

RenderWare Graphics

Artist Guide

Maya™ Tutorials

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Acknowledgements

With thanks to [RenderWare](#) Graphics development and documentation teams.

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1. Introduction

RenderWare Graphics is a 2D and 3D graphics engine used to create real-time 3D graphics applications, such as computer games and simulations.

RenderWare Graphics has a high performance, flexible and feature-rich exporter tool chain that includes viewers for previewing artwork on the target platform. The exporters enable artists to quickly and easily prepare high quality, game-ready assets.

You can use 3ds max, Character Studio, and Maya to create worlds, objects and animations. A RenderWare Graphics exporter plugin - native to each package - converts and optimizes all of your data from these modeling packages into a compressed, optimal format that the RenderWare Graphics run-time engine can handle efficiently.

1.1 Tutorials

The tutorials are designed to enable artists to design and export their Maya artwork into RenderWare Graphics using the RenderWare Graphics exporter. The exporter has been designed to easily integrate Maya artwork with RenderWare Graphics and a working game.

The tutorials are written from an artist's perspective. Intermediate knowledge of Maya is assumed. RenderWare Graphics tutorials are not intended to teach you how to use Maya, but to show you how to obtain the most from your Maya artwork.

This document is organized around a series of tutorials that take you through the basics of exporting and viewing Maya artwork exported using the RenderWare Graphics exporter.

Maya Tutorials

The tutorials in this document are:

- Basics – Basic introduction to Visualizer and exporting
- Customizing Assets – Introduction to customizing, creating and exporting assets.
- Textures - Exporting and viewing textures.
- Vertex Lighting - Exporting and viewing vertex lighting
- Export Templates - Creating and editing export templates.

- Hints and Partitions - Controlling static world sectorization.
- Batch Exporting – Exporting multiple scene file using the Batch Exporter tool.

Workflow

The general workflow for artists in RenderWare Graphics is:

1. Create in Maya
2. View in Visualizer
3. Modify in Maya
4. View in Visualizer
5. Go to Step 3 until artwork is perfect
6. Export in RenderWare Graphics format

The goal of the workflow process is to export your scene, animated characters, etc. so that your programmers can place your models into a working game.

RenderWare Graphics is not Maya

This is obvious, but not everything you can do in Maya translates to your game. It's worth testing before spending excessive amounts of time on a great animation only to discover that it does not export as expected.

Before you begin

Before you begin these tutorials you will need to setup RenderWare Visualizer for your target platform. RenderWare Visualizer is a viewer used for previewing your artwork on your target platform. Setup details are explained in docs\viewers\RenderWareVisualizer.pdf in your RenderWare Graphics directory.

Examples folder

The example Maya scene files used in this tutorial can be found in your docs\exporters\artists\examples\maya in your RenderWare Graphics directory. Examples are saved in Maya 4.0 format.

1.2 Other documentation

For further information on RenderWare Graphics refer to:

- Viewer Documentation – RenderWare Visualizer, Clump View and World View Viewers
- RenderWare Graphics Maya Reference Guide ([MayaReferenceGuide.pdf](#) in \docs\exporters\artists in your RenderWare Graphics directory).
- RenderWare Graphics Artist Guide Glossary
- The conversion document [ConvertingExportsFrom34.pdf](#) for artists upgrading from 3.4 to this version of RenderWare Graphics.
- RenderWare Graphics has a range of documentation material aimed mainly at developers but still useful for the artist. After installation, take a look at additional documents in the docs directory. The User Guide in particular should be useful to you as it covers a lot of material relevant to the artist.
- your customer account on RenderWare Graphics' Fully Managed Support System (FMSS) <https://support.renderware.com>; its searchable knowledge base and downloadable examples

PDF format

Most RenderWare Graphics documents are in PDF format, which is a self-contained document format from Adobe. You'll need to install the (free) Acrobat Reader to view and print these. In some cases the quality is better in the printed form than on-screen.

The RenderWare Graphics PDF documents have been designed to be printed double-sided.

2. Basics

This tutorial introduces the Visualizer, understanding the controls and how it can be used to view your artwork.

