Vision 2021 User's Guide

Vision

Welcome to Vision 2021 pre-visualization software for entertainment design and production professionals. Vision allows you to previz the conventional lights, moving lights, video, and other effects that make up a production, simulated in the context of the event venue. Use Vision to program and cue your show, whether you are selling a concept to the client, testing lighting cues, or conforming lighting systems for a new venue. You can previz without being at the venue or having a crew on standby. Experiment with looks and cues, and review the options with clients and artists before the actual load-in.

For quick answers while using a feature in Vision, use Context-sensitive help.

 Click here for a video tip about this topic (internet access required).

New features

The following table contains a list of new and improved features for the initial release of the Vision 2021 software.

Feature	Purpose	Location
Disguise EVO integration	Vision supports integration with Disguise EVO, to enable lighting visualization and media programming for .mvr files	Rendering video with Disguise EVO DMX control of the Disguise camera Document preferences: Rendering tab
New DMX-controlled cameras	New cameras are available in the DMX Controls dialog box; these allow a lighting console or other integrated program to control the viewport view with DMX. • The pre-existing cameras were renamed as Relative cameras. • A new Absolute camera uses DMX to set the camera position and control the FOV. • A new Disguise camera enables integration with the Disguise EVO program.	Using DMX controls
Performance improvements	The physics and rendering engines have been reworked for significant performance improvements	Not applicable
Patching improvements	In addition to patching fixtures, the Patch dialog box now supports the patching of RGB mesh objects; DMX transforms; and DMX-controlled cameras, ambient intensities, and haze speeds	Patching
Finer control of shadows	A new document preference, **Cast Shadows**, controls shadow behavior for individual objects and layers	Object and fixture parameters

Feature	Purpose	Location
Higher quality metal materials	Shiny materials now appear more realistic due to the following updates: • Ambient lighting creates specular highlights. • Objects reflect the environment when a panoramic background or background color is applied.	Object and fixture parameters
New icons	New icons for tools and the DMX Recorder give the Vision interface a modern look	Not applicable
Texture transparency options	Now you can use the alpha channel from the primary texture as the rendering mask, or use an alpha texture	Object and fixture parameters
Finer control of the bump effect on textures	Now you have finer control of **Bump Strength**, to control the intensity of surface contours for all textures	Document preferences: Rendering tab
Simplified Properties palette for a multiple selection	For a multiple selection of scene items, the Properties palette has been condensed for easier navigation. Now it shows only one set of parameter values for all selected items. Heterogeneous values are clearly indicated by two asterisks.	The Properties palette
Better palette navigation	Now you can expand or collapse all “child” items on the Scene Graph palette and Properties palette	The Scene Graph palette The Properties palette

Installing and launching Vision

The Vision installation program lists the installation system requirements, any known installation issues, and any information that changed in the software after final online help was produced. To ensure a smooth installation, confirm that system requirements are met and take note of any issues or incompatibilities prior to installing the software.

The installer includes an option to collect usage data for software improvement. You can select the type and amount of data collected, and change this setting at any time from the Vision preferences: Session tab in the Vision application.

If you plan to use a video capture source, it must be compatible with UVC (USB Video Class) and use a supported pixel format. For more information, see Vision Capture Input Requirements.

The installer uses a serial number to determine whether the license is valid and to allow access to the correct number of universes.

If no serial number is entered, a dongle can be used to activate the program. Prior to launching Vision, insert the dongle that came with your software into an available USB port. The dongle may need to be updated to run the latest version of Vision; see Updating the dongle. At launch, Vision detects and verifies the dongle and provides access to the correct number of universes.

Vision launches in demonstration mode when a valid license cannot be found. A sample file opens automatically, and a sample DMX file is also loaded to the DMX recorder. Additional sample files are available in the Demo Documents folder within the Vision folder. Only these files can be opened in demonstration mode, and they cannot be edited. The Vision watermark displays on the Scene window viewports.

When Vision launches with a valid dongle or serial number, either open or create a scene file. If a file was sent from Vectorworks using the **Send to Vision** command, Vision launches automatically and opens the file.

Launching in Safe Mode

If Vision quits unexpectedly, you will be prompted to relaunch the program in Safe Mode. This is only recommended if a custom setting or inadequate hardware prevents you from opening Vision properly. In Safe Mode, all user settings are reset to factory defaults, and any custom settings are lost. To prevent crashing, the scene is rendered at low quality; this mode is not suitable for programming a show. “SAFE MODE” displays at the top left of the Scene window viewport when Safe Mode is active. To exit Safe Mode, close and then relaunch Vision.

Updating Vision

Updating the application

Command	Path
Update Vision	Help

Between major releases, the Vision application is regularly updated by service packs. These are maintenance releases that sometimes add new features and functionality, or provide smaller updates to address more urgent issues. For information about Vision and service pack updates, see the Community Forums.

To update the Vision application:

1. Select the command.

   If an update is available, the Vision Update Control Center opens to guide you through the process.

2. The Update Control Center may require an update. If so, click **Update**; it will update and launch.

3. The Update Control Center indicates in the text on the left whether an update is available, or your version of Vision is up to date. If an update is available, click **Update**. If Vision is still open, you are prompted to close it.

   During the update, the necessary files are automatically downloaded and installed. When complete, you can launch the newly updated Vision.

Adding and changing serial numbers

Command	Path
Vision Preferences	Edit

During installation, you are prompted to enter the serial number provided with the Vision program (unless a dongle is in use). You may need to change the serial number later to switch from an evaluation version to a full version, or to upgrade to a version with more available universes.

To add or change a serial number:

1. Select the command.

   The Vision Preferences dialog box opens.

2. Click **Serial Numbers** on the Session tab.

   The Serial Number dialog box opens.

3. Enter the serial number exactly as it appears on the label. The serial number is case sensitive. The letters O and I are not used; enter the numbers 0 and 1 instead.

4. Click **Save**.

   The Activation dialog box opens.

5. Click **Activate** to associate the serial number with the current workstation.

   Alternatively, click **Continue in Demo mode** to use Vision in demonstration mode.

To view the license agreement, select **Help > About**, or click **License Info** on the Serial Number dialog box.

Updating the dongle

Command	Path
Update Dongle	• Help (Windows) • Vision (Mac)

If using a dongle, it may need to be updated to run the latest version of Vision. You can check whether the dongle license is up to date, and update the dongle expiration date based on your maintenance program.

To check on your maintenance program and update the dongle:

With the dongle inserted, select the command.

Alternatively, run the VisionUpdater program from the Vision application folder.

The Vision Updater dialog box opens and indicates whether your dongle license is up to date. The number of available universes and the dongle expiration date are displayed.

Updating the content library

Command	Path
Update Library	• Help (Windows) • Vision (Mac)

The Vision content library can be updated from within Vision.

To check for and apply a library update:

Select the command.

If an update to the content library is available, it is automatically downloaded and applied.

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Using Vision with Vectorworks
Vision basics
Setting Vision preferences

Using Vision with Vectorworks

Vision software is designed to work with Vectorworks Spotlight software, although Vision can also be used as a stand-alone product. For information on Vectorworks, please visit vectorworks.net. For information on using the Vectorworks program, please refer to the Vectorworks online help system.
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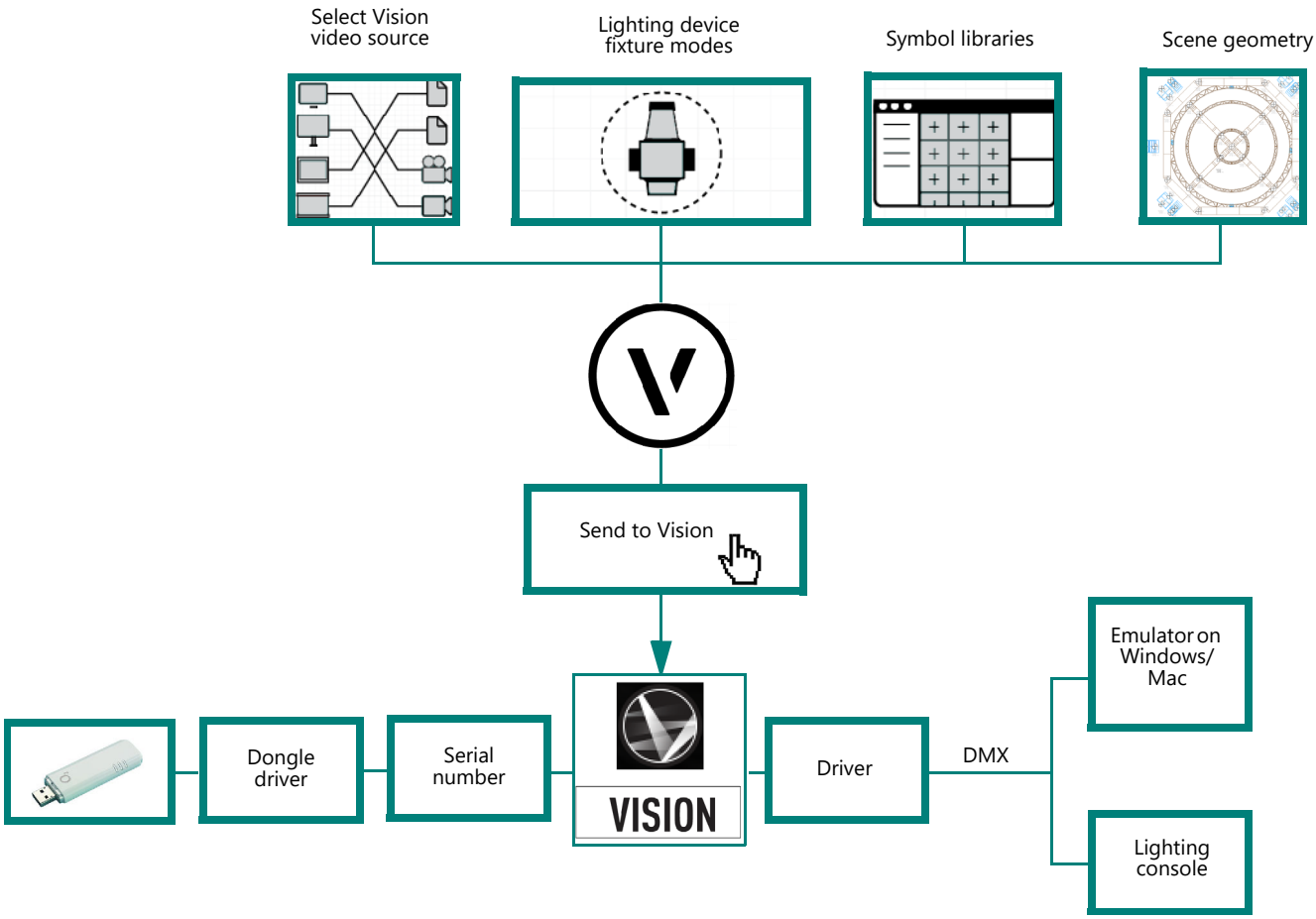


General modeling techniques

Vision relies on properly created models to optimize previz. Efficiently created files run faster and have better results.

When modeling, use the fewest number of polygons possible. A high-polygon item that only represents a small part of the scene (such as a set piece) is an inefficient use of polygons. If an item represents only an inch or two of screen real estate, it is better to create it as a low-polygon item.

Use textures to create a model that has a low polygon count but still looks great. Applying detailed textures to low-polygon objects can give them a realistic appearance that rivals high-polygon scenes; see Object and fixture parameters. For more detailed information on how to use textures, see the documentation for your modeling software.

Preventing instability

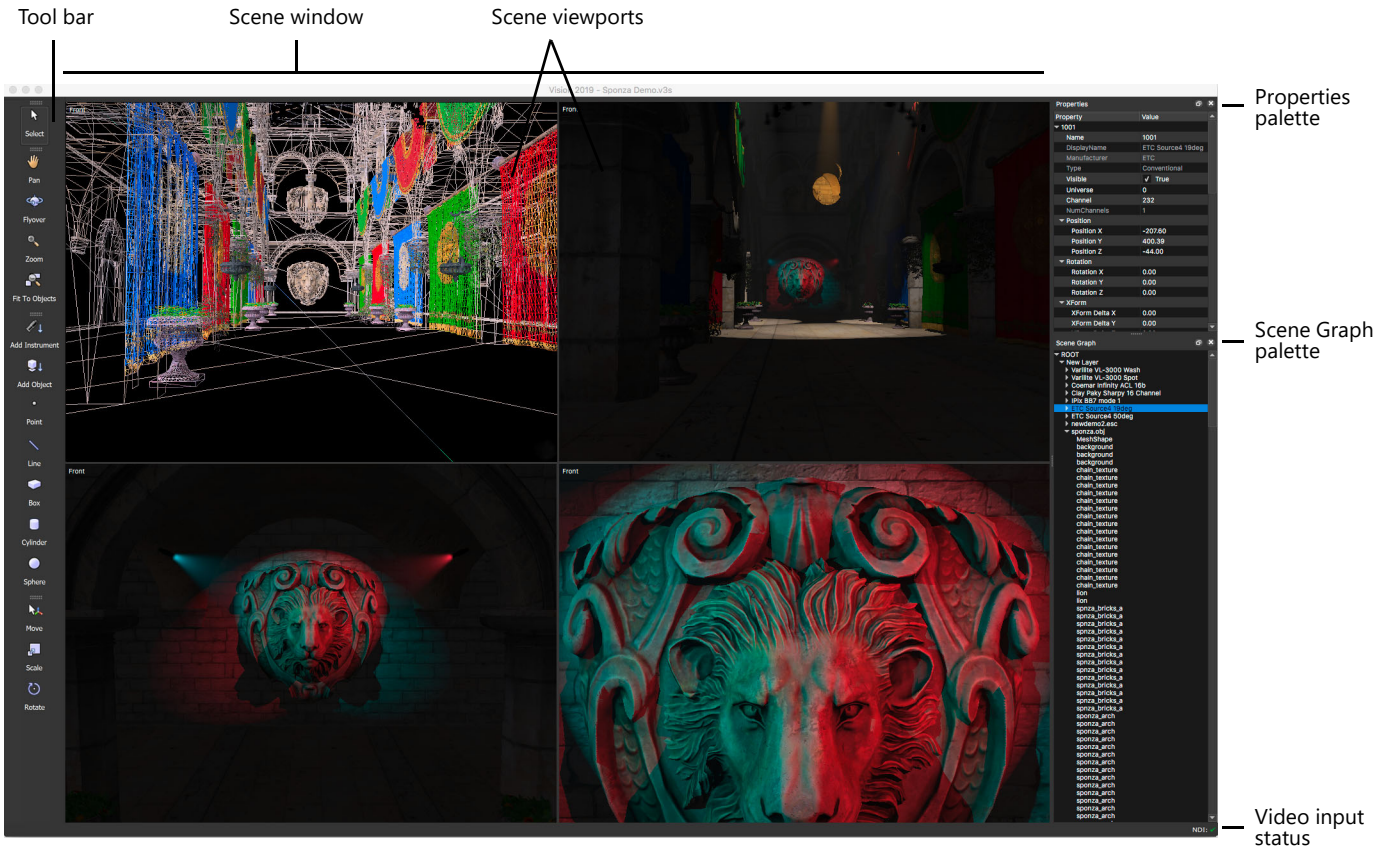
Command	Path
Check VRAM	Render

Occasional instability problems may occur during rendering, depending upon the capabilities of the computer in use. To avoid crashing, ensure that the command is selected and displays with a check mark. Deselect the command for slightly faster rendering if your system has not presented any issues.

