

# XPression

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## **XPression Tessera User Guide**

**Version 11.0**

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David Ross  
CEO, Ross Video  
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# XPression Tessera · User Guide

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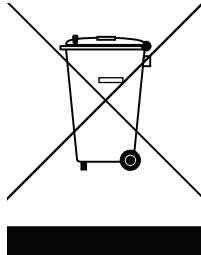
For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your XPression system, contact your regional sales manager.

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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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# Introduction

XPression Tessera, part of Ross Video's broad line of real-time graphics products and workflow tools, 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.

## About This Guide

This user guide describes XPression Tessera, its configuration, and functions.

If, at any time, you have a question pertaining to the installation, configuration, or operation of XPression Tessera, please contact us at the numbers listed in the section "**Contacting Technical Support**" on page 1–2. Our technical staff are always available for consultation, training, or service.

## Documentation Conventions

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

<b>Bold text</b>	Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example: In the <b>3D Model Files</b> section, use the <b>Mode</b> list to select the folder used to store 3D model files.
<code>Courier text</code>	Courier text is used to identify text that a user must enter. For example: Enter <code>localhost</code> when the DataLinq server is running on the same computer as XPression.
>	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads " <b>Display &gt; Widgets</b> ," you would click the <b>Display</b> menu and then click <b>Widgets</b> .

## Getting Help

The *XPression Tessera User Guide* is supplied as a print-ready PDF file.

# 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 any time. 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:**
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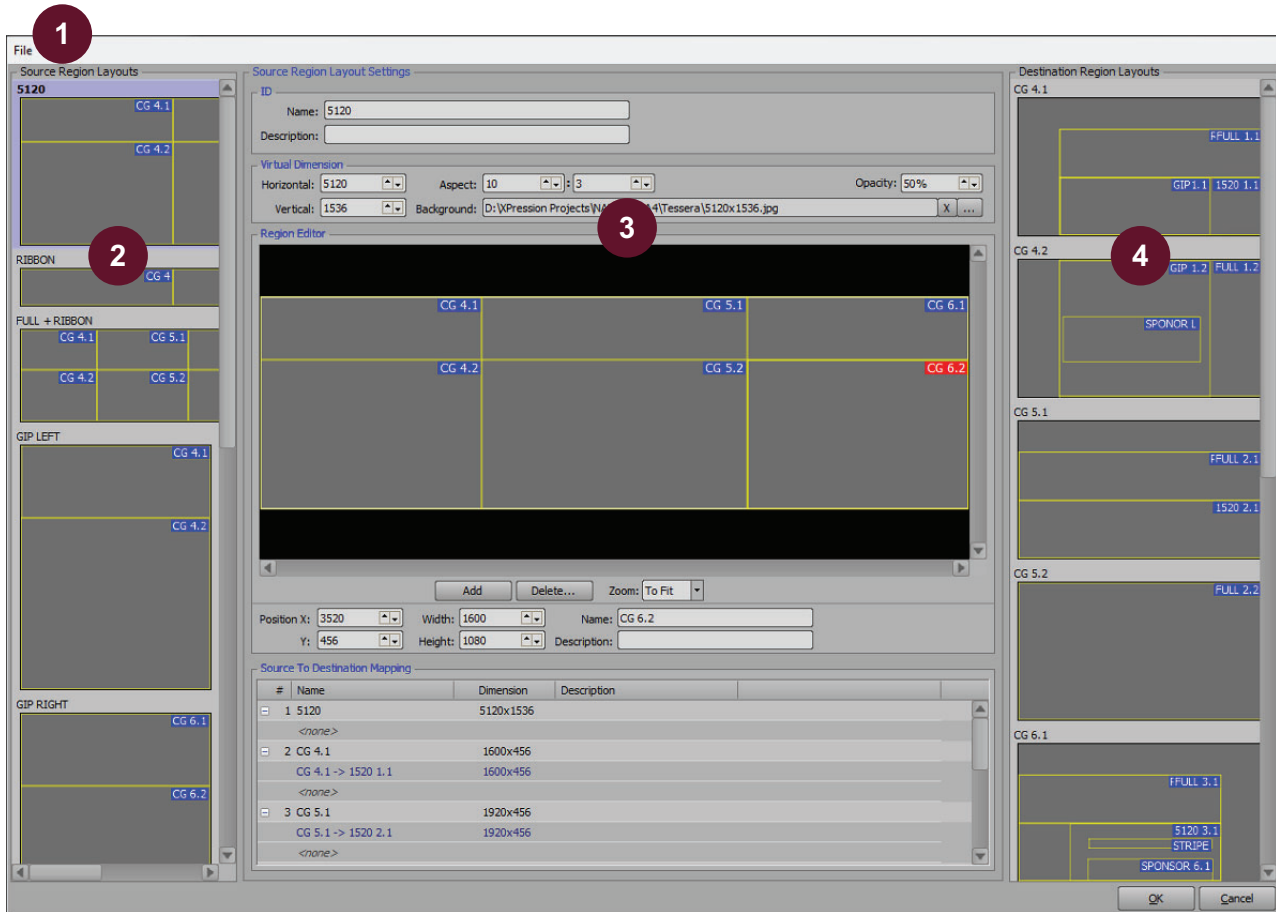
# User Interface Overview

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

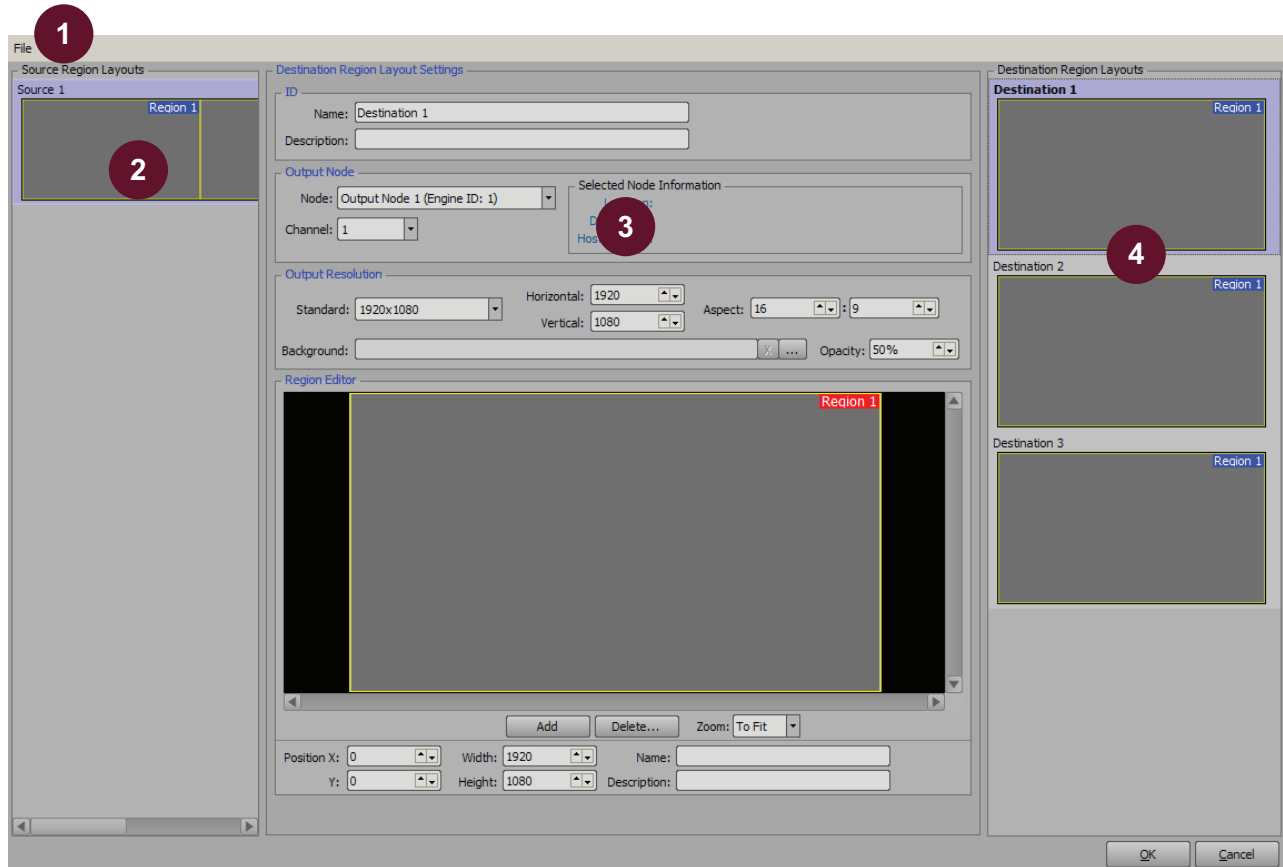
The following screen capture displays the main elements of the **XPression Tessera Region Mapper** window in XPression with the **Source Region Layout** section of the selected source region.