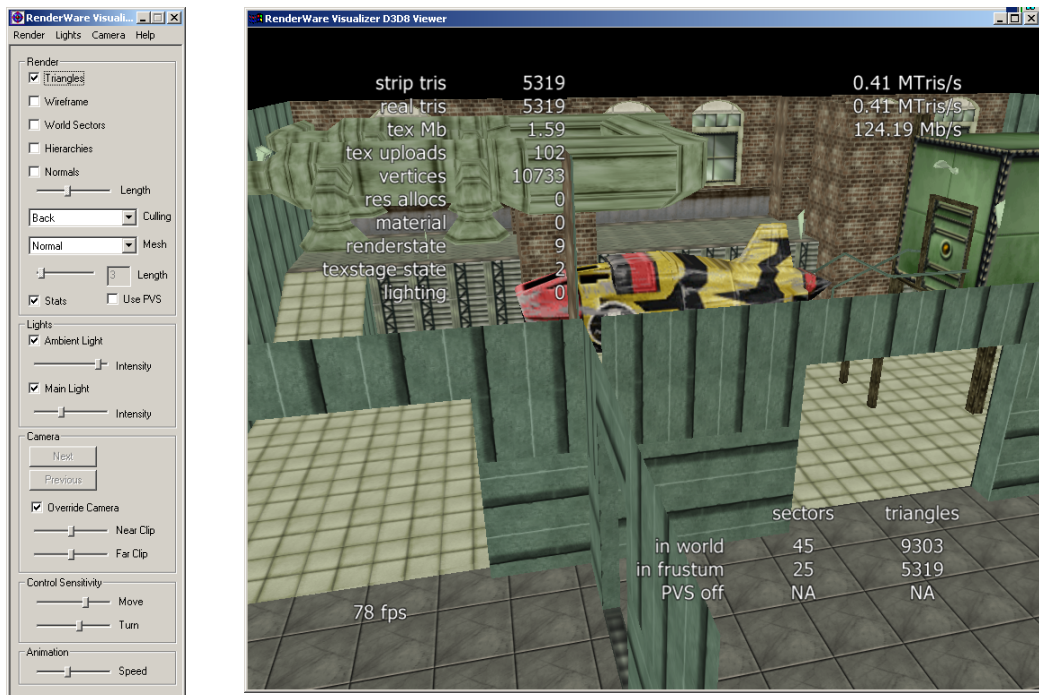
This tutorial will explain:

- What the Visualizer is.
- How to setup Visualizer for use with Maya
- Visualizer basics for the PC
- How to view your artwork in Visualizer
- Exporting basics
- How to automatically create and manage assets

2.1 Visualizer basics

What is the Visualizer?

RenderWare Visualizer is a suite of applications that can be used to view resources on different platforms. It can be run as a stand-alone application or directly from Maya. We'll have a look at viewing artwork directly from Maya.



Control Panel

Viewer



Setting up Visualizer on all platforms is explained in detail in `RenderWareVisualizer.pdf`. This tutorial explains setting up Visualizer on the PC.