Vision basics

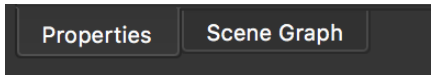
The application window

The Vision application window contains the scene (displayed within the Scene window in either a single viewport or in four viewports), the Scene Graph palette, the Properties palette, and the Tool bar, which contains the tool sets. Palettes and tool sets may be opened, closed, and moved around as necessary. When the application closes, the latest workspace settings are restored for the next session.



The Scene Graph, Properties, and Software Console palettes can be opened from the **Window** menu. Click the **Maximize** button, or double-click the palette title bar, to undock the palette.

Drag an undocked palette back into the Vision window to dock it as a tabbed palette. Drag the palette again, or double-click the palette title bar, to return the palette to the original docked location.



Tabbed palettes

The Tool bar

Command	Path	Shortcut
Tools	Window	• Ctrl+Shift+T (Windows) • Cmd+Shift+T (Mac)

The Tool bar consists of four tool sets containing commonly used tools; see Adjusting the view and Modifying scene objects and fixtures.

To display the Tool bar, select the command.

Click at the top of a tool set to undock it, and drag it to the desired location.

Camera tool set

Customizing the display

The tool set context menu provides options for customizing the user interface. Right-click on any tool set to open the context menu, and select the desired options.

Menu command	Description
Scene Graph	Displays the Scene Graph palette
Properties	Displays the Properties palette
Select	Displays the Select tool set
Camera	Displays the Camera tool set
Modify Scene	Displays the Modify Scene tool set
Modify Object	Displays the Modify Object tool set

Menu command	Description
Dark Theme	Applies a dark color theme across the user interface. This is especially useful when Vision is running in a dark environment.
Tool bar	Controls the appearance of tool icons and text
Icons Only	Displays only an icon for each tool
Text Beside Icons	Displays a text label on the right side of each tool icon
Text Below Icons	Displays a text label below each tool icon
Small/Medium/Large Icons	Sets the size of tool icons
Grayscale Tools	Displays the tool icons in grayscale. Deselect the option to display the tool icons in full color.
Widgets	Controls the display of editable fields in the Properties palette and in the Vision Preferences and Document Preferences dialog boxes. The mouse wheel, arrow keys, and Page Up/Page Down keys can be used to adjust the numerical parameter values controlled by text fields, sliders, and dials.
Text & Sliders	Displays text fields and sliders
Dials & Text	Displays dials and text fields. Dials are smaller than sliders; use dials to save screen space.
Text Only	Displays text fields

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Opening files
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Preferences
Editing the scene

Data exchange for previsualization

GDTF and .mvr files enable a seamless exchange of data between modeling programs, lighting consoles, and visualizers such as Vision. GDTF (General Device Type Format) is used to save and transfer custom fixture data.

You can download .gdtf files from the GDTF Share or create your own in the online Fixture Builder. See the GDTF Help for more information about these platforms.

GDTF files cannot be imported directly in Vision, but only as part of an MVR (My Virtual Rig) import. MVR files enable the transfer of all scene objects and parameter data. See Merging files for more information about MVR.
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Setting the fixture type for MVR import

When importing a .mvr file from Vectorworks, you have the option to use GDTF fixtures or Vision fixtures, but it is also possible to use both in one scene. In Vision, this option is set by the **Use Fixture Types from** parameter in the Import options dialog box. However, the fixture import also depends on the fixture mode(s) specified in Vectorworks.

> For more information on fixture modes in Vectorworks, navigate to help.vectorworks.net and refer to the section on "Lighting device properties."

Set the parameters in Vectorworks and Vision for the desired fixture import:

- To use only GDTF fixtures:
  - In Vectorworks, there is no need to specify a fixture mode.
  - In Vision, select GDTF as the fixture type. GDTF files are created for all fixtures in the scene, even if no **GDTF Fixture Mode** is specified in Vectorworks.
- To use only Vision fixtures:
  - In Vectorworks, specify the **Fixture Mode**. You can also specify the **GDTF Fixture Mode** or set it to None.
  - In Vision, select Vision as the fixture type.
- To use a mix of GDTF and Vision fixtures:
  - For fixtures that should use GDTF data: In Vectorworks, specify only the **GDTF Fixture Mode** and set the **Fixture Mode** to None.
  - For fixtures that should use Vision data: In Vectorworks, specify the **Fixture Mode**. You can also specify the **GDTF Fixture Mode** or set it to None.
  - When importing the mixed file in Vision, select Vision as the fixture type.

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Opening files

Vision opens .mvr, .v3s, .3ds, .obj, and .esc files that were created or saved in Vision, or exported from another program such as Vectorworks. Consider the advantages of Merging files instead.

> When .mvr, .3ds, and .obj files are opened, the **Use Normals** setting on the Document preferences: Rendering tab is enabled by default, even if it was previously deselected. If the normals are incorrect, they can be fixed when setting the Import options or by Adjusting the normals.

The three most recently opened files are listed in the **File** menu. Select a file to open it.

> If a file was sent from the Vectorworks program using the **Send to Vision** command, Vision launches automatically and opens the file.
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To open an existing file:

1. Select **File > Open**.
2. Select the file to open, and click **Open**.

   Depending on the selected file format, the Import options dialog box opens.
3. Specify the import options.

To create a new file:

Select **File > New**.

A new, blank file opens.

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Import options
Merging files
Saving files

Merging files

Command	Path
Merge	File

Vision can merge .mvr, .3ds, .obj, .v3s, and .esc files. Merging .mvr files is recommended for updating the Vision model with changes exported from Vectorworks. MVR (My Virtual Rig) uses unique IDs (UUIDs) to track the scene contents. This allows Vision to apply edits from a merged .mvr file without duplicating the original scene geometry. Applicable edits include new content and any changes to the position, rotation, and patching of existing items. The scene contents are imported as separate items, which can be selected and edited individually in Vision.

> If **Update Existing MVR Objects** is deselected in the Import options dialog box, all geometry in the merged .mvr file will be imported without unique IDs. This means that any pre-existing geometry in the open scene file will be duplicated, not updated.

Like MVR, .esc files can be used to import controllable light fixtures and their focus points. A unique benefit of .esc files is the ability to transfer customized fixture data such as gobo wheels, lamp rotations, and shutter cuts. However, for organizational purposes, merging by ESC requires that you group the scene contents into separate files when exporting from another program. For example, to organize by truss, merge a separate exported file for each truss and its attached lights. To organize by DMX transform, merge a separate exported file for objects and fixtures that should transform together.

To merge a file:

1. Select the command.
2. Select the file to merge, and click **Open**.

   Depending on the selected file format, the Import options dialog box opens.
3. Specify the import options.
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When a file is merged in Vision, it displays as a heading, or “layer,” in the Scene Graph palette. Drag and drop the layer to the desired location (see Organizing the scene contents). When a layer is selected, all items contained in that layer can be moved and transformed as a group.

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Import options

When certain file formats are opened or merged in Vision, the Import Options dialog box opens. The available options depend on the file format.

Click to show/hide the parameters.

Parameter	Description
Mesh Smoothing	Select how mesh smoothing is applied to imported objects. • Imported: Determines whether objects appear faceted or smooth based on the normals in the imported file (the normals are not recalculated). • Custom Crease Angle: Determines whether objects appear faceted or smooth based on the specified **Crease Angle** (the normals are recalculated). • None: Forces all objects to appear flat or faceted (the normals are recalculated).
Crease Angle	When Custom Crease Angle is selected, enter the desired angle to smooth all mesh objects rendered with OpenGL; enter a higher value for smoother surfaces (range: 0–180)
Units in File	Select the units for the imported file; this affects the size of the imported objects
Use Fixture Types from (MVR only)	Select the type of fixture to use: GDTF or Vision. It is also possible to use both fixture types in a scene. The fixture import depends on the **Use Fixture Types from** setting, as well as the fixture mode settings made in Vectorworks. See Setting the fixture type for MVR import. When GDTF fixtures are imported, some of their parameters are disabled on the Properties palette, and all GDTF fixtures are disabled in the Patch dialog box.
Truss Material (MVR only)	Select the truss material, or select Imported to apply truss materials from the imported file
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Parameter	Description
Coordinate System	Select the coordinate system for the imported file: • Vectorworks (right-handed, Z-up, Y-forward) • Vision (left-handed, Y-up, Z-forward) Select Vectorworks if the file was exported from the Vectorworks program.
Flip Moving Lights	Rotates all moving light fixtures by 180 degrees on the X axis, so Vectorworks content can be oriented correctly in Vision
Update Existing MVR Objects (MVR only)	Updates the open scene file without duplicating the existing geometry

Click here for a video tip about this topic (internet access required).

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Document preferences: Rendering tab
Data exchange for previsualization
Opening files
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Saving files

Each Vision file should be saved within a unique folder. The textures associated with a Vision file must have unique names; the textures are named according to the containing folder. Do not save two Vision files in the same folder, as this causes them to share a textures folder, with unpredictable results.

To save a file:

Select **File > Save**.

To save the file with a different name or to a different location:

1. Select **File > Save As**.
2. Specify the file name and location, and click **Save**. The file format is .v3s.

If a file was sent from the Vectorworks program using the **Send to Vision** command, it is important to save the file in Vision immediately. If you close Vision without saving the file, it is lost.

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Exiting Vision
Common functions

Exiting Vision

To close the Vision program along with the open file:

Select **File > Exit** (Windows) or **Vision > Quit Vision** (Mac).

Opening files
Merging files
Saving files

Common functions

The Vision program's **Edit** menu commands perform operations common to most software programs.

- **Undo/Redo:** Undoes or redoes the last performed action.
- **Cut/Copy/Paste:** Cuts or copies an item to the clipboard; pastes the item from the clipboard.

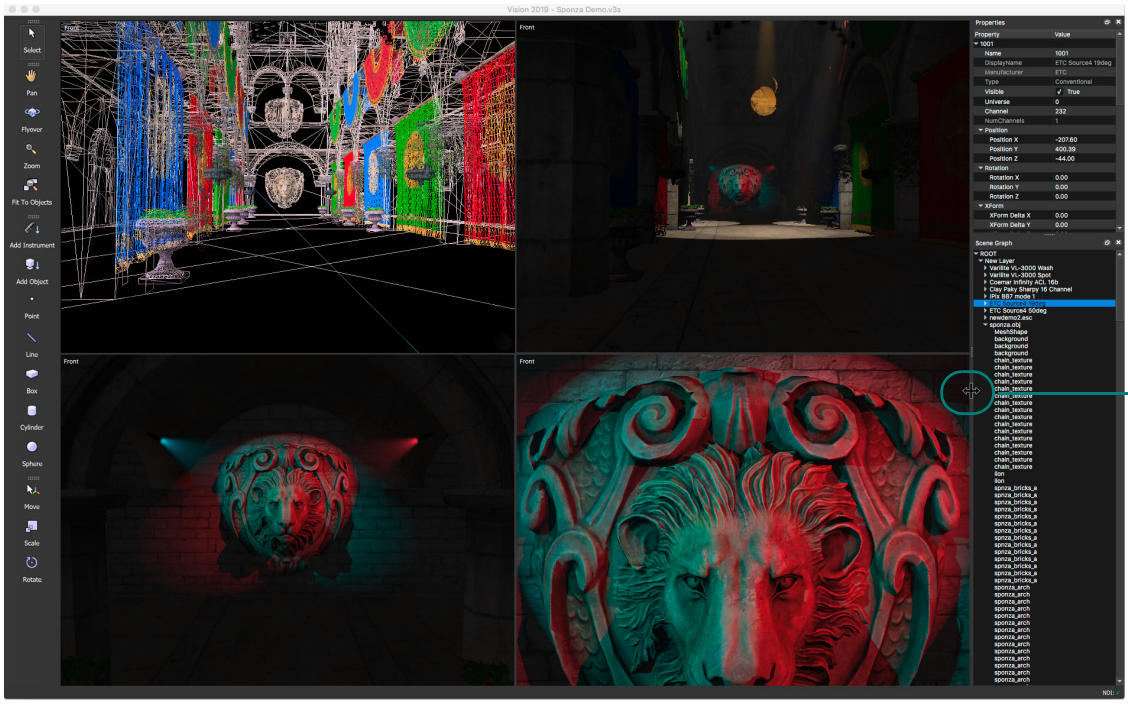
Opening files
Merging files
Saving files

The Scene window

Command	Path	Shortcut
Toggle Number of Viewports	Window	M

The scene file contains the geometry that represents fixtures, trusses, pipes, set pieces, venue walls, and so on. The Scene window displays the scene file, and it is where visualization occurs.

Drag the divider along the edge of the Scene window to adjust the amount of space taken up by the Scene window and any open palettes.



The Scene window can be viewed as a single viewport or as four viewports, each with a different view.

Four viewports are helpful when setting up a complex focus with many fixtures at odd angles.

To toggle the number of viewports in the Scene window, select the command.

Full screen view

Command	Path	Shortcut
Toggle Fullscreen	Window	• Ctrl+Shift+F (Windows) • Cmd+Shift+F (Mac)

The **Toggle Fullscreen** command toggles between a maximized full screen of the bottom right viewport and the normal, resizable display of the Vision program.

To switch to full screen view:

1. Select the command.

   The bottom right viewport expands, filling the entire screen.

2. To exit full screen view, press the Esc key, or press the keyboard shortcut again.

Ambient light in the Scene window

In Vision, ambient lighting simulates the house lights in an indoor scene or the natural lighting in an outdoor scene. To set the azimuth or elevation of ambient light, see the Document preferences: Environment tab.

Ambient Intensity controls the brightness of ambient light throughout the scene, and **Exposure** controls the perceived brightness—mimicking the camera's or the eye's adaptation to changing light levels. These settings can be adjusted from the Document preferences: General tab or the Properties palette.

The **Ambient Intensity** can also be adjusted manually using keyboard shortcuts.

