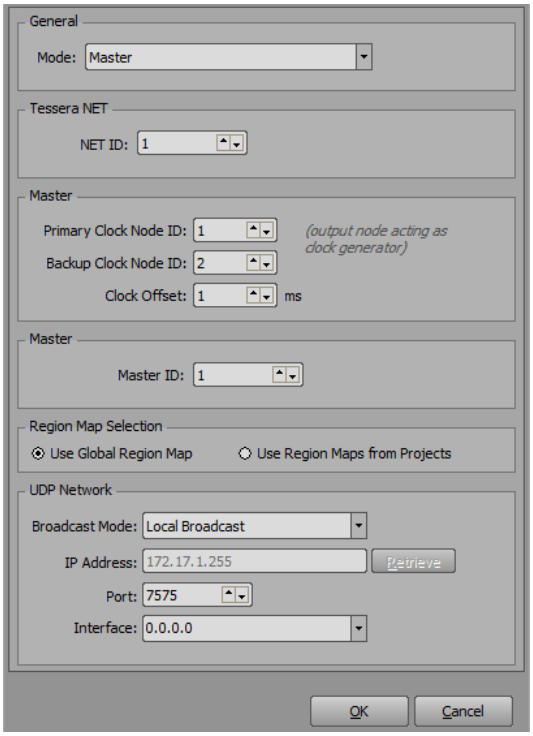
A Tessera preview node can be used to render a live confidence monitor, up-next preview, or previsualization.

To set up a preview node engine:

1. Depending on whether the preview node engine is being configured on XPression Studio or XPression BlueBox, do one of the following:

   - In XPression Studio on a preview node engine, select **Edit > Tessera > Settings** to open the **Tessera Settings** dialog.
   - On an XPression BlueBox machine, right-click on the XPression BlueBox icon () in the Windows system tray and select **Tessera Setup** from the menu to open the **Tessera Setup** dialog.

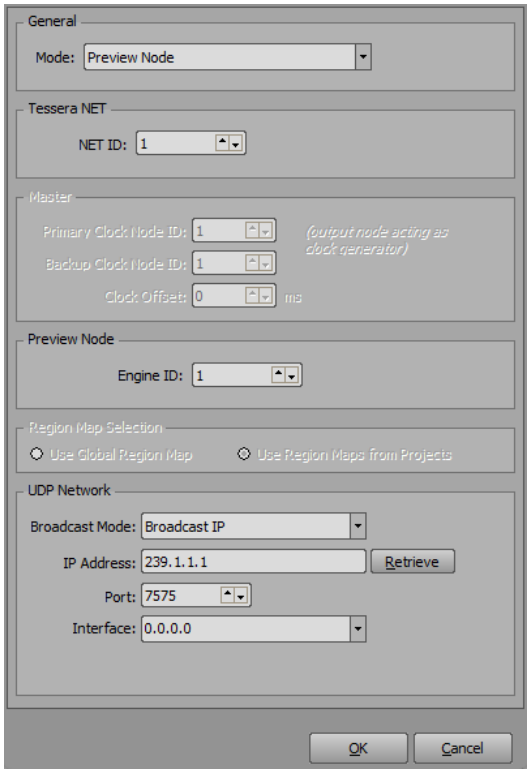
   The **Tessera Settings** / **Tessera Setup** dialog opens.



★The **Master** section with the **Clock Node ID** fields is only available when configuring a Master engine.

2. In the **General** section, from the **Mode** drop-down, select **Preview Node**.

   The **Tessera NET**, **Preview Node**, and **UDP Network** sections become available for configuration.



3. In the **Tessera NET** section, in the **NET ID** field, enter or select a NET ID if using multiple master/node combinations in parallel on the same network.
4. In the **Preview Node** section, in the **Engine ID** field, enter or select an engine ID to use to indicate to other machines which output device this preview node engine is, relative to the rest of the system.

   A different engine ID is required for each preview node engine in the system
5. In the **UDP Network** section, from the **Broadcast Mode** drop-down, set the broadcast mode to one of the following and then follow the instructions in the link to configure the IP address and port:
   - Local Broadcast — broadcast packets to all local network addresses.
   - Broadcast IP — broadcast packets to a specific subsection of the network, for example, 192.168.1.255.

     ★Some routers prevent broadcasting packets as a local broadcast. For example, 255.255.255.
   - Multicast — allow Tessera to subscribe and send data to a Multicast group using any source multicast.

Local Broadcast

If using the **Local Broadcast** option, do the following:

- In the **IP Address** field, enter 255.255.255.255 as the IP broadcast address to broadcast packets to all of the local network addresses.
- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

Broadcast IP

If using the **Broadcast IP** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  This address is used as an IP filter. For example, if the system is set up to function in a 192.168.1.XXX space, use 192.168.1.255 as the IP address to indicate that devices could be located anywhere between 192.168.1.1 and 192.168.1.254. This also ensures that if dual network cards are used, and one of the cards is on a different network address range, Tessera synchronization traffic will not be broadcast to the public side of the network.

  OR

- Select **Retrieve** to have XPression determine the subnet to use for broadcasting.
- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

Multicast

If using the **Multicast** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  OR

- Select **Retrieve** to have XPression determine the subnet to use for broadcasting.
- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.

- In the **Interface** field, enter the IP address of the machine from which the broadcast will come.

6. Select **OK**.

   The preview node engine settings are applied and the dialog closes.

7. Repeat steps 1 to 6 for any other preview node engines in the system.

Setting up the Master Engine

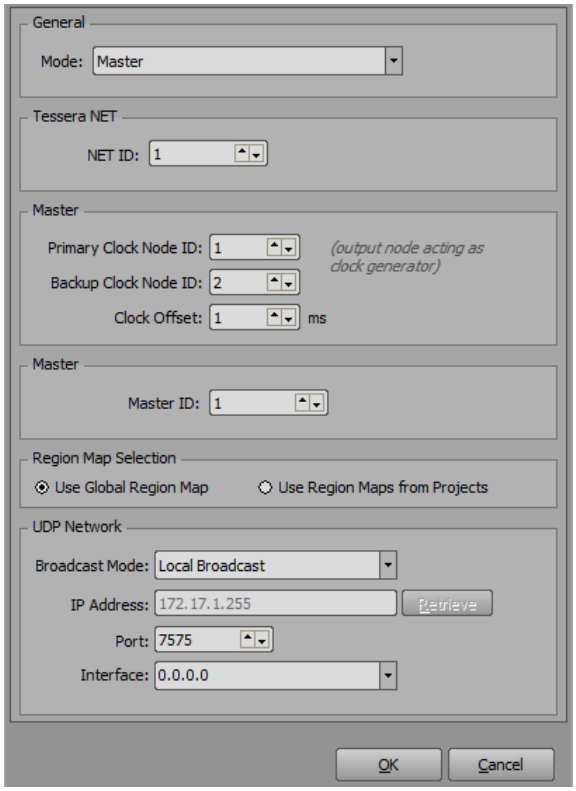
The master engine can only be configured in XPression Studio or XPression Tessera Master versions. Only one master can be configured, and there should be no hardware channels or server channels in the hardware profile. They should all be blank.

For the controlling master engine, use the **Tessera Settings** dialog to configure the master engine settings.

To set up the master engine:

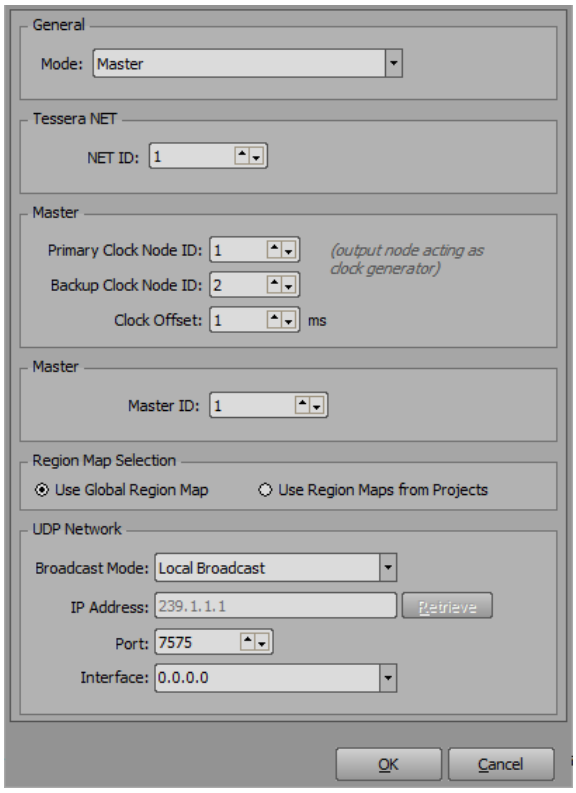
1. In XPression on the master engine, select **Edit > Tessera > Settings**.

   The **Tessera Settings** dialog opens.



2. In the **General** section, from the **Mode** drop-down, select **Master**.

   The **Master** and **UDP Network** sections become available for configuration.



3. In the **Tessera NET** section, in the **NET ID** field, enter or select a NET ID if using multiple master/node combinations in parallel on the same network.
4. In the **Master** section, in the **Primary Clock Node ID** field, enter or select the primary engine node ID to set the clock for all the engines.

   For a single controller setup, the **Primary Clock Node ID** will only be set to **1**.
5. In the **Backup Clock Node ID** field, enter or select an output node engine ID as the backup for the Tessera master should the **Primary Clock Node ID** enter a non-responsive state (**Output Node Timed Out**, **No Communication**, or **Unknown**).
6. In the **Region Map Selection** section, select one of the following:
   - **Use Global Region Map** — use region maps saved globally on the engine.
   - **Use Region Maps from Projects** — use region maps stored in a project file (required for Multicast broadcast).

   ★Using region maps from projects requires a project server.
7. In the **UDP Network** section, from the **Broadcast Mode** drop-down, select one of the following broadcast modes and then follow the instructions in the link to configure the IP address and port:
   - Local Broadcast — broadcast packets to all local network addresses.
   - Broadcast IP — broadcast packets to a specific subsection of the network, for example, 192.168.1.255.

   ★Some routers prevent broadcasting packets as a local broadcast. For example, 255.255.255.
   - Multicast — allow Tessera to subscribe and send data to a Multicast group using any source multicast.

Local Broadcast

If using the **Local Broadcast** option, do the following:

- In the **IP Address** field, enter 255.255.255.255 as the IP broadcast address to broadcast packets to all of the local network addresses.
- In the **Port** field, enter the port number to use for communication between the master and output node engines.

  The default port is **7575**.

Broadcast IP

If using the **Broadcast IP** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  This address is used as an IP filter. For example, if the system is set up to function in a 192.168.1.XXX space, use 192.168.1.255 as the IP address to indicate that devices could be located anywhere between 192.168.1.1 and 192.168.1.254. This also ensures that if dual network cards are used, and one of the cards is on a different network address range, Tessera synchronization traffic will not be broadcast to the public side of the network.

  OR

  Select **Retrieve** to have XPression determine the subnet to use for broadcasting.
- In the **Port** field, enter the port number to use for communication between the master and the output node engines.

  The default port is **7575**.

Multicast

If using the **Multicast** option, do the following:

- In the **IP Address** field, enter the IP address of the broadcast network.

  This address is used as an IP filter. For example, if the system is set up to function in a 192.168.1.XXX space, use 192.168.1.255 as the IP address to indicate that devices could be located anywhere between 192.168.1.1 and 192.168.1.254. This also ensures that if dual network cards are used, and one of the cards is on a different network address range, Tessera synchronization traffic will not be broadcast to the public side of the network.

  OR

  Select **Retrieve** to have XPression determine the subnet to use for broadcasting.
- In the **Port** field, enter the port number to use for communication between the output node engine and master engine.

  The default port is **7575**.
- In the **Interface** field, enter the IP address of the machine from which the broadcast will come.

8. Select **OK**.

The master engine settings are applied and the dialog closes.

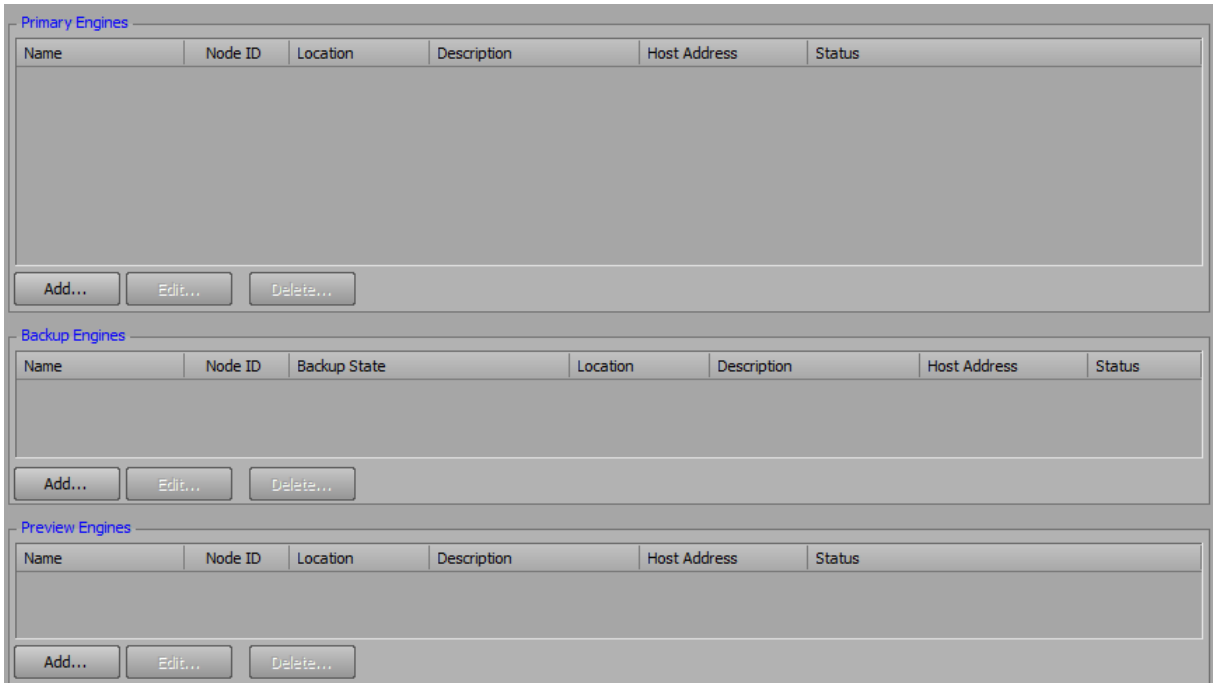
Tessera Output Nodes

Use the **XPression Tessera Output Nodes** dialog to direct the master device to the XPression output engines (configured as output nodes). Output nodes are configurable in XPression Studio and XPression BlueBox versions.

To configure the output nodes:

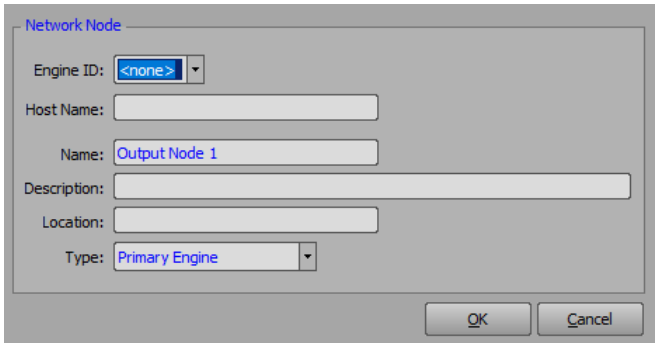
1. In XPression on the master device, select **Edit > Tessera > Output Nodes**.

   The **XPression Tessera Output Nodes** dialog opens.



2. In the **Primary Engines** section, or the **Backup Engines** section, or the **Preview Engines** section, select **Add** to add the type of output node you need.

   The **XPression Tessera Output Node** dialog opens.



3. From the **Engine ID** drop-down, select the output node engine ID for the output/backup/preview node.
4. In the **Host Name** field, enter the UNC or IP address of the network to connect the output engines.
5. In the **Name** field, enter a custom name for the output node if necessary.
6. In the **Description** field, enter a brief description for the output node if necessary.
7. In the **Location** field, define the physical location of the engine if necessary.

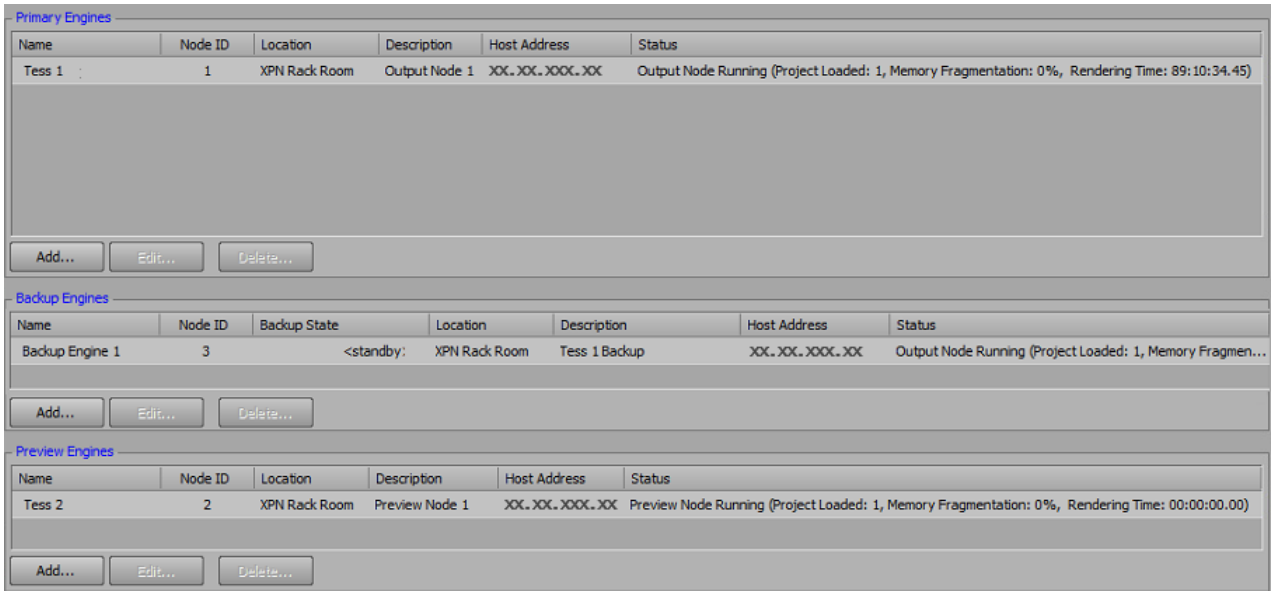
8. From the **Type** drop-down, select the engine type.

   The options are:

   - **Primary Engine** — use the network node as a primary engine. The primary engine is used to direct the master device to the XPression output engines (configured as output nodes).
   - **Backup Engine** — use the network node as a backup engine. In the event that a primary engine is unavailable, the backup engine is used to direct the master device to the XPression output engines (configured as output nodes). The engine ID of the backup engine should be matched with a primary engine that uses the same engine ID.
   - **Preview Engine** — use the node as a preview engine. A preview engine is used to render a confidence monitor, an up-next preview, or local previsualization.

9. Select **OK.**

   Primary engines are added to the **Primary Engines** list, backup engines are added to the **Backup Engines** list, and preview engines are added to the **Preview Engines** list.



10. Repeat steps 2 to 9 for any other output engines.

Using Clips with Tessera Multiple Engine Mode

When using clips with Tessera multiple engine mode, ensure that the **XPression Clip Store Manager** is running on all engines. The master engine then needs to sync its contents to the **Clip Stores** on all the other engines so that they all have the same clip assets available.

Using DataLinq with Tessera Multiple Engine Mode

When using DataLinq with Tessera multiple engine mode, the **XPression DataLinq Server** only needs to run on the master engine.

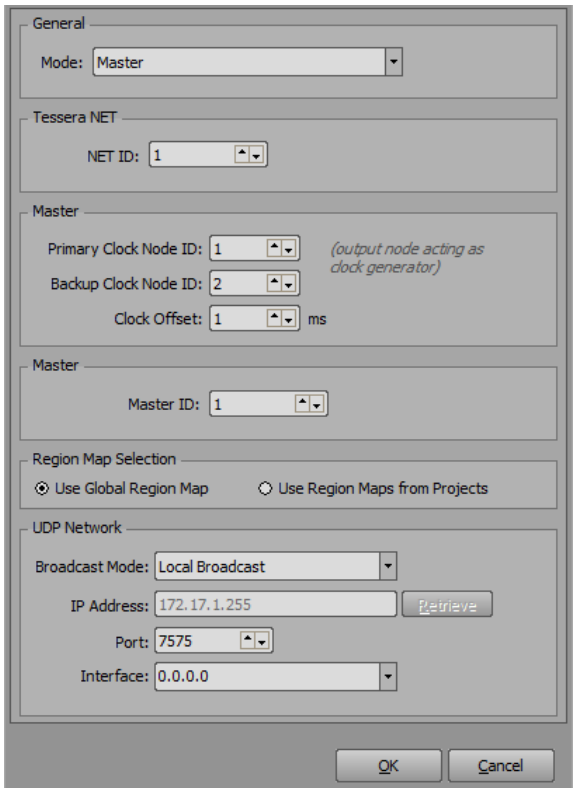
Tessera Single Engine Mode

Use the Tessera single engine option to enable local area mapping within an XPression system.