- 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

## Overview

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
- 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** dialog box, the output node engines and the master engine can be defined and configured. Once the engines have been set up, the output nodes can be configured. Use the following sections to configure the multiple engine Tessera set up:

- Preconditions
- Setting Up the Output Node Engines
- 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.
- Projects have been centrally located on the XPression Project Server where they can be deployed from the master engine.



## Setting Up the Output Node Engines

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 afterwards.

- ★ 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** check box is selected.

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 a output node engine, select **Edit > Tessera > Settings** to open the **Tessera Settings** dialog box.
  - 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 box.

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

The screenshot shows the 'Tessera Settings' dialog box. It is organized into several sections. The 'General' section at the top has a 'Mode' dropdown set to '<disabled>'. Below it is the 'Tessera NET' section with a 'NET ID' dropdown set to '1'. The 'Master' section contains 'Primary Clock Node ID' and 'Backup Clock Node ID' dropdowns, both set to '1' and '2' respectively, with a note '(output node acting as clock generator)' next to the Primary ID. The 'Output Node' section has an 'Engine ID' dropdown set to '1'. The 'Region Map Selection' section has two radio buttons: 'Use Global Region Map' (selected) and 'Use Region Maps from Projects'. The 'UDP Network' section includes a 'Broadcast Mode' dropdown set to 'Local Broadcast', an 'IP Address' text field, a 'Port' dropdown set to '7575', and a 'Retrieve' button. At the bottom are 'OK' and 'Cancel' buttons.

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

2. In the **General** section, use the **Mode** list to select **Output Node**.

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

The screenshot shows the XPression Tesseract configuration window. It is divided into several sections:   
- **General**: Mode is set to 'Output Node'.   
- **Tessera NET**: NET ID is set to '1'.   
- **Master**: Primary Clock Node ID is '1' and Backup Clock Node ID is '2'. A note indicates '(output node acting as clock generator)'.   
- **Output Node**: Engine ID is set to '1'.   
- **Region Map Selection**: 'Use Global Region Map' is selected.   
- **UDP Network**: Broadcast Mode is 'Local Broadcast', IP Address is empty, and Port is '7575'.   
Buttons for 'OK' and 'Cancel' are at the bottom right.

3. In the **Tessera NET** section, use the **NET ID** box to enter or select a NET ID if using multiple master/node combinations in parallel on the same network.
4. In the **Output Node** section, use the **Engine ID** box to enter or select an engine ID to use to indicate to other machines what 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, use the **Broadcast Mode** list to set the broadcast mode to one of the following:
  - **Local Broadcast** — select this option to broadcast packets to all local network addresses.
  - **Broadcast IP** — select this option to 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.

### Local Broadcast

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

- a. Use the **IP Address** box to enter 255.255.255.255 as the IP broadcast address to broadcast packets to all of the local network addresses.
- b. Use the **Port** box to enter the port number to use for communication between the output node engine and master engine. The default is 7575.

### Broadcast IP

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

- a. Use the **IP Address** box to 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.

Click **Retrieve** to have XPression determine the most likely subsection to use for broadcasting.

- b. Use the **Port** box to enter the port number to use for communication between the output node engine and master engine. The default is 7575.

6. Click **OK**.

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

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

## Setting Up the Master Engine

- ★ The master engine can only be configured in Studio versions. Only one master can be configured, and there should be no hardware channels, virtual outputs, or server channels in the hardware profile. They should all be blank.

For the controlling master engine, use the **Tessera Settings** dialog box 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 box opens.

The screenshot shows the 'Tessera Settings' dialog box with the following sections and controls:

- General**: A dropdown menu for 'Mode' set to '<disabled>'.
- Tessera NET**: A dropdown menu for 'NETID' set to '1'.
- Master**: Two dropdown menus for 'Primary Clock Node ID' (set to '1') and 'Backup Clock Node ID' (set to '2'). A note to the right says '(output node acting as clock generator)'.
- Output Node**: A dropdown menu for 'Engine ID' set to '1'.
- Region Map Selection**: Two radio buttons, 'Use Global Region Map' (selected) and 'Use Region Maps from Projects'.
- UDP Network**: A dropdown menu for 'Broadcast Mode' set to 'Local Broadcast', an 'IP Address' text field, a 'Retrieve' button, and a dropdown menu for 'Port' set to '7575'.

At the bottom right are 'OK' and 'Cancel' buttons.

2. In the **General** section, use the **Mode** list to select **Master**.

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

The screenshot shows a configuration window for XPression Tessera. It is divided into several sections:   
- **General**: 'Mode' is set to 'Master'.   
- **Tessera NET**: 'NET ID' is set to '1'.   
- **Master**: 'Primary Clock Node ID' is '1' and 'Backup Clock Node ID' is '2'. A note says '(output node acting as clock generator)'.   
- **Output Node**: 'Engine ID' is '1'.   
- **Region Map Selection**: 'Use Global Region Map' is selected, 'Use Region Maps from Projects' is unselected.   
- **UDP Network**: 'Broadcast Mode' is 'Local Broadcast', 'IP Address' is empty, and 'Port' is '7575'. There is a 'Retrieve' button next to the IP address field.   
At the bottom are 'OK' and 'Cancel' buttons.

3. In the **Tessera NET** section, use the **NET ID** box to enter or select a NET ID if using multiple master/node combinations in parallel on the same network.
4. In the **Master** section, use the **Primary Clock Node ID** box to 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. Use the **Backup Clock Node ID** box to 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** — select this option to use region maps saved globally on the engine.
  - **Use Region Maps from Projects** — select this option to use region maps stored in a project file.

★ Using region maps from projects requires a project server.

7. In the **UDP Network** section, use the **Broadcast Mode** list to set the broadcast mode to one of the following:
  - **Local Broadcast** — select this option to broadcast packets to all local network addresses.
  - **Broadcast IP** — select this option to 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.

### Local Broadcast

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

- a. Use the **IP Address** box to enter 255.255.255.255 as the IP broadcast address to broadcast packets to all of the local network addresses.
- b. Use the **Port** box to enter the port number to use for communication between the master and output node engines. The default is 7575.

## Broadcast IP

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

- a. Use the **IP Address** box to 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.

Click **Retrieve** to have XPression determine the most likely subsection to use for broadcasting.

- b. Use the **Port** box to enter the port number to use for communication between the master and output node engines. The default is 7575.

8. Click **OK**.

The master engine settings are applied and the dialog box closes.

## Tessera Output Nodes

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

To configure the output nodes:

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

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

The screenshot shows the 'XPression Tessera Output Nodes' dialog box. It is divided into two main sections: 'Primary Engines' and 'Backup Engines'. Each section contains a table with the following columns: Name, Engine ID, Location, Description, Host Name, and Status. Below each table are three buttons: 'Add...', 'Edit...', and 'Delete...'.

2. Click **Add** to add a network node to the **Network Nodes** list.

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

The screenshot shows the 'XPression Tessera Output Node' dialog box. It contains the following fields and controls:

- Engine ID: A dropdown menu with '<none>' selected.
- Host Name: A text input field.
- Name: A text input field with 'Output Node 1' entered.
- Description: A text input field.
- Location: A text input field.
- Type: A dropdown menu with 'Primary Engine' selected.
- Buttons: 'OK' and 'Cancel' buttons at the bottom right.