- To increase the setting by 1, press Ctrl+Shift+L (Windows) or Cmd+Shift+L (Mac); to decrease the setting by 1, press Ctrl+Shift+K (Windows) or Cmd+Shift+K (Mac).
- To toggle the setting by 50, press Ctrl+Shift+J (Windows) or Cmd+Shift+J (Mac). If the **Ambient Intensity** is less than 50, the toggle increases the setting by 50. If the **Ambient Intensity** is 50 or more, the toggle decreases the setting by 50.

Looked At point

Command	Path	Shortcut
Toggle Looked At Point	Window	• Ctrl+Shift+O (Windows) • Cmd+Shift+O (Mac)

Each viewport in the Scene window includes a Looked At point to indicate where the camera is looking. All zooming and rotation operations are based on the Looked At point; it is the center of rotation for the **Flyover** tool. Use the tools in the Camera tool set to move the Looked At point. The **Push Looked At Distance** parameter on the Vision preferences: Interactive tab sets the minimum distance from the camera to the Looked At point. This distance can be adjusted to optimize close-ups or distant views.

To toggle the Looked At point on and off, select the command.

Grid view

Command	Path	Shortcut
Toggle Grid	Window	• Ctrl+Shift+G (Windows) • Cmd+Shift+G (Mac)

The **Toggle Grid** command toggles the display of a grid in the Scene window. The grid center is the document origin, and each square of the grid measures 5 feet by 5 feet. When viewing the Scene window as four viewports, the command applies to all viewports.

To display the grid, select the command.

Scene window rendering

Command	Path
• Wireframe • Solid	Context menu

Each viewport can display as a solid or wireframe rendering.

To set the rendering of a viewport:

Right-click on the viewport and select the desired command.

Scene window standard views

Each viewport in the Scene window can display in one of nine preset views, or in a custom view that can be saved (see Saving views). The label in the top left corner of the viewport indicates the current view; “User” designates either a custom view or one of the isometric preset views.

The six standard preset views can be accessed from the viewport context menu; right-click on the viewport and select one of the views. Alternatively, use the shortcut keys on the numeric keypad to access the standard and isometric views. Isometric views are labeled as User views.

Click to show/hide the parameters.

View	Numeric keypad shortcut	Available on context menu
Front Left Isometric	1	No
Front	2	Yes
Front Right Isometric	3	No
Left	4	Yes
Top	5	Yes
Right	6	Yes

View	Numeric keypad shortcut	Available on context menu
Rear Left Isometric	7	No
Back	8	Yes
Rear Right Isometric	9	No

Saving views

A custom view can be saved and restored later. Up to nine Scene window views can be saved with the file. Use the keyboard numbers for these operations; do not use the numeric keypad, which controls the Scene window standard views.

To save a view:

1. Click the viewport with the view to save.
2. Press the Ctrl key (Windows) or Cmd key (Mac), and any number key (1–9) on the keyboard.

   The current viewport view settings are saved to the keyboard shortcut.

To restore a view:

Press the designated number key (1–9) to restore the saved view.

If the saved views do not display as expected, they can be reset. To reset all views:

Right-click on the viewport and select **Set Default Views** from the context menu. The saved views are replaced with the standard preset views.

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Adjusting the view

Use the Camera tools to adjust the view.

Flying over

Tool	Tool set	Shortcut
Flyover 	Camera	Shift+C

The **Flyover** tool simulates movement over and around a real-world scene. The center of rotation is the Looked At point.

To fly over a scene:

1. Click the tool.
2. Within the viewport, click and drag in the direction of movement while holding down the mouse button.
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The viewport label displays “User,” since the view is a custom view and not one of the preset views.

The **Flyover** tool can be used in boomerang mode if you have a center mouse button. Hold down Ctrl+center mouse button (Windows) or Cmd+center mouse button (Mac) to temporarily pause the current tool and switch to the **Flyover** tool. Release the buttons to return to the previous tool.

Zooming

Tool	Tool set	Shortcut
Zoom 	Camera	C

The **Zoom** tool controls how close or far away objects appear in the viewport. Zoom in to get a close-up view of a detail, and zoom out to get a broader view of the scene.

Zooming is based on the Looked At point, not the mouse location. The speed of zooming depends on the **Push Looked At Distance** specified on the Vision preferences: Interactive tab.

To zoom in or out of a viewport:

1. Click the tool.
2. Within the viewport, click and drag while holding down the mouse button. Move the cursor up to zoom in on the viewport, or move the cursor down to zoom out of the viewport.

On a wheel-mouse, roll the mouse wheel forward to zoom in on the viewport (the **Zoom** tool does not need to be selected). Roll the mouse wheel backward to zoom out from the viewport.

This feature will not work properly if standard scrolling is disabled in the mouse setup. For example, if the mouse’s scrolling size is set to “none,” mouse zooming in Vision is disabled. (The specific settings required for this feature depend on the type of mouse.)

Panning

Tool	Tool set	Shortcut
Pan 	Camera	H

The **Pan** tool moves the scene around in the viewport, changing the area of display.

To pan within the viewport:

1. Click the tool.

   Alternatively, depending on the type of mouse being used, press and hold the center mouse button to pan.

2. Within the viewport, click and hold the mouse button, and drag to move the scene.

The **Pan** tool can be used in boomerang mode. Hold down the Space bar or the center mouse button, if you have one, to temporarily pause the current tool and switch to the **Pan** tool. Release the Space bar or the mouse button to return to the previous tool.

Fitting the view to objects

Tool	Tool set
Fit To Objects 	Camera

The **Fit To Objects** tool changes the view to zoom to the selected objects. When the Scene window displays four viewports, this tool applies only to the bottom right viewport.

To fit the view to objects:

1. Select one or more objects.

   To fit the zoom level to all objects in the Scene window, select ROOT from the Scene Graph palette.

2. Click the tool.

   The zoom level adjusts to the selected objects.

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The Scene window
Editing the scene
Setting the DMX provider

Setting the DMX provider

Command	Path
Change DMX Provider	DMX

To properly communicate with a connected console, specify the DMX protocol. See the Community Forums for specific information about DMX connectivity. Some DMX providers limit the number of universes.

A Vision dongle is required to use MA-Net2.

To set the DMX provider:

1. Use an Ethernet cable to connect the console to the Vision computer. Configure the computer's IP address and Sub-net Mask according to your lighting controller's specifications. Some consoles provide utilities for this configuration; consult the console documentation. Make sure your firewall is off temporarily while selecting the provider, and then re-enable it.
2. Launch Vision.
3. Select the command.

   The Select DMX Provider dialog box opens.

4. The currently selected protocol displays with an asterisk. Select a different protocol from the list if needed. The availability of protocols in the list depends on the platform.
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Configuring multiple input devices

Command	Path
Change DMX Provider	DMX

Vision allows multiple DMX input devices to be configured and used at the same time, so you can visualize several different types of DMX input simultaneously.

Multi Input is limited to 64 universes.

To configure multiple input devices:

1. Select the command.

   The Select DMX Provider dialog box opens.

2. Select MultiInput as the DMX protocol.

   The DMX Source Selection dialog box opens.

3. Connect any of the DMX universes within Vision by selecting the universe, and then selecting the DMX protocol from the list.

Preferences

Setting Vision preferences

Command	Path
Vision Preferences	Edit

Vision preferences are options that apply to every file you open, every time you run the program. The settings can be saved and managed from any tab in the Vision Preferences dialog box; see Using saved sets.

To change the Vision preference settings:

1. Select the command.

   The Vision Preferences dialog box opens.

2. Click each tab to set the preferences. Click **Apply** to apply the settings while keeping the Vision Preferences dialog box open.

Vision preferences: Graphics tab

Click the Graphics tab to set preferences that control graphics and display.

Click to show/hide the parameters.

Parameter	Description
Resolution Quality	Sets the maximum screen resolution for the Scene window. If the Scene window resolution is smaller than the specified value, Vision uses the Scene window resolution when rendering.

Parameter	Description
Texture Quality	Sets the quality level for textures and controls their resolution. Higher quality results in more detail but slower rendering.
Shadow Quality	Sets the quality level for shadows. Higher quality results in more accurate shadows but slower rendering.
Surface Light Quality	Sets the quality level for light emitted from a fixture. Higher quality results in more accurate beams and surface lighting, but slower rendering.
Dynamic Shadows	Specifies which items cast shadows in the scene. • Objects & Fixtures: All objects and fixtures cast shadows. • Objects: All objects cast shadows, but fixtures do not. • None: All static objects cast shadows, but dynamic fixtures and objects do not. If the **Texture Quality** is Medium, High, or Very High, all objects become dynamic, and shadows display only if Objects & Fixtures or Objects is selected.
Render Fixtures	Specifies whether or not fixtures are rendered, or rendered in black
Gamma	Adjusts the contrast and brightness of midtone colors, without changing black or white
Haze Quality	Sets the rendering quality of the light beams, but does not control the intensity of the beams
Enable VSync	It is recommended that you enable VSync to prevent “tearing” and other graphical inconsistencies, and to save battery life. Disabling VSync may improve performance, but it should only be done for testing purposes.

Vision preferences: Interactive tab

Click the Interactive tab to set preferences for the display of interactive drawing features, such as the grid, selection boxes, and Looked At point.

Click to show/hide the parameters.

Parameter	Description
Display Grid	Displays the grid in all viewports
Display Looked At Point	Displays the Looked At point in all viewports
Display Selection	Displays the bounding box of the selected object(s)
Push Looked At Distance	Sets the minimum distance from the camera to the Looked At point. Larger values optimize distant views and enable faster navigation through the scene. Smaller values optimize close-up views and small camera movements. Vision moves the Looked At point to maintain the specified distance when Zooming.

Vision preferences: Session tab

Click the Session tab to set the error reporting preferences, view the license information, and add or change serial numbers.

Click to show/hide the parameters.

Parameter	Description
Error Reporting	Sends anonymous information about application crashes and other basic usage statistics to Vectorworks to help improve the software. Four levels of informational detail can be selected. • **Send nothing:** When you activate Vision software, we always collect general data about the operating system, graphics card, monitor resolution, and Vision version. • **Send crash details:** In addition to the general information that is always collected, this allows us to receive additional information in the event of a crash, including idle time, alerts received, and graphics card operations prior to the crash. • **Send crash details and light usage patterns:** Selecting this option invaluably assists us with product development while maintaining user privacy. In addition to the previously listed information, we are able to duplicate actions taken before a software crash, review undo actions, determine which objects may have been selected, and view Vision-related file paths. We cannot see the data in your scenes, and the reporting has no impact on your software operations. Reporting happens in the background as you work and should not affect your workflow. • **Send crash details and verbose usage patterns:** Selecting this option invaluably assists us with product development while maintaining user privacy. In addition to the information gathered through the light usage pattern option, we are able to upload additional information such as tool and command selection. We cannot see the data in your scenes, and the reporting has no impact on your software operations. Reporting happens in the background as you work and should not affect your workflow.
Serial Numbers	Opens the Serial Number dialog box to add or change a serial number for the Vision product (see Adding and changing serial numbers). Click **License Info** to view the license agreement.

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Setting document preferences

Command	Path
Document Preferences	File

Document preferences only apply to the current drawing, and they remain in effect until they are changed. The settings can be saved and managed from any tab in the Document Preferences dialog box; see Using saved sets. When a .esc or .mvr file is opened in Vision, the most recent settings are applied.

Document preferences can also be set from The Properties palette.

To change the preference settings in the document:

1. Select the command.

   The Document Preferences dialog box opens.

2. Click each tab to set the preferences. Click **Apply** to apply the settings while keeping the Document Preferences dialog box open.

Document preferences: General tab

Click the General tab to set various display preferences.

Click to show/hide the parameters.

Parameter	Description
Ambient Intensity	Sets the amount of light in the entire scene when fixtures are off. No shadows are created by ambient lighting. To adjust the ambient light level using keyboard shortcuts, see Ambient light in the Scene window. To modify the color and brightness of ambient light, set the **Ambient Color** from the Document preferences: Environment tab.
Exposure	Controls how much light enters the virtual camera lens. Values above 1.00 increase the exposure and values below 1.00 decrease it. The default setting of 1.00 is best for most scenes, but you may want to adjust for final rendering. Check the target lux values on the Document preferences: Heat Map tab, then modify the exposure as needed.
Haze Intensity	Controls the amount of haze, making light beams more or less intense. For faster rendering, disable light beams by setting the **Haze Intensity** to 0%.
Contrast	Controls the difference between light and dark areas in the scene. Increasing this value makes the difference more intense, while decreasing it can add a washed-out effect.

Parameter	Description
Brightness	Controls brightness in the scene by adjusting the comparative luminance of each pixel. The default setting of 0 (zero) is best for most scenes. To modify the overall scene lighting, first adjust the **Ambient Intensity**, then the **Exposure**, and finally the **Contrast** or **Brightness** if needed.
Camera FOV	Sets the horizontal field of view in the scene. Increase the value to widen the field of view, and decrease the value to narrow it.

Document preferences: Rendering tab

Click the Rendering tab to set the rendering preferences.

Click to show/hide the parameters.

Parameter	Description
Use Normals	Enables advanced lighting when valid normals are present. Normals indicate which direction the scene geometry is facing, to troubleshoot rendering issues. Select **Render Normals** to view the normals in the drawing. When .3ds and .obj files are opened, this setting is enabled by default.
Use Face Culling	For better performance, renders only the camera-facing geometry. If geometry displays incorrectly, try Adjusting the winding order.
Diffuse Strength	Multiplies the intensity of diffuse lighting, which has the same brightness no matter the camera view. Use this setting primarily for testing. To adjust the amount of diffuse lighting, modify the **Ambient Intensity** or **Exposure** instead.
Specular Strength	Makes objects appear shinier by brightening their highlights. Use this setting primarily for testing. To increase or decrease the amount of specular highlighting, adjust the **Exposure** instead.
Bump Strength	Multiplies the intensity of the bump effect for all textures. To finely adjust the bump strength, modify the grayscale shades in the bump texture image.

Parameter	Description
Render Normals	Indicates the normals of the scene geometry by rendering them as RGB colors. The colors adjust to the camera view. • Red indicates left-facing normals. • Green indicates top-facing normals. • Blue indicates front-facing normals. If an object is reflecting light incorrectly, its normals might be inverted; try Adjusting the normals.
Render Specular	Uses color coding to indicate the specular reflectivity of objects (metallic objects should use the metal's color). • White indicates high reflectivity. • Black indicates no reflectivity. • Gray indicates low reflectivity. An overall gray or muted appearance is expected if the **Texture Quality** is low or if a reflective texture image is not applied. • Color indicates metal reflectivity. Select the check box to test the specular lighting. For example, test whether a highly reflective texture is applied correctly when the **Texture Quality** is high.
Render Shadows	Controls the display of shadows for all objects and layers. To decrease rendering time for large files or DMX transforms, deselect the check box. You can override the **Render Shadows** preference for specific items in the scene; set the **Cast Shadows** parameter on The Properties palette to toggle shadows on or off for selected objects and layers.
Send NDI Stream	Outputs a live NDI stream of Vision. Select this option to send an NDI stream of Vision to Disguise EVO, a media server, a video-sharing platform, and so on.
Render Video	Controls how video screens are rendered. • On: Enables video playback. • Screen Test Image: Displays the screen images specified by Vectorworks when the .mvr file was exported. If no images were specified, the screens appear gray. • Render Video with Disguise: Blacks out the video screens, so Disguise can render video. • Off: Blacks out the video screens. The options Render Video with Disguise and Off perform the same function; select either option to stop rendering video screens in Vision.