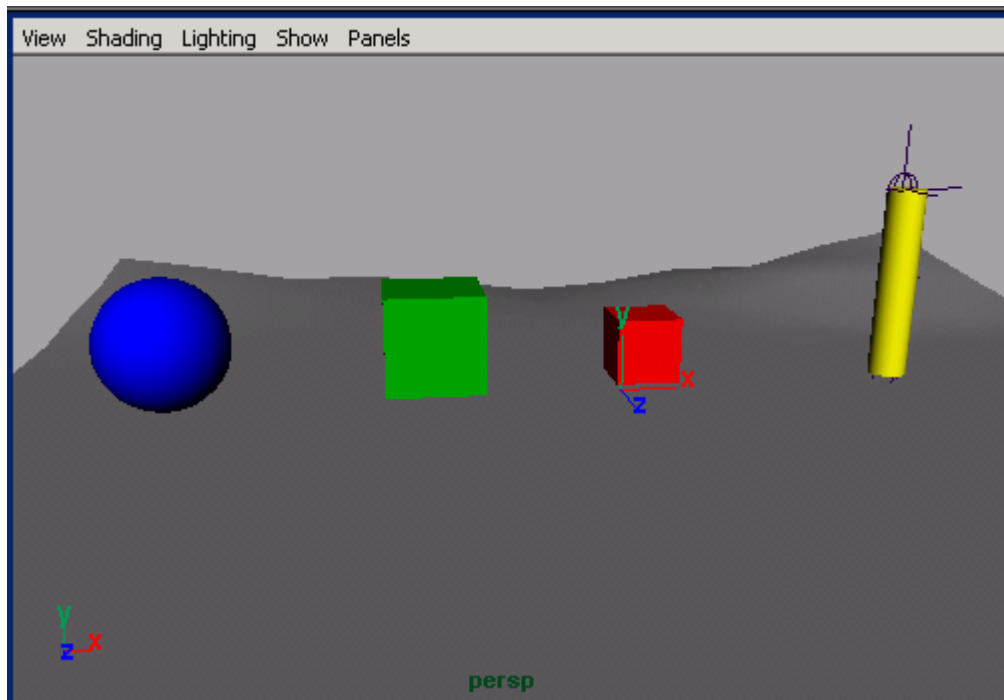
Using the Visualizer

We'll take an existing file and look at viewing the file in Visualizer.

1. Load the Maya file: `exporterbasics.mb`.



The example Maya scene files used in this tutorial can be found in your `docs\exporters\artists\examples\maya` in your RenderWare Graphics directory.

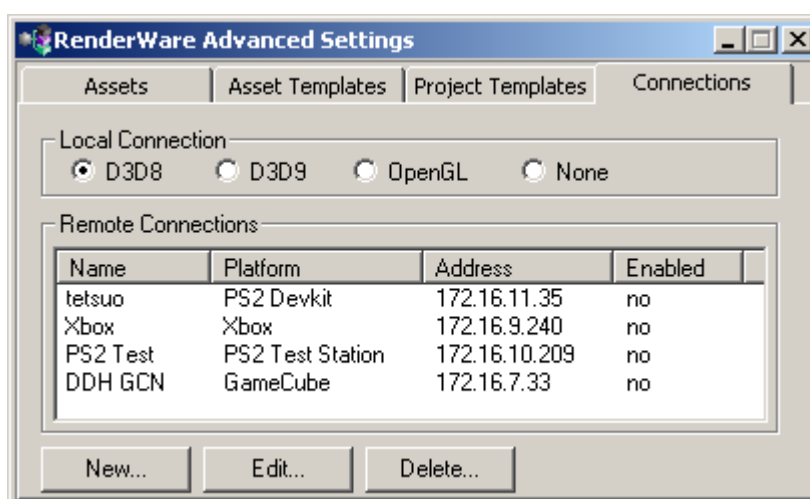


You will see four discreet objects: a blue sphere, green cube, red rectangle and yellow cylinder. They all rest above a gray 'ground plane'.

Play the animation. Each object is animated in a different fashion: the sphere translates, the cube rotates, the rectangle morphs and the cylinder is skinned. The ground plane is static.

The RenderWare Graphics exporter can be used to view this artwork in RenderWare Visualizer and to export artwork to file.