3. Use the **Engine ID** list to select the output node engine ID for the output node.
4. Use the **Host Name** box to enter the UNC or IP address of the network to connect the output engines.
5. Use the **Name** box to enter a custom name for the output node if necessary.
6. Use the **Description** box to enter a brief description for the output node if necessary.
7. Use the **Location** box to define the physical location of the engine if necessary.
8. Use the **Type** list to select the engine type. The options are:
  - **Primary Engine** — select this option to use the output 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** — select this option to use the output 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.
9. Click **OK**.

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

The screenshot displays two configuration panels. The top panel, titled 'Primary Engines', contains a table with the following data:

Name	Engine ID	Location	Description	Host Name	Status
Tess1	1	XPN Rack Room	Slave 1		Unknown
Tess2	2	XPN Rack Room	Slave 2	10.62.134.52	Unknown
Tess3	3	XPN Rack Room	Slave 3	10.62.134.46	Unknown

Below the table are buttons for 'Add...', 'Edit...', and 'Delete...'. The bottom panel, titled 'Backup Engines', contains a table with the following data:

Name	Engine ID	Backup State	Location	Description	Host Name
Backup Engine 1	1	<standby>			

Below this table are also buttons for 'Add...', 'Edit...', and 'Delete...'.

10. Repeat steps 1 to 9 for any other output engines.

#### For More Information on...

- the XPression Tesseract backup system, refer to “**Tesseract Backup System**” on page 3–19.

## Using Clips with Tesseract Multiple Engine Mode

When using Clips with Tesseract 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 Tesseract Multiple Engine Mode

When using DataLinq with Tesseract 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 box opens.

The screenshot shows the 'Tessera Settings' dialog box with the 'General' tab selected. The 'Mode' dropdown is set to '<disabled>'. Below it, the 'Tessera NET' section has 'NET ID' set to 1. The 'Master' section has 'Primary Clock Node ID' set to 1 and 'Backup Clock Node ID' set to 2. The 'Output Node' section has 'Engine ID' set to 1. The 'Region Map Selection' section has 'Use Global Region Map' selected. The 'UDP Network' section has 'Broadcast Mode' set to 'Local Broadcast', 'IP Address' is empty, and 'Port' is set to 7575. At the bottom are 'OK' and 'Cancel' buttons.

2. In the **General** section, use the **Mode** list to select **Single Engine**.

This screenshot is similar to the previous one, but the 'Mode' dropdown is now set to 'Single Engine'. The 'Single Engine' section below the Master section has 'Engine ID' set to 1. All other settings remain the same.

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

★ Using region maps from projects requires a project server.

4. Click **OK**.

The **Tessera Settings** dialog box closes.

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



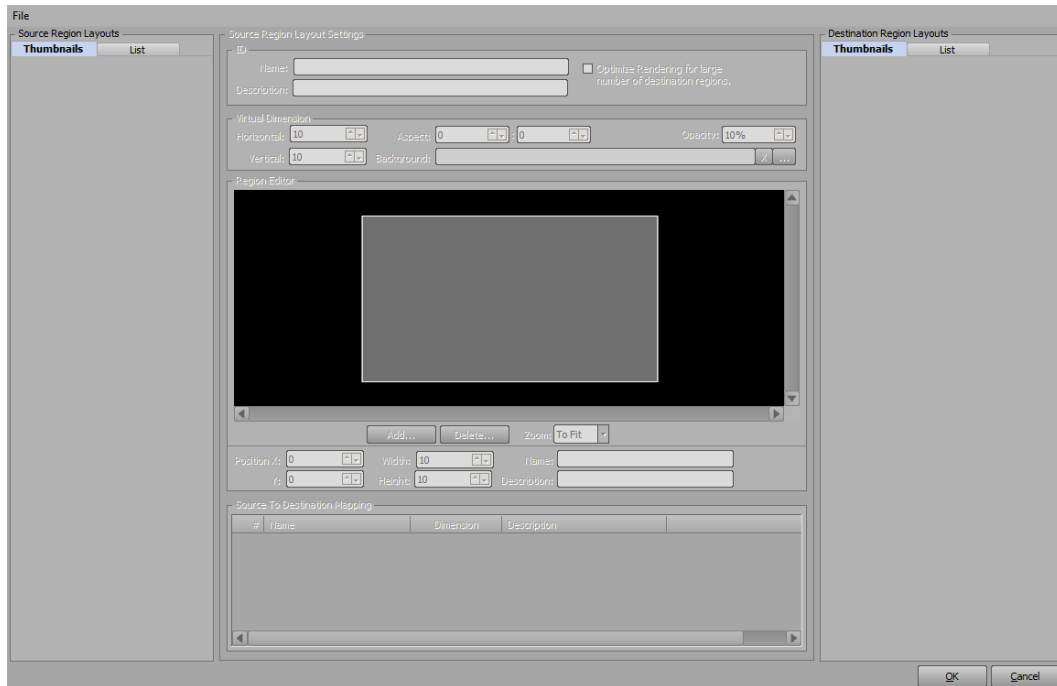
# Region Mapping

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

To map the sources, destinations, and regions:

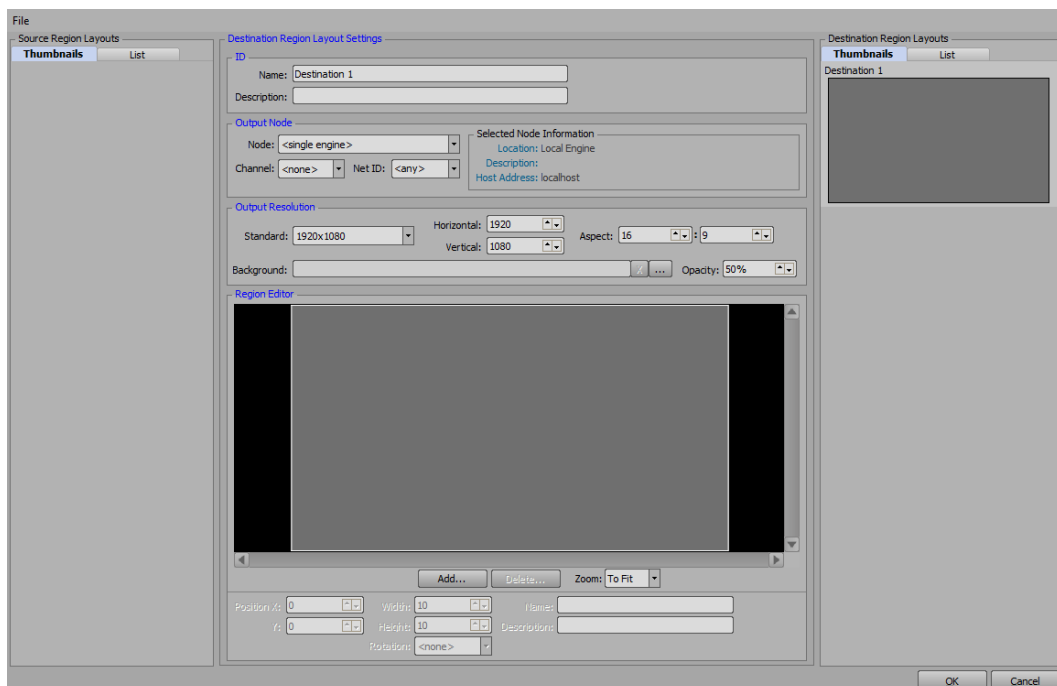
1. In **XPression** on the master device, select **Edit > Tessera > Region Mapping** (or press **Shift+Ctrl+Alt+R**).

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.

The destination is the playback channel.

#### ID

Create a name and description for the destination as required.

- a. In the **ID** section, use the **Name** box to 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.).
- b. Use the **Description** box to enter a custom description about the destination.

#### Output Node

Configure the display output for the destination.

- a. In the **Output Node** section, use the **Node** list to 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 box, or if using Tessera in single engine mode, is restricted to **<local engine>**.
- b. Use the **Channel** list to select a playback channel on the output engine for outputting the destination region. Although there are 12 channels in the list, the amount of usable channels is dependent on the amount of channels available on the output engine.
- c. If using multiple Tessera SE or Tessera Master systems in a MOS workflow, use the **Net ID** list to select a net ID to indicate to which Tessera system the MOS object should be sent.

#### Output Resolution

Configure the resolution in pixels for the destination.

- a. In the **Output Resolution** section, use the **Standard** list to select a standard pixel dimension or select **Custom** to use a custom resolution.  
  