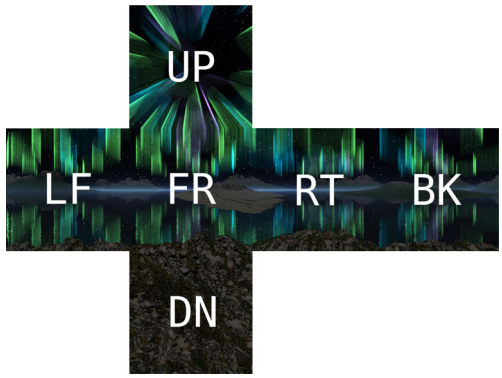
Parameter	Description
Far Clip Plane Distance	Sets the distance (in inches) to the far clip plane, which is the boundary of the visible scene. All items within the **Far Clip Plane Distance** are visible, while items beyond this distance are "clipped" out of view. Lower distance values can improve shadow quality, so extremely high values are not recommended. To set the optimal distance for your scene, zoom out to the furthest extent required for previz. Decrease the **Far Clip Plane Distance** until some geometry is clipped from view, and then gradually increase the distance until no clipping occurs.

Document preferences: Environment tab

Click the Environment tab to set preferences for the environment lighting.

Click to show/hide the parameters.

Parameter	Description
Ambient Color	Sets the color of ambient lighting—for example, to mimic sunrise or moonlighting. Click the button next to the color definition. The Color Picker dialog box opens. Choose a color from the color picker. The Preview displays the selected color. The **Hue**, **Saturation**, and **Luminance** values display, as well as the **Red**, **Green**, and **Blue** values.
Background Color	Sets the background color, if no **Panoramic Background** is specified. Click the button next to the color definition. The Color Picker dialog box opens. Choose a color from the color picker. The Preview displays the selected color. The **Hue**, **Saturation**, and **Luminance** values display, as well as the **Red**, **Green**, and **Blue** values.

Parameter	Description
Panoramic Background	The panoramic background is a composite of six images. These images are saved individually but together form a “cube map.” When the component images are properly named and aligned, as shown below, Vision renders them as a seamless background image.  The component images may need to be inverted or rotated for proper alignment. Each image must have the same name but with a special suffix denoting which side of the cube it represents. All images must be saved in the same format, such as .png or .jpg. • Front: Name_ft • Back: Name_bk • Left: Name_lf • Right: Name_rt • Up: Name_up • Down: Name_dn Select one of the component images of your desired panoramic background; Vision will locate the other images to form the cube map. Click the button to select an image file; click **X** to remove the file. Some panoramic backgrounds are provided with the Vision application; see the “lo” .jpg files and “midnight-silence” .png files in the textures/App folder.
Sun Azimuth	Sets the azimuth for ambient lighting, when orbiting the ambient lighting around the scene. South is at 0 degrees, West is at 90 degrees, North is at 180 degrees, and East is at 270 degrees.
Sun Elevation	Sets the elevation (degrees above the horizon) for ambient lighting

Document preferences: Haze tab

Click the Haze tab to set the haze preferences.

Click to show/hide the parameters.

Parameter	Description
Haze Style	Select the type of haze for the light beams. The 4D haze options use a procedurally-generated haze texture that can move in 3D space and time. • None: No haze texture is applied. • Low-Quality Haze Texture: The specified **Haze Texture** is applied with low quality. The texture image does not adjust to camera movement. • Low-Quality 4D Haze: A 4D haze texture is applied with low quality. • High-Quality 4D Haze - Half Resolution: A 4D haze texture is applied with high quality and rendered at half resolution. • High-Quality 4D Haze - Full Resolution: A 4D haze texture is applied with high quality and rendered at full resolution; performance may decrease.
Haze Texture	For a **Haze Style** with Low-Quality Haze Texture, select a haze image. The image is applied where a light beam projects in the scene.
Haze Texture Intensity	Controls the intensity of the haze texture for all haze styles. At 0%, no texture is applied; at 100%, white areas of the texture have haze and black areas have none.
Haze Horizontal/Vertical Speed	Controls the speed of the haze as it moves horizontally and vertically
Haze Depth Speed (4D Haze only)	Controls the speed of the haze as it moves forwards and backwards, relative to a front view
Haze Turbulence (4D Haze Only)	Controls how fast the haze texture varies
Haze Horizontal/Vertical Offset (Low-Quality Haze Texture only)	Sets a horizontal or vertical offset for the haze image. The offset corresponds to screen percentage; for example, an offset of 10% shifts the haze image by 10% of the screen or Scene window.
Haze Contrast (Low-Quality Haze Texture only)	Controls the difference between light and dark pixels in the haze image
Haze Scale (4D Haze only)	Controls the size of the haze features. At large scale, the haze appears cloudy; at small scale, many small wisps display in the light beam.

Document preferences: Bloom tab

Click the Bloom tab to set the bloom preferences.

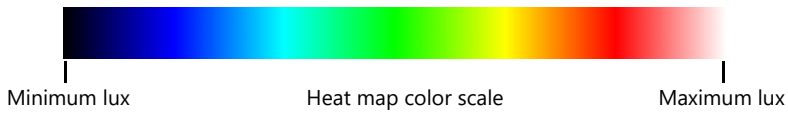
Click to show/hide the parameters.

Parameter	Description
Bloom Percentage	Sets the intensity of the bloom effect. This adds a glow to the brightest areas of the scene, like a bright light overwhelming the camera or eye. A value of 0 (zero) disables the bloom.
Bloom Threshold	Sets the lighting level where bloom occurs
Bloom Lens Strength	Modifies the intensity of the bloom effect for fixture lenses; at 0 (zero), lenses are not rendered

Document preferences: Heat Map tab

Click the Heat Map tab to set the heat map preferences.

Click to show/hide the parameters.

Parameter	Description
Heat Map Style	Select the type of heat map to display. • None: Displays the normally rendered scene with no heat map. • Black and White: Displays a black and white heat map. This option sets the **Heat Map Min/Max Lux** to the same threshold value. Black areas in the scene have less illumination than this value. White areas have the same or more illumination than this value. From the Properties palette, you can identify the lux value in a part of the scene by scrolling to increase and decrease the threshold value; when a part of the scene switches between black and white, its illumination matches the threshold value. • Color Gradient: Displays a color heat map. Illumination is represented by a blend of colors ranging from black as the **Heat Map Min Lux** to white as the **Heat Map Max Lux**. 
Heat Map Min Lux	Set the minimum lux value for the heat map
Heat Map Max Lux	Set the maximum lux value for the heat map

Click here for a video tip about this topic (internet access required).

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Using saved sets

You can save the specified settings for reuse, and edit or delete saved sets.

Click to show/hide the parameters.

Parameter	Description
Settings	Displays the name of the current saved set; to use a different saved set, select it from the list of saved sets. Any set in the list with angle brackets indicates either a Vision default or a variable set, not a saved set. For example, <Active Settings> refers to the dialog box's current parameters, which are not saved as a set.
Save	Opens the Save Settings dialog box to name and save the current parameter settings; the saved set is added to the **Settings** list
Manage	Opens the Manage Saved Sets dialog box, to rename or delete saved sets. Select a name from the list, and then click the appropriate button. When renaming a set, if the entered name is already assigned to another set, you are prompted to confirm that you want to replace the existing set.

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Editing the scene

Editing the scene

The Scene Graph palette

Command	Path	Shortcut
Scene Graph	Window	• Ctrl+Shift+R (Windows) • Cmd+Shift+R (Mac)

The Scene Graph palette displays an organized list of scene items for selection. Use the Scene Graph palette to select items in the scene, to select objects and fixtures for editing in the Properties palette, or to select conventional fixtures for fine adjustments in the Software Console palette. The Scene Graph palette's context menu provides options for organizing the scene contents and troubleshooting display issues.
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To open the Scene Graph palette:

Select the command.

The ROOT list heading, or “ROOT layer,” represents the contents of the entire scene; it contains a hierarchical list of layers, fixtures, and scene objects.

Merged scene files display as layers under the ROOT layer (see Merging files).

Click successive disclosure arrows to navigate the scene hierarchy. Press the Alt key (Windows) or the Option key (Mac) when clicking a disclosure arrow to expand or collapse all items in that layer.

Selected objects and fixtures are highlighted in the Scene window, and their parameters display in the Properties palette. When multiple items are selected, the displayed parameters depend on the first item selected; only that type of item displays parameters.

Selecting global scene parameters, objects, and fixtures

To select items, you may need to expand the layers in the Scene Graph palette:

- From the Scene Graph palette, select ROOT to edit the global parameters for the entire scene (see Global parameters).
- Expand the ROOT layer to access items within the scene. Use the Page Up/Page Down and arrow keys to scroll through the main ROOT layers. When a layer is selected, all items within the layer are also selected, so they can be moved and transformed as a group. These items are highlighted in the Scene window, and their parameters display in the Properties palette.

  Exact parameter values display only if they are identical for all items in the layer. When a value differs, this is indicated by a double asterisk (**) after the parameter name, followed by a blank field or a value of 0.00.

- Keep expanding the layers until you access an individual object or fixture, to select and edit only a single item. The selected fixture or object is highlighted in the Scene window, and its parameters display in the Properties palette. Fixtures with accessories may also display parameters for gobo images and shutters in the Software Console palette. The displayed parameters depend on the fixture type and accessories.
- Multiple items can be selected by pressing the Shift key or the Ctrl (Windows) or Cmd (Mac) key while clicking on items in the Scene Graph palette.

Organizing the scene contents

Command	Path
Insert Layer	Context menu

To organize the scene contents, insert new layers in the Scene Graph palette. You can drag and drop items from one layer to another. When a layer is selected, all items contained in that layer are selected, so they can be moved and transformed as a group. This is especially helpful when setting up DMX transforms.

To insert a layer in the Scene Graph palette:

Select an item in the list of scene contents, and select the command.

A new layer is inserted into the selected layer, or into the layer of the selected fixture or object.

The layer can be renamed from the Properties palette.

To move a layer, click and drag it to the desired location. The ROOT layer is the highest level in the list of scene contents.

Correcting scene contents for previz

When objects are imported into Vision, they may need adjustment for correct display. The following commands apply only when certain options are selected in the document preferences.

Adjusting the normals

Command	Path
Invert Normals	Context menu

This command applies when **Use Normals** is selected on the Document preferences: Rendering tab. If an object does not reflect light correctly, its normals might be invalid. To view the normals, select **Render Normals** from the Document preferences: Rendering tab.

- Left-facing normals are red.
- Top-facing normals are green.
- Front-facing normals are blue.

If an object's normals are inverted, use the command to correct them.

To invert an object's normals:

Select the object in the Scene Graph palette, and select the command.

Adjusting the winding order

Command	Path
Flip Winding Order	Context menu

When **Use Face Culling** is selected on the Document preferences: Rendering tab, Vision uses a clockwise winding order to render the scene geometry. If any geometry displays incorrectly, its winding order might be incompatible.

> Winding (in a clockwise or counter-clockwise direction) defines the order of a polygon's vertices. The winding order determines which polygons are facing the camera. When the scene geometry is wound in the same direction, face culling can be used to render only the camera-facing geometry, for improved performance.

To reverse the winding order of one or more objects:

1. Select the object(s) in the Scene Graph palette, and select the command.

Refreshing the Scene Graph palette

Command	Path
Refresh	Context menu

You can refresh the Scene Graph palette to ensure the proper display of scene contents.

To refresh the Scene Graph palette:

1. Select the command.

   The Scene Graph palette and the Properties palette are updated.

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The Properties palette

Command	Path	Shortcut
Properties	Window	• Ctrl+Shift+Y (Windows) • Cmd+Shift+Y (Mac)
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From the Properties palette, you can view and edit the parameters of selected fixtures, objects, or layers. The available parameters depend on the items selected. Depending on the parameter, a field may be edited, a value toggled, or a dialog box opened.

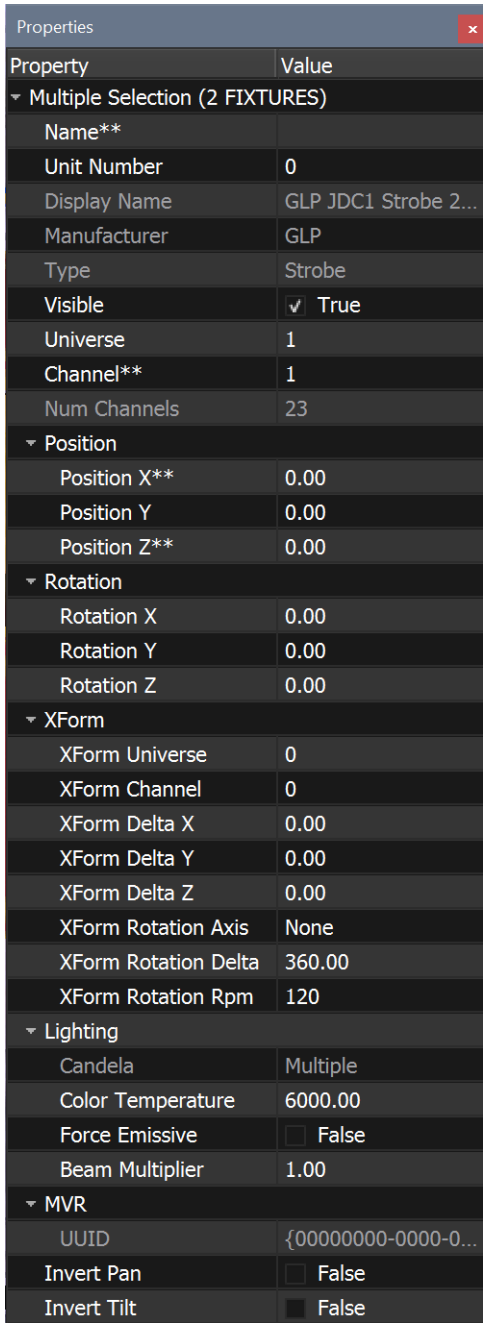
You can use the mouse wheel or arrow keys to change numerical parameter values by small increments; for larger increments, use the Page Up/Page Down keys.