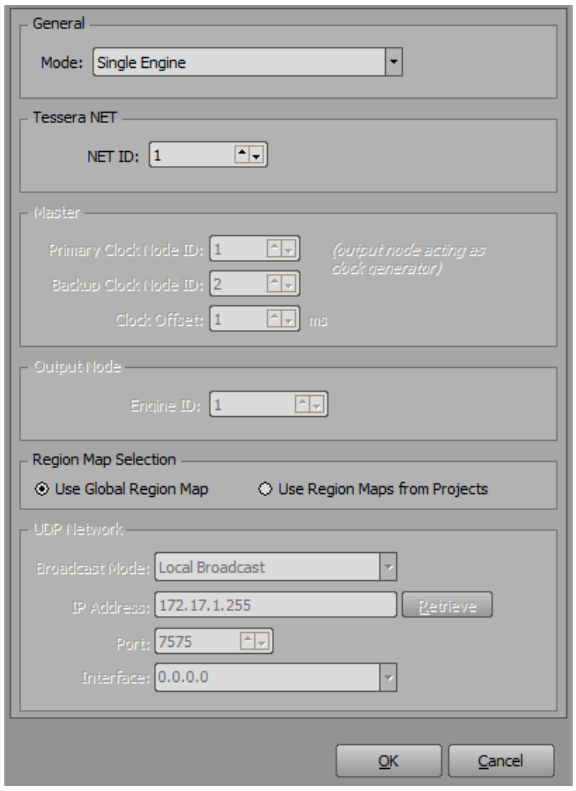
To set up a single engine system:

1. In XPression on the master engine, select **Edit > Tessera > Settings**.

   The **Tessera Settings** dialog opens.



2. In the **General** section, from the **Mode** drop-down, select **Single Engine**.



3. In the **Region Map Selection** section, select one of the following:
   - **Use Global Region Map** — use region maps saved globally on the engine.
   - **Use Region Maps from Projects** — use region maps stored in a project file.

     ★Using region maps from projects requires a project server.
4. Select **OK**.

   The **Tessera Settings** dialog closes.

   In single engine mode, there are no output nodes to configure.

Region Mapping

Use the **XPression Tessera Region Mapper** to map the sources, destinations, and regions. Region mapping is only configurable in Studio versions.

Destination regions are used to display a source that is mapped to it once the sources have been configured.

Source regions are used to select specific sections or portions of a source in order to add them to a specific playback destination.

Multiple sources can be mapped to multiple regions within the destination, which is then outputted to a channel on the output engine. For example, to stitch together multiple full resolution channels into one logical channel, create a region of the full resolution of the output channel, starting it at pixel coordinate width **0**, height **0**.

Once source regions are configured, they need to be mapped to a destination. Mapping indicates to each engine which area of the overall scene is to be rendered.

Configuring a Destination Region Layout

Configuring a Source Region Layout

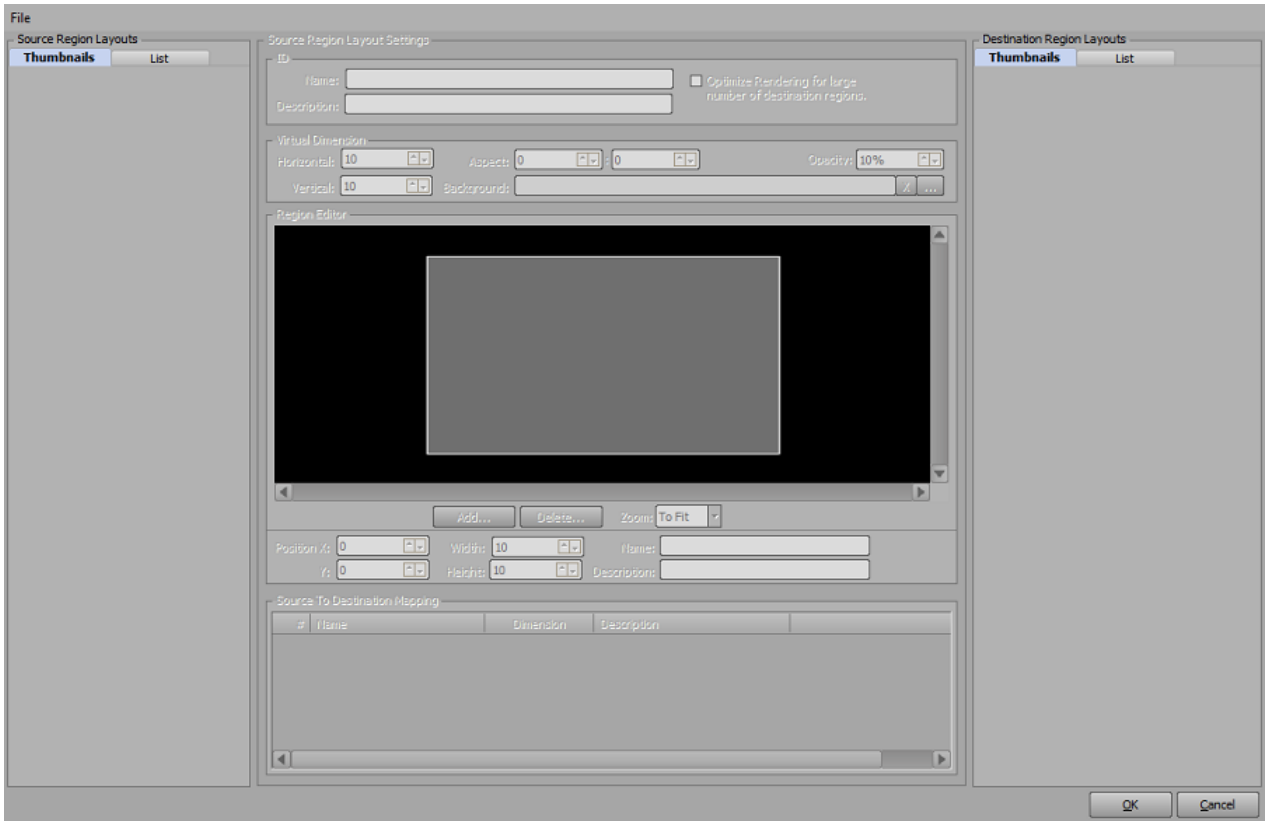
Mapping a Source to a Destination

Configuring a Destination Region Layout

To configure a destination region layout:

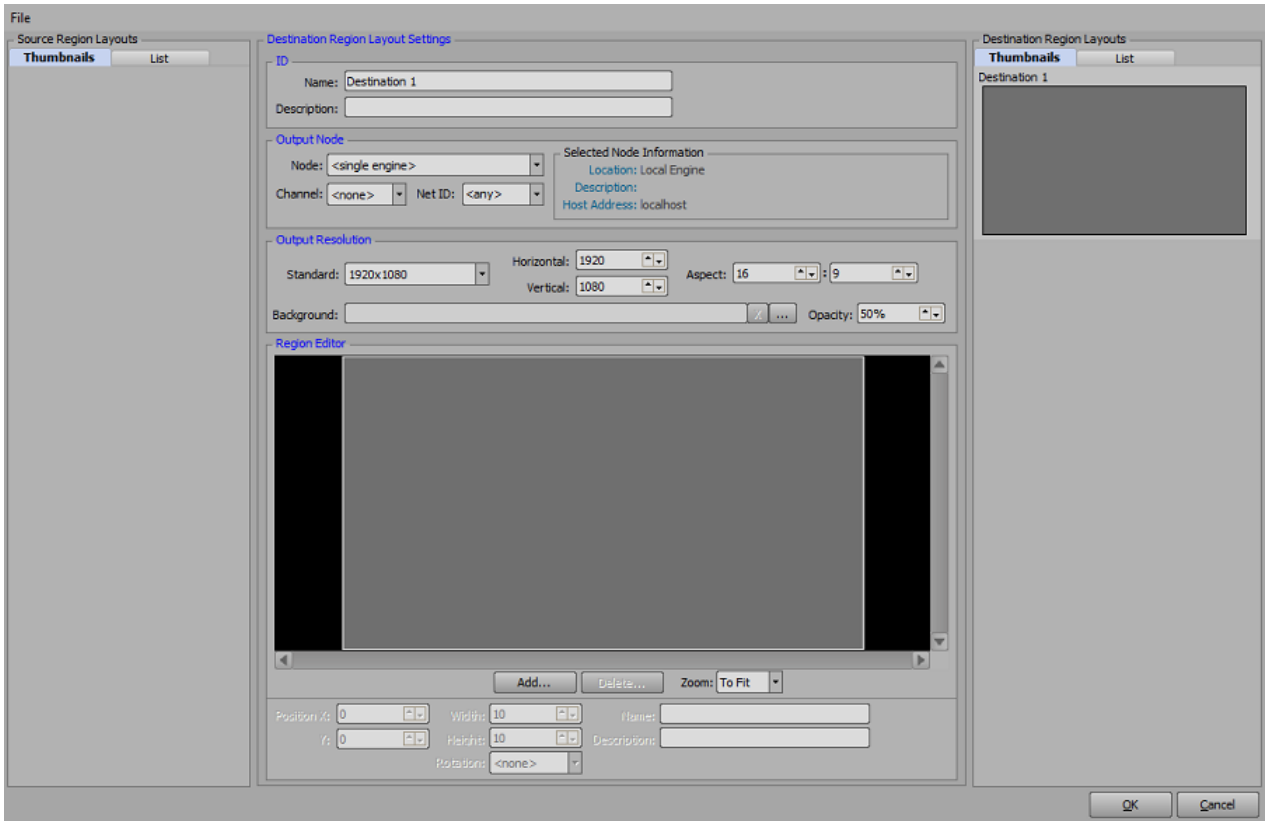
1. In XPression on the master device, select **Edit > Tessera > Region Mapping** (or press **Shift+Ctrl+Alt+R**).

   The **XPression Tessera Region Mapper** opens.



2. In the **Destination Region Layouts** section, right-click and select **Add Destination** from the shortcut menu.

A new destination is added to the **Destination Region Layouts** list.



3. In the **Destination Region Layout Settings** section, configure the source ID, output node, output resolution, and regions.
4. Repeat steps 2 to 3 to add more destinations as necessary.

   The destination is the playback channel.

To configure the source ID:

1. In the **ID** section, in the **Name** field, enter a custom name for the destination.

   Assuming the output resolution is the same as what is displayed, it is recommended to give it a name. Enter a name that makes sense within the system (for example, CG 1-1, which might indicate output node 1-first output channel, etc.).
2. In the **Description** field, enter a description of the destination.

To configure the Output Node:

1. In the **Output Node** section, from the **Node** drop-down, select the output node of the output engine to be used to output the destination.

   The list is populated by the output nodes previously configured in the XPression Tessera Output Nodes dialog, or if using Tessera in single engine mode, is restricted to <local engine>.
2. From the **Channel** drop-down, select a playback channel on the output engine for outputting the destination region.

   Although there are 12 channels in the list, the number of usable channels is dependent on the number of channels available on the output engine.

3. If using multiple Tessera SE or Tessera Master systems in a MOS workflow, from the **Net ID** drop-down, select a net ID to indicate to which Tessera system the MOS object should be sent.

To configure the Output Resolution:

1. In the **Output Resolution** section, from the **Standard** drop-down, select a standard pixel dimension or select **Custom** to use a custom resolution.
2. If using a custom resolution, in the **Horizontal** and **Vertical** fields, enter or select the dimensions for the custom resolution.

   Also, simply entering or selecting a different value will automatically select **Custom** from the **Standard** drop-down.
3. In the two **Aspect** fields, enter or select the aspect ratio for the destination.

   These fields are automatically entered if the **Standard** output resolution is selected.
4. In the **Opacity** field, enter or select the transparency value for the background image.
5. Select **Browse** (...) to locate and select a file to use as the background in the destination, or enter a file path in the **Background** field.

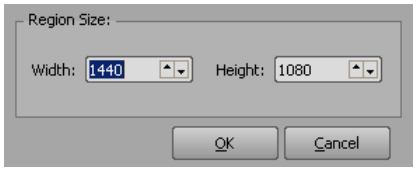
   Backgrounds are used as a reference to clearly delineate between regions and color code them as desired (for example, red regions can represent advertisements, blue regions can represent stats, etc.). Do this by creating an image file that fits the canvas and is representative of the regions.

To configure a Region:

1. From the **Zoom** drop-down, select a percentage size of the destination canvas to display in the **Region Editor** display.

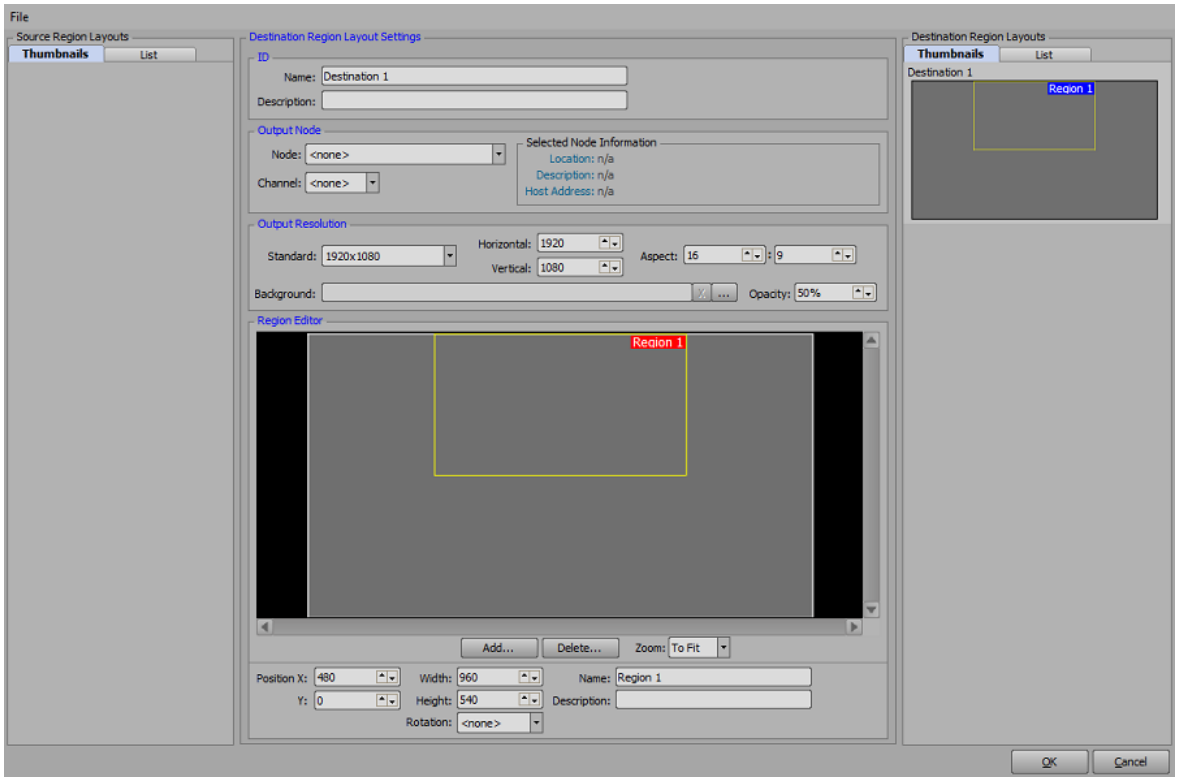
   Selecting **To Fit** will size the canvas to fit the size of the **Region Editor** display.
2. In the **Region Editor** section, select **Add** to create a destination region.

   The **New Region** dialog opens.



3. In the **Width** and **Height** fields, enter or select a size (in pixels) for the new region and select **OK**.

A region is added to the destination canvas in the **Region Editor** display and a thumbnail image is added to the **Destination Region Layouts** list.



4. In the **Position X** and **Y** fields, enter the coordinates to adjust the location of the region along the X-axis and Y-axis within the destination canvas.
5. In the **Width** and **Height** fields, enter the desired size (in pixels) of the region.
6. From the **Rotation** drop-down, select a degree of rotation for the region.

   The options are:

   - **<none>** — apply no degree of rotation to the selected region.
   - **90 degrees**
   - **180 degrees**
   - **270 degrees**

   ★The rotation is only visible on the output and not in the region editor.
7. In the **Name** field, enter a name for the region.
8. In the **Description** field, enter a description about the region.
9. Repeat steps 2 to 8 to add more regions to the destination as necessary.

To copy and paste a region:

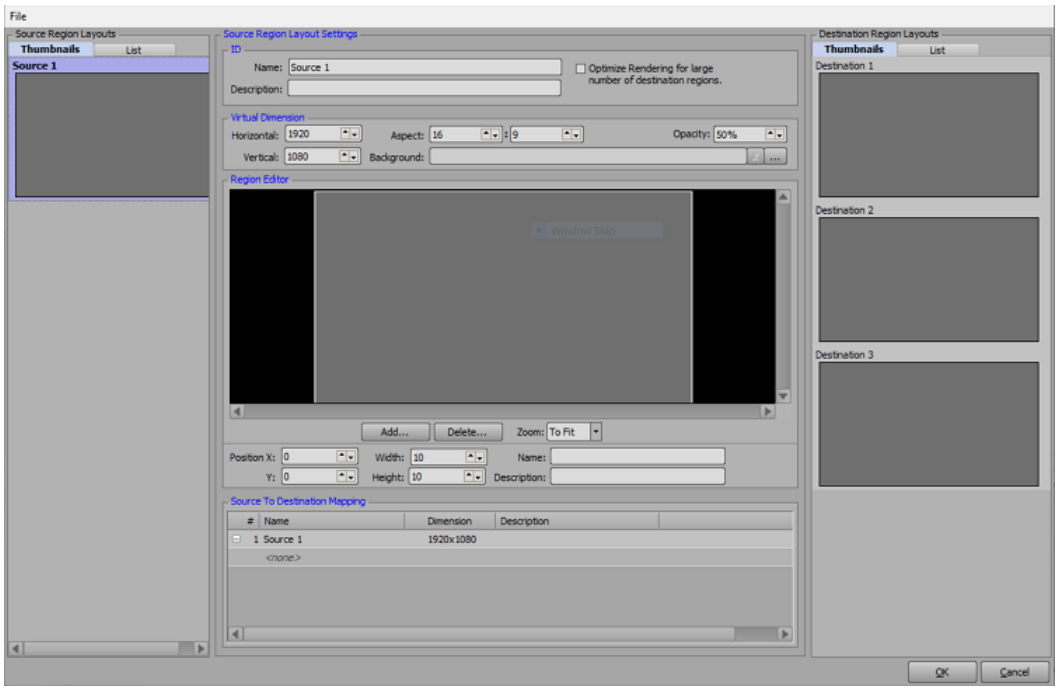
1. Right-click on a region in the **Region Editor** and select **Copy Region** from the shortcut menu.
2. Right-click in the same or a different **Region Editor** and select **Paste Region** from the shortcut menu.

Configuring a Source Region Layout

To configure a source region layout:

1. In the **Source Region Layouts** section, right-click and select **Add Source** from the shortcut menu.

   A new source is added to the **Source Region Layouts** list. Sources in the list can be dragged and dropped into a different order.



2. In the **Source Region Layout Settings** section, configure the source ID, virtual dimensions, regions, and mapping.

   Because Tessera renders one single scene to multiple output channels, there is no single channel in which to render. So a virtual channel must be created, called a source.

To configure the source ID:

1. In the **ID** section, in the **Name** field, enter a custom name for the source.
2. In the **Description** field, enter a custom description of the source.
3. Select the **Optimize Rendering for large number of destination regions** checkbox for high performance rendering when a source is mapped to many destination regions and the scene size is extremely wide or tall.

   This useful in ribbon board workflows, etc.

To configure the virtual dimensions:

1. In the **Virtual Dimension** section, in the **Horizontal** and **Vertical** fields, enter or select the horizontal and vertical dimensions (in pixels) for the source.
2. In the two **Aspect** fields, enter or select the aspect ratio for the source.

   The **Virtual Dimension** and **Aspect** fields automatically data-fill depending on which is configured first. For example, aspect ratios do not need to be manually calculated if the dimensions have been entered.

3. In the **Opacity** field, enter or select the percentage of opacity for the selected background.
4. Select **Browse** (...) to locate and select a file to use as the background in the source, or enter a file path in the **Background** field.

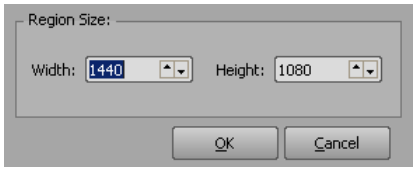
   Backgrounds are used as a reference to clearly delineate between regions and color code them as desired (for example, red regions can represent advertisements, blue regions can represent stats, etc.). Do this by creating an image file that fits the canvas and is representative of the regions.

To configure a region:

1. Use the **Zoom** drop-down to select a percentage size of the region dimension to display in the Region Editor display.

