



Viewpoint

Stream Tuning Studio

User Guide

Version 2.0
June 21, 2001

© 2000-2001 Viewpoint Corporation. All Rights Reserved.

Viewpoint Stream Tuning Studio User Guide

Viewpoint Experience Technology, Viewpoint Stream Tuning Studio, Viewpoint Scene Builder, Viewpoint 3D Photo Studio, and Viewpoint Media Player are registered trademarks or trademarks of Viewpoint Corporation in the United States and in other countries.

Companies, names, and data used in examples herein are fictitious unless otherwise noted. Information in this document is subject to change without notice.

Flash is a registered trademark or trademark of Macromedia Corporation. All other product and company names mentioned herein are the trademarks of their respective owners.

Disclaimer

Except as expressly provided otherwise in an agreement between you and Viewpoint, all information, software, and documentation is provided “as is,” without warranty of any kind. Viewpoint makes no warranties, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose regarding such information, software and documentation. Viewpoint does not warrant, guaranty, or make any representations regarding the use or the results of the software in terms of its correctness, accuracy, reliability, timeliness, suitability or otherwise. The entire risk as to the results of performance of the software is assumed by you.

In no event will Viewpoint be liable for any special, indirect, consequential, punitive, or exemplary damages or the loss of anticipated profits arising from the performance of the software or resulting from the loss of use, data or profits, whether in an action for breach of contract or warranty or tort (including negligence) arising out of or in connection with the information, technology, software and documentation.

The web site and publications may contain technical inaccuracies or typographical errors. Viewpoint assumes no responsibility for and disclaims all liability for any such inaccuracy, error, or omission in the web site and documentation and in any other referenced or linked documentation. Viewpoint may make changes to the information, software, web site, documentation, prices, technical specifications, and product offerings in its sole discretion at any time and without notice.

Author: Carolyn Gronlund

Stream Tuning Studio was developed by Alexei Lebedev and Jack Antipin, with the participation of Vadim Abadjev, Sasha Rukodanov and Nika Shelekhova.

Product Management: Michael Petrov.

Thanks to Anders Vinberg, Vlad Bernstein, Drew Cohan, Andrew Cook, Sree Kotay, Jae Lee, Ales Holecek, Lorraine Wood.

Viewpoint Corporation

498 Seventh Avenue
Suite 1810
New York, NY 10018

Contents

| | |
|---|----|
| Chapter 1: Overview..... | 5 |
| Viewpoint Stream Tuning Studio and Viewpoint Experience Technology (VET)..... | 5 |
| New Features in This Upgrade..... | 5 |
| Minimum System Requirements..... | 5 |
| Required and Recommended Software..... | 6 |
| VET Applications | 6 |
| Other Resources | 6 |
| Chapter 2: Preparing a Scene File for Optimization..... | 7 |
| Create a Scene in Viewpoint Scene Builder..... | 7 |
| To publish .mts and .mtx files from Scene Builder..... | 7 |
| Convert .3ds, .obj, and .ase files to Viewpoint Media Files..... | 8 |
| To convert a .3ds file..... | 8 |
| To convert a Wavefront .obj file..... | 8 |
| To convert an .ase file | 9 |
| Chapter 3: Getting Started With Stream Tuning Studio..... | 10 |
| Install and Start Stream Tuning Studio..... | 10 |
| Uninstall Stream Tuning Studio..... | 10 |
| Walk Through the Stream Tuning Studio Interface..... | 10 |
| Main Window | 10 |
| Toolbar..... | 11 |
| Expanding and Collapsing Tools | 11 |
| Basic Program Functions | 11 |
| Open a Scene..... | 11 |
| Reload a Scene..... | 12 |
| Save a File..... | 12 |
| Left Tool Pad Functions..... | 12 |
| Project Files (formerly MTS Contents)..... | 12 |
| Camera | 13 |
| Modem Simulator | 14 |
| Rendering Options | 14 |
| Dynamic Resolution..... | 15 |
| Show Edges & Creases | 16 |
| Objects | 17 |
| File Info..... | 17 |

| | |
|--|----|
| Right Tool Pad Functions | 18 |
| Animation | 18 |
| Widgets | 18 |
| Edit Material | 19 |
| Colors (formerly Preferences)..... | 19 |
| Image Viewer..... | 20 |
| Resize Textures | 21 |
| Object Statistics | 22 |
| Merge Vertices..... | 22 |
| Adjust Normals | 23 |
| Rotate Texture..... | 24 |
| Set Geometry Quality..... | 24 |
| Set Texture Quality | 25 |
| Chapter 4: Optimizing a File Step-by-Step | 26 |
| Always Backup Your Files Before Optimization..... | 26 |
| Follow These Steps to Optimize a Scene | 26 |
| Optimizing a Scene Containing Flash Content | 29 |
| Chapter 5: Additional Features | 30 |
| New Features in This Release..... | 30 |
| Fill Unused Pixels | 30 |
| Merge Textures | 30 |
| Copy 3D Snapshot | 30 |
| Untile Tiled Textures | 30 |
| Additional Texture Controls | 31 |
| Features Retained From Version 1.5..... | 32 |
| Remove Unused Pixels | 32 |
| Set Minimum Initial Viewing | 32 |
| Set Maximum Poly Count..... | 33 |
| Turn Objects Inside Out..... | 33 |
| Join Objects..... | 33 |
| Clamp Tiled Textures..... | 34 |
| Chapter 6: Help, Resources, and Feedback | 35 |
| Viewpoint Developer Central: A Complete Resource | 35 |
| Download Viewpoint Applications, Guides, and Tutorials | 35 |
| Viewpoint Applications | 35 |
| User Guides and Tutorials..... | 35 |
| Appendix: Keyboard Shortcuts..... | 36 |

Chapter 1: Overview

Viewpoint Stream Tuning Studio and Viewpoint Experience Technology (VET)

Viewpoint Experience Technology (VET) is Viewpoint Corporation's unique technology that streams 3D and rich media content over the Internet via **Viewpoint Media Player**, a Web browser plug-in. **Viewpoint Stream Tuning Studio** is a production tool that optimizes 3D scene files created in **Viewpoint Scene Builder**, **Viewpoint 3D Photo Studio**, or other applications, such as 3ds max or Maya. When viewed on a Web page, the optimized 3D scene streams quickly and retains visual integrity.

Viewpoint Stream Tuning Studio allows you to dramatically reduce scene file size and control the visual presentation of objects during loading. Use Stream Tuning Studio to optimize uncompressed .mts files before you embed your VET scene in a Web page. In some cases, an .mts file can be reduced by as much as 70% by filling or removing unused texture pixels, rotating textures, decreasing the geometry count, resizing textures, reducing the quality of textures, and merging texture coordinates and vertices.

New Features in This Upgrade

Stream Tuning Studio 2.0 has powerful new features allowing you to make your scene files leaner than ever.

- **Improved UI and Work Path** For a simpler, more intuitive workflow. Stream Tuning Studio compresses .mts files, but never alters any .mtx file. It also does not change the name of an .mts file or restructure the scene content hierarchies contained in it.
- **More Robust Image Viewing** Gives you more control and visual feedback. Allows loading textures or lightmaps, as well as reload functionality.
- **Fill Unused Pixels** Fills unused parts of textures with a uniform color (typically reduces file size by 5-30% without loss of quality).
- **Rotate Textures** Allows better packing of textures (up to 20 % file size savings) without compromising visual fidelity or interfering with Flash animations on top of textures.
- **Merge Textures** Allows you to create a texture collage map that enhances 3D streaming performance.
- **Mixed JPEG/TriXelsNT Compression** You can now choose the optimal compression—either JPEG or TriXelsNT—by texture.
- **Untile Tiled Textures** Allows you to play Flash animations on tiled textures.
- **Solo Mode and Object Selection** Allow convenient visualization of individual objects in a scene with Solo camera mode and the Object list.
- **Marquee Zoom and Platter Mode** As with Viewpoint Media Player, these camera and mouse navigation options are available.
- **Supports for Normals** With CAD/CAM models exported as Viewpoint Media Files (.mtx and .mts).

Minimum System Requirements

- 200 MHz Intel Pentium processor
- 64 MB system RAM
- 10 MB free hard disk space
- 16-bit color display (24-bit recommended)
- 1024 × 768 minimum monitor resolution
- Windows 98, NT 4.0, or 2000

Required and Recommended Software

Stream Tuning Studio is a utility that works as part of Viewpoint Experience Technology (VET) and is designed for use with the following software.

VET Applications

- **Viewpoint Media Player (required)** The Web browser plug-in that streams rich media and is required for viewing and interacting with VET.
- **Viewpoint Scene Builder** Use this application to put the finishing touches on your 3D scene, such as lightmaps, textures, widgets (hotspots with descriptive text), and animations. Then, publish your scene to .mts and .mtx, the Viewpoint Media File formats.

Important: Procedural geometries from Scene Builder and their applied textures cannot be optimized.

- **Viewpoint 3D Photo Studio** Creates Web-ready 3D images by combining high-quality photography with image editing, the end result of which are 3D product images. Exports to .mts and .mtx, the Viewpoint Media File formats.

Other Resources

- **Macromedia Flash™** Use Flash files in place of JPEG textures to dramatically reduce file sizes.
- **3ds max (formerly, 3ds max)** Convert .3ds files to .ase in 3ds max, in order to import them into Scene Builder. Or, export scenes directly from 3d max to Viewpoint Media Files. Then, optimize the scene in Stream Tuning Studio.
- **3D stock art from Viewpoint** Files in .3ds format can be purchased from Viewpoint's Web site.