To open the Properties palette:

Select the command.

Individual parameters are categorized by function. Click the disclosure arrows to expand the categories. Press the Alt key (Windows) or the Option key (Mac) when clicking a disclosure arrow to expand or collapse all items in that category.

Use the scroll bar on the Properties palette to navigate the list, or scroll with the Page Up/Page Down and arrow keys.



Parameters for a multiple selection of multi-part fixtures

When multiple items are selected, the exact parameter values display only if they are identical for all selected items. When a value differs, this is indicated by a double asterisk (**) after the parameter name, followed by a blank field or a value of 0.00.

A parameter value of "Multiple" may display if one or more multi-part fixtures are selected. "Multiple" indicates that the parameter value is not identical for all parts of the fixture.

Global parameters

When no scene items are currently selected, the global scene parameters display in the Properties palette. To edit these parameters, select ROOT from the Scene Graph palette.

Most, but not all, of the global scene parameters can also be edited from the Document Preferences dialog box. For ease of access, frequently used parameters display at the top of the Globals list in the Properties palette. The remaining global parameters are grouped like the tabs on the Document Preferences dialog box.

Click to show/hide the parameters.

Global parameter	Description
Globals	See Setting document preferences for parameter descriptions
High Precision	Enables highly accurate renderings. Deselect the check box to quickly render large files; the check box must be deselected each time you open a .v3s file. Some artifacts may appear. Use this setting primarily for testing.

Object and fixture parameters

When scene items are selected, the parameters that display in the Properties palette depend on the type of item. Some parameters are available for both objects and fixtures, while others are available either for objects or for fixtures. Some of these parameters are also available for layers in the Scene Graph palette (for more information on layers, see Organizing the scene contents).

Click to show/hide the parameters.

Parameter	Description	Availability
Name	Displays the fixture's channel number or the object's name	Objects, fixtures, and layers
Unit Number	Displays the fixture unit number	Fixtures
Display Name	Displays the fixture make and model; this field cannot be edited	Fixtures
Manufacturer	Displays the fixture manufacturer; this field cannot be edited	Fixtures
Type	Displays the fixture type; this field cannot be edited	Fixtures
Visible	Indicates that the fixture is visible in the scene; deselect to make the fixture invisible	Fixtures and layers
Universe	Displays the universe assigned to the fixture	Fixtures
Channel	Displays the DMX address assigned to the fixture	Fixtures
Num Channels	Displays the number of channels in the fixture profile; this field cannot be edited	Fixtures

Parameter	Description	Availability
Cast Shadows	Controls the display of shadows for specific objects and layers, so you can override the global shadow preference when needed. Set the global shadow behavior from the **Render Shadows** setting on the Document preferences: Rendering tab. • Use Parent Setting: Uses the same **Cast Shadows** setting that is specified for the closest "parent" layer in the Scene Graph palette. This option is selected for all objects and layers by default, so the ROOT layer setting (controlled by the **Render Shadows** preference) is applied globally. • Cast Shadows: Toggles shadows on, even when you deselect the **Render Shadows** preference. • Do Not Cast Shadows: Toggles shadows off, even when you select the **Render Shadows** preference.	Objects and layers
Position		Objects, fixtures, and layers
Position X	Sets the item's position on the X axis in inches. Positive values move right; negative values move left.	Objects, fixtures, and layers
Position Y	Sets the item's position on the Y axis in inches. Positive values move up; negative values move down.	Objects, fixtures, and layers
Position Z	Sets the item's position on the Z axis in inches. Positive values move away from the camera; negative values move toward it.	Objects, fixtures, and layers
Rotation		Objects, fixtures, and layers
Rotation X/Y/Z	Sets the item's rotation on the X/Y/Z axis in inches. Positive values rotate clockwise; negative values rotate counter-clockwise.	Objects, fixtures, and layers
Scale		Objects and layers
Scale X/Y/Z	Sets the scale of the object in its local X-/Y-/Z-axis coordinate direction	Objects and layers
XForm	Moves, rotates, and scales selected items in the scene, or all items in the selected layer. See DMX transforms for more information. Fixtures cannot be scaled by DMX transform.	Objects, fixtures, and layers
Material		Objects
Color	Displays the RGB color assigned to the object	Objects

Parameter	Description	Availability
Texture	Displays the image file, video file, or video input assigned to the object. Click the button next to the texture field to select a file. Click **X** to remove the file. For more information on adding video to textures, see Assigning textures.	Objects
Use Alpha Channel	Uses the alpha channel from the **Texture** as the rendering mask	Objects
Texture Scale	Sets the texture size on an object. For example, a scale value of 2 doubles the size of the texture.	Objects
Texture Offset H/V	Shifts the start location of the texture horizontally or vertically	Objects
Brightness	Controls the brightness of the texture by adjusting the comparative luminance of each pixel in the texture image; this is useful for video screens	Objects
Specular Texture	Uses a color image to control the color and intensity of the object's reflectivity, depending on the amount of surface detail and the **Specular Power**. Click the button next to the texture field to select a texture image file. Click **X** to remove the file.	Objects
Specular Power	Controls the sharpness of the object's highlights and environment reflections. Lower values create blurry reflections (good for carpet), while higher values create sharper reflections (good for metal).	Objects
Normal Texture	Uses a color image to simulate the lighting of small surface irregularities. RGB colors on the object surface correspond to XYZ values, indicating the direction that light reflects off the object. Click the button next to the texture field to select a texture image file. Click **X** to remove the file. Vision uses tangent space normal maps.	Objects
Bump Texture	Uses a grayscale image to simulate surface contours, such as brick work, for an embossed appearance. Bump textures can provide a greater sense of depth than normal textures, but performance may decrease. Click the button next to the texture field to select a texture image file. Click **X** to remove the file.	Objects
Alpha Texture	Uses an image mask to simulate surface transparency or opacity. White areas appear opaque and black areas appear transparent. Click the button next to the texture field to select a texture image file. Click **X** to remove the file.	Objects
Force Emissive Mesh	Makes a texture image glow even when the ambient lighting is low. This is a good setting for video screens and LED tape.	Objects
Emissive		Objects

Parameter	Description	Availability
Fixture Type	Converts geometry into a DMX-controlled emissive fixture, such as a glowing sphere. The brightness of RGB colors is controlled by separate channels.	Objects
Fixture Candela	Sets the maximum output of the emissive fixture, controlling how brightly it glows	Objects
Fixture Universe	Displays the universe assigned to the emissive fixture	Objects
Fixture Channel	Displays the DMX channel assigned to the emissive fixture	Objects
Lighting		Fixtures
Candela	Sets the maximum output of the lamp in the fixture. Increase the value to make both the beam and the surface lights brighter. Perceived brightness also depends on the beam and field angles of the fixture, the dimmer, and other components of the light train.	Fixtures
Color Temperature	Sets the temperature of emitted light. At 6000K, the light appears white. Larger values make the light appear cooler (blue), and smaller values make the light appear warmer (amber).	Fixtures
Force Emissive	Converts the fixture to an emissive; the lens glows, but the fixture does not emit beams, create surface lights, or cast shadows. This is a good setting for blinders, LED fixtures, and performance-intensive multi-part fixtures. Emissive fixtures can significantly improve performance.	Fixtures
Beam Multiplier	Multiplies the brightness of the beam without affecting surface lights. This is not a real-world fix; adjust the beam by other parameters if possible.	Fixtures
Gobo Wheels	Select a gobo image for the fixture to project. Click the button next to the slot number to select the image file for the slot. Click **X** to remove the file.	Fixtures
Color Wheels	Select a color for each slot in the fixture's color wheel. Click the button next to the color definition. The Color Picker dialog box opens. Color libraries from common manufacturers are listed in the **Number** column. Expand the list by clicking the disclosure arrows. Select a standard color from a manufacturer, or choose a color from the color picker. The Preview displays the selected color. The **Hue**, **Saturation**, and **Luminance** values, as well as the **Red**, **Green**, and **Blue** values, display.	Fixtures
MVR		Objects, fixtures, and layers (MVR only)

Parameter	Description	Availability
UUID	Displays the item's unique ID for tracking by MVR; see Merging files	Objects, fixtures, and layers (MVR only)
Invert Pan	Inverts the fixture's pan	Fixtures
Invert Tilt	Inverts the fixture's tilt	Fixtures

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Editing the scene
Preferences
DMX transforms
Focusing conventional fixtures

DMX transforms

Use DMX transforms to scale, rotate, and move selected items in the scene. Scaling and movement operations are independent from the object's rotation. Scaling does not apply to fixtures.

To transform multiple selections at once, you can group them in a layer; see Organizing the scene contents. When a layer is transformed, all items contained in that layer are transformed accordingly. A transformed fixture's pan and tilt are relative to the transformed position.

> To significantly improve performance for DMX transforms, disable shadows from the Document preferences: Rendering tab. If shadows are needed, set the **Texture Quality** below Medium and set **Dynamic Shadows** to None from the Vision preferences: Graphics tab; shadows will be disabled only for transformed objects.

To scale objects by DMX input:

1. Select one or more objects.

   Alternatively, select a layer in the Scene Graph palette that contains all of the objects to transform. Fixtures cannot be scaled.

2. In the Properties palette, expand the **XForm** heading to access the parameters.
3. Set the **XForm Universe** to specify the universe.
4. Set the **XForm Channel** to specify the DMX address.
5. Enter the **XForm Scale** values to specify the scale factors. Scaling is not affected by the object's rotation.

   - **Scale X** sets the object's X-axis scale.
   - **Scale Y** sets the object's Y-axis scale.
   - **Scale Z** sets the object's Z-axis scale.

6. Set the DMX profile for scaling.

Channel	Coarse/Fine	Purpose	%: Function
10	Coarse	XForm Scale X	0–100
11	Fine		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Channel	Coarse/Fine	Purpose	%: Function
12	Coarse	XForm Scale Y	0–100
13	Fine		
14	Coarse	XForm Scale Z	0–100
15	Fine		

To rotate items by DMX input:

1. Select one or more fixtures or objects.

   Alternatively, select a layer in the Scene Graph palette that contains all of the items to transform.
2. In the Properties palette, expand the **XForm** heading to access the parameters.
3. Set the **XForm Universe** to specify the universe.
4. Set the **XForm Channel** to specify the DMX address.
5. Select the **Rotation Axis**, or select **None**.
6. Enter the **Rotation Delta** to set the maximum angle of index rotation.
7. Enter the **Rotation Rpm** to set the maximum speed of continuous rotation.
8. Set the DMX profile for the rotation.

Channel	Coarse/Fine	Purpose	%: Function
7	Coarse	XForm Rotation (Index)	0–100: Rotation
8	Fine		
7	Coarse	XForm Rotation (Continuous)	• 0–0: No rotation • 48–1: Clockwise rotation • 49–51: No rotation • 52–99: Counter-clockwise rotation • 100–100: No rotation
8	Fine		
9		XForm Rotation Control	• 0–20: Index rotation • 21–40: Continuous rotation • 41–100: Reserved

There are three “dead zones” where no rotation occurs in the Continuous Rotation channel: 0%, 49–51%, and 100%. The rotation is clockwise at 48–1% (where the effect increases as DMX value decreases) and counter-clockwise at 52–99%.

Rotation occurs around the local origin, not the world origin.

To move items by DMX input:

1. Select one or more fixtures or objects.

   Alternatively, select a layer in the Scene Graph palette that contains all of the items to transform.
2. In the Properties palette, expand the **XForm** heading to access the parameters.
3. Set the **XForm Universe** to specify the universe.

4. Set the **XForm Channel** to specify the DMX address.
5. Enter the **XForm Delta** values (in inches) to specify the direction and magnitude of movement. The movement is not affected by the item's rotation. The direction is relative to the item's local coordinate space.

   - **Delta X** controls the range of lateral movement.
   - **Delta Y** controls the range of upward/downward movement.
   - **Delta Z** controls the range of forward/backward movement.

   The **Position X/Y/Z** values in the Properties palette determine the selected items' starting position.
6. Set the DMX profile for the desired movement.

Channel	Coarse/Fine	Purpose	%: Function
1	Coarse	XForm Delta X	0–100: X axis movement
2	Fine		
3	Coarse	XForm Delta Y	0–100: Y axis movement
4	Fine		
5	Coarse	XForm Delta Z	0–100: Z axis movement
6	Fine		

50% indicates the center of the range of movement.

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Editing the scene
Preferences
Modifying scene objects and fixtures

Assigning textures

Textures can display images or video from a file, or live streams from a video input.

In Vectorworks, the Vision video source can be specified with the **Spotlight > Visualization > Select Vision Video Source** command, or from the properties of a video screen. In the Vectorworks online help system, see "Identifying a Video Source for the Vision Program" for more information.

Assigning image or video files

To assign an image or video file to a texture:

1. Select one or more objects, and then click the button next to the **Texture** field on the Properties palette.
2. Navigate to the image or video file and select it.

   The content displays on the selected objects. If a video file is selected, the video plays immediately and loops indefinitely.

To remove the texture file, click **X** next to the **Texture** field.
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Assigning video inputs

Textures can display different types of video input, including capture cards and Network Device Interface (NDI) protocol.

> The number of NDI inputs that can display in the scene depends on your Vision license. If more inputs are assigned than your license allows, the associated textures are rendered as black.

The Scene window status bar indicates the status of certain input types, such as the status of all NDI inputs that are assigned to textures.

- None: No video inputs of this type are assigned.
- Good: All assigned video inputs are available.
- Partial: Some of the assigned video inputs are unavailable.
- Bad: No assigned video inputs are available.

For these types of video input, the status of individual inputs is indicated in the Select Video Input dialog box.

To assign a video input to a texture:

1. With one or more objects selected, do one of the following:
   - Right-click in the viewport and select **Assign Video Input** from the context menu. From the Assign Video Input dialog box, specify a name for the texture. If the specified texture already has an assigned video input, the video displays on the selected objects. If a new name is entered, proceed to step 2.
   - Click the button next to the **Texture** field on the Properties palette. Navigate to textures\App within the Vision folder, and select a capture file. Ten .cap files are provided, and more can be created as needed. If the .cap file already has an assigned video input, the video displays on the selected objects. If the .cap file is unused, proceed to step 2.
2. The Select Video Input dialog box opens. All scene objects with the selected texture display a checkerboard pattern for identification. Proceed to step 5 if not cropping the video input.

Click to show/hide the parameters.