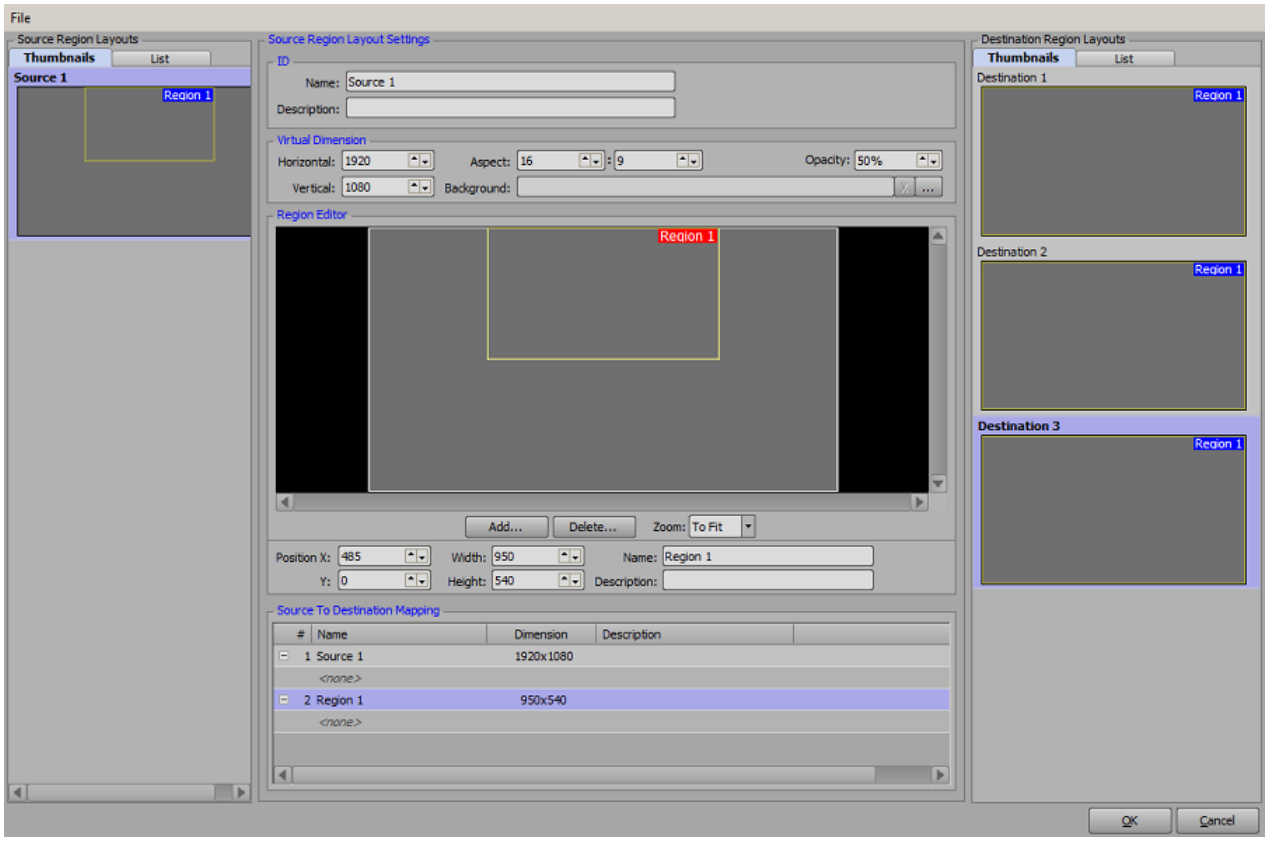
   Selecting **To Fit** will size the source to fit the size of the Region Editor display.
2. In the **Region Editor** section, select **Add** to create a source region.

   The **New Region** dialog opens.



3. In the **Width** and **Height** fields, enter or select a size (in pixels) for the new region and select **OK**.

   A region is added to the source canvas in the **Region Editor** display, and the **Source To Destination Mapping** list, and a thumbnail image is added to the **Sources** list.



4. In the **Position X** and **Y** fields, enter coordinates to adjust the location of the region along the X-axis and Y-axis within the source canvas.

5. In the **Width** and **Height** fields, enter the desired size (in pixels) of the region.
6. In the **Name** field, enter a name for the region.
7. In the **Description** field, enter a description of the region.
8. Repeat steps 2 to 7 for any other source region layouts as necessary.

To duplicate a source region layout:

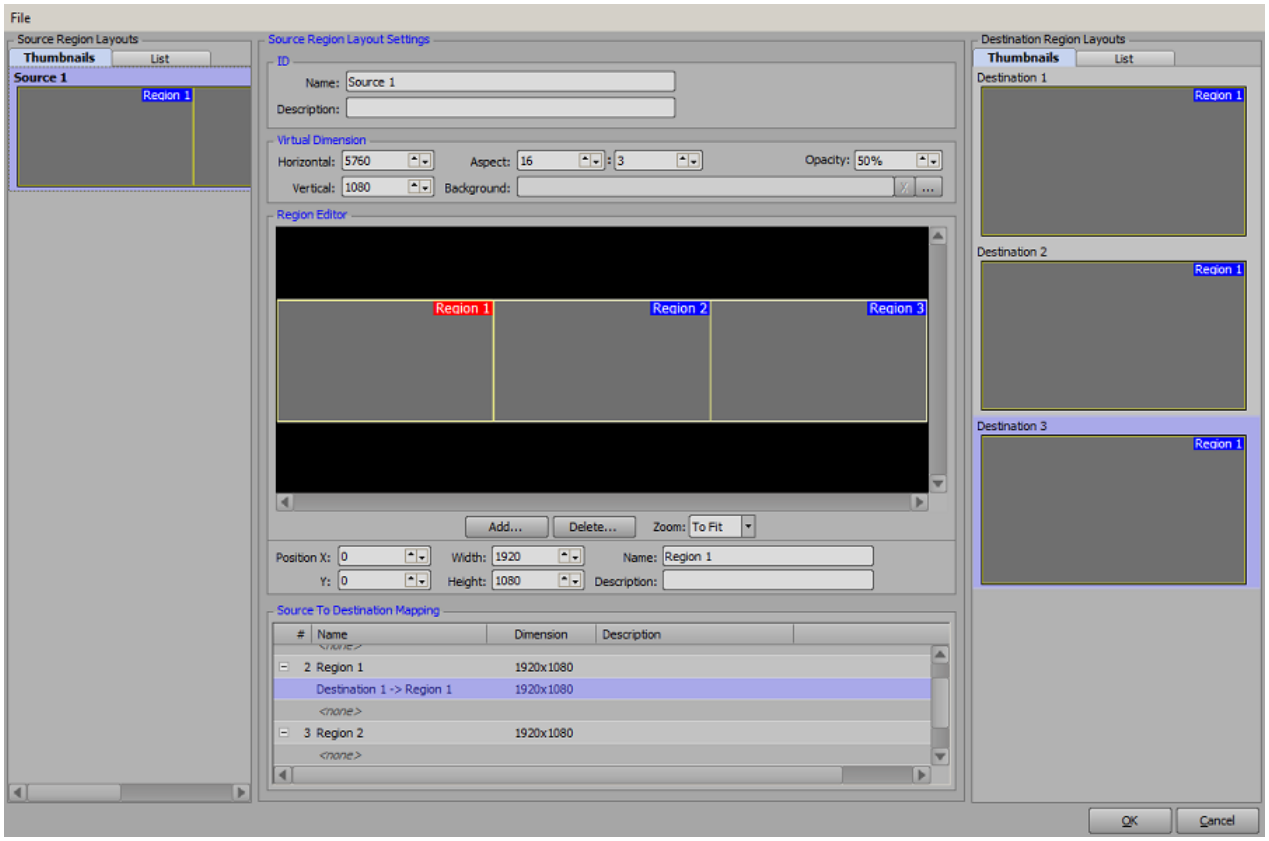
- Right-click a source and from the shortcut menu, select **Duplicate Source**.

Mapping a Source to a Destination

To map a source to a destination:

1. In the **Source To Destination Mapping** table, select **<none>** under a source **Region** and from the drop-down, select the desired playback destination or destination region for the source region.

   If mapping the source to the entire destination canvas, select the destination. If mapping the source to a region within the destination canvas, select the specific region within the destination.



2. Repeat step 1 for all regions in the table.
3. Select **File > Save To File** to save the region mapping to an **.xprgm** file.

To copy and paste a region:

1. Right-click on a region in the **Region Editor** and select **Copy Region** from the shortcut menu.
2. Right-click in the same or a different **Region Editor** and select **Paste Region** from the shortcut menu.

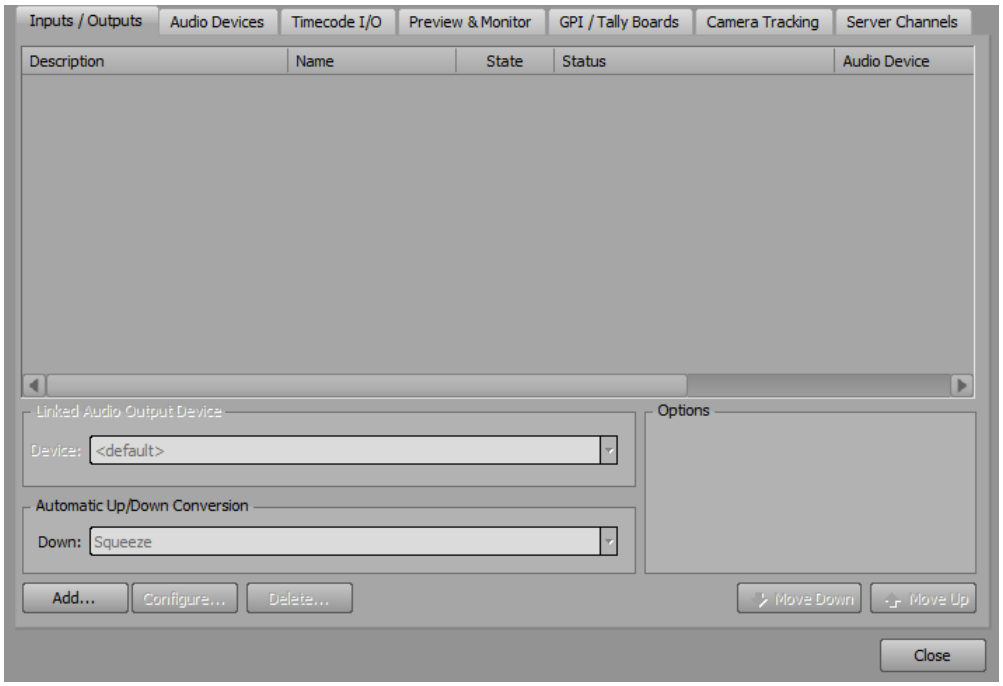
Using a Preview Output on a Tessera Master

The Tessera master can use local framebuffers as a preview output.

To set up a preview output:

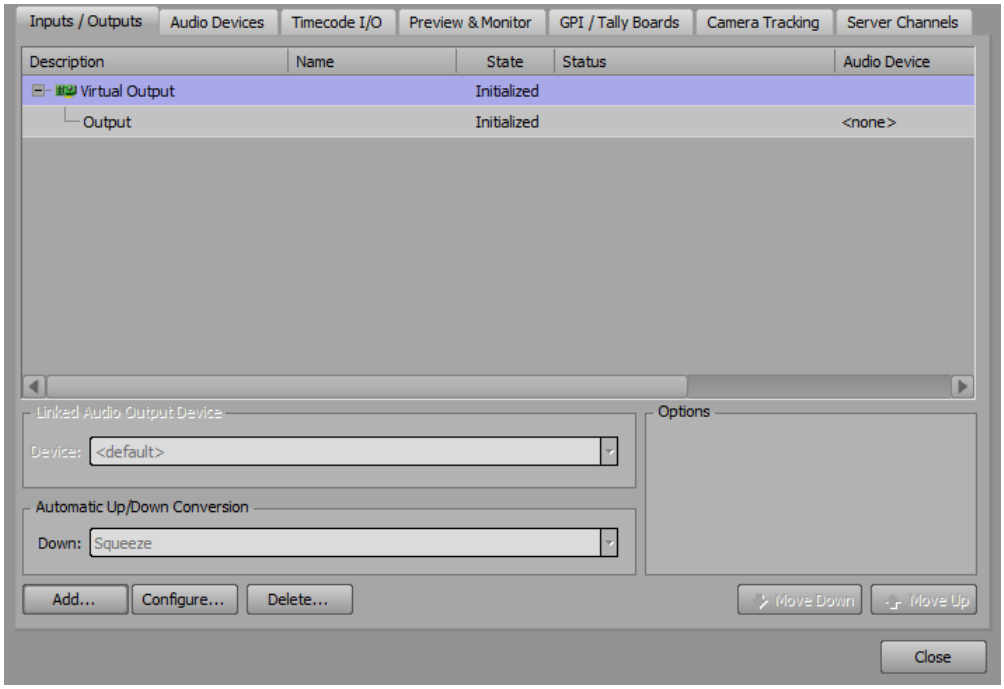
1. On the Tessera master, select **Edit > Hardware Setup**.

   The **Hardware Setup** dialog opens.



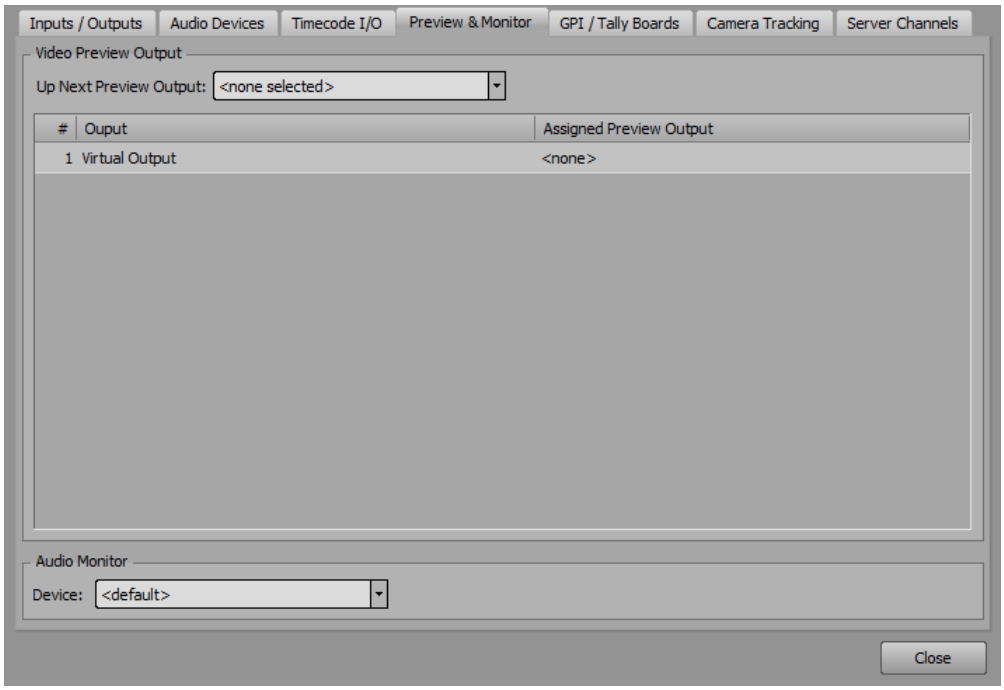
2. Configure an output.

   The output is added to the **Inputs / Outputs** list.



3. Select the **Preview & Monitor** tab.

   The **Preview & Monitor** tab opens.



4. In the **Video Preview Output** section, from the **Up Next Preview Output** drop-down, select the output to use for the Tessera master preview.

For More Information on...

- configuring a framebuffer output, refer to the *XPression User Guide*.

Preview and Monitoring

Tessera Preview and Monitoring is a set of features that provide live confidence monitoring and up-next previews for a Tessera workflow, as well as previsualization capabilities, either during design or during a show. The monitoring, preview, and previsualization outputs can be shared using one of the following layouts:

Dynamic Grid (default) — shows every Tessera output channel (from every configured Tessera output node) that is used by at least one Tessera destination in the region mapper. The outputs are arranged in a N x N grid, where N is the smallest value that can fit the total number of Tessera channels. Each output takes the same space. Each output is displayed sequentially by filling the first row from left to right, then going to the next row, etc. until all outputs are shown. Rows do not necessarily contain all outputs from an engine, nor do they necessarily contain only outputs from an engine.

Custom Scene — user-built custom scene that represents the physical layouts of the Tessera screens. Custom scene layouts are regular XPression scenes built using **Tessera Preview** materials and could use 3D models to match the physical layout. During operation, if a configured custom scene is not found in the loaded projects, any outputs that refer to it will revert to the **Dynamic Grid** layout.

By default, no preview, monitoring or previsualization features are enabled.

The **Tessera Preview and Monitoring** setup can be done on the Tessera Master engine or on a Tessera Single Engine. It also needs to be done on a Tessera Previsualization engine (offline). Note that the same system can be used either in Tessera Master (online) mode or Tessera Previsualization engine (offline/design) mode.

Multiple dynamic grids and/or custom scenes can be added.

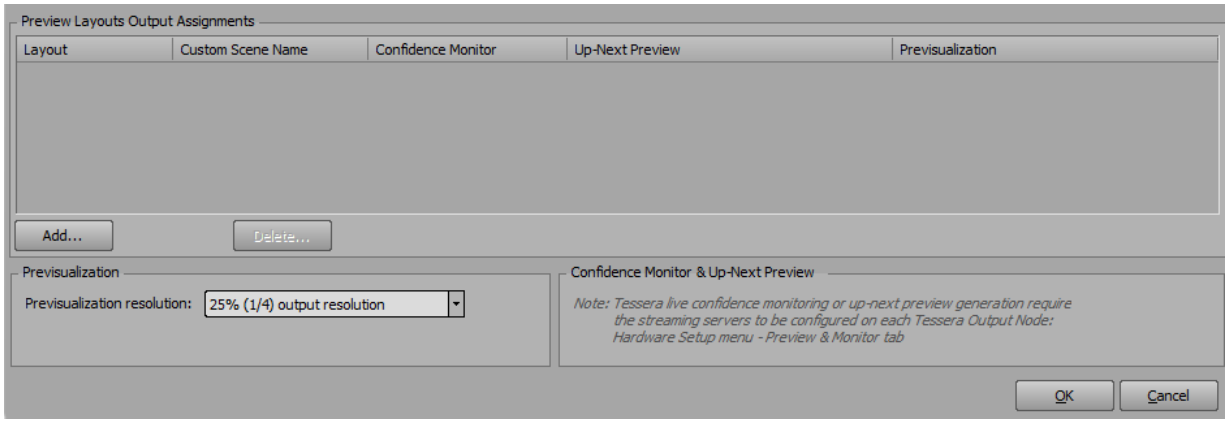
Once outputs are configured as either dynamic grid layouts or custom scenes, you can use RossTalk commands to replace the current Tessera preview scene on an output with either a dynamic grid layout or a custom scene. Refer to the *RossTalk / Smart GPI on XPression* application note for further information.

★Tessera live confidence monitoring or up-next preview generation require the streaming servers to be configured on each Tessera output or preview node. See Configuring the Video Output Monitor for instructions.

To set up a Dynamic Grid:

1. Select **Edit > Tessera > Preview and Monitoring**.

   The **XPression Tessera Preview & Monitoring** window opens.



2. Select **Add**.

   The default **Dynamic Grid** layout is added by default.

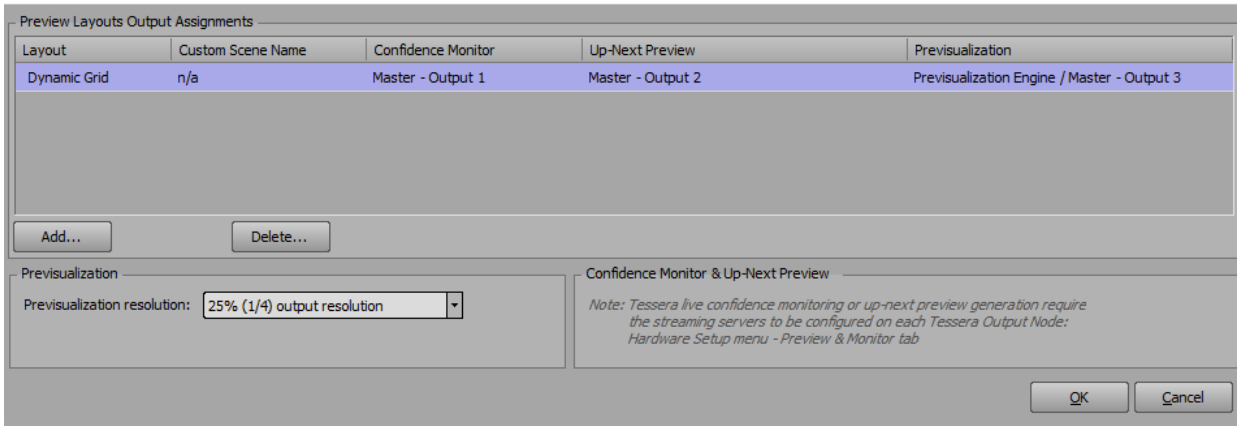
3. Select from the following options:

   In the **Confidence Monitor** field, from the drop-down, select the output on which to display the confidence monitor.

   AND/OR

   In the **Up-Next Preview** field, from the drop-down, select the output on which to display the up-next preview.

4. In the **Previsualization** field, from the drop-down, select the output on which to display the previsualization engine output (required).



5. From the **Previsualization resolution** drop-down, select a resolution.

   The options are:

   - 50% (1/2) output resolution
   - 25% (1/4) output resolution
   - 12.5% (1/8) output resolution
   - 6.25% (1/16) output resolution

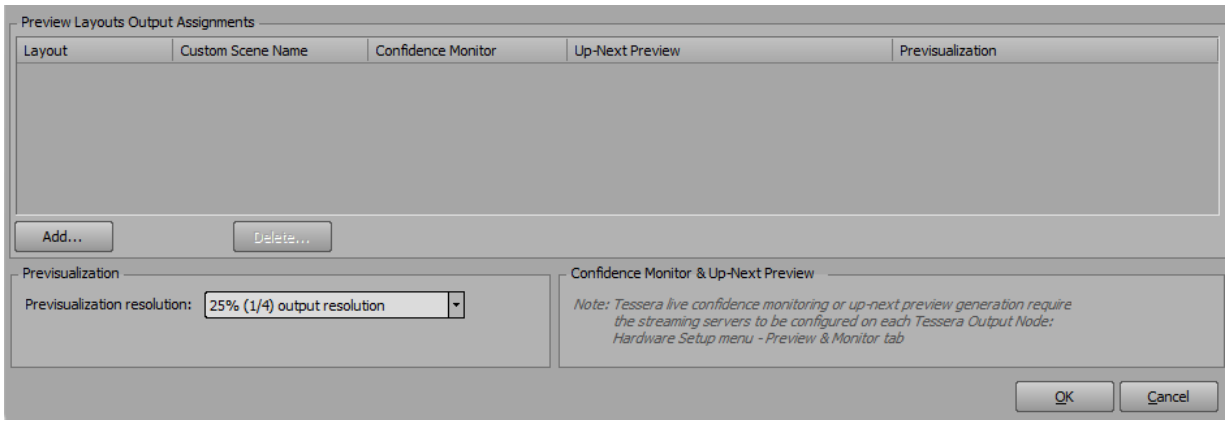
★A lower resolution consumes fewer resources and may be adequate for design and testing.