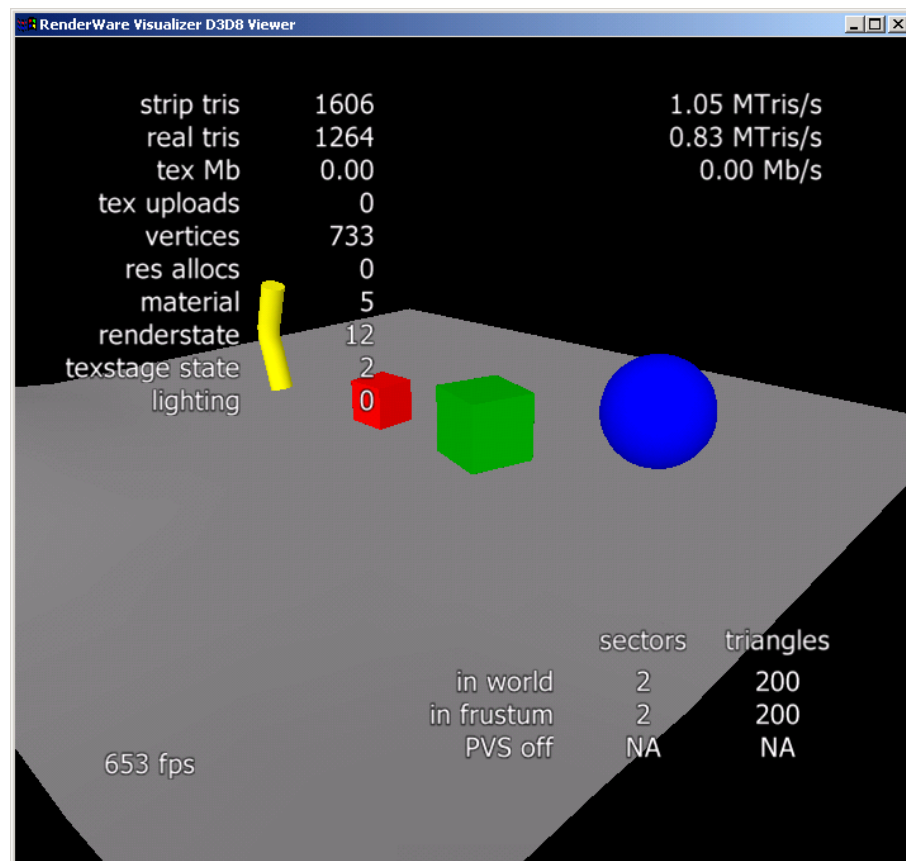
2. Open the RenderWare Advanced Settings window
RenderWare → Advanced Settings...



3. Click on the *Connections* tab to setup your connections for RenderWare Visualizer.
4. Select D3D8 local connection, if you have DirectX8 installed on your machine, else select OpenGL.

5. Close the Advanced Settings window.
6. Click *RenderWare* → *View* to view the artwork.

RenderWare Visualizer comprises of a viewer and a control panel. The viewer is displayed below.



RenderWare Visualizer Viewer

Navigation Controls on PC

left click & drag	Mouse Look - position static, but changing view position
right click	Activates and deactivates orbit mode. To activate orbit mode, depress the right mouse button and keep it depressed. Move the mouse or use the keyboard for navigation. Release the right mouse button to deactivate orbit mode.
→ or D	Strafe Left
← or A	Strafe Right
↑ or W	Forward
↓ or S	Backward

Esc

Quit application if in the Viewer window

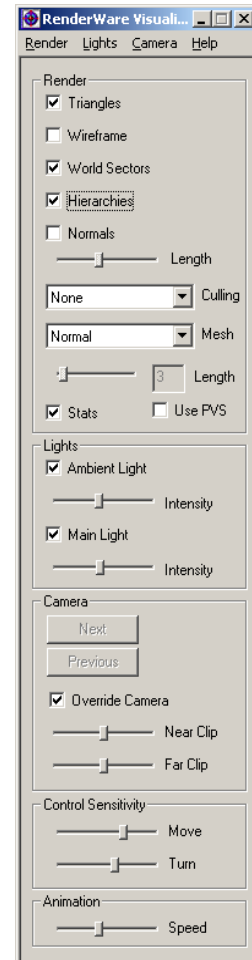


The navigation controls for other platforms are stated in `RenderWareVisualizer.pdf`.

To reset the artwork, deselect *Override Camera* in the Control Panel. Toggling this option enables and disables navigation in the Viewer window.

Viewing artwork in the Visualizer directly from Maya gives the artist an idea what the artwork will look like when it is rendered. However, it is not designed to give an optimized view of your artwork. To obtain this you will need to customize the scene assets.