Parameter	Description
Video input list	Lists all available video inputs with a prefix indicating the type. The status is displayed for certain types, such as NDI. • Good: The video input is available. • Bad: The video input is unavailable. The status icon updates automatically when the status changes.
Crop Selected Video Input	Crops the video input for display. Different portions of the same input can display on different objects, creating a split-screen effect.
Delete Selected Crop Video Input	Removes the selected video input from the list
Preview	Displays a preview of the selected video input and its resolution

Parameter	Description
Options	Options display for certain types of input. You can set the bandwidth for NDI inputs. For best performance, select **Low Bandwidth**.

3. Select **Crop Selected Video Input** to define the area of the video input that displays.

   The Crop Selected Video Input dialog box opens.

4. Either enter the right, left, top, and bottom coordinates of the desired area, or use the handles on the preview to position the video. Click **OK** to return to the Select Video Input dialog box.

   The video crop displays, and shows its coordinates, in the list of available inputs.

5. Select a video input, and click **OK**.

   The video displays on the selected objects.

To remove the assigned texture, click **X** next to the **Texture** field.

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Editing the scene
Preferences
Modifying video inputs
Resetting video inputs
Managing assigned video inputs

Modifying video inputs

Command	Path
Modify Video Input	Viewport context menu

Certain types of video input have options for their modification.

To modify a video input:

1. Select an object with the texture input to modify, and select the command.

   The Modify Video Input dialog box opens.

Click to show/hide the parameters.

Parameter	Description
Preview	Displays a preview of the video input and its resolution
Low/High Bandwidth (NDI only)	Sets the video bandwidth. Select **Low Bandwidth** for best performance.

2. Select the desired options.

   All objects with the selected texture display the modified input.

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Editing the scene
Assigning textures
Resetting video inputs

Managing assigned video inputs

Resetting video inputs

You can reset one or more video inputs, to change the inputs assigned to textures.

Resetting a single video input

Command	Path
Reset Video Input	Viewport context menu

To reset a video input:

1. Select an object with the texture input to change, and select the command. All objects with the selected texture display a checkerboard pattern for identification.

   The Select Video Input dialog box opens.

2. Select a video input for the specified texture, as described in Assigning video inputs.

   All objects with the selected texture display the new input.

Resetting multiple video inputs

Command	Path
Reset Video Inputs	Render

To reset one or more video inputs:

1. Select the command.

   An alert indicates the status of video inputs in the file. If all inputs are available, click **OK**. If some inputs are faulty, address the issues as described in Managing assigned video inputs.

   The Select Video Input Texture dialog box opens, listing the textures in use.

2. Select a texture to change; **Preview** displays the assigned video input. All scene objects with the selected texture display a checkerboard pattern for identification.

3. Click **Reset**.

   The Select Video Input dialog box opens.

4. Select a video input for the specified texture, as described in Assigning video inputs.

   All objects with the selected texture display the new input.

5. You are prompted to reset more video inputs. Click **Yes** to continue changing inputs, or click **No** to stop.

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Managing assigned video inputs

Video input assignments and crops are saved with the scene file. As described in Assigning video inputs, the Scene window status bar displays the current status of certain input types. If any assigned inputs are unavailable when the file is opened, a diagnostic alert indicates the faulty inputs. Vision will continue searching for these inputs while the alert is open.

If assigned inputs are unavailable, do one of the following:

- Fix the connectivity issues: As faulty inputs are fixed, their status updates automatically in the diagnostic alert, which closes when all inputs are found. Click **OK** in the success alert.
- Assign a different video input: Click **Cancel** in the diagnostic alert. The Select Video Input dialog box opens to specify new inputs for the associated textures; see Assigning video inputs.
- Work without video inputs: Click **Cancel** in the diagnostic alert, and then click **Cancel** in the Select Video Input dialog box. The textures that are associated with unavailable inputs are rendered as black. If you choose to work without video inputs, the saved inputs can be restored mid-session.

  Capture cards must be plugged in when Vision is launched.

To restore assigned video inputs:

1. Select **Render > Restore Video Inputs**.
2. An alert displays the status of video inputs in the file.
   - If faulty inputs remain, they are indicated for troubleshooting. Fix the connectivity issues.
   - When all assigned inputs are available, click **OK**; the inputs automatically display on the associated textures.

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Rendering video with Disguise EVO

Vision can integrate with Disguise EVO® for synchronized visualization of lighting and video. The integration uses DMX-controlled cameras and an exchange of NDI streams to sync the two programs. This allows Disguise to render video for Vision and control its camera movement.

To enable the integration with Disguise:

Activate and patch the Disguise camera as described in DMX control of the Disguise camera. Vision turns off the video rendering and outputs a live stream of the viewport for Disguise to receive.

To disable the integration with Disguise:

1. Deselect **Disguise Camera** in the DMX controls dialog box.
2. Click **Yes** when prompted to stop sending a live NDI stream of Vision and to turn on video rendering.
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Video rendering is turned on in Vision. Disguise no longer renders the video.

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Using DMX controls
Setting document preferences

Modifying scene objects and fixtures

Selecting geometry

Tool	Tool set	Shortcut
Select 	Select	X

The **Select** tool selects an object or fixture in the Scene window. The selected item is also selected in the Scene Graph palette, and its parameters display in the Properties palette.

If nothing is selected in the Scene window, the ROOT layer is selected in the Scene Graph palette, and the global scene parameters are displayed.

To select an object or fixture:

1. Click the tool.
2. Click an item in the Scene window. A bounding box displays around the selected item. If a fixture is selected, it outputs light.

   Alternatively, select one or more items from the Scene Graph palette.

Multiple objects and fixtures can be selected by pressing the Ctrl (Windows) or Cmd (Mac) key while clicking on items in the Scene window.

Moving geometry

There are several ways to move objects and fixtures in the scene. The **Move object** tool is best for approximate movements. For exact movements, do one of the following:

- To move a single item—or multiple items of the same type—to a specific coordinate position, enter the **Position X/Y/Z** value in the Properties palette.
- To move items of any type by an exact distance, use the **Move 3D** command to move the items along the selected axis.
- To move items by DMX input, see DMX transforms.