6. Select **OK** to save the settings and close the window.

To set up a custom scene:

1. Select **Edit > Tessera > Preview and Monitoring**.

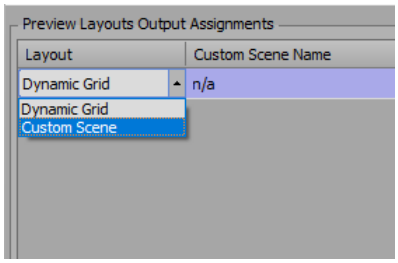
   The **XPression Tessera Preview & Monitoring** window opens.



2. Select **Add**.

   The default **Dynamic Grid** layout is added by default.

3. In the **Layout** column, from the drop-down, select **Custom Scene**.



4. In the **Custom Scene Name** field, enter the name of the custom scene that was created.

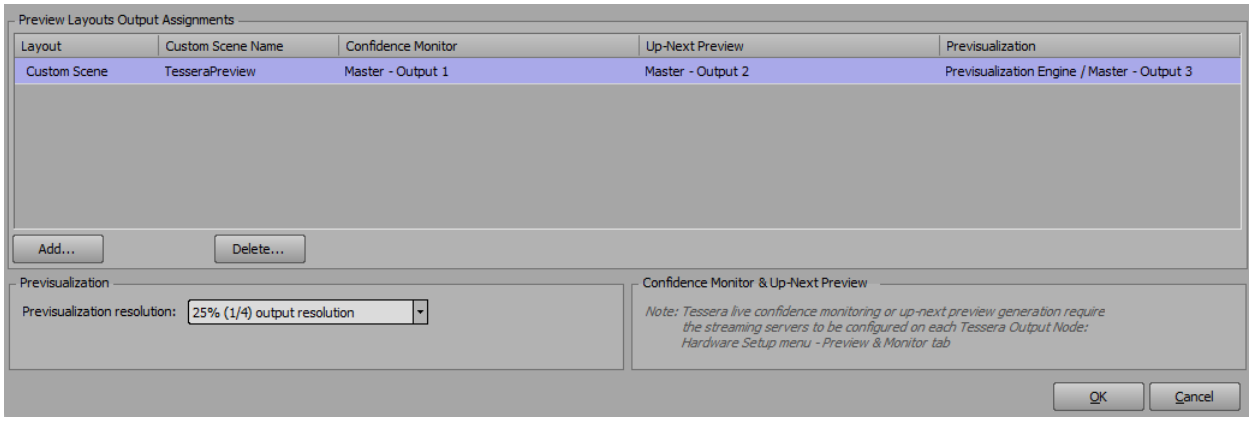
5. Select from the following options:

   In the **Confidence Monitor** field, from the drop-down, select the output on which to display the confidence monitor.

   AND/OR

   In the **Up-Next Preview** field, from the drop-down, select the output on which to display the up-next preview.

6. In the **Previsualization** field, from the drop-down, select the output on which to display the previsualization engine output (required).



7. From the **Previsualization resolution** drop-down, select a resolution.

   The options are:

   - 50% (1/2) output resolution
   - 25% (1/4) output resolution
   - 12.5% (1/8) output resolution
   - 6.25% (1/16) output resolution

   ★A lower resolution consumes fewer resources and may be adequate for design and testing.

8. Select **OK** to save the settings and close the window.

Previsualization

You can configure previsualization in Tessera to see how a scene will behave when it is played on-air. It allows you to test scene logic, sequencing, animation timing, data updates, conditional behaviors, and transitions before going live.

Previsualization can be set up on a dedicated Tessera Previsualization engine, on a Tessera Master, on a Tessera single engine, or on a Tessera Preview node.

Tessera Previsualization Engine — offline design and testing using a dedicated previsualization engine.

Tessera Master Engine — preview content while simulating a distributed Tessera deployment.

Tessera Single Engine — preview content on a standalone Tessera system.

Tessera Preview Node — render previsualization on a preview node (either an XPression Studio engine or an XPression BlueBox engine.

The same engine can be switched between Tessera Master and Tessera Previsualization Engine modes (i.e., the same system can be used in full Previsualization mode when designing and go back to Master mode during shows.

Each scene that is to be previsualized, needs to have a source defined.

For information about defining sources, see the Region Mapping section.

Viewing Scenes in a Web Browser

For workflows that include multiple nodes you can also view the outputs for each output or preview node in a web browser.

To view outputs in a web browser:

1. Open a web browser on your XPression Tessera Master engine.
2. In the **URL** field, enter the output engine or preview engine host name, followed by `:9056/outputs`.
3. Repeat for each output engine or preview engine in your system.

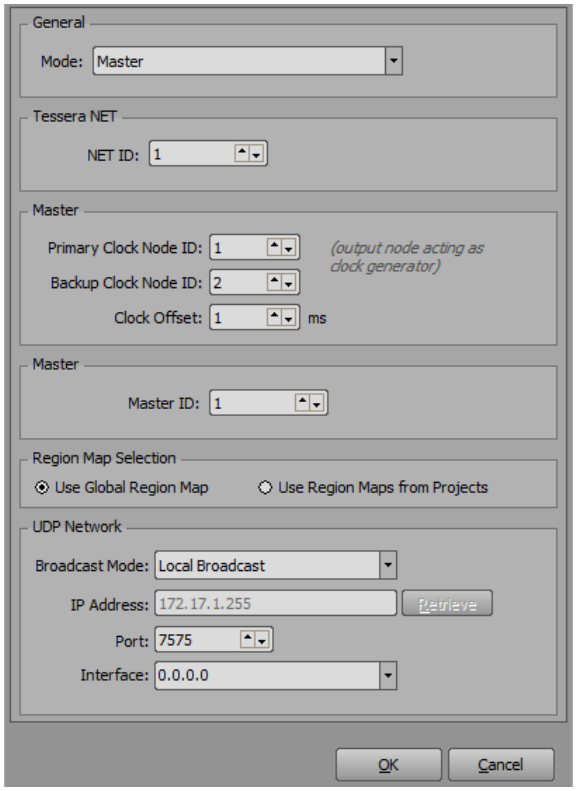
Tessera Previsualization Engine

Use a Tessera previsualization engine when designing a Tessera production offline. All you need is a Tessera project and a virtual output.

To configure previsualization on a Tessera Previsualization Engine:

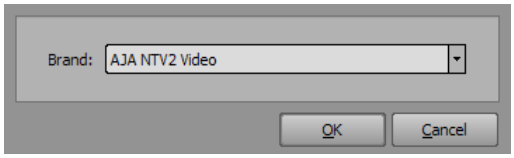
1. In XPression, select **Edit > Tessera > Settings**.

   The **Tessera Settings** dialog opens.



2. From the **Mode** drop-down, select **Previsualization Engine** and then select **OK**.
3. In **Edit > Hardware Setup**, in the **Inputs / Outputs** tab, select **Add**.

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



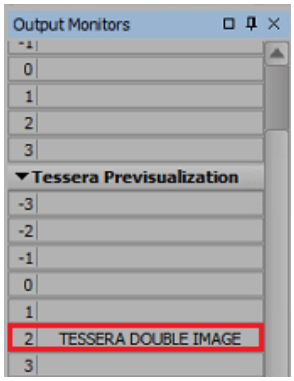
4. In the **Add New FrameBuffer Board** dialog, from the **Board** drop-down, select **XPression Virtual Output** and select **OK**.
5. In the **Virtual Output Settings** dialog, configure the behavior of the virtual output as desired and select **OK**.

   The virtual output is added to the **Inputs / Outputs** tab.

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

7. Select **Edit > Tessera > Preview & Monitoring** and add a **Dynamic Layout** (this is the default option).
8. In the **Previsualization** column, select **Previsualization Engine / Master - Output 1** and then select **OK**.
9. In the XPression **Sequencer**, double-click a take item (needs to have a Tessera source defined).

   Scenes that are being previsualized will appear in the **Tessera Previsualization** output section and in the virtual output.



Tessera Master Engine

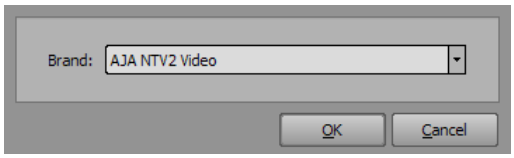
Use the Master engine for previsualization when you are designing for a large distributed Tessera installation, and you want to test the architecture you will actually deploy. You will need to configure at least one virtual output for this mode.

For this workflow, you will need to configure the **Video Output Monitor**. See Configuring the Video Output Monitor.

To configure previsualization on a Tessera Master:

1. In the XPression Tessera Master engine, select **Edit > Hardware Setup** and select the **Inputs / Outputs** tab.
2. In the **Inputs / Outputs** tab, select **Add**.

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

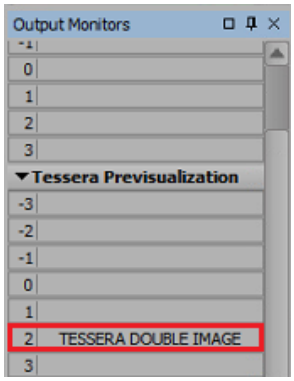


3. In the **Add New FrameBuffer Board** dialog, from the **Board** drop-down, select **XPression Virtual Output** and select **OK**.
4. In the **Virtual Output Settings** dialog, configure the behavior of the virtual output as desired and select **OK**.

   The virtual output is added to the **Inputs / Outputs** tab.
5. In **Edit > Tessera > Preview And Monitoring**, select **Add** and add either a **Dynamic Grid** or **Custom Scene**.
6. In the **Previsualization** column, from the drop-down, select **Previsualization Engine / Master - Output 1**.

   For information about configuring a **Dynamic Grid** or **Custom Scene** see Preview and Monitoring.
7. Select **OK**.
8. In the XPression **Sequencer**, right-click a take item (needs to have a Tessera source defined) and select **Send Item to Previsualization**.

   Scenes that are being previsualized will appear in the **Tessera Previsualization** output section and in the virtual output window.



To clear the Tessera Previsualization output:

- Select **Remove Item From Previsualization** to clear the item from the **Tessera Previsualization** output.

  OR

  Select **Clear All Previsualization** to clear all items from the **Tessera Previsualization** output.

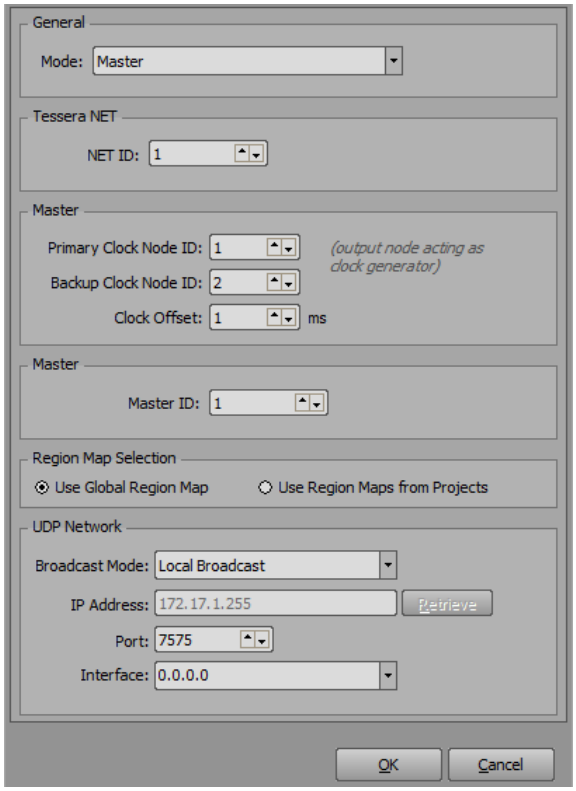
Tessera Single Engine

Use a Tessera Single Engine for previsualization to preview content on a standalone engine. You can use an output on the installed FrameBuffer board as your previsualization output or add a virtual output.

To configure previsualization on a Tessera Single Engine:

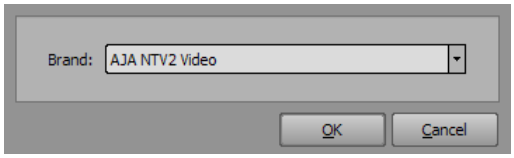
1. In XPression Studio, select **Edit > Tessera > Settings**.

   The **Tessera Settings** dialog opens.



2. From the **Mode** drop-down, select **Single Engine** and then select **OK**.
3. In **Edit > Hardware Setup**, in the **Inputs / Outputs** tab, select **Add**.

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

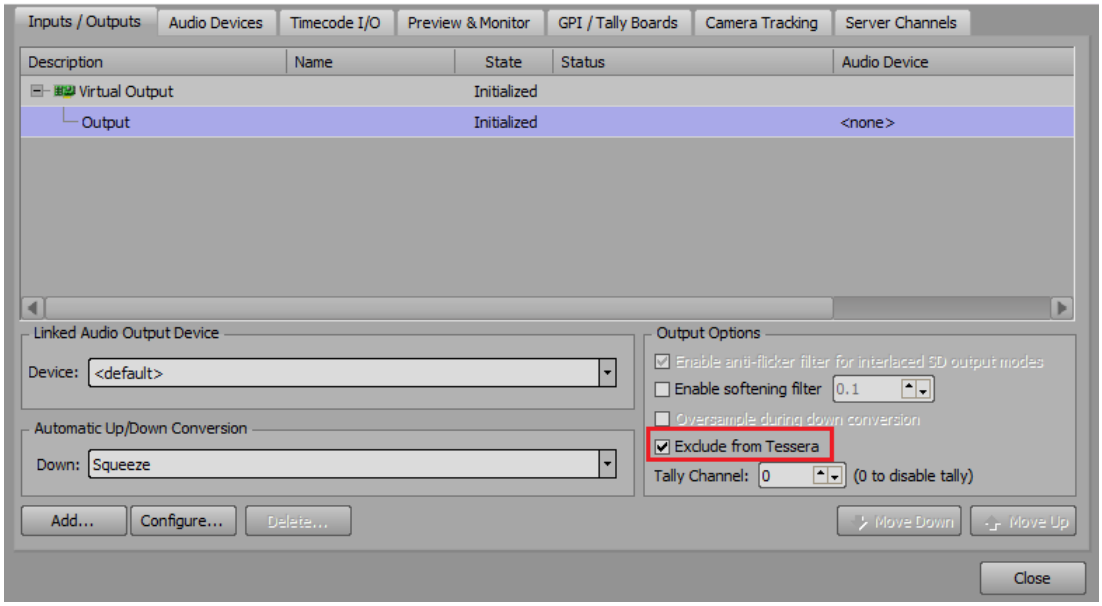


4. To add a virtual output, in the **Add New FrameBuffer Board** dialog, from the **Board** drop-down, select **XPression Virtual Output** and select **OK**.
5. In the next dialog, configure the virtual output as desired and select **OK**.

   The output is added to the **Inputs / Outputs** tab.

   ★Alternatively, you can use an output on the installed FrameBuffer board for previsualization.

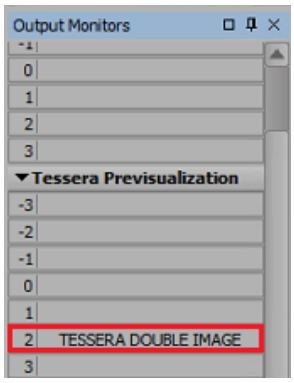
6. Select the output and in the **Output Options** section, select **Exclude from Tessera** and then close the dialog.



7. In **Edit > Tessera > Preview And Monitoring**, select **Add** and configure either a **Dynamic Grid** or a **Custom Scene**.
8. In the **Previsualization** column, from the drop-down, select **Local Engine - Output 1** and then select **OK**.

   For information about configuring a **Dynamic Grid** or **Custom Scene** see Preview and Monitoring.
9. In the XPression **Sequencer**, right-click a take item (needs to have a Tessera source defined) and select **Send Item to Previsualization**.

   Scenes that are being previsualized will appear in the **Tessera Previsualization** output section and in the configured output.



To clear the Tessera Previsualization output:

- Select **Remove Item From Previsualization** to clear the item from the **Tessera Previsualization** output.

  OR

  Select **Clear All Previsualization** to clear all items from the **Tessera Previsualization** output.

Tessera Preview Node

Use multiple Tessera preview nodes, configured on XPression BlueBox engines, if you need to embed the preview into a custom scene, recreate the physical installation, or build a sophisticated monitoring interface.

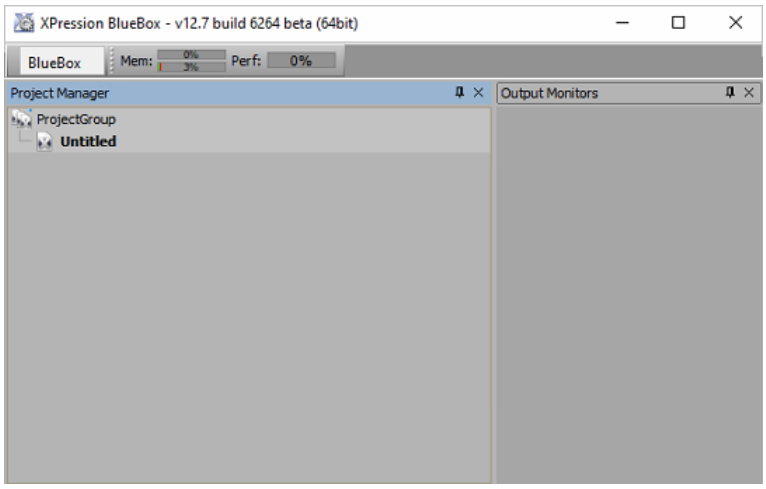
Only Tessera preview scenes created using the **Tessera Preview** shader material can be taken online on the preview node.

For instructions on using the **Tessera Preview** shader material, see Creating a Tessera Preview Material.

For this workflow, you will need to configure the **Video Output Monitor**. See Configuring Video Preview and Audio Monitor.

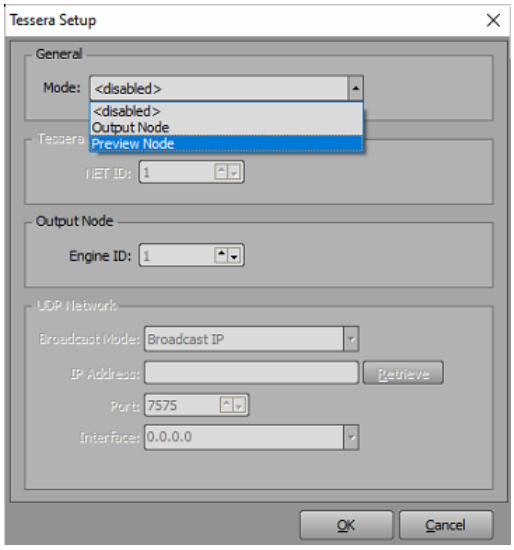
To configure previsualization on a Tessera preview node:

1. On your XPression BlueBox engine, right-click on the XPression BlueBox icon in the system tray and select **Admin** to open the BlueBox UI.



2. Left-click **BlueBox** and from the drop-down menu, select **Tessera Setup**.

   The **Tessera Setup** dialog opens.



3. From the **Mode** drop-down, select **Preview Node** and configure the **Engine ID** and **UDP Network** settings.

   Refer to Tessera Multiple Engine Mode for configuration instructions for preview nodes.

4. Select **OK** to exit the **Tessera Setup** dialog.

5. Left-click **BlueBox** again and from the drop-down menu, select **Project Server > Deploy**.

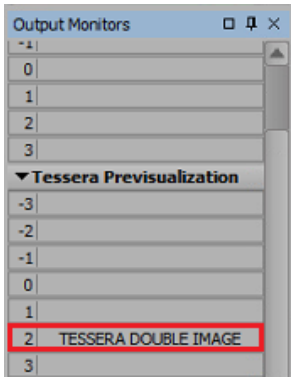
   If you don't already have a project server set up, see Setting up a Project Server for instructions.

6. Deploy the project you want to use.

   See Deploying a Project from the Project Server for instructions.

7. On your XPression Tessera Master engine, in the **Sequencer**, right-click a take item (needs to have a Tessera source defined) and select **Send Item to Previsualization**.

   Scenes that are being previsualized will appear in the **Tessera Previsualization** section of the **Output Monitors** panel on the XPression Tessera Master engine and in the web browser if that is being used to view the outputs.



To clear the Tessera Previsualization output:

- Select **Remove Item From Previsualization** to clear the item from the **Tessera Previsualization** output.

  OR

  Select **Clear All Previsualization** to clear all items from the **Tessera Previsualization** output.

Creating a Tessera Preview Material

Use a **Tessera Preview Material** to display live or previewed Tessera content within XPression by connecting to Tessera output streams or local preview render proxies.

The shader is used for:

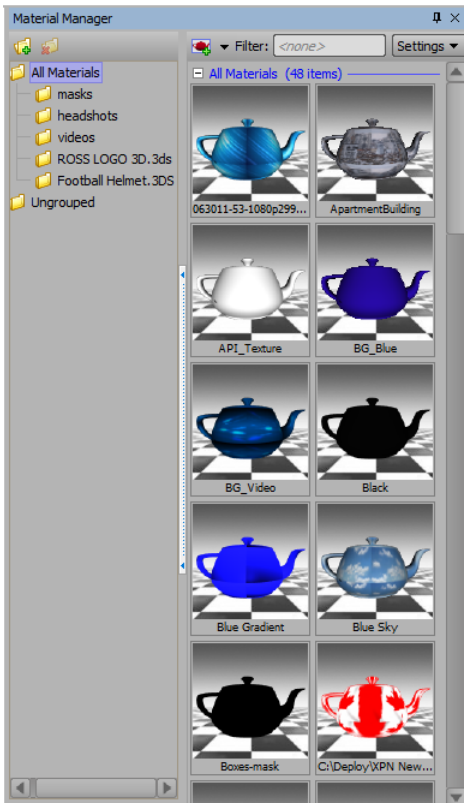
- Live output monitoring
- Up-next preview
- Previsualization
- Tessera Preview nodes
- Tessera Master virtual preview outputs

★The shader texture dimensions match the destination region size.