If using a custom resolution, use the **Horizontal** and **Vertical** boxes to enter or select the dimensions for the custom resolution. Also, simply entering or selecting a different value will automatically select **Custom** from the **Standard** list.
- b. Use the two **Aspect** boxes to enter or select the aspect ratio for the destination. This is automatically entered if the **Standard** output resolution is selected.
- c. Use the **Opacity** box to enter or select the transparency value for the background image.
- d. Click **Browse (...)** to open a file browser to locate a file to use as the background in the destination, or enter a file path in the **Background** box.

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.

#### Region Editor

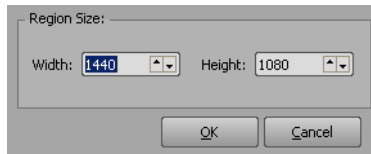
Set the region(s) for the destination region layout. A destination region is used to display a source that is mapped to it once the sources have been configured. Multiple sources can be mapped to multiple regions within the destination, which is then outputted to a channel on the output engine.

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.

Use the **Zoom** list to 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.

- a. In the **Region Editor** section, click **Add** to create a destination region.

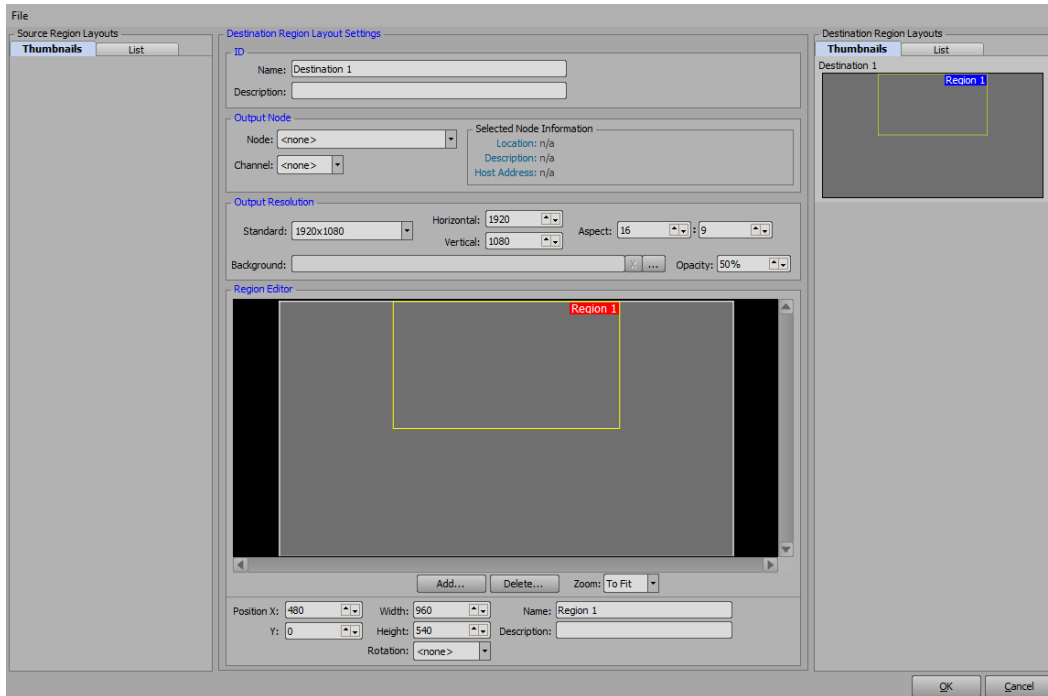
The **New Region** dialog box opens.



- b. Use the **Width** and **Height** boxes to enter or select a size in for the new region.

- c. Click **OK**.

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



- d. Use the **Position X** and **Y** boxes to adjust the location of the region along the X-axis and Y-axis within the destination canvas.

- e. Use the **Width** and **Height** boxes to adjust the size of the region.

- f. Use the **Rotation** list to 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.

- g. Use the **Name** box to enter a custom name for the region.

- h. Use the **Description** box to enter a custom description about the region.

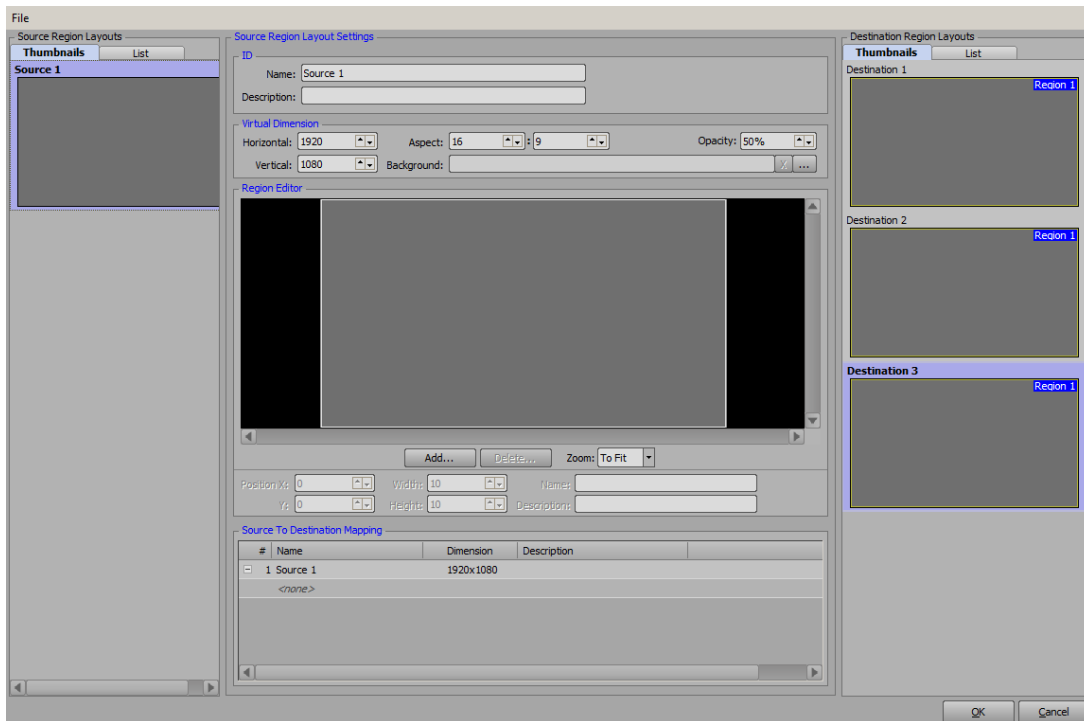
- i. Repeat steps a to h to add more regions to the destination as necessary.

★ Regions can be copied by right-clicking on the region in the Region Editor and selecting Copy Region from the shortcut menu. Paste a copied region in the same or a different Region Editor by right-clicking in the Region Editor and selecting Paste Region from the shortcut menu.

4. Repeat steps 2 to 3 to add more destinations as necessary.

5. 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.



6. 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, and that is called a source.

### ID

Create a name and description for the source as required.

- a. In the **ID** section, use the **Name** box to enter a custom name for the source.
- b. Use the **Description** box to enter a custom description about the source.

### Virtual Dimension

Set the dimensions of the virtual source channel template.

- a. In the **Virtual Dimension** section, use the **Horizontal** and **Vertical** boxes to enter or select the horizontal and vertical resolution for the source.
- b. Use the two **Aspect** boxes to 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.
- c. Use the **Opacity** box to enter or select the percentage of opacity for the selected background.
- d. Click **Browse (...)** to open a file browser to locate a file to use as the background in the source, or enter a file path in the **Background** box.

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.

## Region Editor

Set the region(s) for the source region layout. Source regions are used to select specific sections or portions of a source in order to add them to a specific playback destination.

Use the **Zoom** list 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.

- a. In the **Region Editor** section, click **Add** to create a source region.