Moving geometry by dragging

Tool	Tool set
Move object 	Modify Object
~~~~~~~~~~~~~~~~~~~~~~~~~~

To move objects and fixtures by dragging:

1. Click the tool.
2. Click one or more items in the Scene window and drag them to the desired location.

Moving geometry by command

Command	Path	Shortcut
Move 3D	Edit	• Ctrl+M (Windows) • Cmd+M (Mac)

Use the **Move 3D** command to move an object or fixture relative to its current position. You can also move multiple items by the same distance value. For example, select trusses with different trim heights and raise them all by 12 inches.

To move objects and fixtures by a specified distance:

1. Select the items to move.
2. Select the command.

   The Move 3D dialog box opens.

Click to show/hide the parameters.

Parameter	Description
X/Y/Z Axis	Select the axis of movement
Distance	Specify the distance to move (in inches)

The selected items move accordingly.

Rotating geometry

There are several ways to rotate objects and fixtures in the scene. The **Rotate object** tool is best for approximate rotations. For exact rotations, do one of the following:

- To rotate a single item—or multiple items of the same type—to a specific angle, enter the **Rotation X/Y/Z** value in the Properties palette.
- To rotate items of any type by a specified number of degrees, use the **Rotate 3D** command to rotate the items along the selected axis.
- To rotate items by DMX input, see DMX transforms.

Rotating geometry by dragging

Tool	Tool set
Rotate object 	Modify Object

To rotate objects and fixtures by dragging:

1. Click the tool.
2. Click one or more items in the Scene window and change their rotation angle by dragging with the mouse.

Rotating geometry by command

Command	Path
Rotate 3D	Edit

Use the **Rotate 3D** command to rotate an object or fixture relative to its current orientation. You can also rotate multiple items by the same degree value. For example, to flip a selection of fixtures, adjust the rotation by 180 degrees.

To rotate objects and fixtures by a specified number of degrees:

1. Select the items to rotate.
2. Select the command.

   The Rotate 3D dialog box opens.

Click to show/hide the parameters.

Parameter	Description
X/Y/Z Axis	Select the axis of rotation
Rotation Angle	Specify the angle of rotation

The selected items are rotated accordingly.

Resizing geometry

Tool	Tool set
Scale object 	Modify Object

The **Scale object** tool changes the scale of an object or fixture in the Scene window.

To resize an object or fixture:

1. Click the tool.
2. Click on the item in the Scene window and change its scale up or down by dragging with the mouse.

   Alternatively, change the scale of the selected item from the Properties palette.

Adding fixtures

Tool	Tool set
Add Instrument 	Modify Scene

New fixtures can be added to the scene with the **Add Instrument** tool.

You can use this method to add Vision fixtures, not GDTF fixtures.

To add an instrument to the scene:

1. Click the tool.

   The Add Instrument Tool dialog box opens.

2. Select the instrument to add.

Click to show/hide the parameters.

Parameter	Description
Instrument list	Select an instrument for insertion. The available instruments can be listed in different ways; click the disclosure arrow to expand the list. • All: Lists all instruments alphabetically by instrument name. • Manufacturer: Lists all instruments alphabetically by manufacturer name. • Type: Lists all instruments alphabetically by type.
Search	Enter a search term, and click **Search**. Only instruments that contain the search term display in the instrument list; click the disclosure arrow to expand the list.
Universe	Enter the DMX universe number assigned to the instrument
Channel	Enter the DMX channel number assigned to the instrument
Trim Height	Specify the height of the instrument above the zero plane

Adding objects

Tool	Tool set
Add Object 	Modify Scene

New objects can be added to the scene with the **Add Object** tool.

To add an object to the scene:

1. Click the tool.

   The Add Object Tool dialog box opens.

2. Select the object to add.

Click to show/hide the parameters.

Parameter	Description
Object list	Select an object for insertion. The available objects are listed alphabetically by category; click the disclosure arrow to expand the list.
Filter	Enter a search term, and click **Search**. The Search Results list displays objects that contain the search term.
Trim Height	Specify the height of the object above the zero plane
Rotation	Specify the rotation angle of the object

The Modify Scene tool set contains additional tools to insert simple primitive objects into the scene, such as spheres or lines.

To insert a simple object into the scene:

1. Click the **Draw Sphere, Draw Box, Draw Cylinder, Draw Line**, or **Draw Point** tool.
2. Click in the Scene window. Drag the mouse to draw the object, and release the mouse when the object is at the desired scale. Lines are drawn by clicking, dragging, and clicking again to finish the line.

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Vision basics
Editing the scene

Deleting scene objects and fixtures

Command	Path
• Delete Selected Fixtures • Delete Selected	Context menu

There are multiple ways to delete objects and fixtures from the scene.

To delete items from the scene:

1. Do one of the following:
   - From the Scene Graph palette, select the object or fixture to delete. Multiple items can be selected by selecting a layer, or by pressing the Shift key or the Ctrl (Windows) or Cmd (Mac) key while clicking on the items.
   - From the Scene window, select the object or fixture to delete. Multiple items can be selected by pressing the Ctrl (Windows) or Cmd (Mac) key while clicking on the items.

   Selected items are highlighted in the scene.
2. Select the appropriate command. The options depend on the items selected.
   - To delete only the selected fixtures, select **Delete Selected Fixtures**.
   - To delete all selected items, select **Delete Selected**.

     If several items are selected, and only the fixtures should be deleted, select **Delete Selected Fixtures**.
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The items are deleted from the scene.

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Editing the scene
Modifying scene objects and fixtures
Replacing fixtures

Replacing fixtures

Command	Path
Replace Selected Fixtures	Context menu

There are multiple ways to replace fixtures in the scene.

You cannot replace a Vision fixture with a GDTF fixture, or replace a GDTF fixture with a Vision fixture. To edit GDTF fixtures, see Updating GDTF fixtures.

To replace a fixture:

1. Do one of the following:
   - From the Scene Graph palette, select the fixture to replace. Multiple fixtures can be selected by selecting a layer, or by pressing the Shift key or Ctrl key (Windows) or the Cmd key (Mac) while clicking on the fixtures.
   - From the Scene window, select the fixture to replace. Multiple fixtures can be selected by pressing the Ctrl key (Windows) or Cmd key (Mac) while clicking on the fixtures.

   Selected fixtures are highlighted in the scene.
2. Select the command.

   The Replace Instruments dialog box opens.
3. Select the replacement fixture.

Click to show/hide the parameters.

Parameter	Description
Instrument list	Select an instrument to use as the replacement. The available instruments can be listed in different ways; click the disclosure arrow to expand the list. • All: Lists all instruments alphabetically by instrument name. • Manufacturer: Lists all instruments alphabetically by manufacturer name. • Type: Lists all instruments alphabetically by type.
Search	Enter a search term, and click **Search**. Only instruments that contain the search term display in the instrument list; click a disclosure arrow to expand the list.

The original fixtures are replaced in the Scene Graph palette and the scene. The replacement fixtures have the same name, universe, channel, position, and rotation as the original fixtures. If the original and replacement are both conventional fixtures, the manual pan and tilt are maintained.

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Modifying scene objects and fixtures
Focusing conventional fixtures

Updating GDTF fixtures

Command	Path
Update Fixture Type	Context menu

You can modify GDTF fixtures in the scene by opening the GDTF Fixture Builder directly from Vision. Internet access is required. When saving a fixture in the Fixture Builder, the associated .gdtf file is updated, along with each instance of that fixture type in the scene. This is a local update to the scene file; it does not affect the fixture on the GDTF Share. The .gdtf file is saved with the .v3s file.

To update a GDTF fixture:

1. Select the fixture in the Scene window, and select the command. The associated .gdtf file opens in the Fixture Builder while Vision stays open in the background.

   If the GDTF fixture is not properly configured, a list of errors displays. See the GDTF Help for more information about creating a valid fixture.

2. Edit the fixture in the Fixture Builder. Only the DMX Mode name cannot be changed.
3. When the edits are complete, click **Save** to save the updated fixture.
4. An alert opens, confirming that you want to update all fixtures of this type in the scene. Click **OK** to update the .gdtf file and all associated fixtures, and to close the Fixture Builder.

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Data exchange for previsualization
Import options
Editing the scene
Modifying scene objects and fixtures
Focusing conventional fixtures

Focusing conventional fixtures

Command	Path
Focus Selected Lights Here	Context menu

A conventional fixture is a non-moving fixture. If the conventional fixtures are focused in Vectorworks prior to import, they are automatically focused in Vision. Otherwise, these lights need to be manually adjusted so they point to the desired location.

> By default, all unfocused conventional fixtures point down in the hung position and point up in the floor-mounted position.

To focus one or more conventional fixtures:

1. Select the fixture(s) to focus. The selected fixtures automatically output light in the Scene window.
2. Right-click on the desired location in the scene, and select the command.

   Alternatively, use the arrow keys to pan and tilt the selected fixtures to achieve the desired focus.
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The selected fixtures are focused to the location.

When several conventional fixtures are selected, each fixture in the selection can be focused independently. Cycle through the selected fixtures to focus them one at a time.

To focus selected conventional fixtures one at a time:

1. Select the fixtures to focus. The selected fixtures automatically output light in the Scene window.
2. Use the Page Up/Page Down keys to traverse the selected fixtures, based on their order in the Scene Graph palette.

   Press the Page Down key to focus the first selected fixture and to cycle down the list. Press the Page Up key to focus the last selected fixture and to cycle up the list.

   The fixture to focus displays its normal light beams, while the other fixtures emit blue light.
3. Use the arrow keys to pan and tilt the highlighted fixture to achieve the desired focus.
4. Continue pressing the Page Up or the Page Down key to traverse the selected fixtures. Use the arrow keys to focus each fixture as needed.

   When the cycle is complete, all selected fixtures display their normal light beams.

Cycle through the selected conventional fixtures to focus them one at a time; the fixture to focus is highlighted

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Editing the scene
Preferences
The Software Console palette

The Software Console palette

Command	Path	Shortcut
Software Console	Window	• Ctrl+Shift+S (Windows) • Cmd+Shift+S (Mac)
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Additional properties of conventional (non-moving) fixtures, such as gobo, iris, focus, and shutters, can be adjusted from the Software Console palette. If the conventional fixtures are imported from Vectorworks, some parameters, such as shutters and barn doors, are already set.

To open the Software Console palette:

Select the command.

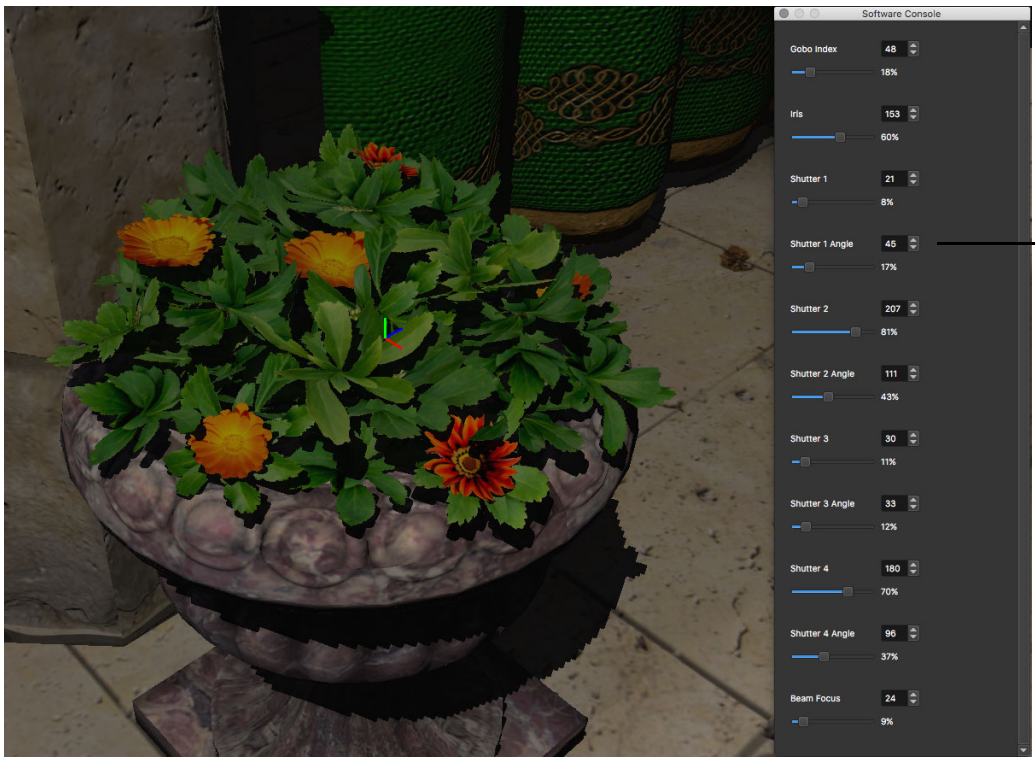
To adjust the properties of a conventional fixture from the Software Console palette:

1. Select a conventional fixture from the Scene Graph palette.

   When selected, the fixture automatically outputs light in the Scene window.

2. In the Software Console palette, adjust the sliders, or enter a value, to change the parameter settings. The available parameters depend on the type of conventional fixture selected.

   The Scene window displays the result of the adjustment in real time.



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Editing the scene
Preferences

Saving the scene as an image

Command	Path
Render Still	Render

Vision allows you to create still images of the Scene window displaying the current lighting status. When the Scene window displays four viewports, the bottom right viewport is used to create the image. Still images
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are saved in .jpg format. Specify the image render settings, and optionally save them as a preset. For more information on saving and managing the Render Still presets, see Using saved sets.

To save the Scene window as a still image:

1. Properly configure the scene and create the desired lighting look.
2. Select the command.

   The Render Still dialog box opens.

Click to show/hide the parameters.

Parameter	Description
Settings Preset	Select a set of image render settings, or select <Active Settings>
Customize	Opens the Vision Preferences dialog box to specify and save the image render settings
Resolution	Select the image resolution in pixels, or select Custom Print Size
Print Size	For printing purposes, displays the custom **width** and **height** in inches and the **dpi**
Output Filename	Displays the image file name and location

3. Select a set of image render settings from the **Settings Preset** list, or select <Active Settings> to use the settings currently specified in the Vision Preferences dialog box.
4. Click **Customize** to specify the image render settings.

   The Vision Preferences dialog box opens, but only the Graphics tab is available. The top portion of the dialog box offers options for saving and managing presets. The Graphics tab displays the rendering parameters. Set the parameters as desired.

Click to show/hide the parameters.

Parameter	Description
Graphics	Many of the same parameters display when setting the Vision application preferences; see Vision preferences: Graphics tab for parameter descriptions
Render Buffer Size	To help achieve the desired resolution, select a size that is smaller than the **Resolution** in the Render Still dialog box. Smaller sizes increase the render time, but also make it possible to render high-resolution images.

5. Do one of the following:
   - To save the currently specified settings as a preset, see Using saved sets.
   - To use the currently specified settings without saving them as a preset, click **OK**.
6. From the Render Still dialog box, select the image **Resolution**. If the image will be printed, set the **dpi**.

For finer control of the print size, set the **Resolution** to Custom Print Size and specify the **Print Size** dimensions.

7. Click the button next to the **Output Filename** field, and set a name and location for the image file.
8. Click **Render** to save the image.

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Saving the scene as a movie

Command	Path
Render Movie	Render

Vision allows you to render the current scene and save it as a video file in .mpg format. To create a video, the scene must have an associated DMX file. Specify the movie render settings, and optionally save them as a preset. For more information on saving and managing the Render Movie presets, see Using saved sets.

If video screens or geometry are displaying video from a file or capture source within the scene, the video playback is not synchronized to the exported video.

To save the Scene window as a video file:

1. Open the scene file to use for the video.
2. Select the command.

   The Render Movie dialog box opens.

Click to show/hide the parameters.

Parameter	Description
Settings Preset	Select a set of movie render settings, or select <Active Settings>
Customize	Opens the Vision Preferences dialog box to specify the movie render settings
Resolution	Select the video resolution in pixels
Frame Rate	Specify the frame rate in frames per second (fps)
DMX Recording	Displays the DMX recording to use for the video
DMX Start Time	Specify when to start the video in the DMX recording
DMX End Time	Specify when to end the video in the DMX recording
Output Filename	Displays the video file name and location

3. Select a set of movie render settings from the **Settings Preset** list, or select <Active Settings> to use the settings currently specified in the Vision Preferences dialog box.
4. Click **Customize** to specify the movie render settings.
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The Vision Preferences dialog box opens, but only the Graphics tab is available. The top portion of the dialog box offers options for saving and managing presets. The Graphics tab displays the rendering parameters. Set the parameters as desired.

Click to show/hide the parameters.

Parameter	Description
Graphics	Many of the same parameters display when setting the Vision application preferences; see Vision preferences: Graphics tab for parameter descriptions
Render Buffer Size	To help achieve the desired resolution, select a size that is smaller than the **Resolution** in the Render Movie dialog box. Smaller sizes increase the render time, but also make it possible to render high-resolution videos.

5. Do one of the following:
   - To save the current settings as a preset, see Using saved sets.
   - To use the current settings without saving them as a preset, click **OK**.