To create a Tessera Preview Material:

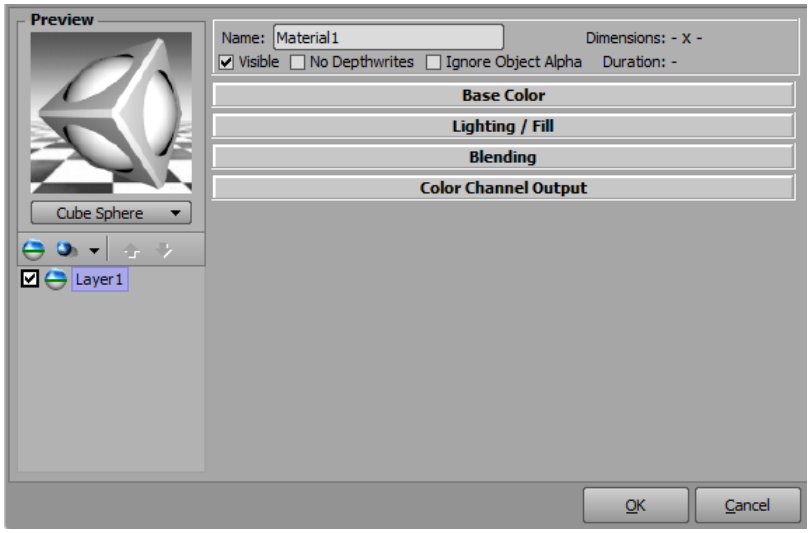
1. In XPression Tessera, select **Display > Material Manager**.

   The **Material Manager** opens. To prevent the **Material Manager** window from being hidden by other windows, select the **Pin** icon in the window title bar.

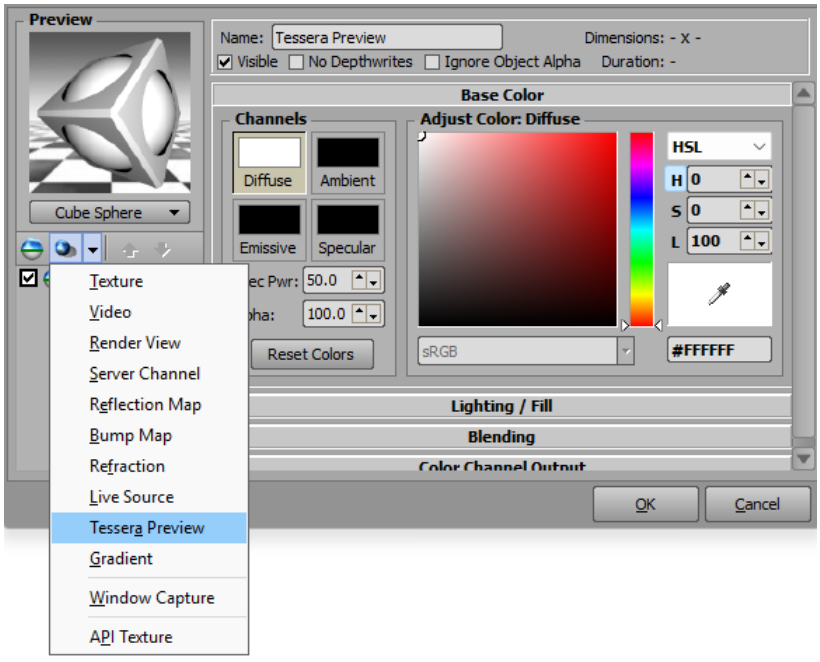


2. In the **Material Manager**, select the **Create New Material** icon in the toolbar.

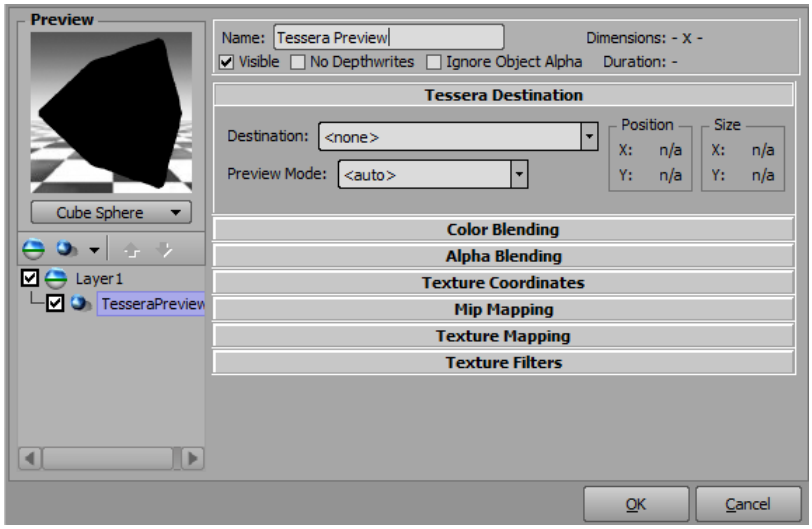
   The **Material Editor** dialog opens.



3. In the **Name** field, enter a name for the new material.
4. In the **Preview** section, from the **Shader** drop-down, select **Tessera Preview**.



A **Tessera Preview** shader is added to the material.



Continue with configuring the Tessera Destination settings.

To configure the Tessera Destination settings:

1. From the **Destination** drop-down, select the Tessera destination.

   Once the destination has been selected, the **Position** and **Size** of the region will be reflected in the read-only information to the right of the drop-down.

2. From the **Preview Mode** drop-down, select one of the following modes:

   <auto> — automatically selects the appropriate preview mode.

   Up Next Preview — displays upcoming content.

   Live Monitor — displays the currently active Tessera output.

   Previsualization — displays content rendered through the previsualization system.

3. Continue with configuring the Color Blending settings.

To configure the Color Blending settings:

1. From the **Blend Mode** drop-down, select the mode with which to blend the color (layer) and the object.

   The available modes are:

   - **Multiply —** multiply the color information of the current shader with the previous stage. For example: a **Previous Stage** value of white (1,1,1) multiplied by a **Current Shader** value of red (1,0,0) results in a shader output value of (1,0,0).
   - **Addition** — **Previous Stage** value + the **Current Shader** value
   - **Subtract** — **Previous Stage** value - the **Current Shader** value
   - **Mix** — (1 - Mix Value) * **Previous Stage** value + (**Mix Value** * **Current Shader** value)
   - **Dot Product 3** — **Previous Red** value * **Current Red** value + **Previous Green** value * **Current Green** value + **Previous Blue** value * **Current Blue** value
   - **Blend Alpha** — process the alpha value of the stage (shader or layer).
   - **Use Previous Stage** — use the color information from the previous stage "as is".

- **Use Current Stage** — ignore all previous stages and pass the current value without any elements of the previous stage in value.
- **Overlay** — combines **Multiply** and **Screen** blend modes. Where the base layer is light, the top layer becomes lighter; where the base layer is dark, the top becomes darker; where the base layer is mid-grey, the top is unaffected.

2. In the **Mix Value** field, enter or select the mix value for the selected **Blend Mode**.

   This field is only available for the **Addition**, **Subtraction**, and **Mix** blend modes.

3. In the **Previous Stage** section, from the **Modifier** drop-down, select the modifier with which to blend the previous stage.

   The available modifiers are:

   - **None** — the value of the stage is returned unmodified.
   - **Invert** — the color value of the stage is returned as (1-Red, 1-Green, 1-Blue).
   - **x2 (multiply by 2)** — the color value of the stage is returned multiplied by a value of 2.
   - **x2 + Negate** — the color value of the stage is returned multiplied by 2 and then negated (multiplied by -1).
   - **Bias** — the color value returned by this stage is -0.5 + **ColorValue** (-0.5 being the fixed bias value).
   - **Bias + Negate** — the color value returned by this stage is (-0.5 + **ColorValue**) * -1.
   - **Bias + x2** — the color value returned by this stage is (-0.5 + 2 * **ColorValue**).
   - **Bias + x2 + Negate** — the color value returned by this stage is (-0.5 + 2 * **ColorValue**) * -1.

4. In the **Current Stage** section, from the **Modifier** drop-down, select the modifier with which to blend the current stage.

   The available modifiers are:

   - **None** — the value of the stage is returned unmodified.
   - **Invert** — the color value of the stage is returned as (1-Red, 1-Green, 1-Blue).
   - **x2 (multiply by 2)** — the color value of the stage is returned multiplied by a value of 2.
   - **x2 + Negate** — the color value of the stage is returned multiplied by 2 and then negated (multiplied by -1).
   - **Bias** — the color value returned by this stage is -0.5 + **ColorValue** (-0.5 being the fixed bias value).
   - **Bias + Negate** — the color value returned by this stage is (-0.5 + **ColorValue**) * -1.
   - **Bias + x2** — the color value returned by this stage is (-0.5 + 2 * **ColorValue**).
   - **Bias + x2 + Negate** — the color value returned by this stage is (-0.5 + 2 * **ColorValue**) * -1.

5. In the **Output Modifier** section, from the **Modifier** drop-down, select the modifier with which to blend the output of the material.

   The available modifiers are:

   - **None** — the output remains “as is”.
   - **Multiply by 2** — the output value is multiplied by a value of 2.0.
   - **Multiply by 4** — the output value is multiplied by a value of 4.
   - **Multiply by 8** — the output value is multiplied by a value of 8.
   - **Divide by 2** — the output value is divided by a value of 2.

- **Divide by 4** — the output value is divided by a value of 4.
- **Divide by 8** — the output value is divided by a value of 8.

6. Select the **Saturate** checkbox to blend saturation between objects.
7. Continue with configuring the Alpha Blending settings.

To configure the Alpha Blending settings:

1. From the **Blend Mode** drop-down, select the mode with which to blend the color (layer) and the object.

   The available modes are:

   - **Multiply —** multiply the color information of the current shader with the previous stage. For example: a **Previous Stage** value of white (1,1,1) multiplied by a **Current Shader** value of red (1,0,0) results in a shader output value of (1,0,0)
   - **Addition** — Previous Stage value + the Current Shader value.
   - **Mix** — (1 - Mix Value) * Previous Stage value + (Mix Value * Current Shader value)
   - **Subtract** — Previous Stage value - the Current Shader value.
   - **Use Previous Stage** — use the color information from the previous stage "as is".
   - **Use Previous Stage (Fill)** — use the **Fill** only from the previous shader.
   - **Use Current Stage** — ignore all previous stages and pass the current value without any elements of the previous stage in value.

2. In the **Mix Value** field, enter or select the mix value for the selected **Blend Mode**.

   This field is only available for the **Addition**, **Subtraction**, and **Mix** blend modes.

3. In the **Previous Stage** section, from the **Modifier** drop-down, select the modifier with which to blend the previous stage.

   The available modifiers are:

   - **None** — the value of the stage is returned unmodified.
   - **Invert** — the color value of the stage is returned as (1-Red, 1-Green, 1-Blue).
   - **x2 (multiply by 2)** — the color value of the stage is returned multiplied by a value of 2.
   - **x2 + Negate** — the color value of the stage is returned multiplied by 2 and then negated (multiplied by -1).
   - **Bias** — the color value returned by this stage is -0.5 + Color value (-0.5 being the fixed bias value).
   - **Bias + Negate** — the color value returned by this stage is (-0.5 + ColorValue) * -1.
   - **Bias + x2** — the color value returned by this stage is (-0.5 + 2 * ColorValue).
   - **Bias + x2 + Negate** — the color value returned by this stage is (-0.5 + 2 * ColorValue) * -1.

4. In the **Current Stage** section, from the **Modifier** drop-down, select the modifier with which to blend the current stage.

   The available modifiers are:

   - **None** — the value of the stage is returned unmodified.
   - **Invert** — the color value of the stage is returned as (1-Red, 1-Green, 1-Blue).
   - **x2 (multiply by 2)** — the color value of the stage is returned multiplied by a value of 2.

- **x2 + Negate** — the color value of the stage is returned multiplied by 2 and then negated (multiplied by -1).
- **Bias** — the color value returned by this stage is -0.5 + Color value (-0.5 being the fixed bias value).
- **Bias + Negate** — the color value returned by this stage is (-0.5 + ColorValue) * -1.
- **Bias + x2** — the color value returned by this stage is (-0.5 + 2 * ColorValue).
- **Bias + x2 + Negate** — the color value returned by this stage is (-0.5 + 2 * ColorValue) * -1.

5. In the **Output Modifier** section, from the **Modifier** drop-down, select the modifier with which to blend the output of the material.

   The available modifiers are:

   - **None** — the output remains "as is".
   - **Multiply by 2** — the output value is multiplied by a value of 2.
   - **Multiply by 4** — the output value is multiplied by a value of 4.
   - **Multiply by 8** — the output value is multiplied by a value of 8.
   - **Divide by 2** — the output value is divided by a value of 2.
   - **Divide by 4** — the output value is divided by a value of 4.
   - **Divide by 8** — the output value is divided by a value of 8.

6. Select the **Saturate** checkbox to blend saturation between objects.
7. Continue with configuring the Texture Coordinates.

To configure the Texture Coordinates:

1. In the **Texture Coordinates** section, in the **Position** section, set the placement of the shader.
   - **X** — enter or select the **X** coordinate for the shader location.
   - **Y** — enter or select the **Y** coordinate for the shader location.
2. In the **Scale** section, set the size of a shader.
   - **X** — enter or select the scale factor to apply to a shader along the X (horizontal) axis.
   - **Y** — enter or select the scale factor to apply to a shader along the Y (vertical) axis.
   - **XY** — equally adjust the **Y** scale factor when changing the **X** scale factor. Changing the **Y** scale factor does not affect the **X** scale factor.
   - **None** — independently change scale factors.
3. In the **Rotation** section, enter or select the degree of rotation of the shader.
4. In the **Pivot** section, set the pivot point of the shader.
   - **X** — enter or select the **X** coordinate for the shader pivot point.
   - **Y** — enter or select the **Y** coordinate for the shader pivot point.
5. In the **Address Mode** section, from each of the **U** and **V** drop-downs, select the 2D image representation for the **U** and/or **V** texture coordinates of the texture.

   The options are:

   - **<default>** — select this when the texture is smaller than the object. The edge pixels are repeated. This is the same as the **Clamp** option.

- **Wrap** — wrap the texture around rounded 3D objects such as spheres.
- **Mirror** — mirror the texture infinitely within the object.
- **Clamp** — select this when the texture is smaller than the object. The edge pixels are repeated. This is the same as the **<default>** option.
- **Border** — add a border to the texture within the object.
- **Mirror Once** — reflect the texture once.

6. Continue with configuring the Mip Mapping settings.

To configure the Mip Mapping settings:

1. From the **Map Filter** drop-down, select the method with which to determine the mip map object to display when the object size changes during animation.

   The available methods are:

   - **<disabled>** — do not use a mip filter.
   - **Nearest** — use a nearest neighbor filter when down scaling the original image info into mip maps.
   - **Linear** — use a linear interpolation filter when down scaling the original image info into mip maps.

2. From the **Minimum Mip Level** drop-down, select the minimum level of mip maps that can be used for a video shader.
3. Continue with configuring the Texture Mapping settings.

To configure the Texture Mapping settings:

1. Select **Default** to display texture in the default state or **Spherical Reflection** to display texture as a spherical reflection.
2. Continue with configuring the Texture Filters.

To configure the Texture Filters:

1. From the **Minification Filter** drop-down, select the interpolation method for minifying a texture in relation to the original.

   The available methods are:

   - **Nearest**
   - **Linear**
   - **Anisotropic**
   - **Pyramidal**
   - **Gaussian**

2. From the **Magnification Filter** drop-down, select the interpolation method for magnifying a texture in relation to the original.

   The available methods are as follows:

   - **Nearest**
   - **Linear**
   - **Anisotropic**

- **Pyramidal**
- **Gaussian**

3. In the **Max Anisotropy** field, enter or select the maximum anisotropic value for the Anisotropic minification and/or magnification interpolation method.

   This field is only available when **Anisotropic** is selected for the **Minification Filter** or the **Magnification Filter**.

4. Select **OK** to close the **Material Editor**.

   The new material is added to the **Material Manager** and is ready to be applied to objects.

Scenes

Projects can be designed as they are always designed in XPression, with a couple of caveats:

- Orthogonal cameras cannot be used in combination with Tessera.
- Background objects cannot be used in combination with Tessera.

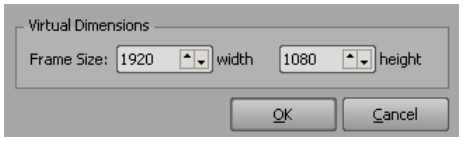
These objects are not compatible with how Tessera renders the scene.

Any size of scene can be used. It typically makes sense to have the aspect of the source scenes match the aspect of the destination.

To create a custom size scene:

1. Right-click inside the **Scene Manager** and select **New > Custom Size Scene** from the shortcut menu.

   The **New Scene** dialog opens.

2. In the **Virtual Dimensions** section, in the Width field, enter or select the width (in pixels) of the new scene.
3. In the **Height** field, enter or select the height (in pixels) for the new scene.

   The **Area Mapping** table is not applicable in the Tessera workflow.
4. Select **OK** to create the new scene with the defined settings.

   The **New Scene** dialog closes and the new scene is added to the **Scene Manager** window below the scene or scene group selected in the scene list.

Saving Region Mappings

Individual region mappings can be saved and loaded in the XPression Tessera Region Mapper.

To save a region mapping:

1. In the **XPression Tessera Region Mapper**, select **File > Save To File**.

   The **Save As** file browser opens.
2. Select a folder for the file and select **Save** to save the region mapping to an **.xprgm** region mapper file.

To load a saved file:

- In the **XPression Tessera Region Mapper**, select **File > Load From File**.

Tessera Backup System

This section describes the **XPression Tessera Output Nodes** status list and its use in monitoring the status of the Tessera primary and backup nodes and assigning a backup node to act as a primary node. The **XPression Tessera Output Nodes** status list can be used to determine if a Tessera system is active and ready to be used.

To determine if a system is ready, confirm that all output nodes show a status of **Output Node Running** and display the correct number of **Projects Loaded**. If a primary or backup node shows **Output Node Running** and has the correct number of projects loaded, it is ready to receive commands from the Tessera master.

The **Backup Clock Node** and **Backup Tessera Master** methods and maintaining the backup system are also described.

The following topics are discussed:

Tessera Output Nodes Status List

Using a Backup Node

Using the Keyboard/GPI Map to Assign Backup Nodes

Video Routing

Backup Tessera Output Node Maintenance

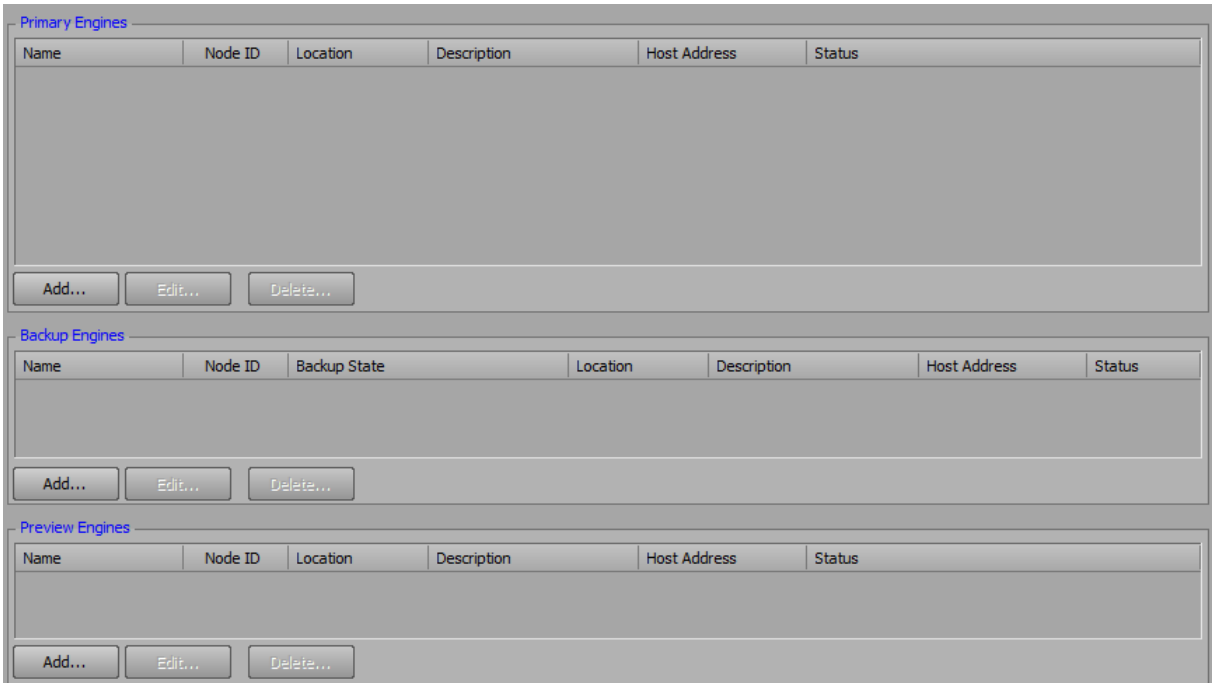
Backup Clock Node

Using a Backup Master

Backup Tessera Master Maintenance

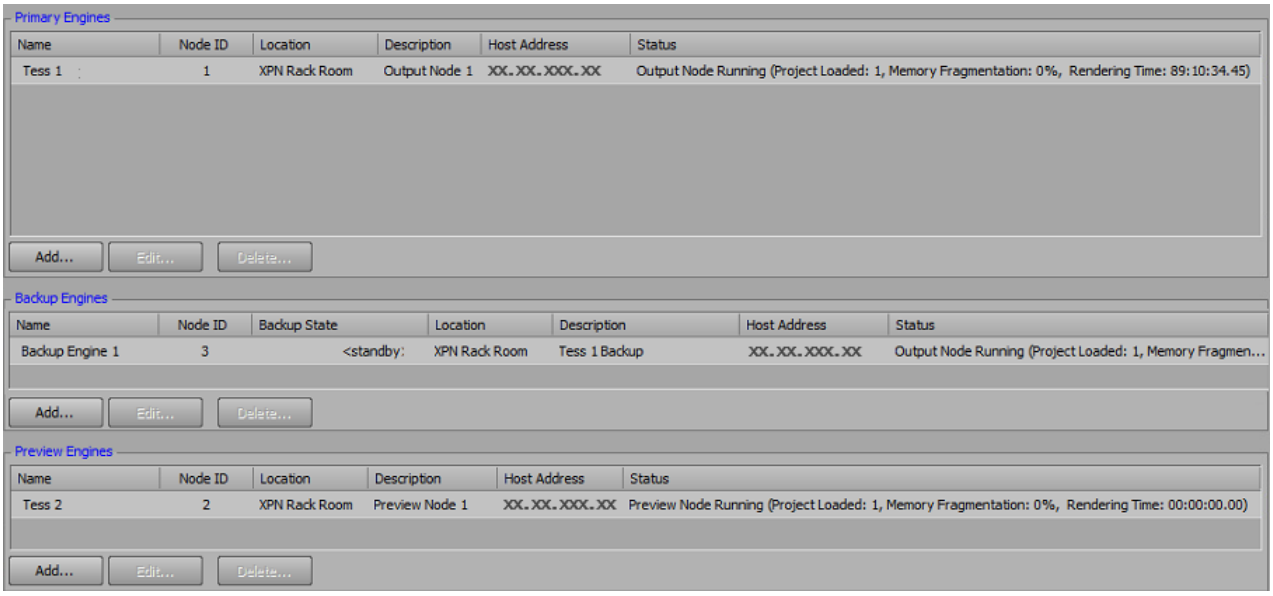
Tessera Output Nodes Status List

Open the **XPression Tessera Output Nodes** window and access the Tessera output nodes status list on the master engine by selecting **Edit > Tessera > Output Nodes**.