Note: Although VET supports files exported from Poser, optimizing these files through Stream Tuning Studio is not recommended.

Chapter 2: Preparing a Scene File for Optimization

Viewpoint Stream Tuning Studio optimizes uncompressed .mts files from Viewpoint Scene Builder and other applications that export .mts files. Optimize other files, such as .obj and ase, by bringing the files through Scene Builder first, as the diagram on the right illustrates. Convert .3ds files to .ase in 3ds max first, in order to import them into Scene Builder.

Note: For best results using Stream Tuning Studio, tiled textures must have dimensions that are powers of 2; some examples are 8×16 , 256×256 , and 512×1024 .

Create a Scene in Viewpoint Scene Builder

To get the best results from Viewpoint Stream Tuning Studio, follow the instructions below to publish a scene from Scene Builder.

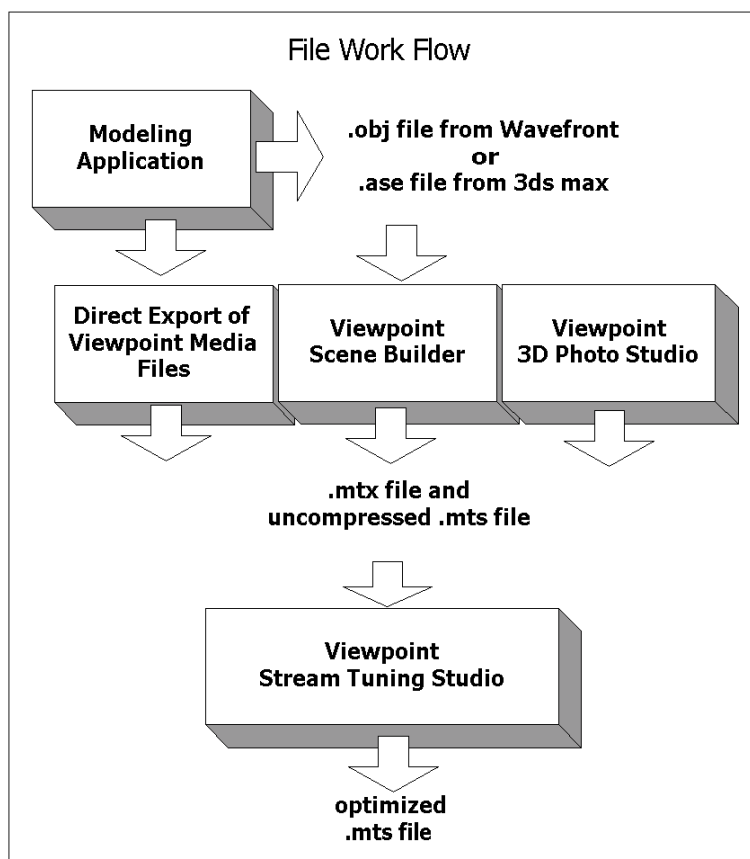
Important: Procedural geometries from Scene Builder and their applied textures cannot be optimized.

To publish .mts and .mtx files from Scene Builder

- 1 Create a scene in Scene Builder.
- 2 From the **Load/Publish** menu, choose **Publish for Tuning Studio** to publish the .mtx file and uncompressed .mts file.

Note: By publishing an uncompressed .mts file, you avoid compressing the file twice and degrading visual quality.

To learn more about using Scene Builder, [download the Viewpoint Scene Builder User Guide](#).



Open Viewpoint scene files (an .mtx file with an associated .mts file) directly in Stream Tuning Studio. Bring other files through Scene Builder first.

Convert .3ds, .obj, and .ase files to Viewpoint Media Files

Viewpoint Stream Tuning Studio opens an .mtx file and its associated .mts file (although, only the .mts file contents are optimized). Follow the procedures below for using Viewpoint Scene Builder to convert .obj and .ase files for optimizing. Convert .3ds files to .ase in 3ds max, so that you can convert them with Scene Builder.

To learn more about using Scene Builder, [download the Viewpoint Scene Builder User Guide](#).

To convert a .3ds file

- 1 Open the .3ds file in 3ds max.
- 3 Export the file as .ase. For further instructions, see *Viewpoint MAX 2 ASE Tutorial*.
- 4 Launch **Viewpoint Scene Builder**.
- 5 On the **Load/Publish** menu in Scene Builder, click **Import ASE**.
Choose the .ase file you've just exported from 3ds max, and then click **Open**.
- 6 If the file contains animations, in the **ASE Behavior Editor** dialog box, type the names you want to give animation actions and their frame ranges. (If your file does not contain animations, this dialog does not display upon loading the file.)
To review and edit this information later, click the **Anim Dialog** button on the **Load/Publish** menu.
- 7 Use the powerful features in Scene Builder to add lightmaps, textures, additional animations, widgets (procedural geometry that displays descriptive text when triggered by an **OnClick**, for instance), or change the camera orientation—just to name a few of the things you can do.
For more information, see the [Viewpoint Scene Builder User Guide](#).
- 8 When your scene is complete, choose **Publish for Tuning Studio** from the **Load/Publish** menu to publish the .mtx file and uncompressed .mts file. By publishing an uncompressed .mts file, you avoid compressing the file twice and unintentionally degrading the visual quality.

The scene is now ready to be optimized in Viewpoint Stream Tuning Studio.

To convert a Wavefront .obj file

- 1 Launch **Viewpoint Scene Builder**.
- 2 On the **Load/Publish** menu, click **Add OBJ**.
- 3 Use the powerful features in Scene Builder to add lightmaps, textures, additional animations, widgets (procedural geometry that displays descriptive text when triggered by an **OnClick**, for instance), or change the camera orientation—just to name a few of the things you can do.
For more information, see the [Viewpoint Scene Builder User Guide](#).
- 4 When you are finished with your scene, on the **Load/Publish** menu, choose **Publish for Tuning Studio** to publish the .mtx file and uncompressed .mts file. By publishing an uncompressed .mts file, you avoid compressing the file twice and unintentionally degrading the visual quality.

The scene is now ready to be optimized in Viewpoint Stream Tuning Studio.

To convert an .ase file

- 1 Launch **Viewpoint Scene Builder**.
- 2 On the **Load/Publish** menu in Scene Builder, click **Import ASE**.
- 3 Choose the .ase file you want to convert, and then click **Open**.
- 4 In the **ASE Behavior Editor** dialog box, type the names you want to give to the animation actions and their frame ranges.

Note: To review and edit this information later, click the **Anim Dialog** button on the **Load/Publish** menu.

- 5 Use the powerful features in Scene Builder to add lightmaps, textures, additional animations, widgets (procedural geometry that displays descriptive text when triggered by an OnClick, for instance), or change the camera orientation—just to name a few of the things you can do.

For more information, see the [Viewpoint Scene Builder User Guide](#).

- 6 When your scene is complete, choose **Publish for Tuning Studio** from the **Load/Publish** menu to publish the .mtx file and uncompressed .mts file. By publishing an uncompressed .mts file, you avoid compressing the file twice and unintentionally degrading the visual quality.

The scene is now ready to be optimized in Viewpoint Stream Tuning Studio.

Chapter 3: Getting Started With Stream Tuning Studio

Install and Start Stream Tuning Studio

- 1 To install Stream Tuning Studio, double-click the Viewpoint Stream Tuning Studio installation file and follow the on-screen instructions. Tutorial files referred to in this guide are copied to your computer in C:\Program Files\Viewpoint\Viewpoint Stream Tuning Studio\Tutorial.
- 2 On the **Start** menu, click the **Viewpoint** folder, and then click **Viewpoint Stream Tuning Studio**.