7. Select *Hierarchies* in the Control Panel. This will display the hierarchies for the blue sphere and the yellow cylinder. You can see the blue sphere and the yellow cylinder moving using hierarchies.
8. Select *World Sectors* to display the world sectors. Notice how the statistics changes when options are selected in the Control Panel.
9. Have a look at the other options in the Visualizer; in particular the Render options to see what they do.
10. Close the *Control Panel*. Closing the Control Panel will also close the viewer.



Control Panel



The statistics displayed on the screen can be turned on and off by selecting Stats on the floating Control Panel. The statistics can be divided into two sections. At the top of the screen are platform specific statistics and at the bottom of the screen are the platform dependent statistics.

2.2 Exporting Basics

The exporter enables the artist to create worlds, objects and animations in Maya; view the artwork using Visualizer and export the artwork to RenderWare Graphics. RenderWare Graphics converts and optimizes all of the data into a compressed optimal format that the RenderWare Graphics run-time engine can handle efficiently.

The exporters have six file export formats:

- `.rws` can contain multiple Animation, Static World, Animated Hierarchy and Spline assets in any combination. Can also contain embed textures and material effects.
- `.rf3` an un-optimized version of the `.rws` file in the XML standard.
and legacy files
- `.anm` for Animation information
- `.bsp` for Static World information
- `.dff` for Animated Hierarchical information
- `.spl` for Spline information

Why are there different file export formats?

There are different file export formats because artwork can be manipulated in different ways depending on the type of objects used.

Detailed description of file export formats

RWS

A `.rws` file stores all export formats. This means that it can store Static Worlds, Animations, Splines and Animated Hierarchies at the same time, which means that you're able to view your entire scene in one instance. Texture libraries and Material effects are embedded in `.rws` files.

RF3

From RenderWare Graphics 3.5 a new type of file format, the `.rf3` file is supported. The `.rf3` file format is an XML based editable file, which contains all the raw exported data. Unlike the `.rws` files, which are RenderWare Graphics optimized binary files, `.rf3` files contain no rendering optimizations, and are simply a snapshot of the raw 3D data. Using the `rf3cc` compiler tool, users can compile these `.rf3` file into optimized platform specific RenderWare Graphics binary files. Textures and material effect are referenced from their original location.

Legacy Files: ANM, DFF, BSP and SPL

The file formats `.anm` `.dff`, `.bsp`, `.spl` are now considered legacy and may be removed in future releases. It is therefore recommended that you export to `.rws` files.

What are Assets?

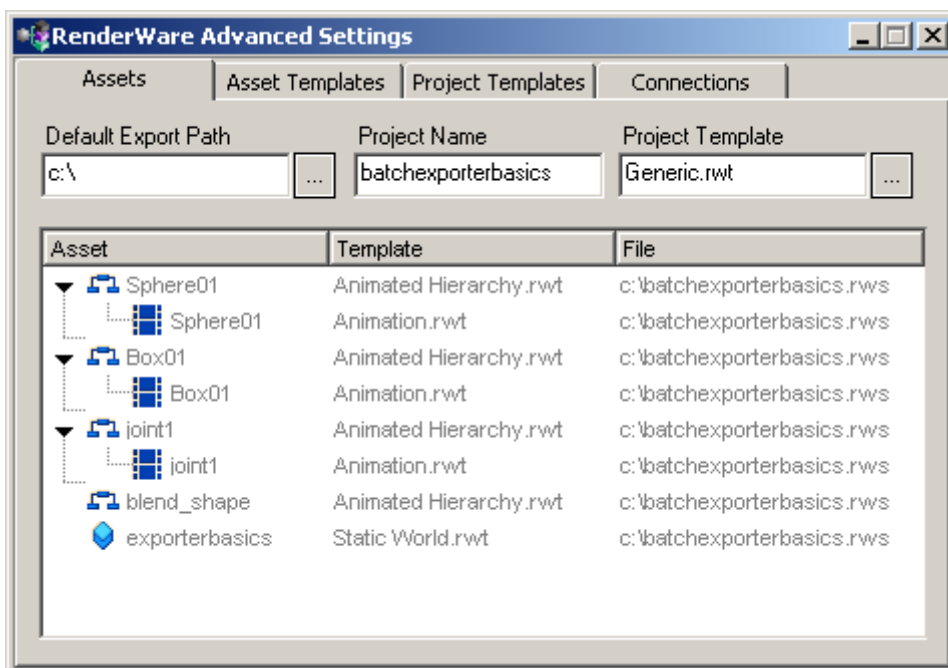
Assets are created in the Assets tab to export and view different types of objects. All assets can be viewed using the *View* menu option or individually by right clicking on the individual asset in the Assets tab. Assets are created so that they can be exported and viewed individually. Programmers will likely want to use the assets separately in the game engine.