This window lists all the primary, backup, and preview output nodes to which the Tessera master is connected.

The **Output Nodes** window displays the status of each engine. Primary engines are actively being used by the Tessera master and the backup engines can be assigned a backup state at any time. By default, backup engines will be in the **<standby>** state. Preview engines are used for confidence monitoring, up-next previews, or previsualization.



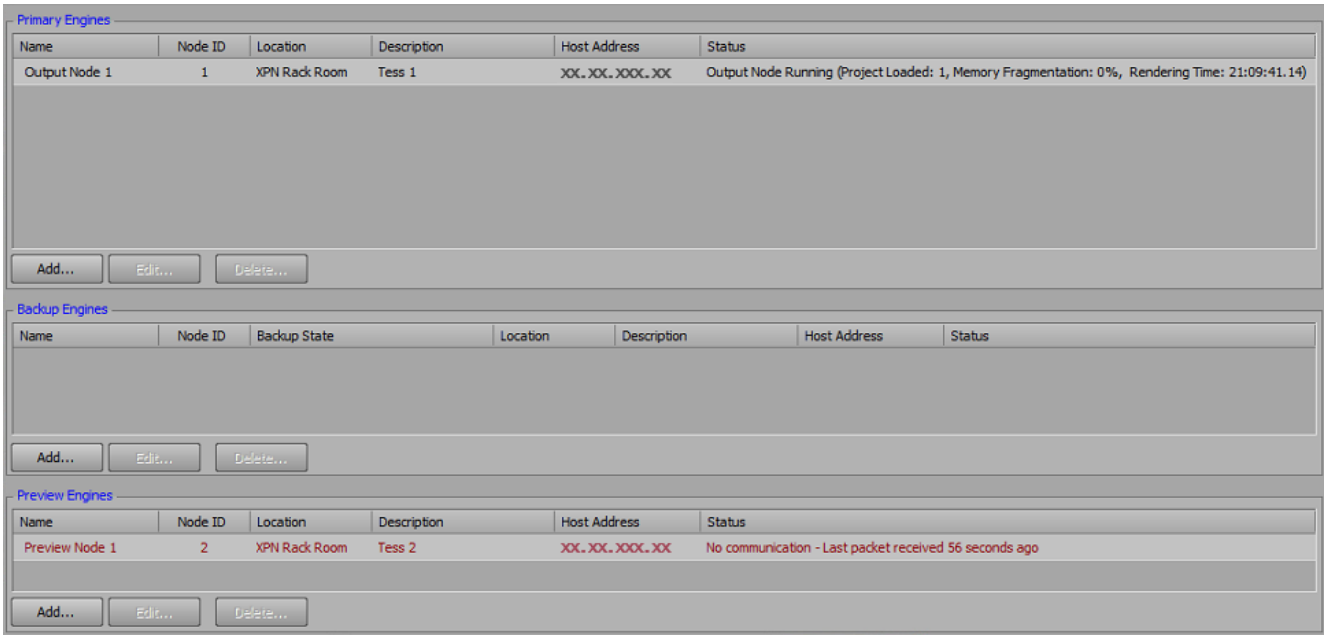
Primary, Backup, and Preview Nodes

In the **Primary Engines**, **Backup Engines**, and **Preview Engines** lists are the configured primary, backup, and preview nodes respectively.

- **Name** — the name of the node. Does not affect operation. For example, Left Mainboard Engine.
- **Engine ID** — the Tessera output node engine ID set in the Tessera output node configuration on each node.
- **Location** — the location of the node. Does not affect operation. For example, Rack 10 Row 20.
- **Description** — a description of the node. Does not affect operation. For example, node used for interior boards.
- **Host Name** — the IP address or host name of the Tessera node running XPression Studio or BlueBox.
- **Status** — displays the status of the node. See Node Status below for more information.

Node Status

Tessera nodes will continuously send the Tessera master a status message when running.



There are four possible statuses that can be shown in the XPression Tessera Output Nodes status list:

- **Output Node Running** — the output node is running XPression Studio or BlueBox and is sending status packets.
  - **Projects Loaded** — number of projects loaded in the output node.
  - **Memory Fragmentation** — memory usage of XPression on the output node.
  - **Rendering Time** — uptime of the output node XPression Studio or BlueBox software application.
- **Output Node Timed Out** — the output node has stopped sending status messages. If an output node enters this state, the Tessera master will stop waiting for this node to respond to commands.Possible cause: XPression Studio or BlueBox is in a non-responsive state.

- **No Communication** — the Tessera master has not received status packets from the node in 15 seconds or more.

  Possible causes:

  - Network communication lost.
  - XPression Studio or BlueBox has not been closed since being launched.
  - XPression Studio or BlueBox has been incorrectly configured.

- **Unknown** — the Tessera master has not yet received any status packets from the output node.

  Possible cause: XPression Studio or BlueBox has not been launched on that output node since the Tessera master has been active.

Using a Backup Node

Backup Engines (for backing up primary output nodes) can be activated without interrupting or changing the behavior of the Tessera system. Backup Engines can be used as warm or hot backups. A warm backup can be assigned any Primary Engine ID and a hot backup can be left running in parallel with any Primary Engine ID.

To use a backup node:

1. On the XPression Tessera master, select **Edit > Tessera > Output Nodes**.

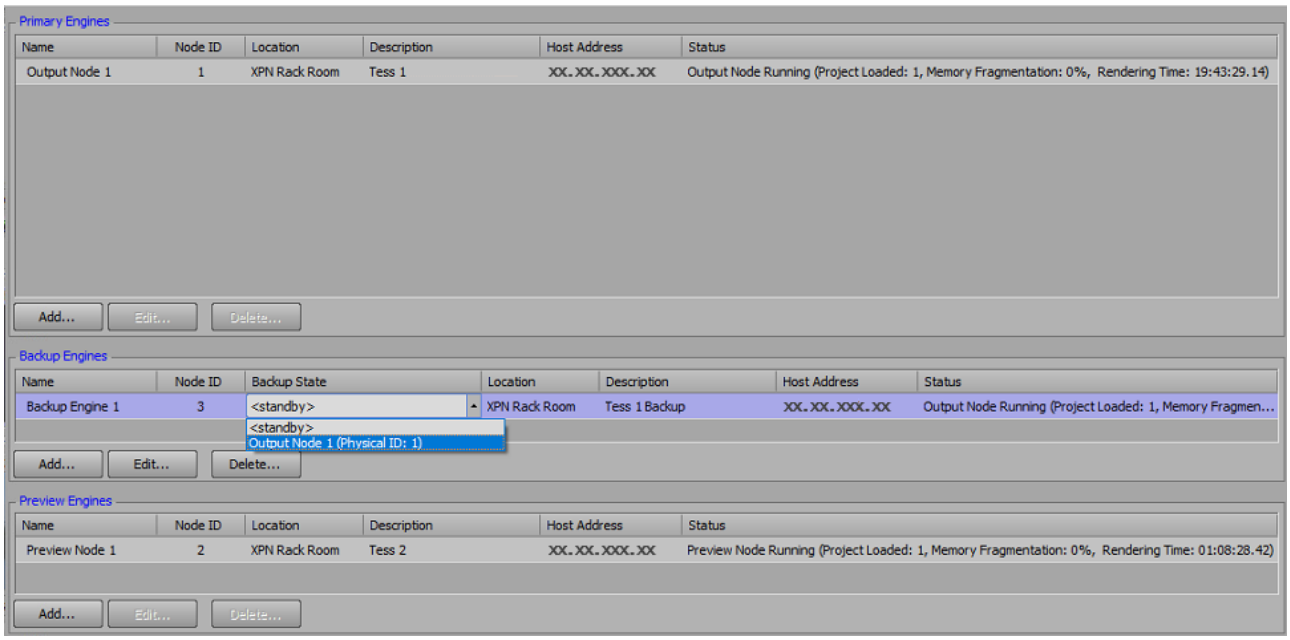
   The **XPression Tessera Output Nodes** window opens.

2. In the **Backup Engines** list, select a backup engine.

3. Select the **Backup State** column.

   The **Backup State** column displays a drop-down menu that lists all the primary engines from the **Primary Engines** list by name and engine ID.

4. Select a primary engine for the backup state (the engine to be backed up).



The backup engine will now respond to all commands from the Tessera master that are assigned to that engine ID.

- If the primary engine is in **Output Node Running** status, both the primary engine and backup engine assigned to it will run in parallel (hot backup).
- If the primary engine is in **Output Node Timed Out/No Communication** or **Unknown** the Tessera master will only wait for the backup engine for playout.

A backup engine will only respond to commands sent from the Tessera master after it has been assigned a **Primary Engine ID**. It will not retroactively engage commands that were sent before it was assigned a **Primary Engine ID** or bring online take items that were already online on the primary engine.

Using the Keyboard/GPI Map to Assign Backup Nodes

XPression Keyboard and GPI mapping can also be used to assign a backup engine and primary engine node ID.

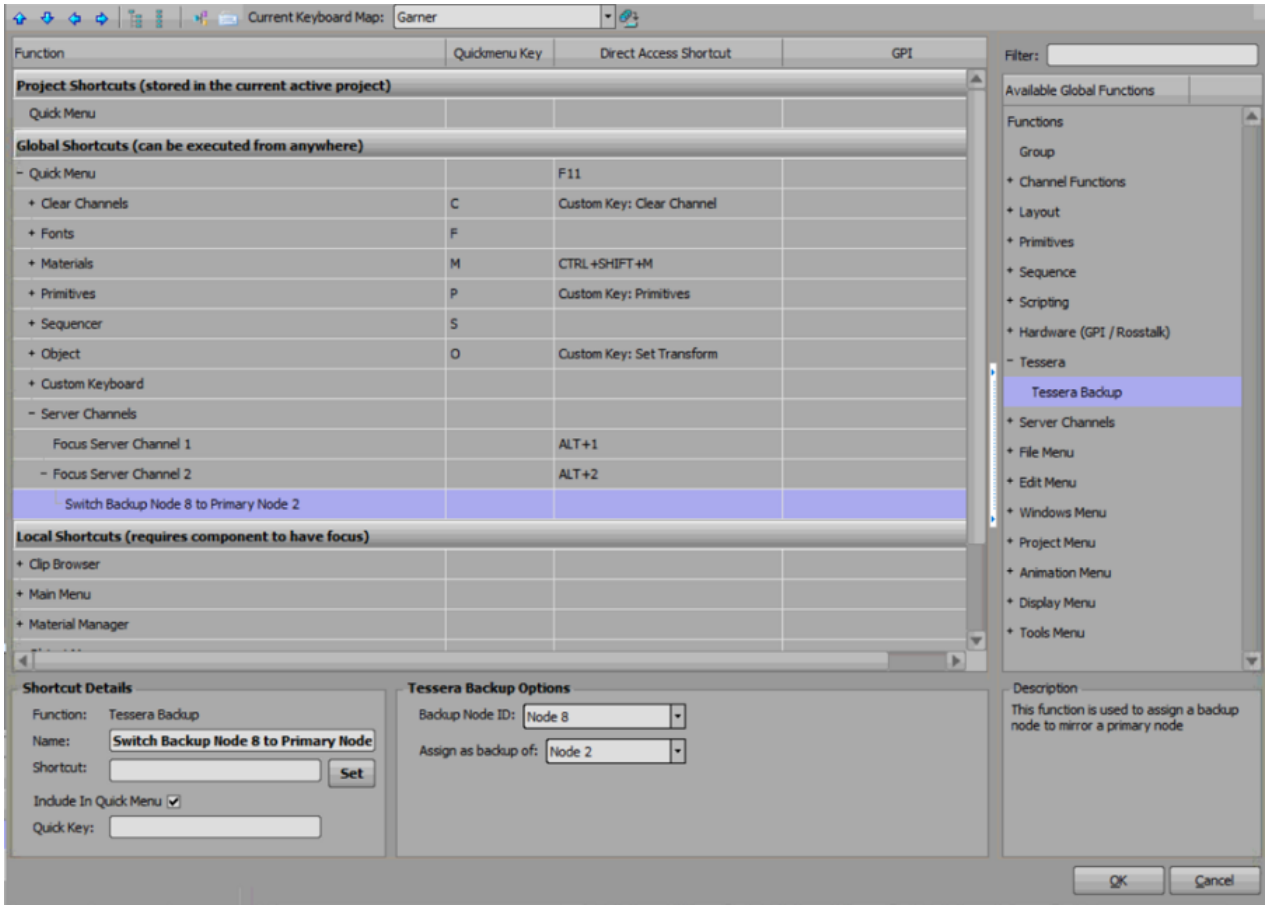
To assign backup nodes:

1. On the XPression Tessera master, select **Edit > Keyboard / GPI Mapping**.

   The **Keyboard / GPI Mapping** dialog opens.

2. In the **Available Global Functions** section, expand the Tessera menu and select **Tessera Backup**.

3. Drag the **Tessera Backup** function and drop it on an available **Global Shortcut**.



4. In the **Tessera Backup Options** section, from the **Backup Node ID** drop-down, select the backup node.

5. From the **Assign as backup of** drop-down, select the node to backup using the selected backup node ID.

6. Select **OK**.

   The **Keyboard / GPI Mapping** dialog closes.

Video Routing

Once a backup engine has been assigned as a primary engine, the video feed from the backup engine will need to be routed to the same destination that the primary engine had been. For example, this could be done as a router salve/macro or a video switcher custom control. Ensure that macros for every combination of backup engine replacing a primary engine are accounted for.

For example:

- Backup Node 4 replacing Primary Node 1, 2, and 3.
- Backup Node 5 replacing Primary Node 1, 2, and 3.

Backup Tessera Output Node Maintenance

Include the backup Tessera output node engines in the regular system maintenance schedule.

If using XPression Clip Store, verify that the Clip Stores on the Tessera backup engines are all being synced with the master Clip Store.

For More Information on...

- setting up Clip Store sync, refer to the *XPression Clips Workflow User Guide*.

Backup Clock Node

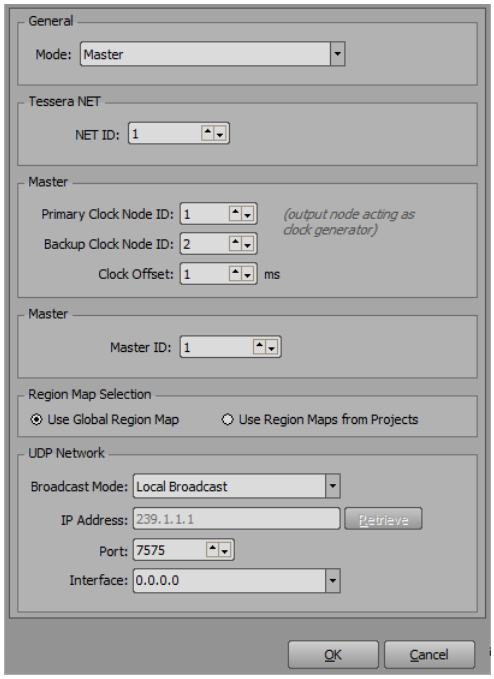
Tessera uses one of the outputs nodes as a clock node. The clock node is used as the clock generator (timer) by the Tessera master for triggering Tessera commands synchronously across all nodes. A backup clock node can also be configured, and this node will be used by the Tessera master if the primary clock node enters the **Output Node Timed Out**, **No Communication**, or **Unknown** states.

To configure a backup clock node:

1. On the XPression Tessera master, select **Edit > Tessera > Settings**.

   The **Tessera Settings** dialog opens.

2. Ensure that the **Mode** in the **General** section is set to **Master**.



3. In the **Master** section, in the **Primary Clock Node ID** field, enter or select the primary engine node ID to set the clock for all the engines.
4. In the **Backup Clock Node ID** field, enter or select an output node engine ID as the backup for the Tessera master should the **Primary Clock Node ID** enter a non-responsive state (**Output Node Timed Out**, **No Communication**, or **Unknown**).
5. Select **OK**.

Using a Backup Master

Using a backup Tessera master requires that the backup be configured identically to the primary Tessera Master, except for the **Master ID**, which needs to be different.

To configure the backup Tessera Master:

1. On the engine you want to use as the backup, select **Edit > Tessera > Settings**.
2. In the **Tessera Settings** dialog, from the **Mode** drop-down, select **Master**.
3. In the **Tessera Net** section, ensure that the **NET ID** is the same as in the primary Tessera Master.
4. In the **Master** section, in the **Master ID** field, enter a number that is different from the primary Tessera Master.
5. In the **UDP Network** section, ensure that all fields are identical to the primary Tessera Master settings.
6. Select **OK** to save the settings and close the dialog.

To use a backup Tessera master:

1. On the backup Tessera Master engine, select the red **Take Control** button located in the top-right corner of the UI.
2. Select the **Node Status** link above the **Take Control** button to verify that each output node is responding and shows that all project(s) are loaded.

Backup Tessera Master Maintenance

Include the backup Tessera master in the regular system maintenance schedule.

Keep the backup master Tessera deploy folder up to date by deploying the latest revision of the Tessera project(s) from the XPression Project Server.

To deploy latest Tessera project(s):

- Select **File > Project Server > Deploy** on the XPression Tessera master.

To save updated sequencer list Take Items on the backup, save the project on the primary.

If using DashBoard, keep the backup Tessera master DashBoard up to date with the latest Dashboard **.grid** files.

If using XPression Clip Store, check that the XPression Clip Stores on the Tessera backup master are being synced with the master Clip Store.

For More Information on...

- setting up Clip Store sync, refer to the *XPression Clips Workflow User Guide*.

Tessera Master / Tessera SE Replication

You can create a backup system to replace a failed Tessera Master or Tessera SE system. The backup system will monitor one or more Master or SE systems and keep a deployed copy of all projects used on those systems, as well as copies of the framebuffer configurations, preferences, Tessera settings, etc.

If the monitored engine fails, the backup can load the projects and configuration files and take over control of any distributed Tessera output nodes.

This procedure should not be used to replicate output nodes.

In a MOS workflow, any edits in the Tessera Master MOS sequences will not be brought over to the replication Master, as all changes are coming in from MOS.

You can assign keyboard/GPI actions for taking control of the system and turning monitoring on and off.

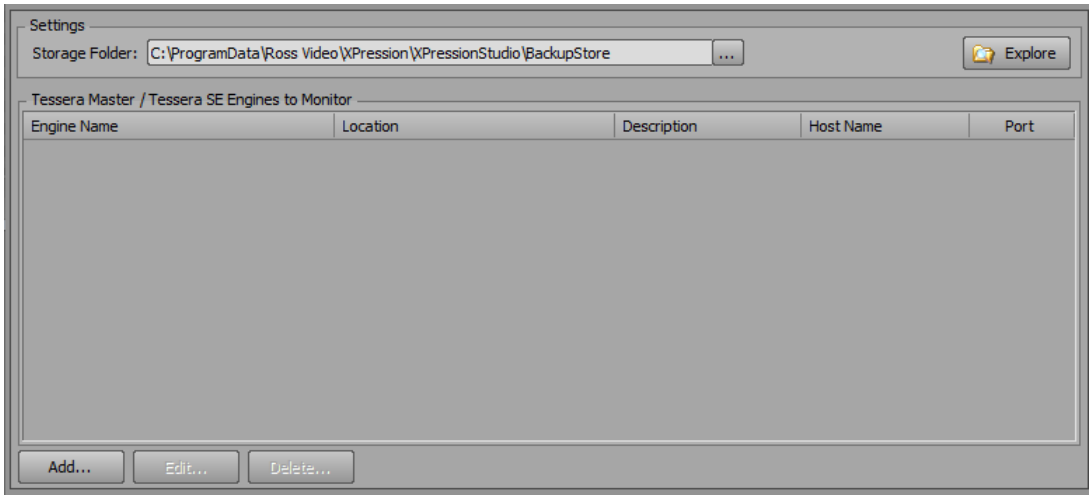
Prerequisites

- You must have a Tessera license for version 10.0 or newer.
- All engines must have the same type of framebuffer board (do not mix X.mio2 and DSXLE4 and/or IP boards).
- XPression Project Server is required and all engines must be connected to the same project server.
- In a MOS workflow, there cannot be a combination of a MOS sequence and a non-MOS sequence in the first Tessera Master.