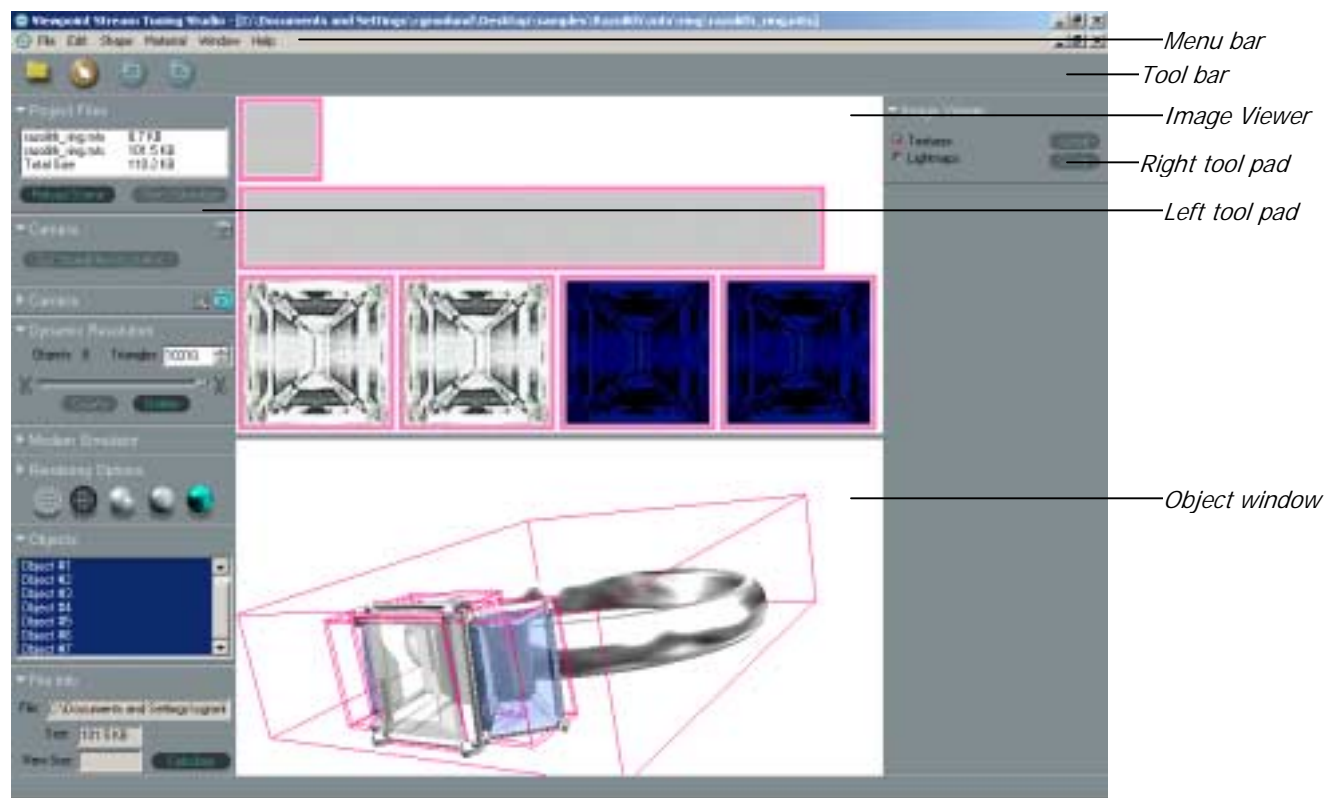
Uninstall Stream Tuning Studio

- To uninstall the application, use **Add/Remove Programs** in the **Windows Control Panel**. Or, run `unwise.exe` located in the folder with the application (C:\Program Files\Viewpoint\Viewpoint Stream Tuning Studio).

Important: Never uninstall by deleting the application folder, because this does not uninstall the application completely.

Walk Through the Stream Tuning Studio Interface





Main Window



The Stream Tuning Studio window as it appears when you select an .mts file, and then click the View/Optimize button under Project Files. Image Viewer has also been selected from the Material menu.

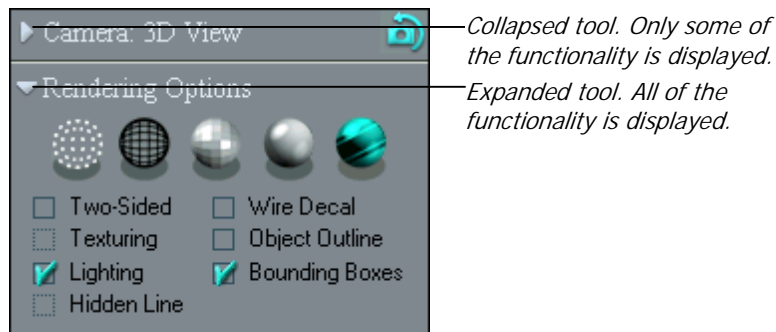
Toolbar

Toolbar icons give you quick access to the following functions:

| | | |
|---|-----------------|--|
|  | Open (Ctrl + O) | Open an .mtx file to optimize its associated .mts file. |
|  | Select Object | Click objects to select them. |
|  | Undo (Ctrl + Z) | Stream Tuning Studio lets you go back and undo multiple changes to a file. |
|  | Redo (Ctrl + Y) | Reapplies the last action(s) for which you chose Undo. |

Expanding and Collapsing Tools

Tools can be expanded and collapsed to display or hide their functionality. Collapse tools you aren't using if the screen becomes too crowded.



Click the arrowhead next to the tool name to ▼expand (show) or ▶collapse (hide) tools.


Tip: You can close tools if the tool pads become too crowded. Right-click a tool title, such as Scene Statistics, and then click **Close**.

Basic Program Functions

Open a Scene

Note: Much like editing a bitmap image, optimizing a scene cannot be reversed once the scene is saved. *Always* back up your original files before you optimize a scene in Stream Tuning Studio.

In Stream Tuning Studio, you open a Viewpoint scene by opening an .mtx file that references an .mts file.

- 1 From the **File** menu, choose **Open**. Or, click  on the toolbar.
- 2 Choose the .mtx file for the scene you want to optimize, and click **Open**.

Important: Although you use the .mtx file to reference the .mts file you are optimizing, the .mtx file is never changed or saved by Stream Tuning Studio. You can only optimize and save the .mts file with this tool.

Reload a Scene

When you are finished optimizing your scene, reload the .mtx file to test how the scene streams.

- 1 Under **Project Files** on the left tool pad, click **Reload Scene** to load the .mtx file.
- 2 To save your optimization settings, click **Yes** when you are prompted to **Save all changed MTS files**.

Save a File

Stream Tuning Studio saves and compresses only the .mts file. The .mtx file remains unchanged.

- With the .mts file in **View Optimize** mode, choose **Save** from the **File** menu.

Note: To maintain visual fidelity, do not resave a file you've already optimized and saved.

Left Tool Pad Functions

Tools are presented here in the order they appear on the left side of the screen.

Note: To close a tool pad, right-click it and then click **Close**.

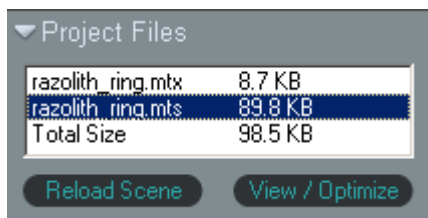
Project Files (formerly MTS Contents)

Displays when you open an .mtx file.

The Project Files tool displays when you open an .mtx file and has two primary functions:

- **Reload Scene** Allows you to load the scene at the speed specified in the Modem Simulator tool. To test scene loading, click the .mtx file name, set the preferred connection speed in **Modem Simulator**, and then click **Reload Scene**.
- **View/Optimize** Loads the .mts file for optimization. To begin optimizing an .mts file, click the file name, and then click **View/Optimize**.

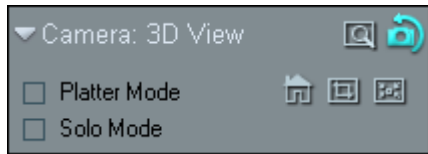
Tip: You can also double-click a file name in Project Files to load it.



Project Files lets you choose an .mts file for optimization or reload the scene.

Camera

Displays when you load an *.mts* file. Also displays with limited functionality when you load an *.mtx* file.



*Camera controls let you manipulate the object view when the *.mts* file is loaded.*

Use the following camera tools to change object view and revert it to home position again:



Rotate Camera (Alt) allows you to view the object from all angles.



Home returns the object to its original position.



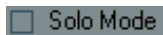
View Selected Objects zooms the selected object into view. Select one or more objects by clicking the **Pick Object** tool (in the tool bar), and then clicking the object (or Ctrl + click more than one object) you want to view. Click the View Selected Objects button.



View All Objects zooms view to show all selected objects.



Choose **Platter Mode** to simulate the camera navigation of Viewpoint Media Player.




In **Solo Mode**, you can cycle the camera through the objects in a scene one at a time (for a scene containing more than one object). On the keyboard, press F11 or Shift + F11 to cycle down or up through the object list. Use Solo Mode to easily view overlapping or hidden objects.



*When the *.mtx* file is loaded, you can set the default home position of the camera.*

Note: Home camera position is for viewing and editing scenes in Stream Tuning Studio. It is not saved when you save your optimized scene.

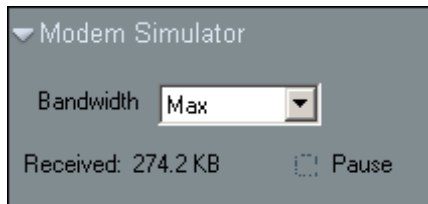
To reset the home position of an object

- 1 Open a scene, or load an *.mts* file.
To open a scene, choose **Open** from the **File** menu. Or, click  on the toolbar.
To load an *.mts* file, click the name of the *.mts* file listed under **Project Files**. Then, click **View/Optimize**.
- 2 On the **Camera: 3D View** tool on the left, click the **Rotate Camera** tool.
- 3 Click the object and drag it to the home position you want to use.
- 4 At the top of the right tool pad, click **Set Home Position** under **Camera Options**.

Modem Simulator

Open an .mtx file or reload the scene, and then choose Modem Simulator from the Scene Builder menu.

Modem Simulator allows you to test your optimized file at various Internet connection speeds. Modem Simulator reads the .mtx file and streams the geometry and textures as specified in the combined .mts and .mtx files. This is especially useful for verifying whether a scene is well optimized for lower speed Internet connections.



Modem Simulator allows you to verify how your model renders at various Internet connection speeds.

To test a scene with Modem Simulator

- 1 Open an .mtx file. Or, select the file in the **Project Files** area, and then click the **Reload Scene** button.
- 2 Choose **Modem Simulator** from the **Scene Builder** menu.
- 3 From the **Bandwidth** drop-down list, choose the connection speed you want to test. Then, under **Project Files**, click the **Reload Scene** button.

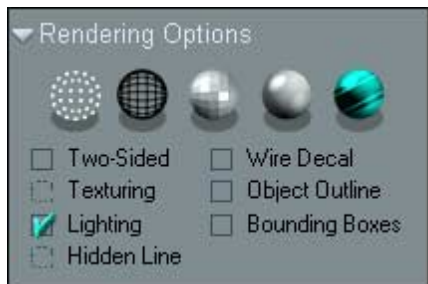
Repeat this step for each connection speed you want to verify.