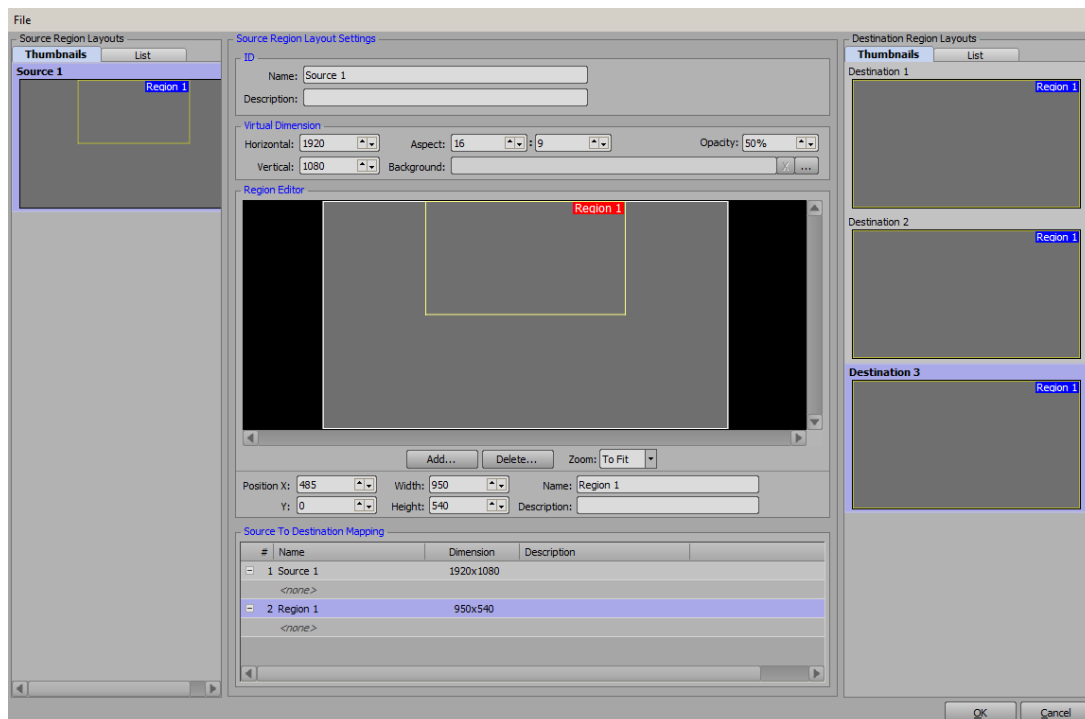
The **New Region** dialog box opens.



- b. Use the **Width** and **Height** boxes to enter or select a size in for the new region.

- c. Click **OK**.

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



- d. Use the **Position X** and **Y** boxes to adjust the location of the region along the X-axis and Y-axis within the source canvas.
- e. Use the **Width** and **Height** boxes to adjust the size of the region.
- f. Use the **Name** box to enter a custom name for the region.
- g. Use the **Description** box to enter a custom description about the region.
- h. Repeat steps a to g for any other source region layouts as necessary.

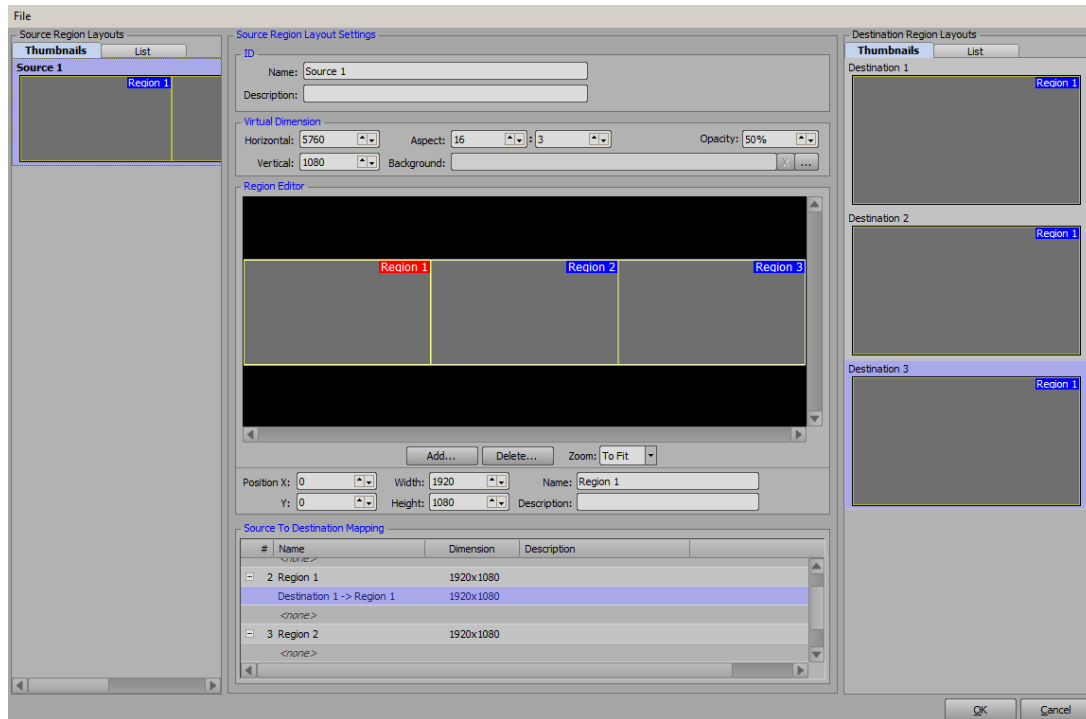
Source region layouts can also be duplicated by right-clicking a source and selecting **Duplicate Source** from the shortcut menu.

## Source To Destination Mapping

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

- a. In the **Source To Destination Mapping** table, click **<none>** under a source **Region** and use the list to 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.



- b. Repeat step a for all regions in the table.

★ Regions can be copied by right-clicking on the region in the Region Editor and selecting **Copy Region** from the shortcut menu. Paste a copied region in the same or a different Region Editor by right-clicking in a Region Editor and selecting **Paste Region** from the shortcut menu.

7. Click **File > Save To File** to save the region mapping to a .xprgm file.

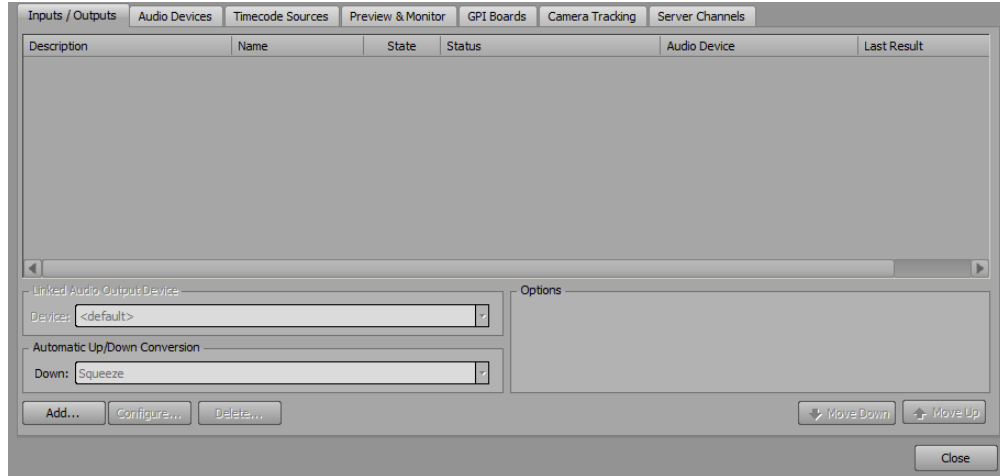
# Using a Preview Output On a Tessera Master

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

**To setup a preview output:**

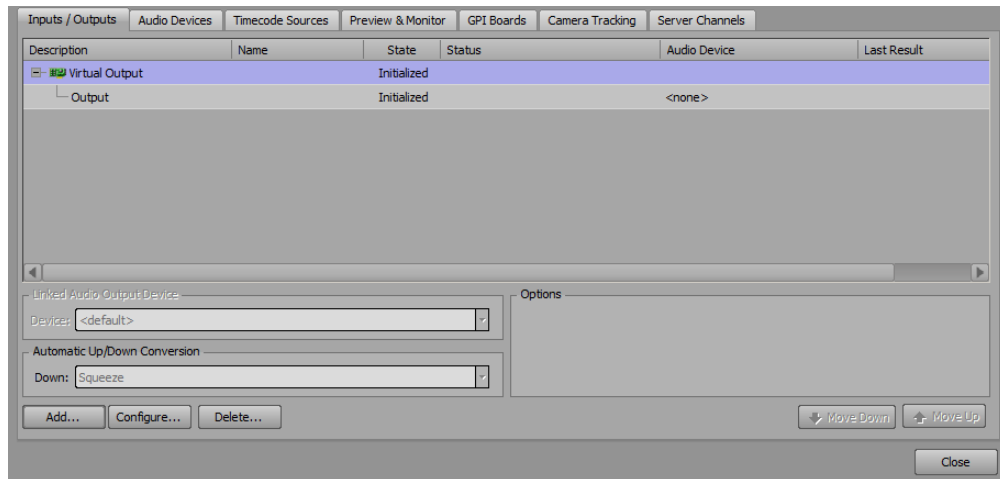
1. On the Tessera master, click **Edit > Hardware Setup**.