To replicate a Tessera Master or SE system:

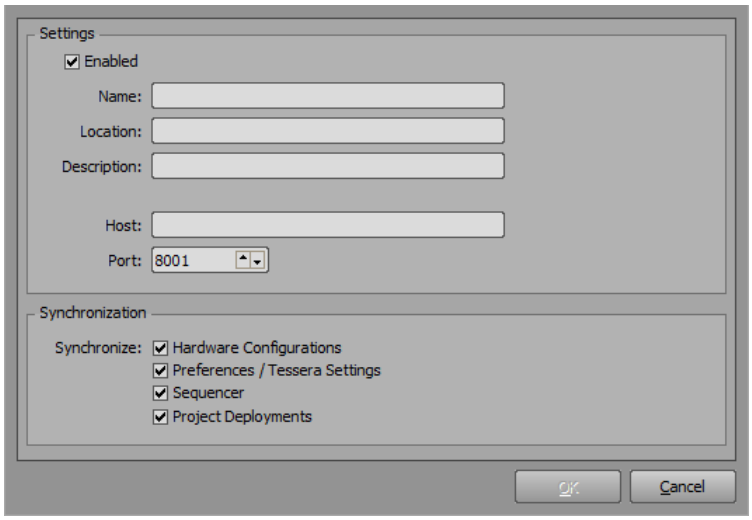
1. In XPression, select **Edit > Tessera > Tessera Master / SE Replication**.

   The **Tessera Master / SE Replication Settings** dialog opens.



2. Select **Add**.

   The **Edit Tessera Master / SE Engine Details** dialog opens.



3. In the **Settings** section, enter the following details:

   - In the **Name** field, enter the name of the Tessera engine to be monitored and replicated if necessary.
   - In the **Location** field, enter the location of the Tessera engine to be monitored and replicated if necessary.
   - In the **Description** field, enter the description of the Tessera engine to be monitored and replicated if necessary.
   - In the **Host** field, enter the IP address of the Tessera engine to be monitored and replicated if necessary.

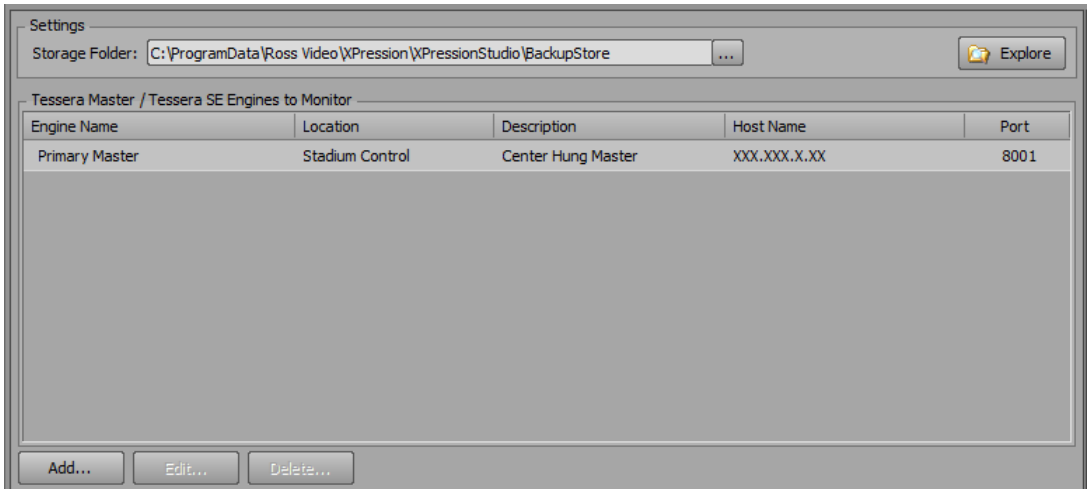
     The **Port** field is populated with the port number on which the Tessera Master is communicating with the output nodes.

4. In the **Synchronization** sections, select the checkboxes of the items to be included in the backup.

   It is recommended that all items be selected.

5. Select **OK** to save the details and close the dialog.

   The described engine is added to the **Tessera Master / Tessera SE Engines to Monitor** list.

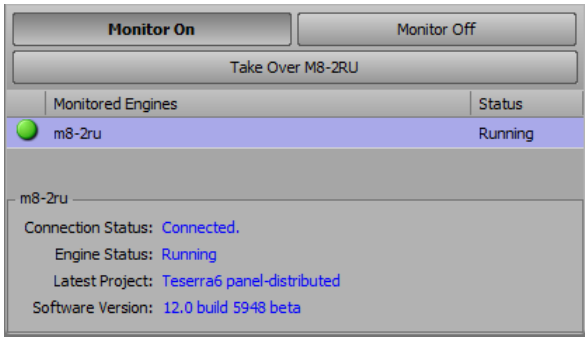


6. Repeat steps 2 to 5 to add any other engines to the list.
7. When all engines to be monitored are added, select **OK** to close the dialog.

To monitor the status of the engines:

1. In XPression, select **Display > Replication Status**.

   The **Replication Status** dialog opens.



   The **Replication Status** dialog displays the connection status of the engines. It can be moved and docked anywhere.

2. Select **Monitor On** to monitor the status of the engines or **Monitor Off** when not required.

   The **Node Status** is indicated above the Take Control button.

3. Select the underlined node status text to open the **Output Node** dialog to see the status of all the nodes.

To take control of a failed engine:

1. In the **Replication Status** dialog, select the engine that has failed and select **Take Over [Name of Engine]**.

   The status of the takeover will be displayed as synchronization of each item is completed.

2. When the synchronization is complete, on the backup engine, at the top of the XPression UI, select the **Take Control** button to give control of the output nodes to the backup engine.
3. When the primary engine is ready to resume operation, select the **Take Control** button on the primary engine to give control back to the primary engine.

For More Information on...

- backing up output nodes, refer to Tessera Backup System.

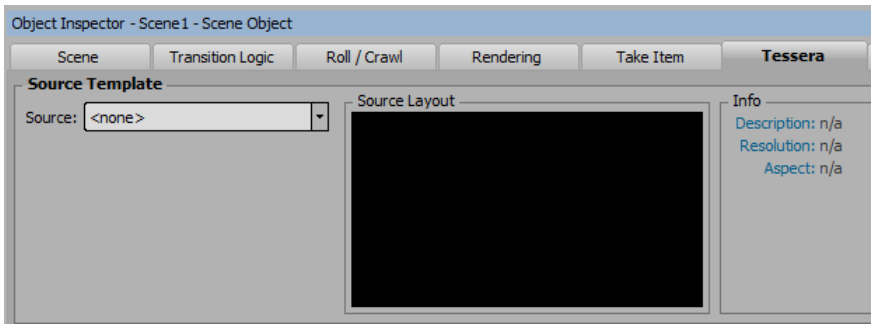
Assigning a Source Output to a Scene or Scene Group in the Object Inspector

Tessera source outputs can be assigned to a scene or scene group using the **Tessera** tab in the **Object Inspector** of the selected scene or scene group.

To assign a source output:

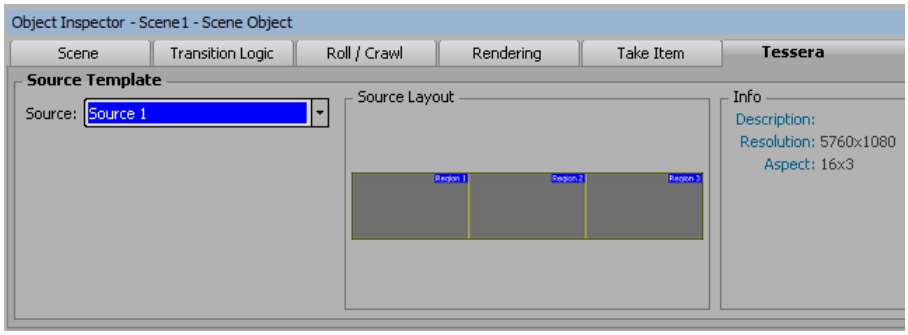
1. In the XPression **Editor**, select a scene or scene group.
2. In the **Object Inspector**, select the **Tessera** tab.

   The **Tessera** tab opens.



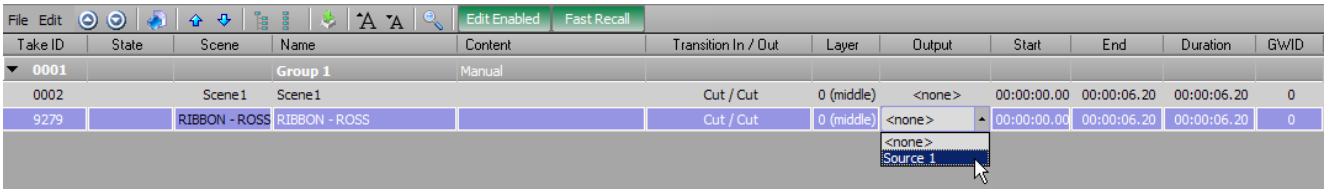
3. In the **Source Template** section, from the **Source** drop-down, select a source output for the scene object.

   The selected source output is assigned to the scene object and a preview of the layout is displayed in the **Source Layout** section.



Tessera Playback

Once the correct setup has been implemented for the Tessera workflow, use the XPression Sequencer in the master for playback. No outputs will be listed in the **Output** list in the **Sequencer**. The Tessera source regions previously created, which serve as an overlay for the current scene targeting the destination regions, are listed by name instead. Any scene or scene size can be sent to any channel, but sending the appropriate scene for the appropriate source will avoid distorting the output.



Taking elements to air is the same as it is in a regular XPression workflow.

★Source outputs can also be assigned using the Tessera tab in the Object Inspector of a scene or scene group. For more information on assigning source outputs in the Object Inspector, refer to Assigning a Source Output to a Scene or Scene Group in the Object Inspector.

Project Server

The **Project Server** allows XPression Tessera projects to be published and deployed using a server.

The following topics are discussed in this section:

Setting up a Project Server

Publishing a Project to the Project Server

Deploying a Project from the Project Server

Saving a Project

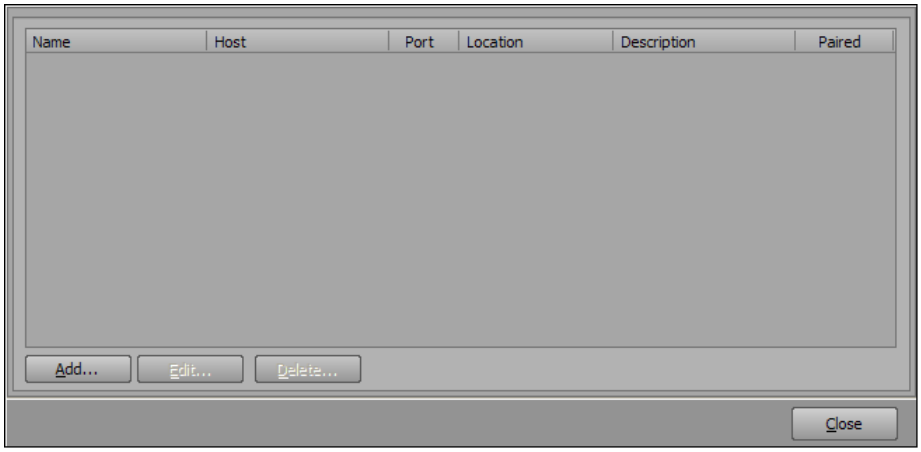
Setting up a Project Server

This topic explains how to add or modify a project server in XPression. It guides you through accessing the **Project Servers Setup** dialog, entering or updating the required server details, and saving the configuration so the project server is available for use within the application.

To set up a project server:

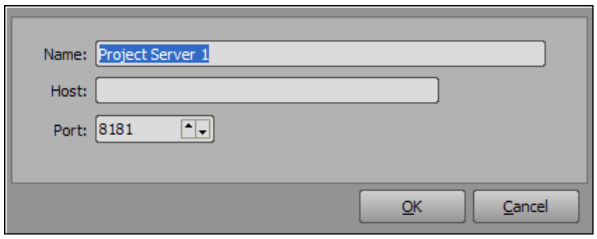
1. In XPression, select **File > Project Server > Setup**.

   The **Project Servers Setup** dialog opens.



2. Select **Add** to add a new project server or select **Edit** to edit an existing project server.

   The **Edit Project Server** dialog opens.



3. In the **Edit Project Server** dialog, enter or edit the project server information.
   - In the **Name** field, enter or edit a name for the project server.
   - In the **Host** field, enter or edit the host IP address.
   - In the **Port** field, enter or edit the host port number.
4. Select **OK**.

   The added or edited project server appears in the list in the **Project Servers Setup** dialog.
5. Select **Close**.

Publishing a Project to the Project Server

This topic describes how to log on to a project server from XPression and publish a project. It walks you through selecting or creating a show, entering project revision details, and completing the publishing process so the project and its revisions are made available on the project server.

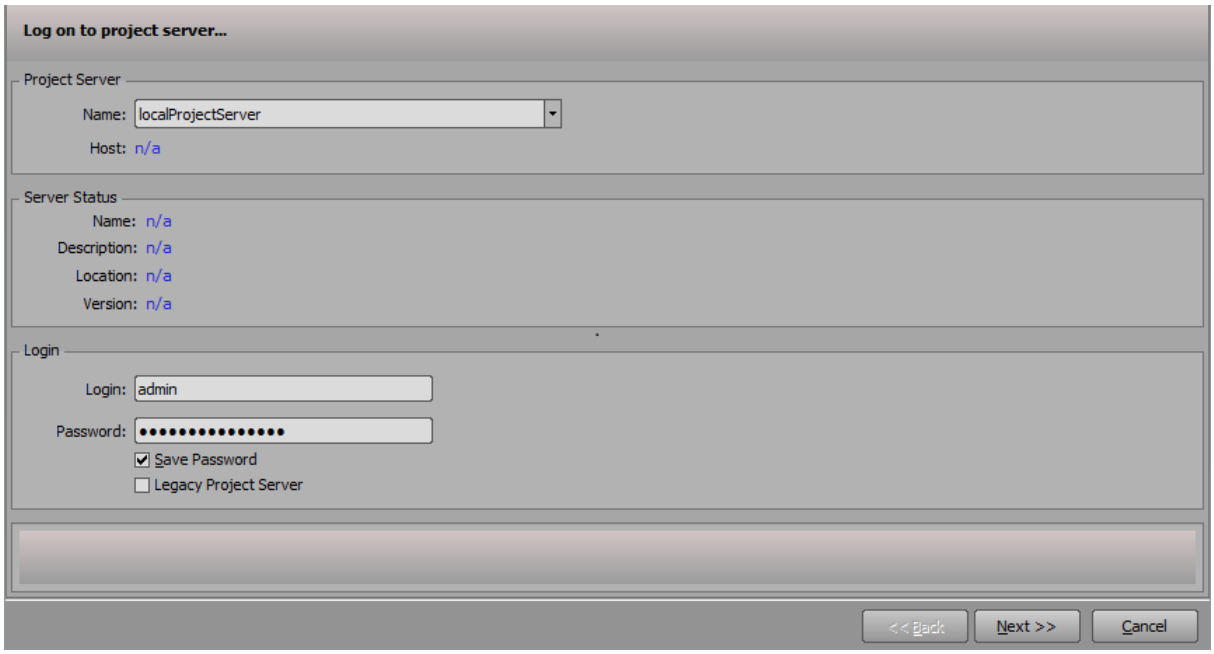
To log on to the Project Server:

1. Open a project in XPression and save it.

   Saving the project is required before publishing it to the project server.

2. In XPression, select **File > Project Server > Publish**.

   The **Log on to project server** dialog opens.



3. In the **Project Server** section, from the **Name** drop-down, select the project server.

   For a project server to appear in the **Name** list, a project server needs to be configured.

4. In the **Login** section, in the **Login** field, enter the project server login.

   The default login is **admin**.

5. In the **Password** field, enter the project server login password.

   The default password is **admin**.

6. Select the **Save Password** checkbox to save the password.

7. Select the **Legacy Project Server** checkbox if you have updated your XPression software, but are still using an older version of the **XPression Project Server**.

8. Select **Next**.

9. Continue with the instructions for one of the following actions:

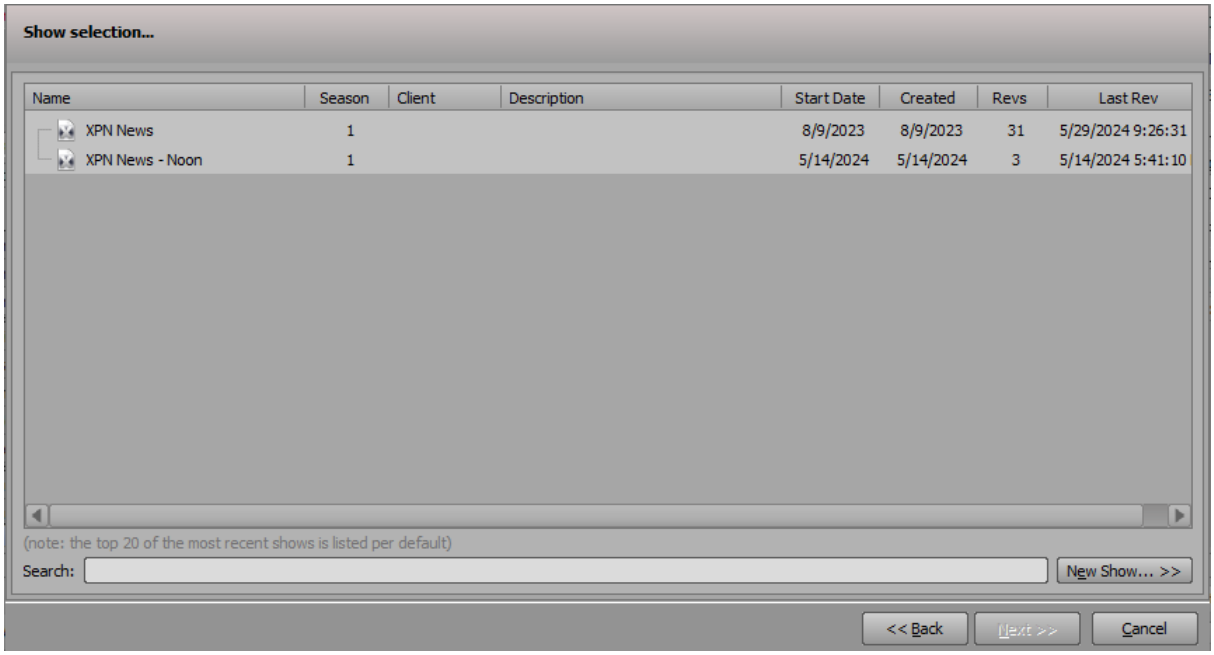
   Selecting a show

   Creating a new show

To select a show:

1. In the **Show selection** dialog, select a show from the list.

   The top 20 of the most recent shows are listed by default.



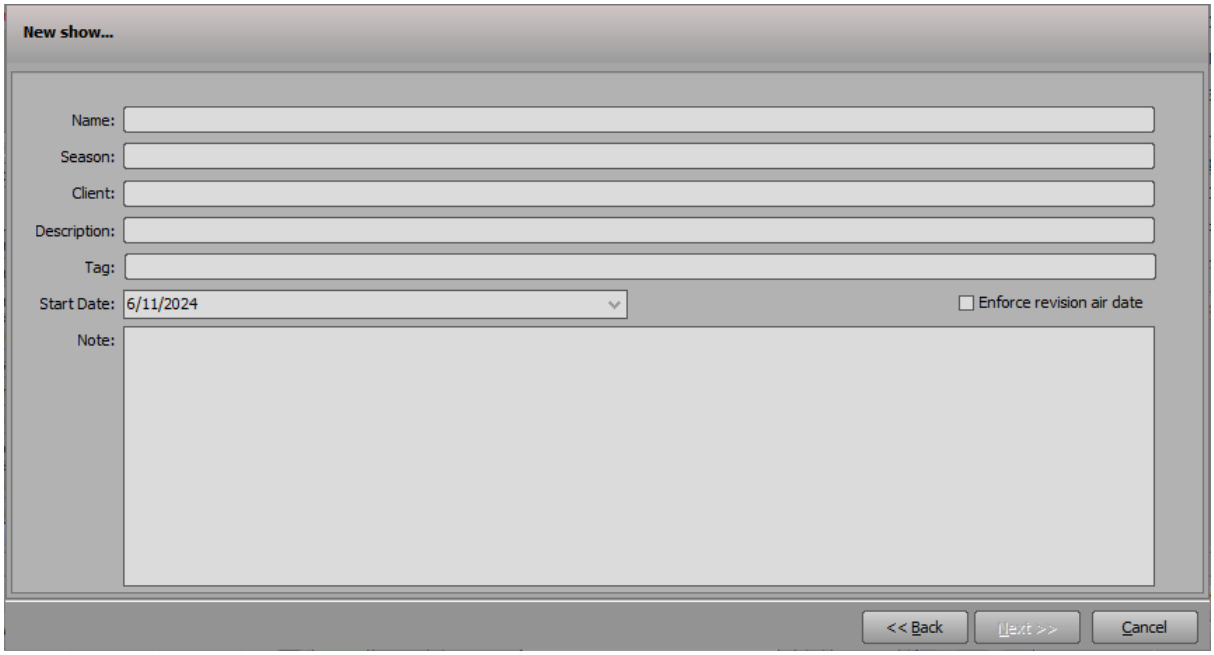
   Alternatively, you can enter the name of a show in the **Search** field.

2. Select **Next**.
3. Continue with the instructions for setting project revision information.

To create a new show:

1. Select **New Show**.

   The **New show** dialog opens.