Note: Select the **Pause** checkbox to pause streaming the scene. Deselect the checkbox to continue streaming.

Rendering Options

Available when you load an .mts file. Limited functionality when the .mtx file is loaded.

The Rendering Options tool contains five rendering modes and also allows you to set additional parameters to change the display of objects in a scene. These options only change the way the model appears on-screen. They do not affect the geometry or textures of the model and are not saved in the file.



Rendering Options allows you to choose different working views of a scene.

Choose from five rendering options:

- **Points** Displays only the vertices of the triangles that make up the object. Because Points mode contains the least information of any of the rendering modes, it renders fastest.
- **Wireframe** Shows the polymesh—the triangles that make up the object’s geometry. Use Wireframe mode to view objects as a geometric mesh. You can set the Wireframe color in the Colors tool (choose Colors from the Edit menu).
- **Solid with Flat Shading** Displays each triangle in the polymesh as a single value. You see the contours of objects, but they appear as triangular planes, rather than as a continuous, smooth surface. Use this mode to see the distinct geometric surfaces that make up an object.
- **Solid with Smooth Shading** Displays objects with a smooth, continuous surface also called Gouraud shading.
- **Solid with Surface Texture** Displays objects in full color with surface texture. This is the full rendering mode that is used most often.

Select other rendering options by clicking the corresponding checkboxes:

- **Two-Sided** Makes texturing visible on both sides of the object. For example, if you look at the backside of an object, you see a mirror image of the front texture. On the backside of the face, writing on the object appears backward. With Two-Sided unchecked, the object effectively disappears when you attempt to view the backside of its face. This setting has no visible effect if the model is a non-transparent, enclosed, watertight object.
- **Texturing** Turns on the display of texture on the objects in the scene.
- **Lighting** The default with the solid modes, it provides the sense of depth. If you uncheck Lighting while in a solid mode, the object displays as a flat silhouette on a solid background.
- **Hidden Line** A Wireframe mode option, that shows only the faces of the wireframe. The wireframe is not transparent in this mode.
- **Wire Decal** Places a wireframe over a solid object with or without texture. This allows you to correlate the wireframe to the visible contours of the object.
- **Object Outline** A colored line defines the edges of selected objects.
- **Bounding Boxes** Displays a three-dimensional rectangular box around each selected object. This box acts as a visual guide to tell you how much 3D space the object occupies. You can set the bounding box color in the Colors tool (choose Colors from the Edit menu).

Dynamic Resolution

Displays when you select an .mts file and click View/Optimize.

Dynamic Resolution shows the number of triangles in an object and allows you to set the minimum quality of the initial scene the user sees when loading a Web page, as well as the maximum triangle count.

Viewpoint 3D Photo Studio uses a triangular polygonal mesh to reconstruct a 3D object, with triangles as the basic unit. The polymesh may contain thousands of triangles, although you might need only a fraction of them to create a realistic model. Use the Dynamic Resolution slider to reduce triangle count while maintaining visual quality.

For more information on using the Dynamic Resolution slider, see “[Set Minimum Initial Viewing](#)” and “[Set Maximum Poly Count](#),” later in this guide.



Use the Dynamic Resolution slider to reduce the triangle count of an object, while retaining its visual quality.

Note: Dynamic Resolution preserves smoothing groups, but not creases.

Show Edges & Creases

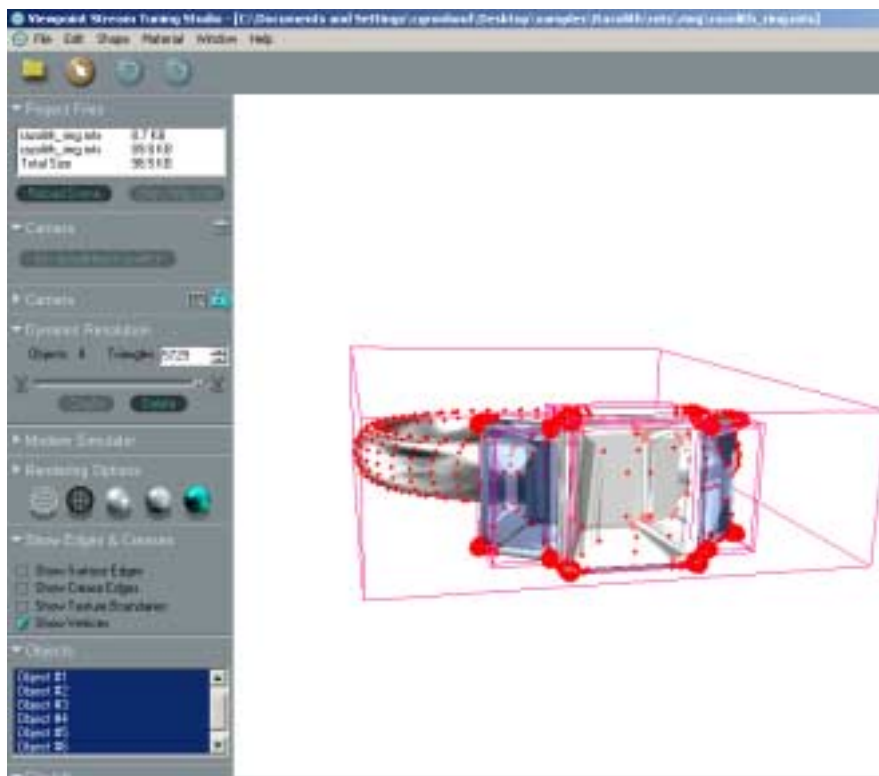
With an .mts file loaded, choose *Show Edges & Creases* from the *Shape* menu.



Show Edges & Creases has four preview modes you can use to inspect the quality of a model.

Use the preview options in *Show Edges & Creases* to see edges, creases, texture boundaries, and vertices of a model. These preview options can help you detect any anomalies with the object's edge bias. You can also use these options to see texture or material boundaries.

- **Show Surface Edges** Check this option to highlight the surface edges of all triangulation. If the model is watertight, you should not see any surface edges. Use this option to look for small holes and degenerate triangles.
- **Show Crease Edges** Check this option to highlight any creases (that is, places where the normals change direction from facing towards you to facing away from you).
- **Show Texture Boundaries** Check this option to highlight the boundaries between textures.
- **Show Vertices** Check this option to see the location of all the vertices on the model. Drag the slider to adjust the size of the display. (Depending on the make your graphics card, dragging the slider may not have any effect on the appearance of your model.)

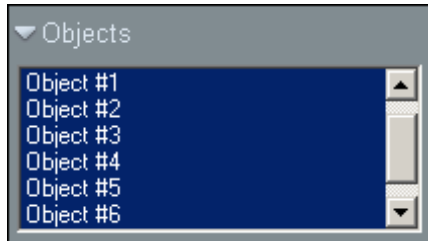


Show Edges & Creases with *Show Vertices* selected.

Objects

Displays by default when you choose the .mts file and click View/Optimize.

The Objects palette lists the selectable objects in a scene and allows you to view each one in by clicking on it in the list. Use Ctrl + click or Shift + click to select combinations of objects in the list.

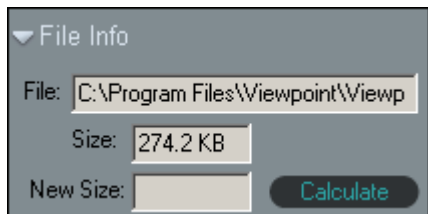


The Objects palette lists selectable objects in a scene.

File Info

Displays by default when the .mts file is loaded. You can also choose File Info from the File menu.

File Info shows you the location and original size of your scene files. Click **Calculate** to see how optimize settings reduce overall file size (displays in the **New Size** field).



File Info tool calculates the smaller, optimized file size.

Right Tool Pad Functions

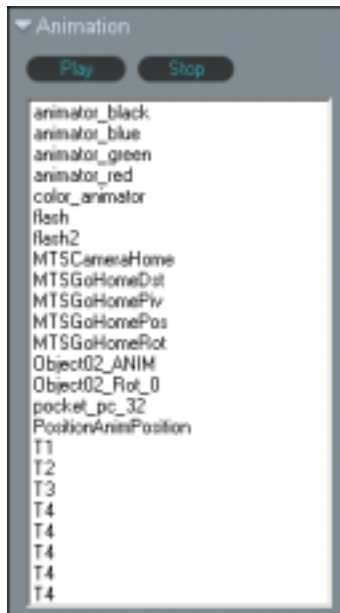
Tools are presented here in the order they appear on the right side of the screen.

Note: To close a tool pad, right-click it and then click **Close**.

Animation

With the *.mtx* file loaded, choose *Animation* from the *Scene Builder* menu.

The Animation tool shows your animations by name and allows you to play and stop a selected animation.

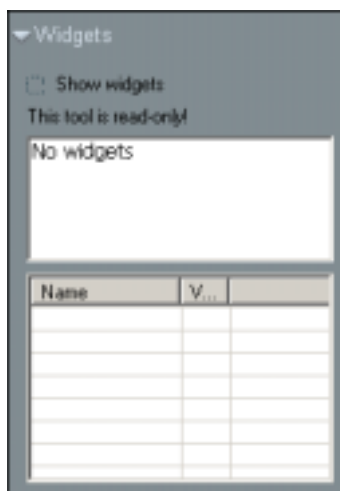


Preview a scene's animations with the Animation tool.

Widgets

With the *.mtx* file loaded, choose *Widgets* from the *Scene Builder* menu.

The Widgets tool shows information about the widgets in a scene and allows you to display them for preview only.