The **Hardware Setup** dialog box opens.



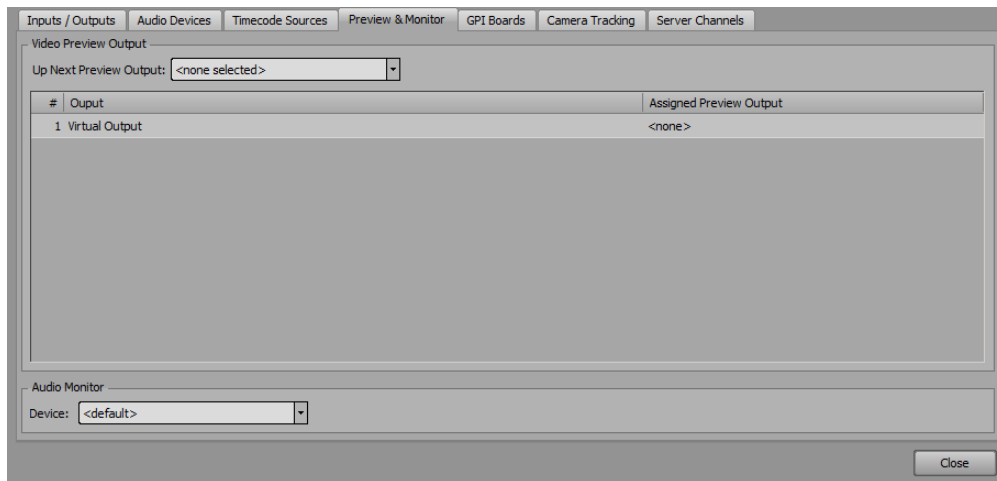
2. Configure an output.

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



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

The **Preview & Monitor** tab opens.



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

#### For More Information on...

- configuring a framebuffer output, refer to “**System Setup**” on page 3-1 in the *XPression User Guide*.

## Scenes

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

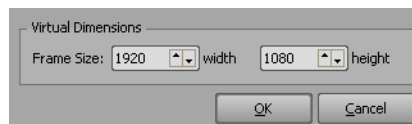
- Orthogonal cameras cannot be used in combination with Tessera.
- Background objects cannot be used in combination with Tessera.

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 box opens.



2. In the **Virtual Dimensions** section, use the **Width** box to enter or select the width in pixels of the new scene.
3. In the **Height** box, enter or select the height in pixels for the new scene.

★ The **Area Mapping** table is not applicable in the Tessera workflow.

4. Click **OK** to create the new scene with the defined settings.

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




# 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.
4. Click the **Save Project and Publish To Project Server** button (  ) to save the project and ensures all systems are queued to sync.

## Single Engine

If using 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:**

1. Save the project to disk.

# 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**, click **File > Save To File**.  
The **Save As** file browser opens.
2. Select a folder for the file and click **Save** to save the region mapping to a .xprgm region mapper file.

★ Saved files can be loaded by clicking **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.

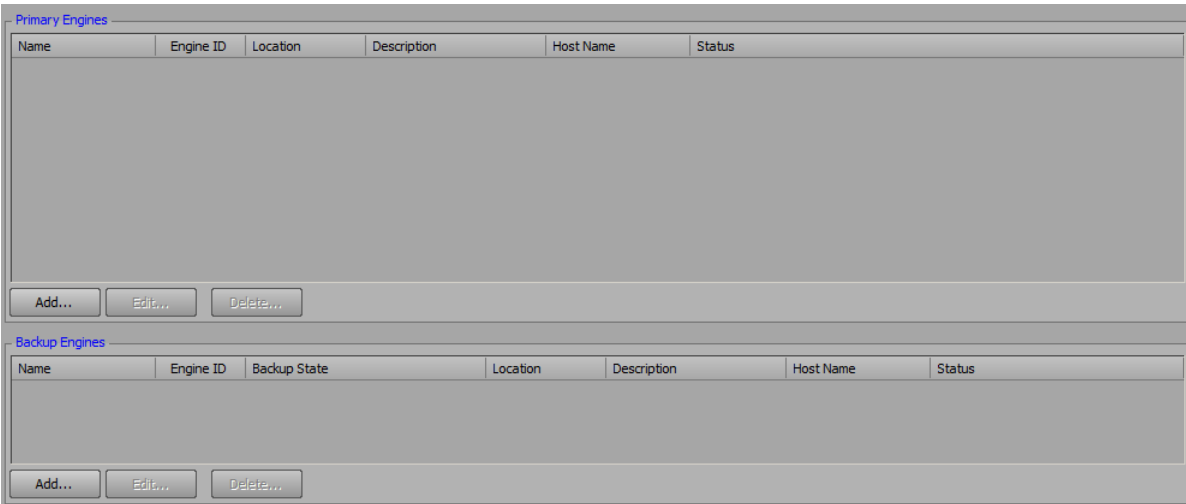
The Backup Clock Node and Backup Tessera Master methods and maintaining the backup system are also described.

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 Tessera Master
- Backup Tessera Master Maintenance

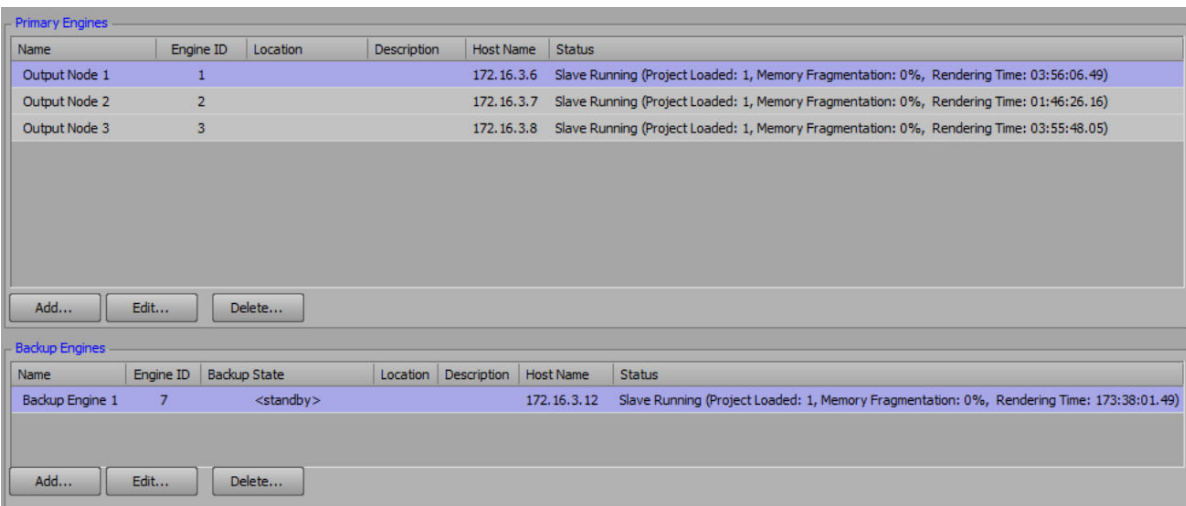
## Tessera Output Nodes Status List

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



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

The output nodes are divided by **Primary Engines** and **Backup Engines**. 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.