2. Enter the following information for the new show:
   - **Name** — enter the name of the new show.
   - **Season** — enter the season of the show (required).
   - **Client** — enter the intended recipient of the show.
   - **Description** — enter a brief descriptor.
   - **Start Date** — from the drop-down calendar, select the start date of the show.
   - **Note** — enter any notes for the show.
3. Select the **Enforce revision air date** checkbox to ignore any revision with a future air date when getting the latest revision of the show in the MOS and NLE plugins or through autonomous deployment.
4. Select **Next**.
5. Continue with the instructions for setting project revision information.

To set project revision information:

1. In the **Set project revision information** dialog, in the **New Project Revision Information** section, revise the following information as necessary:
   - **Project Name** — enter a revised name for the project.
   - **Author** — from the drop-down, select a revised author for the project.
   - **Description** — from the drop-down, select a revised description for the project.
   - **Air Date** — from the drop-down calendar, select a revised air date for the project.
   - **Note** — enter any revised notes for the project.
2. Select **Next**.

   The next **Set project revision information** dialog opens.
3. In the **Options** section, select the **Include unused files in the project's default folders** checkbox to include unused files for the project in the default folders.
4. Select the **Publish with HTML renderer files** checkbox to include HTML5 plugin graphics in the project, allowing the project to be used in Chameleon Designer.
5. Select **Add** to create a new folder or **Remove** to remove a selected folder.
6. Select **Next**.
7. Continue with the instructions for publishing the project.

To publish the project:

1. In the **Ready to publish** dialog, review the project information before publishing.
2. Select the **Publish** button to publish the project to the project server.

   ★Publishing a revision of a project will send a notification of the revision to any MOS Plugin using that project.

   ★When a new revision of a project is published, the XPression engine will download and deploy the new revision into the Project Manager, while also making sure that the previous version remains loaded if necessary (because a take item in the project is online). Take items that are online at this time continue to use the previous revision. Take items that are not online are replaced by the new revision of the project. When there are no more take items using the old revision, it will be unloaded. Take items that were online and are taken offline will take the new revision of the project the next time they go online.
3. Select **Close**.

For More Information on...

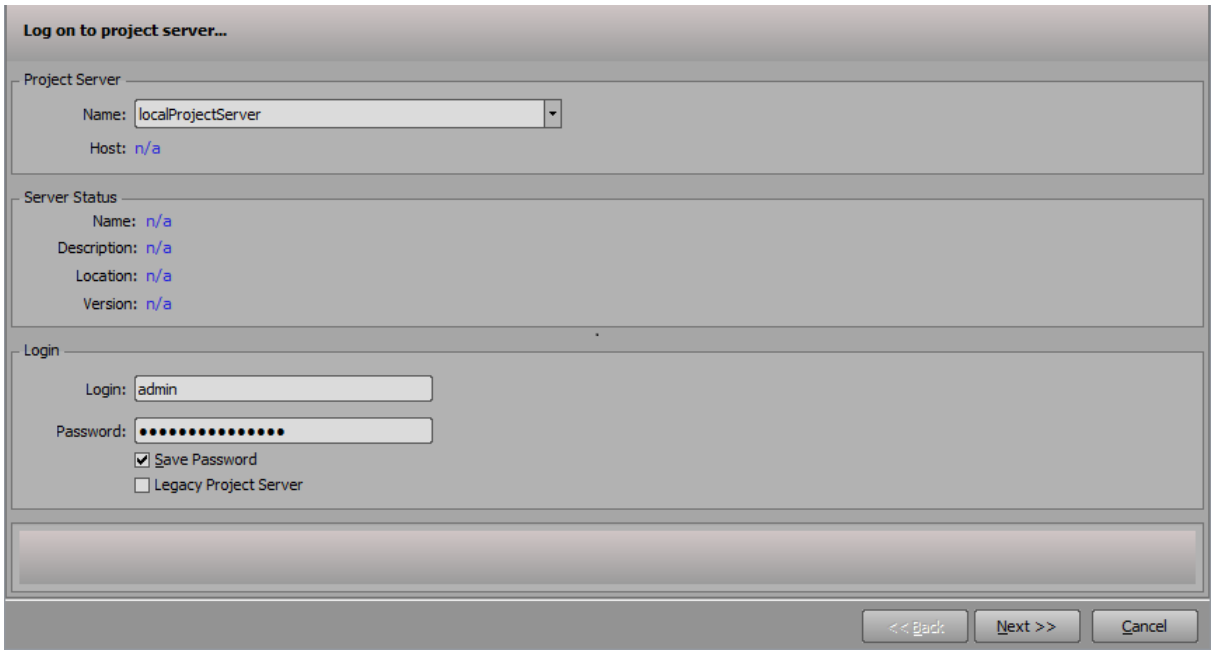
- configuring a project server, see the *XPression Project Server User Guide*.

Deploying a Project from the Project Server

This topic describes how to select a show and revision in the **Project Server** to deploy from and how to deploy the project.

To log on to the Project Server:

1. Open a project in XPression.
2. In XPression, select **File >Project Server > Deploy**.
3. The **Log on to project server** dialog opens.



4. In the **Project Server** section, from the **Name** drop-down, select the project server.

   For a project server to appear in the **Name** list, a project server needs to be configured.

5. In the **Login** section, in the **Login** field, enter the project server login.

   The default login is **admin**.

6. In the **Password** field, enter the project server login password.

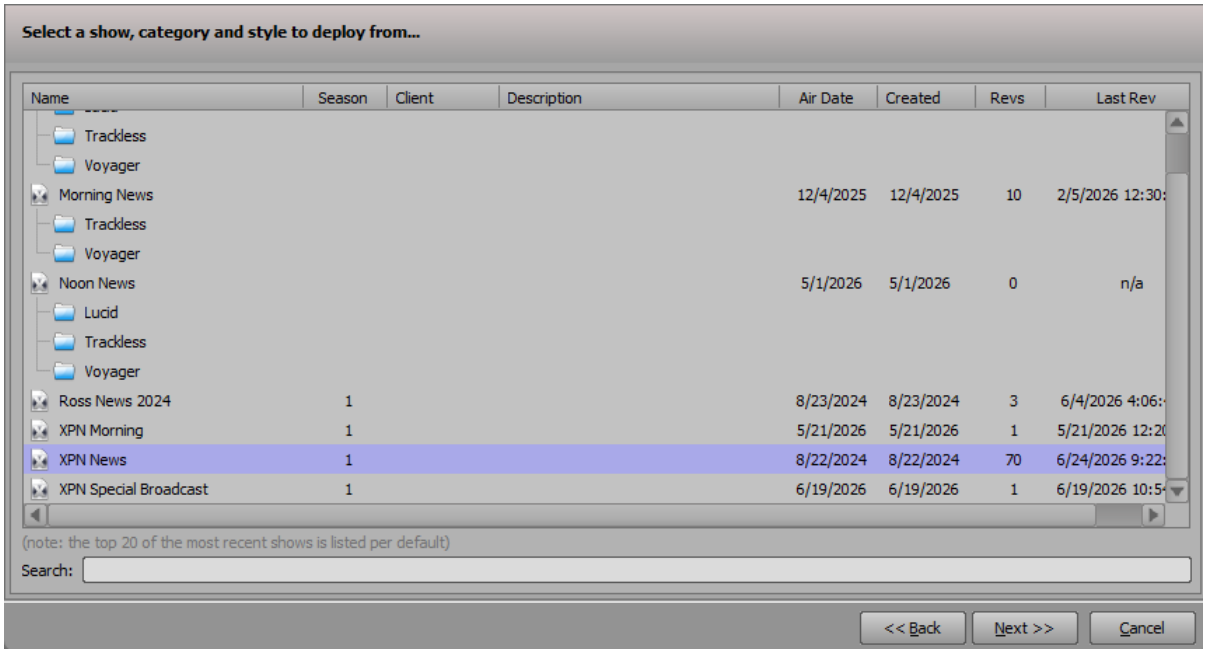
   The default password is **admin**.

7. Select the **Save Password** checkbox to save the password.
8. Select the **Legacy Project Server** checkbox if you have updated your XPression software, but are still using an older version of the **Project Server**.
9. Select **Next** and continue with the instructions for selecting a show, category and style to deploy from.

To select a show, category and style to deploy from:

1. In the **Select show, category and style to deploy from** dialog, select a show from the list or use the **Search** field to find and select a show.

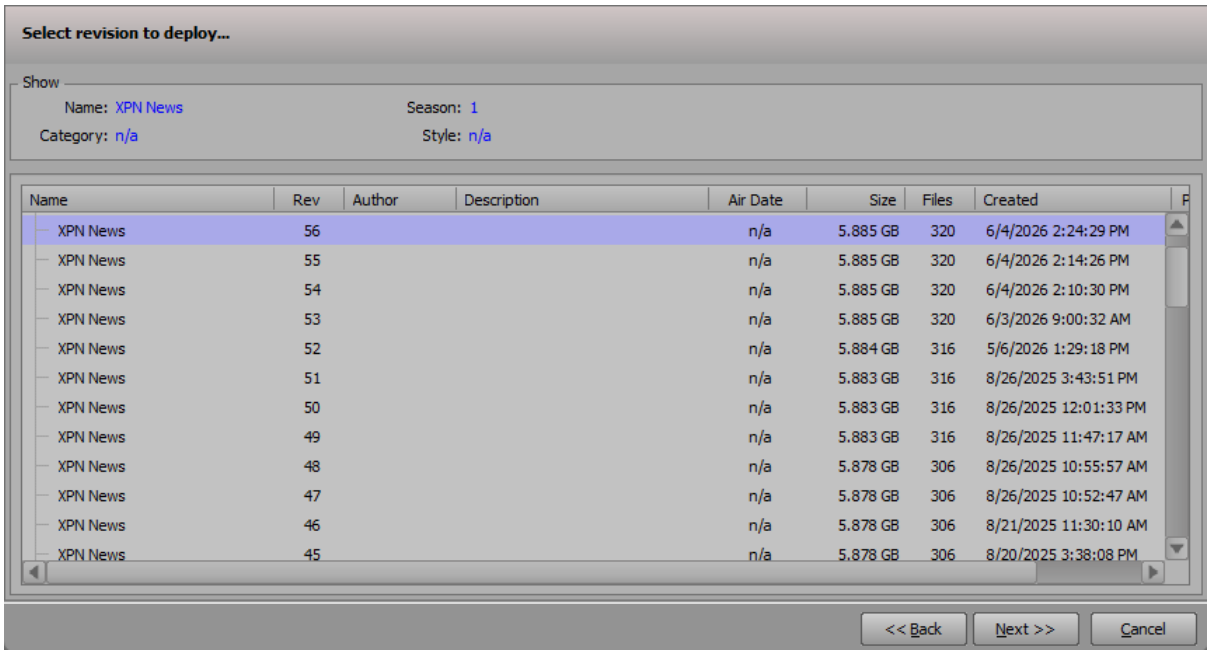
   The top 20 of the most recent shows are listed by default.



2. Select **Next**.
3. Continue with the instructions for selecting a revision to deploy.

To select a revision to deploy:

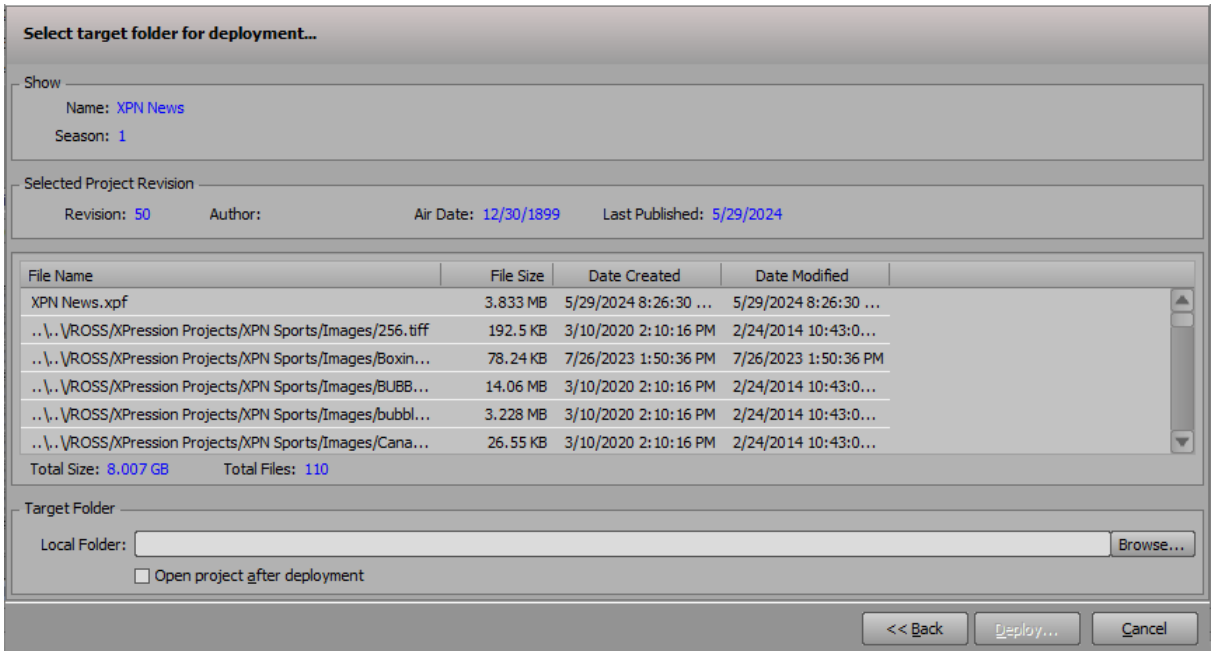
1. In the **Select revision to deploy** dialog, select the revision number to deploy from the project server.



2. Select **Next**.
3. Continue with the instructions for selecting a target folder for deployment.

To select a target folder for deployment:

1. In the **Select target folder for deployment** dialog, in the **Local Folder** field, type a filepath to a folder or select the **Browse** button to navigate to a folder.



2. Select the **Open project after deployment** checkbox if you want to open the project immediately after deploying.
3. Select the **Deploy** button to deploy the project from the project server.
4. Select **Close**.

Saving a Project

Saving projects varies depending on whether Tessera uses multiple engines (master and output nodes) or a single engine.

Multiple Engines

Tessera using multiple engines uses the Project Server to automatically sync the project amongst the render engines (output nodes). To enable this mechanism it is required that certain steps are completed.

To enable the Save Project and Publish To Project Server button:

1. Save the project to disk.
2. Save the project to the project server.
3. Deploy the project in XPression Tessera.
4. Select the **Save Project and Publish To Project Server** button () to save the project and ensure all systems are queued to sync.

Single Engine

If using XPression Tessera with a single engine, the Project Server is not required and saving the project to disk is sufficient.

To save a project using a single engine:

- Save the project to disk.

Configuring the Video Output Monitor

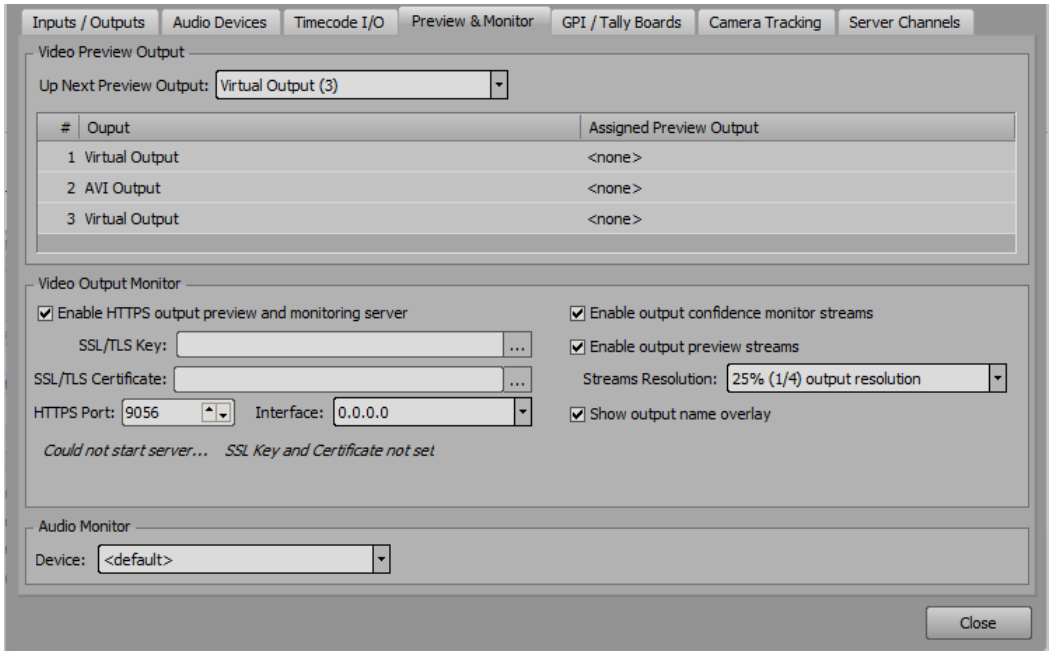
In the **Preview & Monitor** tab, you can select a framebuffer on an output to preview video and select an audio output device from which to monitor audio. Web streams for outputs and previews are accessible through specific URLs, supporting browsers with a VideoDecoder API.

To configure the Video Output Monitor:

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

   The **Hardware Setup** dialog opens.

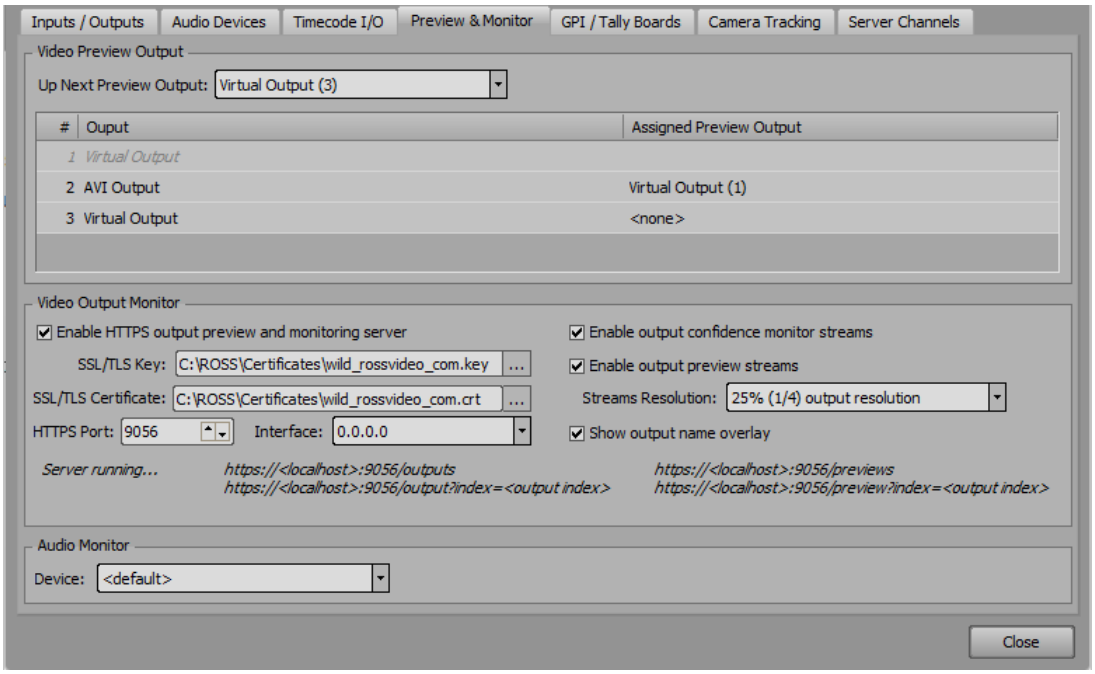
2. Select the **Preview & Monitor** tab.



3. In the **Video Output Monitor** section, do the following:

   - Select **Enable HTTPS output preview and monitoring server** to enable the preview web server.
   - Select the **Browse** button beside the **SSL/TLS Key** field, navigate to the location on your machine where you have stored the key file and select the file.
   - Select the **Browse** button beside the **SSL/TLS Certificate** field, navigate to the location on your machine where you have stored the certificate file and select the file.

     With the key and certificate entered, you will see the status change to *Server running*.



- In the **HTTPS Port** field, accept the default port or enter a different port if necessary.
- If you need to start the server using a specific network interface controller (NIC), in the **Interface** field, enter any interface that is different from the default.
- Select **Enable output confidence monitor streams** if you want to monitor live feeds for each output.
- Select **Enable output preview streams** if you want to see the up-next preview for each output.
- From the **Streams Resolution** drop-down, select the desired resolution (size of the frames).

  The options are:

  ➢ Native output resolution

  ➢ 50% (1/2) output resolution

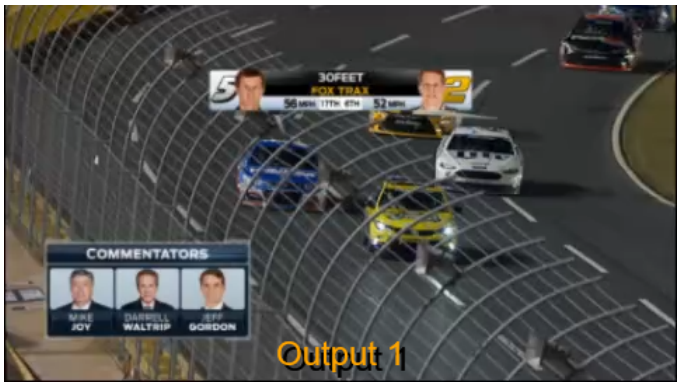
  ➢ 25% (1/4) output resolution

  ➢ 12% (1/8) output resolution

  ★25% is the default resolution and gives a good balance between system workload/bandwidth and resolution.

  The streams can be viewed in a browser that supports VideoDecoder in the WebCodecs API (JavaScript).

  In the browser, enter `https://<hostname or machine IP address>:9056/outputs`.
- Select **Show output name overlay** to display the output number in the monitor window.



4. Select **Close** to exit the **Hardware Setup** dialog.
5. In your browser settings, find and select the **Use graphics acceleration when available** or **Use hardware acceleration when available** (depending on the browser) option.

   ★This option must be selected for the output to work.

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