View information about a scene's widgets.

Edit Material

With an *.mts* file loaded, choose *Edit Material* from the *Material* menu.

Note: If your model uses textures for all surfaces, editing materials does not affect look of the model. If a lightmap is applied to a model without textures, Ambient and Specular values have no effect. However, the Diffusive value, in this case, changes the color of the model.

On the Edit Material tool, you can change the material properties of an object as follows:

- **Ambient** The color of the object's base material where it is in the shadow. Click the color swatch to choose a different color from the **Color** dialog box.
- **Diffuse** The base material color of the object. Click the color swatch to choose a different color from the **Color** dialog box.
- **Specular** A material property that determines the color of the highlights on the object. Click the color swatch to choose a different color from the **Color** dialog box.
- **Transparency** Move the slider to change the transparency of an object. Moving the slider to the right makes the object more transparent. When the slider is all the way to the left, the object is opaque.
- **Shininess** Move the slider to the right to increase the amount of specular reflection. This slider is not available if the specular color is set to black.

Note: The Edit Material tool changes material properties for the whole object only. It cannot change the material properties for individual parts of an object.

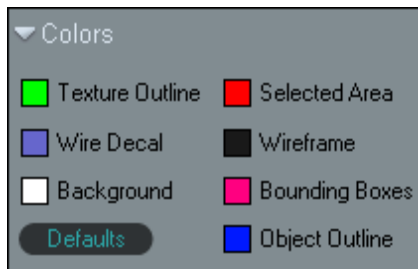


Adjust the Material Properties of an .mts file with the Edit Material tool.

Colors (formerly Preferences)

From the *Edit* menu, choose *Colors*.

Stream Tuning Studio color settings allow you to customize the preview display of your scene. These colors are not saved in the optimized scene, because the *.mtx* file is not saved.



Use the Colors palette to customize elements of the scene preview display.

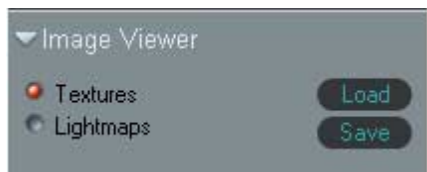
To set Stream Tuning Studio preview display colors

- 1 On the **Edit** menu, choose **Colors**.
- 2 Click the color swatch next to the feature color you want to change.
From the **Color** dialog box, choose a new color, and then click **OK**.
Click the **Defaults** button to return preview colors to the default settings.

Image Viewer

With an *.mts* file loaded, choose *Image Viewer* from the *Material* menu.

When you choose *Image Viewer* from the *Material* menu, the screen splits with the 2D view of the textures or lightmaps at the top of the window and the 3D object view at the bottom. *Image Viewer* allows you to replace existing textures or lightmaps with new texture map or lightmap images, including images from Adobe Photoshop®. Click the **Textures** or **Lightmaps** option button to switch between working with texture or lightmap images.



To replace an existing texture or lightmap with a new one

- 1 With the **Image Viewer** window open, click the **Texture** or **Lightmap** option button, depending on what kind of image you want to replace.
- 2 Click the texture or lightmap you want to replace to select it.
- 3 In the **Image Viewer** tool, click **Load**.
- 4 Choose the new texture or lightmap, and then click **Open**. The new texture or lightmap now appears on the object.

Tip: You can also copy texture maps and lightmaps from Adobe Photoshop. Follow steps 1 and 2 above, and then copy (Ctrl+C) and paste (Ctrl+V), or choose **Paste Texture** from Stream Tuning Studio's **Edit** menu.

To save a texture or lightmap file

- 1 With the **Image Viewer** window open, click the **Texture** or **Lightmap** option button, depending on what kind of image you want to save.
- 2 Click the texture or lightmap you want to save to select it.
- 3 In the **Image Viewer** tool, click **Save**.
- 4 Choose the new texture or lightmap, and then click **Open**. The new texture or lightmap now appears on the object.

To delete a texture or lightmap

- 1 With the **Image Viewer** window open, click the **Texture** or **Lightmap** option button, depending on what kind of image you want to delete.
- 2 Click the texture or lightmap you want to delete to select it.
- 3 Press **Delete** on your keyboard.

Other Image Viewer features

- **Detailed texture view** Double-clicking any texture or lightmap causes another window to appear with a detailed texture view that also shows the texture's UV mapping. To close this view, right-click on the window, and then click **Close**.
- **Image Viewer options** Right-click on any texture to choose options such as **Select All** or **Fit to Window**.

Resize Textures

From the **Material** menu, choose **Resize Textures**.

An optimization tool that reduces texture size. You can build your models using textures with maximum resolution, and then use this tool to optimize the textures for streaming. You can also use this tool to see the dimensions of a texture in pixels.

Note: Image Viewer must be open when you use this tool. On the **Materials** menu, choose **Image Viewer**.



Resize Textures is one way to reduce overall file size by optimizing textures.

To see the size of a texture

- 1 On the **Material** menu, choose **Image Viewer**, and then choose **Resize Textures**.
- 2 Click a texture to select it.
- 3 In the **Resize Textures** tool, click the **Pixels** option button.
- 4 The texture size in pixels appears in the **Width** and **Height** fields.

To resize a texture

If you choose one texture to resize, the texture is reduced to the percentage of surface area or to the pixel dimensions entered.

- 1 On the **Material** menu, choose **Image Viewer**, and then choose **Resize Textures**.
- 2 Click the texture you want to resize to select it.
- 3 Click the **Pixels** or **Area** option button to choose how you want to resize the texture.
- 4 To resize the texture while constraining its proportions, type the new number in the **Width** field.
- 5 Click **Set** to accept the new texture size.

To resize more than one texture at a time

If you choose more than one texture to resize at once, total surface area of the textures is reduced to the percentage you enter. Each texture may be resized differently in inverse proportion to the surface area it occupies.

- 1 On the **Material** menu, choose **Image Viewer**, and then choose **Resize Textures**.
- 2 Ctrl + click the textures you want to resize to select them.
To deselect a texture you don't want adjusted, press the Ctrl key and re-click the texture.
- 3 Click the **Area** option button. Type the percentage to which you want overall texture size decreased.

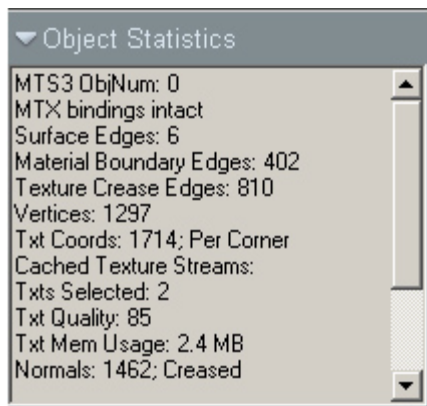
Note: The **Area** option resizes textures proportionate to the 3D surface area.

- 4 Click **Set** to accept the new texture sizes.

Object Statistics

With an .mts file loaded, choose *Show Object Statistics* from the *Shape* menu.

Object Statistics summarizes information about the object, including number of surface edges, material boundary edges, texture crease edges, normals, and more. If Object Statistics is open, it updates automatically as you optimize a scene.



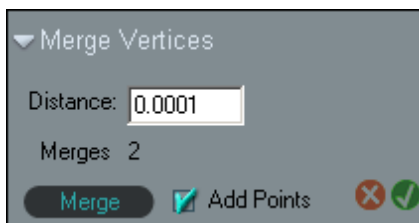
Object Statistics tracks changes to a scene as you optimize it.

Merge Vertices

With an .mts file loaded, choose *Merge Vertices* from the *Shape* menu.

Use Merge Vertices to remove small holes and degenerate triangles from the wireframe. Degenerate triangles have zero width (they are infinitely narrow). Such artifacts rarely exist on models created using Viewpoint 3D Photo Studio 3D, but they may appear in models generated in third-party software.

Because some models contain large holes that are intentional, this tool lets you set the maximum size of the holes that it affects.




Merge Vertices can fix minor holes in a model and reduce overall file size.

Important: Use Merge Vertices with caution when optimizing a scene that contains more than one object.

To merge vertices

- 1 Open a scene, or load an .mts file.

To open a scene, choose, choose **Open** from the **File** menu. Or, click  on the toolbar.

To load an .mts file, click the name of the .mts file listed under **Project Files**. Then, click **View/Optimize**.

- 2 From the **Shape** menu, choose **Merge Vertices**.

The Merge Vertices tool opens to the right of the Object window.

- 3 Accept the default **Distance** parameter, or type in a new one and press **Enter**.
Keep track of the number of merges by viewing the number below this box. The Distance parameter defines the maximum size of the merged hole (the default is 0.0001; units are fractions of the bounding box, so the maximum is 1).

Note: As you merge vertices, you can keep track of the number of triangles in Dynamic Resolution and the number of vertices in Object Statistics.

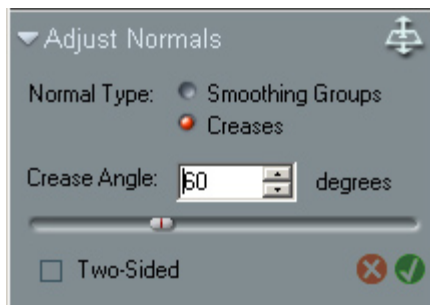
- 4 When the number of Merges is 1 or more, click the **Merge** button to merge the vertices. Keeping clicking the Merge button until there are no more merges.
- 5 Check **Add Point** if you want the tool to rearrange the triangulation so that the degenerate triangles disappear. This option also allows you to close very large holes by adding vertices within them.
- 6 If you find that this did not remove all the holes you wanted to remove (or if it removed some you didn't want to), repeat steps 3 to 5.
- 7 When you are satisfied with the results, click the \checkmark button to apply your changes. Or, click the \times button to cancel changes.