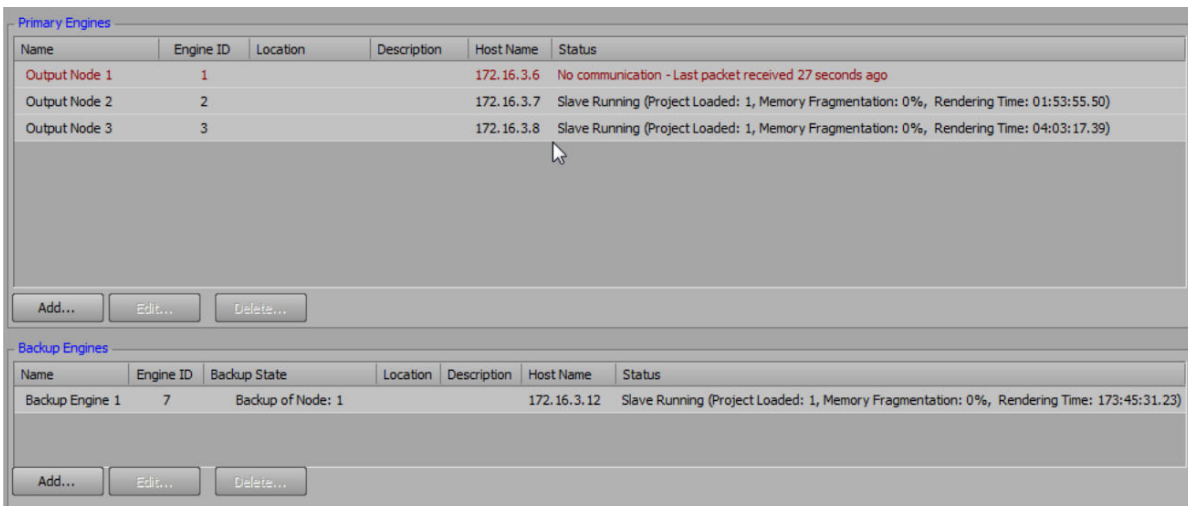
### Primary & Backup Nodes

In the **Primary Engines** and **Backup Engines** lists are the configured primary and backup 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 (Primary or Backup).
- **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 primary and output nodes will continuously send the Tessera master a status message when running.



The screenshot displays two sections of the Tessera GUI. The top section, titled 'Primary Engines', contains a table with columns: Name, Engine ID, Location, Description, Host Name, and Status. It lists three output nodes: 'Output Node 1' (Engine ID 1, Host 172.16.3.6, Status 'No communication - Last packet received 27 seconds ago'), 'Output Node 2' (Engine ID 2, Host 172.16.3.7, Status 'Slave Running'), and 'Output Node 3' (Engine ID 3, Host 172.16.3.8, Status 'Slave Running'). Below the table are 'Add...', 'Edit...', and 'Delete...' buttons. The bottom section, titled 'Backup Engines', contains a table with columns: Name, Engine ID, Backup State, Location, Description, Host Name, and Status. It lists one backup engine: 'Backup Engine 1' (Engine ID 7, Backup State 'Backup of Node: 1', Host 172.16.3.12, Status 'Slave Running'). Below this table are also 'Add...', 'Edit...', and 'Delete...' buttons.

Name	Engine ID	Location	Description	Host Name	Status
Output Node 1	1			172.16.3.6	No communication - Last packet received 27 seconds ago
Output Node 2	2			172.16.3.7	Slave Running (Project Loaded: 1, Memory Fragmentation: 0%, Rendering Time: 01:53:55.50)
Output Node 3	3			172.16.3.8	Slave Running (Project Loaded: 1, Memory Fragmentation: 0%, Rendering Time: 04:03:17.39)

Name	Engine ID	Backup State	Location	Description	Host Name	Status
Backup Engine 1	7	Backup of Node: 1			172.16.3.12	Slave Running (Project Loaded: 1, Memory Fragmentation: 0%, Rendering Time: 173:45:31.23)

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.
- **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 the Status List

The XPression Tessera Output Node 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.

## Using a Backup Node

Backup Engines 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.

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

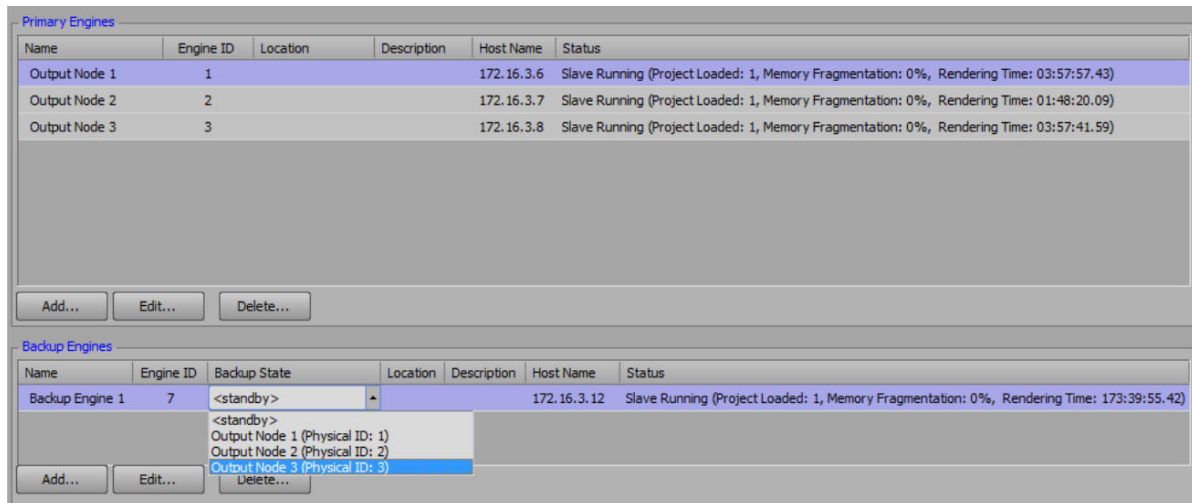
The **XPression Tessera Output Nodes** window opens.

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

- a. Click 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.

- b. Select a primary engine for the backup state.



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 payout.

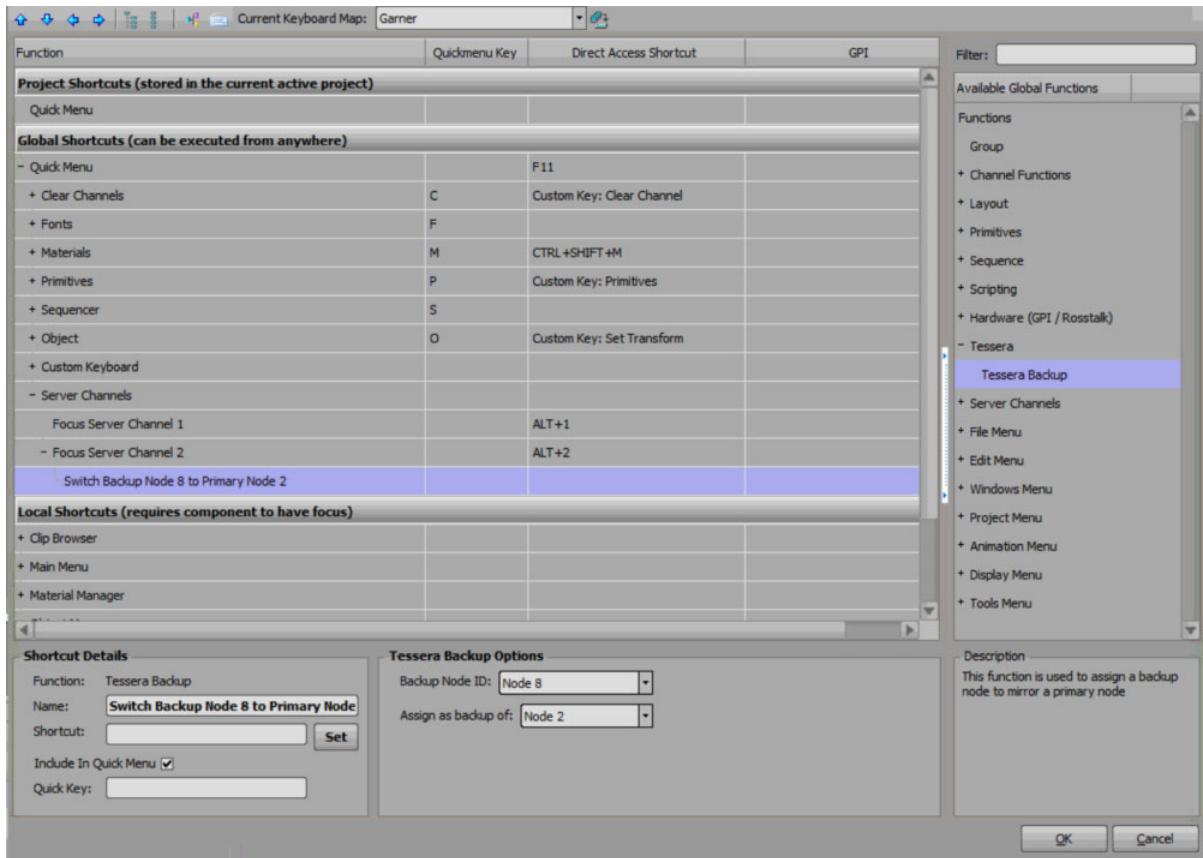
A backup engine will only respond to commands sent from the Tessera master after it has been assigned a Primary Engine ID. It will not retroactively engage commands that were sent before it was assigned a Primary Engine ID or bring online take items that were already online on the primary engine.