6. From the Render Movie dialog box, select the video **Resolution**.
7. Set the video **Frame Rate**.
8. Click the button next to the **DMX Recording** field, and select the DMX file to use for the video.
9. Set the **DMX Start Time** and the **DMX End Time**.
10. Click the button next to the **Output Filename** field, and set a name and location for the video file.
11. Click **Render** to save the video.

    The progress bar displays while the video renders. The actual rendering does not display on the screen.

    To cancel the rendering and save the video file as-is, click **Cancel**. The file is saved in the specified location.

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Editing the scene
Recording and playing DMX files
Saving the scene as an image

Patching

Command	Path	Shortcut
Patch	Window	• Ctrl+Shift+P (Windows) • Cmd+Shift+P (Mac)

Use the Patch dialog box to view and edit the DMX address of the following scene items:

- Fixtures
- RGB mesh objects
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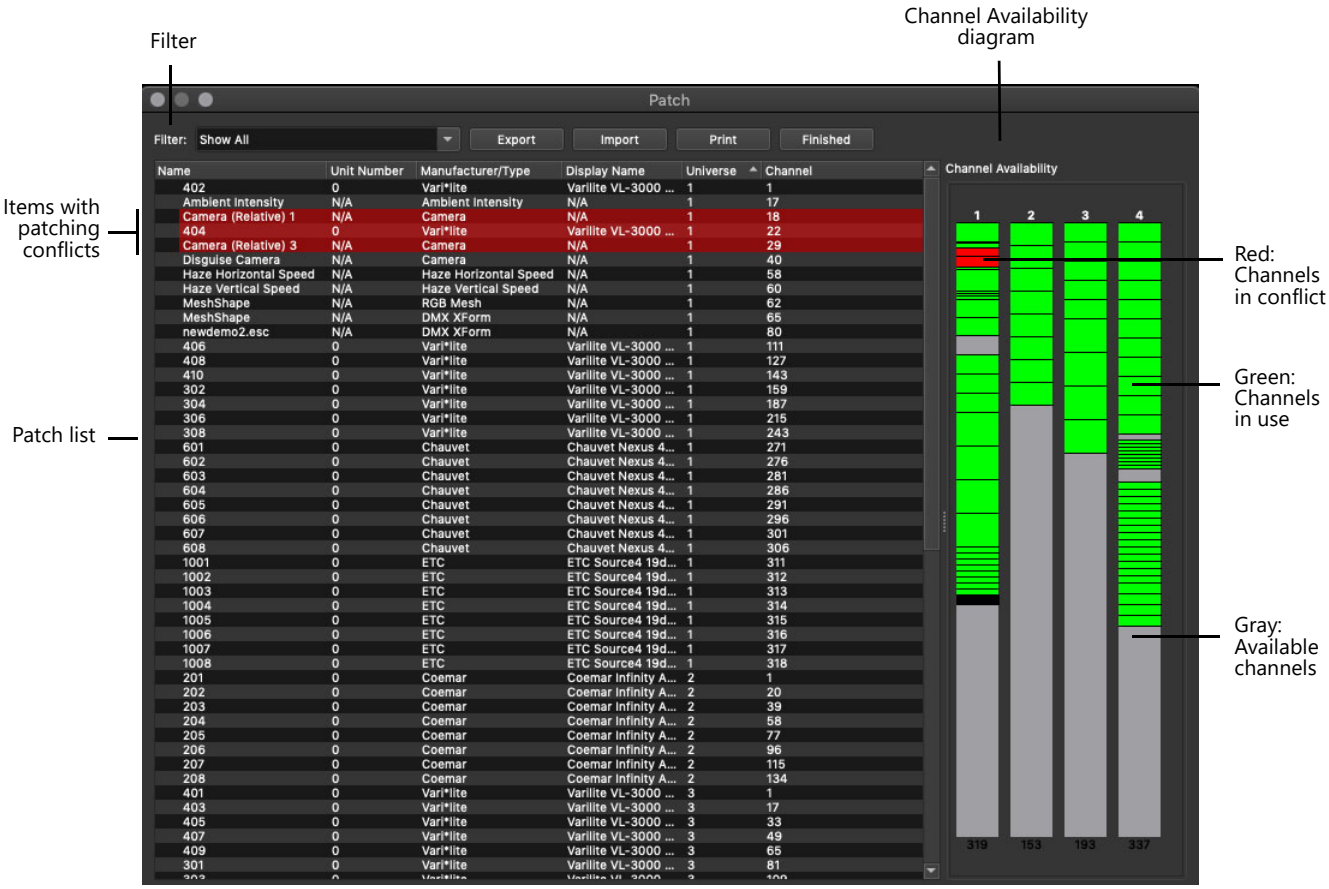
- Layers with DMX transforms
- DMX-controlled cameras
- DMX-controlled ambient intensities
- DMX-controlled haze vertical/horizontal speeds

The address of a single item can be edited directly from the Patch list. To edit the patching of multiple items, use context menu commands to set the universe, to patch items sequentially, and to resolve conflicts (see Assigning patch information). In addition to DMX patching, you can sort and filter the Patch list to view the desired data, and export, import, and print patching data.



To open the Patch dialog box:

Select the command.

Click to show/hide the parameters.

Parameter	Description
Filter	Filters the scene items by a specified universe, fixture manufacturer, item type, or displayed name. Select Show All to display all of the patchable scene items in the Patch list. The **Filter** field is also a search box. Type some or all of the text for the desired filter and press Enter; the search is case-insensitive.
Export	Exports the patch information for all scene items in comma-separated value (csv) format to a Vision .v3p patch file; specify the file name and location

Parameter	Description
Import	Imports patch information from a Vision .v3p patch file
Print	Saves the patch information as a PDF file
Finished	Closes the Patch dialog box
Patch list	Lists the scene items and their patch information (according to the selected **Filter**), including universe and channel assignment; click on a column heading to sort the list in ascending or descending order
Channel Availability	Displays channel usage per universe. Green areas represent channels in use, and red are in conflict. The number of universes shown depends on the Vision dongle and license.

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Assigning patch information

Properly configured addresses are required for scene items to respond to a DMX lighting console. In the Vision program, all universes and channels start at 1, not 0 (zero).

Fixtures, RGB mesh objects, and DMX transforms can be patched from the Properties palette or the Patch dialog box. DMX-controlled items can be patched from the DMX Controls dialog box or the Patch dialog box.

The Patch dialog box displays all patchable scene items and their address information, sorted and filtered as desired. The channel availability diagram shows channel usage and errors for each universe.

The number of universes depends on the Vision dongle and license.

Setting the address

To quickly change the address of a single item:

1. From the Patch list, double-click on the **Universe** or **Channel** number.
2. Edit the value directly.

To set the universe for a selection of items:

Command	Path
Set Universe	Context menu

1. Select one or more items from the Patch list.
2. Right-click on a selected item and select the command.

   The Set Universe dialog box opens.
3. Specify a universe for the item or items.
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Patching sequentially

Command	Path
Patch Sequentially	Context menu

A selection of items can be assigned to sequential channels in a specified universe.

To patch items sequentially:

1. Select the items from the Patch list.
2. Right-click on a selected item and select the command.

   The Patch Sequentially dialog box opens.
3. Specify a universe for the items, and then set the first channel.

   The selected items are patched sequentially based on the specified start address.

Resolving conflicts

Command	Path
Resolve Conflicts	Context menu

When there is a conflict due to overlapping or duplicated addresses, they display with a red highlight in the Patch list and the Channel Availability diagram. Conflicts can be resolved automatically.

To resolve conflicts:

1. Select the items with a conflict from the Patch list.
2. Right-click on a selected item and select the command.

   If space is available in the universe, an appropriate DMX address is assigned to the items, resolving the conflicts.

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Patching
Viewing received DMX
Using DMX controls

Viewing received DMX

Command	Path
DMX Viewer	DMX

When a lighting console is connected, you can view the incoming DMX information from the console.

To view the DMX information:

1. Select the command.

   The DMX Provider dialog box opens.
2. Specify the protocol to connect to the lighting console, and click **OK**.
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The DMX Viewer opens. This is a separate dialog box that opens along with Vision, and it can remain open while Vision is in use.

3. For each selected **Universe**, the current DMX information sent from the console displays. The **Display Type** can be toggled between Decimal and Percentage.
4. Click **X** to close the DMX Viewer.

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Patching
Assigning patch information
Using DMX controls

Using DMX controls

Vision uses DMX to allow a lighting console, or a program such as Disguise EVO, to control specific features of the application. These features include:

- Cameras that control the viewport view
- Ambient lighting intensity
- Haze speed in vertical and horizontal directions

When these features are properly patched, the lighting console or the Disguise program can sync with Vision and control the features with DMX.

Three camera types can be externally controlled. The cameras have different behavior, as described in the following sections:

- Relative camera: DMX control of the Relative camera
- Absolute camera: DMX control of the Absolute camera
- Disguise camera: DMX control of the Disguise camera

The DMX information follows the Last Takes Precedence (LTP) priority; the latest information sent takes priority. The patching is saved in the .v3s file.

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Patching
Viewing received DMX
DMX control of the Relative camera
DMX control of the Absolute camera
DMX control of the Disguise camera
DMX control of ambient lighting
DMX control of haze speed

DMX control of the Relative camera

Command	Path	Shortcut
DMX Controls	DMX	• Ctrl+Shift+C (Windows) • Cmd+Shift+C (Mac)

The Relative camera is an orbiting camera that allows unlimited movement within the Vision scene. It uses DMX to control the direction and speed of camera movement. The camera relies on saved views to provide a starting view point. Up to nine saved camera views are available, corresponding to the nine Relative camera items in the DMX Controls dialog box. These virtual views are set up and stored within the .v3s file.

To enable external control of the Vision view with a Relative camera:

1. Select the command.

   The DMX Controls dialog box opens.

2. To activate and control the camera views, select the check box for the **Camera (Relative)** to use and specify the **Universe** and **Channel** number. There are 11 channels per DMX camera.

Channel	Coarse/Fine	Purpose	%: Function
1		Activation	• 0–49: Deactivate camera • 50–100: Activate camera
2	Coarse	Pan Horiz	• 0–0: No pan • 1–48: Pan left • 49–51: No pan • 52–99: Pan right • 100–100: No pan
3	Fine		
4	Coarse	Pan Vert	• 0–0: No pan • 1–48: Pan down • 49–51: No pan • 52–99: Pan up • 100–100: No pan
5	Fine		
6	Coarse	Orbit Horiz	• 0–0: No orbit • 1–48: Orbit left • 49–51: No orbit • 52–99: Orbit right • 100–100: No orbit
7	Fine		
8	Coarse	Orbit Vert	• 0–0: No orbit • 1–48: Orbit up • 49–51: No orbit • 52–99: Orbit down • 100–100: No orbit
9	Fine		
10	Coarse	Zoom	• 0–0: No zoom • 1–48: Zoom in • 49–51: No zoom • 52–99: Zoom out • 100–100: No zoom
11	Fine		

   - 1% = decreasing quickly
   - 50% = no change
   - 99% = increasing quickly

   When Vision is synced with a lighting console, or other integrated program, activating a Relative camera changes the viewport to the selected camera view.

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Using DMX controls
Patching
Assigning patch information
~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Viewing received DMX

DMX control of the Absolute camera

Command	Path	Shortcut
DMX Controls	DMX	• Ctrl+Shift+C (Windows) • Cmd+Shift+C (Mac)

The Absolute camera uses DMX to set the camera position. This camera navigates the Vision scene within a fixed range of movement: -1000 m to 1000 m on any given axis. Unlike the Relative camera, the Absolute camera moves by pan and tilt (or yaw and pitch motion) instead of orbiting. You can control the field of view, and saved views are not required.

> Because the **Disguise camera** uses the same functionality as the **Absolute camera**, they cannot be active at the same time.

To enable external control of the Vision view with an Absolute camera:

1. Select the command.

   The DMX Controls dialog box opens.

2. To activate the camera view, select the check box for **Camera (Absolute)** and specify the **Universe** and **Channel** number.

Channel	Coarse/Fine/Ultra	Purpose	%: Function
1	Coarse	Position X	0–100: -1000m–1000m
2	Fine		
3	Ultra		
4	Coarse	Position Z	0–100: -1000m–1000m
5	Fine		
6	Ultra		
7	Coarse	Position Y	0–100: -1000m–1000m
8	Fine		
9	Ultra		
10	Coarse	Pan	0–100: -720°–720°
11	Fine		
12	Ultra		
13	Coarse	Tilt	0–100: -720°–720°
14	Fine		
15	Ultra		
16	Coarse	Vertical Field of View (FOV)	0–100: 22.5°–225°
17	Fine		
18	Ultra		

When Vision is synced with a lighting console, or other integrated program, the view changes to match the Absolute camera position.

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Using DMX controls
Patching
Assigning patch information
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DMX control of the Disguise camera

Command	Path	Shortcut
DMX Controls	DMX	• Ctrl+Shift+C (Windows) • Cmd+Shift+C (Mac)

Vision uses a DMX-controlled camera to sync with Disguise EVO for media programming. See Rendering video with Disguise EVO for more information on enabling and disabling the Disguise integration. The Disguise camera is a type of Absolute camera, whose behavior is described in DMX control of the Absolute camera.

The **Disguise camera** and the **Absolute camera** cannot be active at the same time.

To enable Disguise to control the Vision view:

1. Select the command.

   The DMX Controls dialog box opens.

2. To activate the Disguise camera, select the check box for **Disguise Camera** and specify the **Universe** and **Channel** number.

Channel	Coarse/Fine/Ultra	Purpose	%: Function
1	Coarse	Position X	0–100: -1000m–1000m
2	Fine		
3	Ultra		
4	Coarse	Position Z	0–100: -1000m–1000m
5	Fine		
6	Ultra		
7	Coarse	Position Y	0–100: -1000m–1000m
8	Fine		
9	Ultra		
10	Coarse	Pan	0–100: -720°–720°
11	Fine		
12	Ultra		
13	Coarse	Tilt	0–100: -720°–720°
14	Fine		
15	Ultra		
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Channel	Coarse/Fine/Ultra	Purpose	%: Function
16	Coarse	Vertical Field of View (FOV)	0–100: 22.5°–225°
17	Fine		
18	Ultra		

3. If the rendering preferences have not already been set for Disguise integration, two alerts open. When prompted, click **Yes** to send a live NDI stream of Vision and to render video screens with Disguise.

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Using DMX controls
Patching
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Viewing received DMX

DMX control of ambient lighting

Command	Path	Shortcut
DMX Controls	DMX	• Ctrl+Shift+C (Windows) • Cmd+Shift+C (Mac)

To use DMX for the ambient intensity:

1. Select the command.

   The DMX Controls dialog box opens.

2. To control the ambient intensity, select the check box for **Ambient Intensity** and specify the **Universe** and **Channel** number.

Channel	Coarse/Fine	Purpose	%: Function
1		Ambient	• 0–0: No ambient • 1–100: Ambient value

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Using DMX controls
Patching
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DMX control of haze speed

Command	Path	Shortcut
DMX Controls	DMX	• Ctrl+Shift+C (Windows) • Cmd+Shift+C (Mac)

To use DMX for the haze speed:

1. Select the command.

The DMX Controls dialog box opens.

2. To control the speed of the haze texture image as it moves in vertical and horizontal directions, select the check box for **Haze Vertical/Horizontal Speed** and specify the **Universe** and **Channel** number.

Channel	Coarse/Fine	Purpose	%: Function
1	Coarse	Haze Vertical Speed	• 0–0: No direction • 1–48: Haze left • 49–51: No direction • 52–99: Haze right • 100–100: No direction
2	Fine		

Channel	Coarse/Fine	Purpose	%: Function
1	Coarse	Haze Horizontal Speed	• 0–0: No direction • 1–48: Haze left • 49–51: No direction • 52–99: Haze right • 100–100: No direction
2	Fine		

Using DMX controls
Patching
Assigning patch information
Viewing received DMX
Recording and playing DMX files

Recording and playing DMX files

The DMX recorder

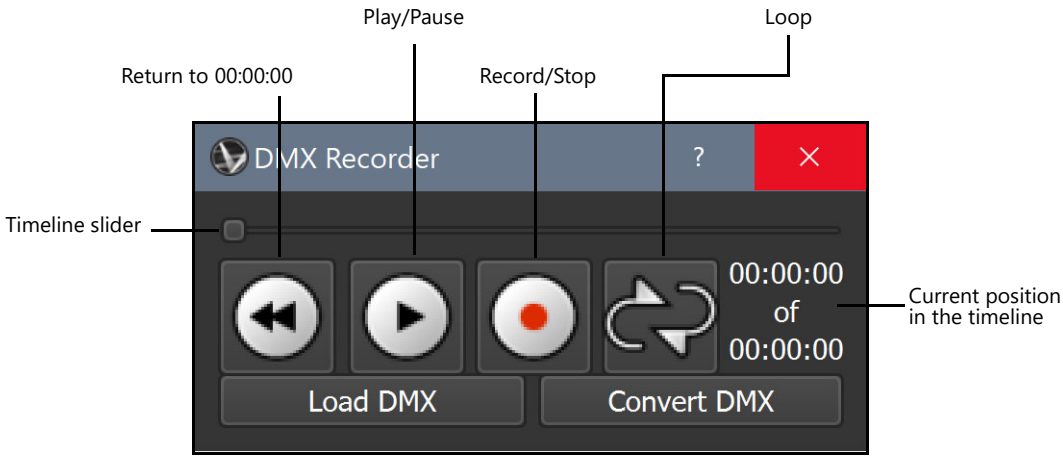
Command	Path	Shortcut
DMX Recorder	Window	• Ctrl+Shift+D (Windows) • Cmd+Shift+D (Mac)

Vision allows real-time recording of the incoming DMX stream. This recorded DMX stream can be used to play back lighting looks and sequences when no controller is connected.

To open the DMX Recorder:

Select the command.

The DMX Recorder is a separate application that opens along with Vision.



Click to show/hide the parameters.

Parameter	Description
Timeline slider	Scrubs the timeline to the desired location; click **Play** to begin viewing the DMX file at that location
Return to 00:00:00	Returns the timeline slider to the start point of the DMX file and stops the play
Play/Pause	Toggles between playing and pausing the DMX file
Record/Stop	Press once to start recording the DMX file, and press again to stop recording and save the file
Loop	When the DMX file ends, loops the playback to the beginning to continuously play the file; press again to stop looping
Load DMX	Opens a DMX file for playback; the DMX file needs to correspond with the fixtures in the current Vision file for correct playback to occur
Convert DMX	Opens a DMX file for conversion from a previous version of Vision

Recording a DMX file

Before recording, ensure that the lighting console is properly connected and that the correct communication protocol has been specified.

To record from a DMX stream:

1. Click **Record** on the DMX Recorder.
2. Send the DMX stream to Vision. All DMX values are recorded as they are received; any subsequent cues or effects played on the lighting console will be recorded.
3. Click **Record** again to stop the recording.

   The Save DMX dialog box opens. Specify a name and location for the .dmx file. The saved DMX file is currently loaded by default and is ready to play, or it can be loaded and played by selecting it with **Load DMX**.

Opening a DMX file

To open (load) a DMX file:

1. Click **Load DMX** on the DMX Recorder.

   The Open DMX dialog box opens.

2. Select the .dmx file to open.

Playing a DMX file

Before playing the currently loaded DMX file, open the corresponding Vision file.

 To play the current DMX file:

1. Click **Play** on the DMX Recorder.
2. The DMX file plays within the Vision application window, replacing the current view in the Scene window.

   To pause the playback, click **Play** again. The Scene window returns to its former display. Click **Play** to resume the playback.

3. At the end of the timeline, playback stops and the Scene window returns to its former display, unless Loop mode is enabled. Looping playback continues until **Loop** is disabled or the playback is paused.

Pausing a DMX file

 To pause the DMX file:

1. Click **Play** on the DMX Recorder.

   The Scene window pauses; the DMX signal input continues, but DMX playback from the file is paused.

2. Click **Play** again. DMX playback from the file resumes in the Scene window.

Looping DMX file playback

 To loop DMX file playback:

1. Click **Loop** on the DMX Recorder.
2. Click **Play**.

   The DMX file begins playback. At the end of the timeline, playback loops back to the beginning and plays continuously until **Loop** is disabled.

Click here for a video tip about this topic (internet access required).

Using the help system

For information about this help system, please navigate to help.vectorworks.net and refer to the section on using the help.

Context-sensitive help

Context-sensitive help is available within the Vision program. To learn more about a feature, do one of the following:

- For a dialog box, click the ? icon on the Title bar.

- For a selected tool or dialog box, press F1.

  On a Mac (aluminum keyboard), press Fn+F1.

- For a tool, a palette, the Scene window, or the NDI status indicator, select **Help > What's This?** Then move the question mark cursor to the feature of interest, and click it.

  To deactivate the "What's This?" question mark cursor, select **Help > What's This?** again.

The relevant help topic is opened. You can simultaneously view the help and the Vision application.

Vision cannot directly access context-sensitive help for some commands. To view help for these items, launch the help system and locate the topic by conducting a search.

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