Adjust Normals

With an *.mts* file loaded, choose *Adjust Normals* from the *Shape* menu.

Adjust Normals allows you to change the crease angle and/or make normals two-sided.

Normals are vectors that define the direction geometry faces. The direction a normal points represents the outer surface of the geometry and, therefore, the outer surface of the object.



Adjust Normals controls crease angle and makes normals one or two-sided.

To make surfaces two-sided

- 1 Check **Two-Sided**.
Unchecking this option reverts the normals to one-sided.
- 2 Click the \checkmark button to apply or the \times button to cancel.

To change the crease angle setting

- 1 Type a number in the **Crease Angle** field, or move the slider until the number you want displays.
 - When the crease angle is set to 0, the model appears flat shaded (with rough edges between adjacent triangles).
 - When the crease angle is 180, the model appears smooth-shaded.
- 2 When you are satisfied with the results, click the \checkmark button to apply your changes. Or, click the \times button to cancel changes.

Note: Dynamic Resolution preserves smoothing groups, but not creases.

Rotate Texture

With an .mts file loaded, choose *Rotate Texture* from the *Material* menu.

Rotate Texture is a powerful new tool allowing you to optimize textures for even greater file size reduction. By rotating odd-shaped textures, for instance, to an optimum angle to fit within a rectangle, file size is reduced without reduction of texture quality. UV texture coordinates are automatically adjusted so the texture is applied correctly to geometry.

Note: Rotating textures does not affect the resolution of textures and does not change the appearance of the model.

Rotate Texture also allows you to untile tiled textures. See [Untile Tiled Textures](#) for details.



Rotate Texture is a powerful tool for reducing file size.

To set optimal rotation on a texture

- 1 Click the name of the .mts file listed under **Project Files**. Then, click **View/Optimize** to load it.
- 2 On the **MATERIAL** menu, choose **Rotate Texture**.
Image Viewer opens above the scene and Texture Coordinate view to the left of the scene.
- 3 Double-click a texture to select it, and then click the **Best** button in the **Rotate Texture** tool.
This selects the optimum angle of texture rotation. If the texture cannot be optimized by rotation, a warning box displays.

Note: You can choose a custom angle of rotation, but for optimal results the texture rotation calculated when you click Best is recommended.

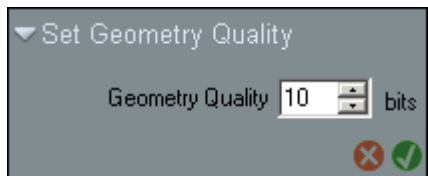
- 4 Click the **Set** button to apply the rotation.

Set Geometry Quality

With an .mts file loaded, choose *Set Geometry Quality* from the *Shape* menu.

Important: Set Geometry Quality functions are for advanced modelers only. Reduction of file size is minimal with this feature. The default value of 10 is best for most models.

Set Geometry Quality adjusts the quality of a model's geometry by bits. As in 2D images, the higher the number of bits, the higher the model's quality. Choose the smallest number that still produces acceptable visual quality.



When you set geometry quality, more bits means higher quality, but also larger, slower files.

To set geometry quality

- 1 Type a number in the **Geometry Quality** field. Or, click the up or down arrows next to the field to choose a number.

Choose the lowest number of bits that still produces an acceptable visual effect.

- 2 When you are satisfied with the results, click the ✓ button to apply your changes. Or, click the × button to cancel changes.

If you apply changes, you can preview the difference in file size with File Info.

Note: Increasing the bit level from the scene's original setting does not create a higher resolution, just as you cannot increase the resolution of a scanned image after it is captured.

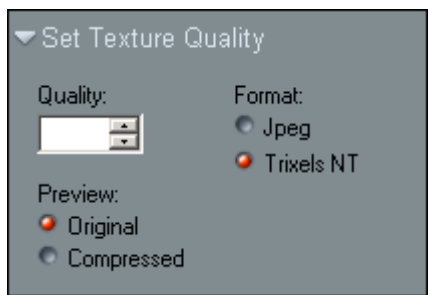
Set Texture Quality

With an .mts file loaded, choose Set Texture Quality from the Material menu.

In this new release, you can use the Set Texture Quality tool to apply either JPEG or TrixelsNT compression to textures in a model; whereas, in the previous version, you had to choose one texture compression format for the entire scene.

Use Set Texture Quality to preview the model at different levels of texture compression and also to set the level and type of texture compression for each texture. The type of compression is defined by the compression in the image that you open. This tool also allows you to set the compression levels of lightmaps, although this functionality is rarely used. Follow these steps to view and change the texture quality:

Note: You must have the Image Viewer tool open to set the quality levels for individual textures.



Set Texture Quality lets you preview the effects of texture compression on your scene.

To set texture quality

- 1 On the **Material** menu, choose **Image Viewer**, and then choose **Texture Quality**.
- 2 Ctrl + click the texture(s) you want.
In the **Quality** field, the selected texture's quality displays.
- 3 To change the texture quality, type a value in the **Quality** field. You can also click the option button next to either **JPEG** or **TrixelsNT** to choose the type of compression. Press **Enter** to accept these settings.
- 4 Click the **Compressed** option button to preview the model at the set resolution level.

Chapter 4:

Optimizing a File Step-by-Step

Stream Tuning Studio allows you to optimize scenes for fast loading and visual quality. Using the sample files provided, follow the steps described for best results when optimizing.

Always Backup Your Files Before Optimization

Backing up your original files as you make large incremental changes to them is a good production practice whether you are working in 2D or 3D. That way, you always have original, uncompressed files to go back to if you want to make changes.

When you optimize an .mts file in Stream Tuning Studio, you irreversibly compress the file and lose some of the original information and image quality. This optimization can make for excellent rendering times over the Internet. However, if you don't like the quality of the optimized scene, you need to have a copy of the original, uncompressed .mts file if you want to start over and apply different optimization settings.

To save a backup copy of scene files

- 1 Double-click the **My Computer** icon, and locate the folder that contains the scene you want to optimize.
- 2 Create a folder in the scene folder and name it *Backup Copy*.
- 3 Ctrl + click the .mts and .mtx files for the scene you want to optimize, and then choose **Copy** (Ctrl + C) from the **Edit** menu.
- 4 Double-click the **Backup Copy** folder to open it.
- 5 From the **Edit** menu, choose **Paste** (Ctrl + V) to put copies of the scene files in the Backup Copy folder.

Note: It's a good idea to save a backup copy of scene files, even after you've completed production and posted them on the Web. Save the original uncompressed .mts and accompanying .mtx files, as well as any native files from other 3D applications, such as .ase or .obj. Then, if you want to go back and make changes to a scene, such as adding a lightmap or panorama, you have original, uncompressed files to work from.

Follow These Steps to Optimize a Scene

Use the sample files provided and follow the procedures below to learn how to optimize a model or scene file with Stream Tuning Studio. Optimized files from Stream Tuning Studio are smaller than typically produced from a modeling package and download in a way that is optimal for viewing.

Important: Procedural geometries from Scene Builder and their applied textures cannot be optimized.

- 1 **Open File** From the **File** menu, choose **Open** and select the .mtx file for the scene you want to optimize. When you open an .mtx file, the **Project Files** area displays the .mtx file name with the accompanying .mts file name.
 - Open the tutorial file, cell_phone.mtx located C:\Program Files\Viewpoint\Viewpoint Stream Tuning Studio\Tutorial.
 - Click the .mts file name, and then click the **View/Optimize** button, to begin optimizing the .mts file.

Note: Stream Tuning Studio references, but does not optimize, the .mtx file. However, by opening the .mtx file, you can view the maximum data about a scene and test its streaming with Modem Simulator.

2 Complete This Quick-Tuning Checklist

Open the **Image Viewer** by choosing it from the **Materials** menu. By completing each of the following tasks in order, you can quickly optimize a scene while reducing either texture or geometry quality:

Note: To enlarge the texture view in Image Viewer window, place your cursor over the divider between texture preview window and the main window. When you see the double-headed arrow, click and drag the divider down. To see an individual texture in a larger view with UV coordinates, double-click it.



Image Viewer at the top of the Stream Tuning Studio screen displays all textures applied to an object.

- **Remove Duplicate Textures** Click in the Image Viewer, and then press Ctrl + A to select all textures. From the **Material** menu, choose **Remove Duplicate Textures**. In the Image Viewer tool, click the **Lightmaps** option button, and then choose **Remove Duplicate Textures** again.

If you want to keep some textures as duplicates, deselect the textures before you choose Remove Duplicate Textures. In the upper display area where all textures are highlighted with colored bounding boxes, Ctrl + click on textures you want to keep. Then, from the **Material** menu, choose **Remove Duplicate Textures**.

Note: The tutorial scene *colored_cube_demo* is especially useful for showing the effect of Remove Duplicate Texture.