## 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.

1. On the XPression Tessera master, click **Edit > Keyboard / GPI Mapping**.  
The **Keyboard / GPI Mapping** dialog box 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, use the **Backup Node ID** list to select the backup node.
5. Use the **Assign as backup of** list to select the node to backup using the selected backup node ID.
6. Click **OK**.

The **Keyboard / GPI Mapping** dialog box 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, click **Edit > Tessera > Settings**.  
The **Tessera Settings** dialog box opens.
2. Ensure that the **Mode** in the **General** section is set to **Master**.

The screenshot shows the 'Tessera Settings' dialog box with the following configuration:

- General**: Mode: Master
- Tessera NET**: NET ID: 1
- Master**: Primary Clock Node ID: 1, Backup Clock Node ID: 2. A note next to the Backup Clock Node ID says '(output node acting as clock generator)'. There is also a note next to the Primary Clock Node ID that says '(output node acting as clock generator)'.
- Output Node**: Engine ID: 1
- Region Map Selection**: Use Global Region Map (selected), Use Region Maps from Projects (unselected)
- UDP Network**: Broadcast Mode: Local Broadcast, IP Address: (empty), Port: 7575, and a Retrieve button.

3. In the **Master** section, use the **Primary Clock Node ID** box to enter or select the primary engine node ID to set the clock for all the engines.
4. Use the **Backup Clock Node ID** box to 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. Click **OK**.  
The **Tessera Settings** dialog box closes.

## Using a Backup Tessera Master

Using a backup Tessera master requires system changes to allow a backup master to replace the primary master. Because the primary master receives commands from control systems like DashBoard or OverDrive and triggers from video switchers, the IP address of the backup master must be changed to the IP address of the primary master (and the primary taken offline).

### To use a backup Tessera master:

1. Ensure that the primary Tessera master system is offline by running the **Deactivate Primary.bat** batch file.  
Running this batch file:
  - Closes XPression Studio/Designer.
  - Changes the IP to a placeholder IP.

2. Turn on the Backup master.
  - a. Ensure that XPression is closed.
  - b. Run the **Activate Backup.bat** batch file.

Running this batch file:

    - Changes the IP to the primary master IP.
    - Launches XPression.
3. In XPression, click **File > Load Project > Tessera Project Server Deploy** to load a Tessera project.
4. Once the project has loaded, click **Edit > Tessera > Output Nodes** to open the **XPression Tessera Output Nodes** status list.
5. Verify that the each output node status 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 by clicking **File > Project Server > Deploy** on the XPression Tessera master. To save updated sequencer list Take Items on the backup, the project needs to be saved 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.

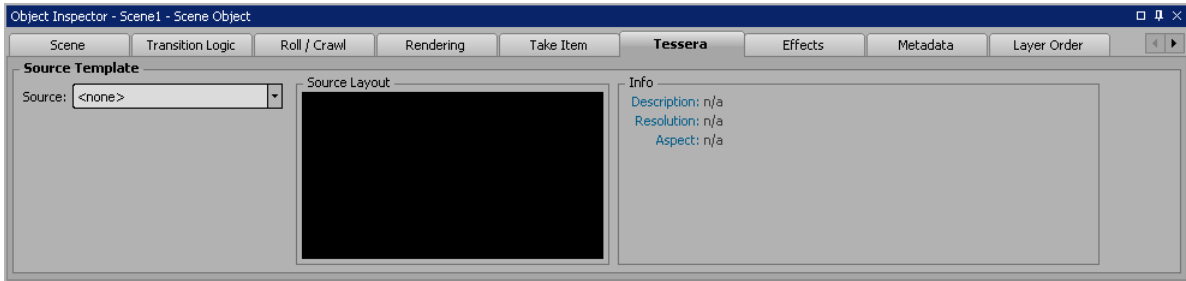
# Assigning a Source Output to a Scene or Scene Group in the Object Inspector

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:**

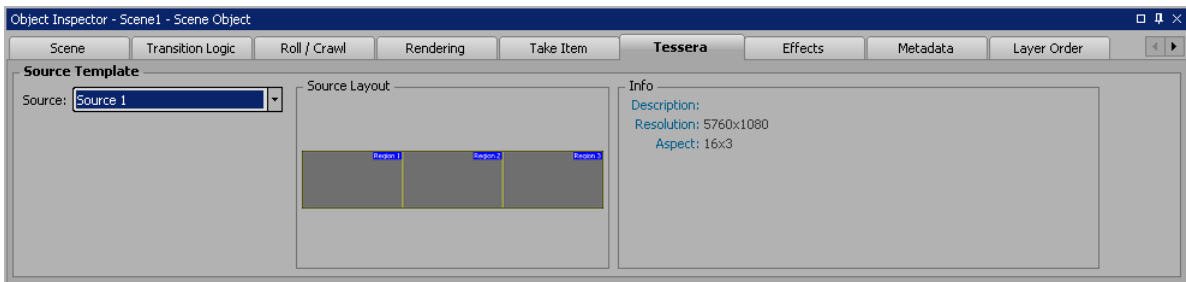
1. In the XPression Editor, select a scene or scene group.
2. In the **Object Inspector**, select the **Tessera** tab.

The **Tessera** tab opens.



3. In the **Source Template** section, use the **Source** list to select a source output for the scene object.

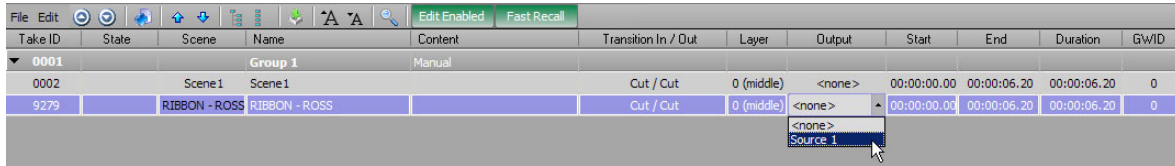
The selected source output is assigned to the scene object and a preview of the layout is displayed in the **Source Layout** section.





# 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.



The screenshot shows the XPression Sequencer interface. At the top, there are buttons for 'File', 'Edit', and 'Fast Recall'. Below these is a table with columns: Take ID, State, Scene, Name, Content, Transition In / Out, Layer, Output, Start, End, Duration, and GWID. The table contains three rows. The first row is a header row. The second row is a group header. The third row is a data row for a scene named 'RIBBON - ROSS'. A dropdown menu is open for the 'Output' column of the third row, showing options '<none>' and 'Source 1'.

Take ID	State	Scene	Name	Content	Transition In / Out	Layer	Output	Start	End	Duration	GWID
0001		Group 1		Manual							
0002		Scene1	Scene1		Cut / Cut	0 (middle)	<none>	00:00:00.00	00:00:06.20	00:00:06.20	0
9279		RIBBON - ROSS	RIBBON - ROSS		Cut / Cut	0 (middle)	<none> Source 1	00:00:00.00	00:00:06.20	00:00:06.20	0

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**” on page 3–26.



**Notes:**

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