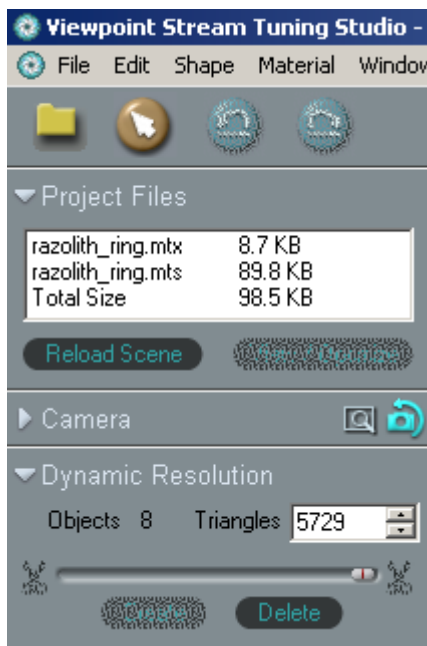
- **Remove Unused Pixels** With all the textures selected, choose **Remove Unused Pixels** from the **Material** menu. Repeat this for lightmaps.
- **Rotate Textures** From the **Material** menu, choose **Rotate Texture**. Selecting one texture or lightmap at a time, click the **Best** button in the Rotate Texture tool, and then click the **Set** button to apply the rotation.
- **Check the New File Size** In the **File Info** tool on the lower left tool pad, click **Calculate** to see the effects of these simple optimizations on file size.

Note: If this quick-tuning checklist reduces file size adequately, apply **Fill Unused Pixels** (from the Material menu) to textures and lightmaps as the final step and then save your file.

3 Adjust Dynamic Resolution to Reduce Poly (Triangle) Count and Set Minimum Initial Viewing

- Click the arrow to the left of **Dynamic Resolution** to display the tool functions.
- If the **Delete** button is not already enabled, click the **Create** button, and then adjust the Dynamic Resolution slider to a setting that does not degrade the geometry of the model, but reduces the overall triangle count.
- View all sides of the model to ensure your settings do not degrade the geometry. Then, click the **right** scissors icon to finalize the operation. For more information, see “[Set Maximum Poly Count](#)” later in this guide.
- To set minimum initial viewing, use the Dynamic Resolution slider as described above, but choose a minimum level of geometry quality you want for the initial view when streaming. Click the **left** scissors icon to set the minimum level of the initial view.

For more information, see “[Set Minimum Initial Viewing](#)” later in this guide.



Under Dynamic Resolution you can reduce total triangle (poly) count or set minimum initial viewing.

4 Reduce Texture Quality Preserve readability of textures with text by deselecting these textures as described above.

Note: In Stream Tuning Studio 2.0, you have more control of texture compression. You can set the quality and compression format (JPEG or TrixelsNT) by the texture.

- From the **Material** menu, choose **Set Texture Quality**.
- Set the **Quality** to **40%**, and then press the **Enter** key.
- Preview the object by spinning it and zooming into it to be sure the quality is not visibly degraded. Adjust the quality as necessary. When finished, click the \surd button to apply your changes.
- Try this on the sample file. Select All (Ctrl + A). Then, deselect (Ctrl + click) the face and back textures of the cell before you reduce texture quality to preserve those textures with text.

Important: In scenes containing text, use caution when adjusting size and quality of textures containing text. Reducing texture quality can degrade readability.

5 Resize Textures

- From the **Material** menu, choose **Image Viewer** and **Resize Textures**. Select all textures in the image viewer (press **Ctrl + A**, or from the **Edit** menu, choose **Select All Textures**).
- Click the **Area** option button, and then type **40%** in the enabled field.

Note: To deselect textures you don't want adjusted, press the Ctrl key and click the textures. Determine which setting to use for each texture: Choose higher settings to preserve fine detail and lower settings for solid textures.

- Preview the textures first before completing the operation. To preview the effects of a texture size setting, type the texture size, and then press **Enter**. You may change the texture size as many times as you want this way; changes aren't applied until you click the \checkmark button.



Optional Functions

- **Merge Vertices** From the **Shape** menu, choose **Merge Vertices**. This closes the spaces between textures. The cell phone sample does not require this.
- **Merge Texture Coordinates** From the **Material** menu, choose **Merge Texture Coordinates**. A dialog box indicates how many coordinates have merged. There is no visual difference. The cell phone sample does not require this.
- **Material created from texture color** From the **Material** menu, choose **Generate Material From Texture**. When the object is streaming to the client, the average color of the entire object is displayed, rather than the default gray material typically seen during the initial streaming. This function is already applied to the cell phone sample files.
- **Modem Simulator** This feature works when the .mtx file is loaded. (In **Project Files**, click the .mtx file name, and then click **Reload Scene**.) Use this feature to simulate a scene streaming at different Internet connection speeds.

6 Fill Unused Pixels

From the Material menu, choose Fill Unused Pixels.

Note: For best results, Fill Unused Pixels should be your last step in optimization.

7 Save the optimized file

- From the **File** menu, choose **Save**.
- Click **OK**. Be sure to save the file in a different directory than the original.

Note: Stream Tuning Studio only optimizes and saves the .mts file. The .mtx file remains unchanged.

Optimizing a Scene Containing Flash Content

Viewpoint Experience Technology (VET) now supports Macromedia Flash™ compatibility. In Stream Tuning Studio, you can do the following to optimize your scene containing Flash content:

- Optimize a texture to which a Flash movie is targeted.
- Untile tiled textures, so that you can apply a Flash movie.
- Create collage maps of textures you want to replace with Flash files.

Chapter 5: Additional Features

New Features in This Release

Fill Unused Pixels

Fill Unused Pixels is a texture compression tool that allows you to further fine-tune scene file size while maintaining texture quality. This feature fills the unused pixels in a texture with white for optimum texture compression.

Note: For best results, use Fill Unused Pixels as a final step in optimization.

To fill unused pixels

- 1 Choose **Image Viewer** from the **Material** menu.
- 2 Select a texture, and then from the **Material** menu choose **Fill Unused Pixels**.

Merge Textures

Merging textures allows you to create a collage map of textures, so that all the textures included load at the same time. This may improve the appearance of a loading scene, but has little or no effect on overall file size.

To merge textures

- 1 Choose **Image Viewer** from the **Material** menu.
- 2 Select the textures you want to merge, and then from the **Material** menu choose **Merge Textures**.

Note: Although by merging textures, you create one large texture map, original texture references are retained by the .mts file so that it remains compatible with its .mtx file.

Copy 3D Snapshot

Choose **Copy 3D Snapshot** from the **Edit** menu to copy a screen shot of the scene window to the Windows clipboard. You must have an .mts file loaded for optimization for this feature to work.

Untile Tiled Textures

If you want to apply Flash content to a scene element where a tiled (repeated) texture is used, you must untile the texture, or the Flash movie will play in each tile of the texture.

To untile a tiled texture

- 1 Choose **Image Viewer** from the **Material** menu.
- 2 From the **Material** menu, choose **Rotate Textures**.
- 3 Select the tiled texture by clicking it. Double-click the texture to see the detailed texture view with UV coordinates.

If you are uncertain which textures are tiled, choose **Select Tiled Textures** from the **Material** menu to highlight all tiled textures. Then, click the texture you want to select.

- 4 In the **Rotate Texture** tool, click the **Set** button.
This untiles the texture and stretches it to match the UV coordinates.

Additional Texture Controls

Warning: Texture animations referencing textures stored in an .mts file may break if you delete or merge duplicate textures.

To remove duplicate textures

- 1 From the **Material** menu, choose **Image Viewer**.
Be sure that duplicate textures are not referenced in an animation. Reload the .mtx file, and then choose Play Animation from the Scene Builder menu to inspect animations.
- 2 Click inside the Image Viewer, and then press **Ctrl + A** to select all textures.
- 3 From the **Material** menu, choose **Remove Duplicate Textures**.

To remove similar, but not identical, textures

- 1 From the **Material** menu, choose **Image Viewer**. Double-click each texture to inspect it in a detailed view.
Be sure that textures you remove are not referenced in an animation. Reload the .mtx file, and then choose Play Animation from the Scene Builder menu to inspect animations.
- 2 In Image Viewer, click the texture with which you want to replace other similar. Press **Ctrl + C** to copy it.
- 3 Click the texture you want to replace, and then press **Ctrl + V**.

To select unused textures

- 1 From the **Material** menu, choose **Image Viewer**.
Be sure you do not delete or merge textures that may appear to be unused but are referenced in an animation. Reload the .mtx file, and then choose Play Animation from the Scene Builder menu to inspect animations.
- 2 From the **Material** menu, choose **Select Unused Textures**.

To select tiled textures

Working in conjunction with **Image Viewer**, this tool allows you to select all tiled textures.

- 1 Choose **Image Viewer** from the **Material** menu.
- 2 On the **Material** menu, choose **Select Tiled Textures**.

If the model contains no tiled textures, then no textures are selected. If the model tiled textures then all of them are selected.

Features Retained From Version 1.5

Remove Unused Pixels

Remove Unused Pixels allows you to reduce texture size without reducing texture quality. Pixels outside the mapped UV coordinates of a texture are removed, thus reducing file size.

To remove unused pixels

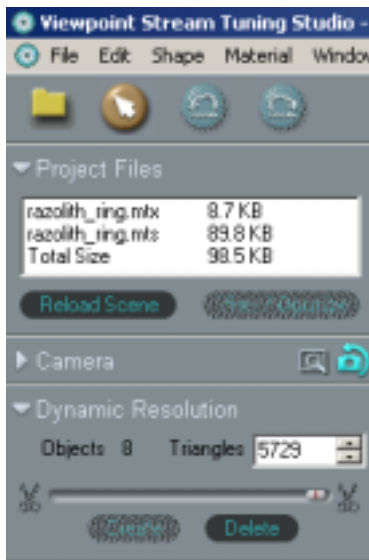
- 1 Choose **Image Viewer** from the **Material** menu.
- 2 Select a texture, and then from the **Material** menu choose **Remove Unused Pixels**.

Set Minimum Initial Viewing

Stream Tuning Studio allows you to set lowest level of geometry quality at which an object is initially viewed when streaming. You can choose to have a general shape viewable initially, to have the entire object streamed before displaying, or any selection in between.

To set minimum initial viewing

- 1 In **Project Files**, click the .mts file you want to optimize, and then click the **View/Optimize** button.
- 2 Click the arrow to the left of **Dynamic Resolution** to maximize that tool.
- 3 If the **Delete** button is not already enabled, click the **Create** button, and then use the Dynamic Resolution slider to choose a setting that degrades the geometry of the model to a minimum level you want for the initial view when streaming.
- 4 Click the **left** scissors icon to set the minimum level of the initial view.



Set Maximum Poly Count

Use the Dynamic Resolution slider to set the maximum poly (triangle) count for an object. This simplifies an object's geometry, so it's important to weigh the trade-off between a more optimized model—and, therefore, smaller file size—and the visual quality of the model.

Note: Setting maximum poly count is most useful for optimizing Viewpoint 3D Photo Studio models. Adjusting Dynamic Resolution may alter texture mapping.

To set maximum poly count

- 1 In the **Project Files** area, choose the .mts file you want to optimize, and then click the **View/Optimize** button.
- 2 Click the arrow to the left of **Dynamic Resolution** to maximize that tool.
- 3 If the **Delete** button is not already enabled, click the **Create** button, and then move the Dynamic Resolution slider to the left to reduce the number of triangles (poly count) in the model.

Note: Adjusting Dynamic Resolution may alter texture mapping.

- 4 Click the **Delete** button or the **right** scissors icon to set the maximum poly count.

Note: Be sure to inspect the optimized model. If you want to change the maximum poly count setting, choose **Undo** from the **Edit** menu. Then, follow steps 3 and 4 to choose a new maximum poly count.

Turn Objects Inside Out

This function inverts the normals of an object. Use this function if an object (usually originating in a third-party application) appears inverted; for instance, it rotates opposite the direction of your mouse movement.

Join Objects

Separate objects in different bounding boxes can be joined so they share a single bounding box. Once joined, the objects move together and are optimized as a single object.

- 1 Click the  tool, and then Ctrl-click each object you want to join.
- 2 On the **Shape** menu, click **Join Objects**.

If this selection is grayed, you did not select the objects correctly or there is only one object in the scene. To reselect objects, return to step 1.

Clamp Tiled Textures

About Tiled Textures

A texture is mapped onto an object by means of texture coordinates. The texture coordinate (0,0) corresponds to the lower-left corner of the texture, while (1,1) corresponds to the upper-right corner of the texture. When these texture coordinates are outside of the 1×1 square, the texture is tiled, or repeated, to cover the extra area.

All tiled textures must have dimensions that are powers of 2 to display properly. When a file is saved, Stream Tuning Studio automatically detects which textures are tiled, and stretches them so that their dimensions are powers of 2. This means that a 127×513 texture becomes 128×1024 .

Sometimes, only one or two texture coordinates go outside of the 1×1 square, and moreover, this area is sometimes mapped to a very small triangle. In this case, the visual defect is almost unnoticeable. However, Stream Tuning Studio still treats such texture as tiled, and stretches it to the next power of 2, potentially increasing file size. To “clamp,” or constrain such textures, choose **Clamp Tiled Textures** from the **Material** menu.

When Clamp Tiled Textures is applied, texture coordinates that would go outside of the texture rectangle are constrained to the size of the rectangle. If the texture is tiled multiple times, you see a significant change in the 3D view. To see the results of Clamp Tiled Textures, zoom into the model, and then apply Undo and Redo (Ctrl + Z and Ctrl + Y).

To apply Clamp Tiled Textures to selected textures only

- 1 Choose **Image Viewer** from the **Material** menu.
- 2 Ctrl + click textures to select them.
- 3 On the **Material** menu, choose **Clamp Tiled Textures**.

Note: Clamp Tiled Textures tool does not improve the visual quality of the model, but it may slightly reduce file size.

Chapter 6: Help, Resources, and Feedback

Viewpoint Developer Central: A Complete Resource

The newly launched Viewpoint Developer Central Web site is a complete resource for Viewpoint Experience Technology (VET) developers. At Developer Central you can get Viewpoint applications, support, production tips and techniques, tutorials, and user guides—to name just a few of the offerings there.

[Go to Viewpoint Developer Central](#) to

- [Get Assistance](#) For questions about using Viewpoint Experience Technology, click **Support** and go to the Viewpoint Forums.
- [Get Examples](#) Click **Create Content** and go to the Example Files.
- [Subscribe to the Viewpoint Developer Newsletter](#) Learn new production tips and techniques for creating 3D and rich media content for the Web with VET.
- [Give Feedback About Viewpoint Applications](#) Viewpoint Corporation values your feedback. Direct your comments and suggestions to the Viewpoint Forums.

You can also visit [Viewpoint Corporation's main Web page](#) for company news, links to Web sites featuring VET, and more.

Download Viewpoint Applications, Guides, and Tutorials

[Viewpoint Developer Central](#) is updated on an ongoing basis with the latest versions of its applications, user guides, and tutorials. Click **Create Content** to find links to the following.

Viewpoint Applications

You can download Viewpoint applications free of charge. Among applications available for download are

- [Viewpoint Media Player \(VMP\)](#) The Web browser plug-in necessary to view VET content with Netscape Navigator or Internet Explorer.
- [Viewpoint Scene Builder](#) An application designed to assemble and edit the content of a VET scene before its output to Viewpoint Media Files (.mts and .mtx/.mtz).
- [Viewpoint Media Publisher \(formerly called MTX 2 HTML\)](#) A utility that quickly creates an HTML page from a VET XML (.mtx/.mtz) file. This application provides a fast and convenient way for content creators to visualize a VET scene and animations within a Web page using the Viewpoint Media Player.
- [Viewpoint Control Panel](#) A utility designed to aid in the content creation, technical support, and development of VET-enabled Web sites and software.

User Guides and Tutorials

Get the most out of VET by learning with user guides and tutorials downloaded from Viewpoint Developer Central Web site.

Available are user guides covering the family of Viewpoint applications. Also available for download are the *Viewpoint Experience Technology XML Authoring Overview* and *Viewpoint Experience Technology XML Reference Guide* documenting the XML tags that create and orchestrate all aspects of a VET scene.

Tutorials use sample files to lead you step-by-step through a specific aspect of creating with VET. Download tutorials, such as “Texture Animation,” “Camera Animation,” and “JavaScript: Animations and Browser Control.”

Appendix: Keyboard Shortcuts

| Press this... | To do this... |
|--|--|
| Ctrl+O | Open an existing document |
| Ctrl+F4 | Close active document |
| Ctrl+.mts file listed at bottom of File menu | Imports an .mts file into the active document. Must have an .mts file loaded; this does not work if you are in .mtx file mode. |
| Ctrl+S | Save active document. |
| Alt+F4 | Exit application. |
| Ctrl+Z | Undo. |
| Ctrl+Y | Redo. |
| Ctrl+X | Cut selected objects. |
| Ctrl+C | Copy selected objects. |
| Ctrl+V | Paste selected objects. |
| Ctrl+D | Duplicate selected objects. |
| Ctrl+A | Select all objects. |
| Ctrl+Shift+A | Deselect all objects. |
| Delete | Delete selected objects. |
| Ctrl+Alt+P | Activate Preferences dialog. |
| F2 | View selection. |
| F3 | View all. |
| F9 | Toggle left tool pad. |
| F10 | Toggle right tool pad. |
| F11 | Select next object. |
| Home | Return camera to home position. |
| Ctrl+Ins | Set Home position. |
| Ctrl+J | Join objects. |
| Ctrl+ M | Merge vertices. |
| Right-click tool title bar. | Displays a shortcut menu for expanding and collapsing the tool. Some tools also include a Close option. |
| Ctrl+Drag | On object: Zooms plane. In Image Viewer: Zooms image. |
| Shift+Drag | On object: Moves plane left, right, up, and down while key is down. In Image Viewer: Pans image. |

Appendix B: Keyboard Shortcuts (con't.)

| Press this... | To do this... |
|------------------------|---|
| Alt | Switches to the Rotate Camera tool while key is down. |
| Ctrl+E | Toggles Solo mode On/Off. In Solo mode, only selected objects are drawn; others are hidden. |
| Ctrl+G | Generate Dynamic Resolution. |
| Ctrl+Shift+G | Delete Dynamic Resolution. |
| Ctrl+I | Display Dynamic Resolution. |
| Ctrl+Tab | Select next document. |
| Ctrl+Left Arrow | Rotates camera 90° around Y axis to the left. |
| Ctrl+Right Arrow | Rotates camera 90° around Y axis to the right. |
| Ctrl+Up Arrow | Rotates camera 90° around X axis up. |
| Ctrl+Down Arrow | Rotates camera 90° around X axis down. |
| Ctrl+Shift+Left Arrow | Rotates camera 30° around Z axis counter-clockwise. |
| Ctrl+Shift+Right Arrow | Rotates camera 30° around Z axis clockwise. |
| Left Arrow | Rotates camera 30° around Y axis to the left. |
| Right Arrow | Rotates camera 30° around Y axis to the right. |
| Up Arrow | Rotates camera 30° around X axis up. |
| Down Arrow | Rotates camera 30° around X axis down. |