There are four types of Assets, Animated Hierarchy, Animation, Static World and Spline. These assets export to the selected export file type selected within the project template. The default is a .rws file.

Automatically Managing Assets

Automatically managing assets is an easy way to export and view the scene assets and an easy way to get started. Assets are managed automatically by default when a scene is first created; Each time an object is added to the scene it is automatically added to the Assets tab's list of assets.

1. Click *RenderWare* → *Advanced Settings...* Click the Assets tab, this will display the Assets tab.



2. Assets have been created for all four objects (the first bone in the case of the cylinder) and an export node for the gray plane. Assets are automatically given a name from the name of the object.

2.3 Summary

This tutorial has explained the basics required to setup and view artwork using RenderWare Visualizer. It has also explained an overall explanation of what types of assets there are and how to use the Assets tab to automatically create assets for different scene objects

3. Customizing Assets

This tutorial is an introduction to customizing Assets. Assets are, by default, created automatically using the Assets tab. However, the assets may need tweaking. Assets can be created manually based on your selection.

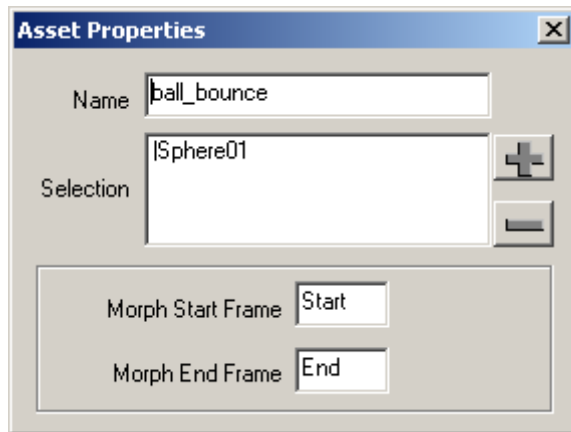
This tutorial will explain:

- renaming assets
- modifying assets
- RenderWare Output Window basics
- exporting assets
- using RenderWare Visualizer Launcher
- simple animation including bone weights

3.1 Assets

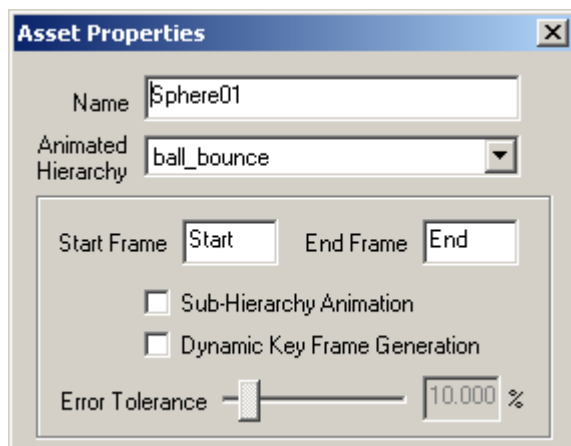
Modifying and renaming assets is explained below.

1. Open `exporterbasics.mb`.
2. Open the Assets tab
RenderWare → *Advanced Settings...* the assets are currently grayed out, showing that the assets are managed automatically.
3. Right Click on the Window and Select *Customize*. This turns off the automatic asset management.
4. Select Sphere01 and Right Click → *Properties*. This will display the Asset Properties dialog for the blue sphere.
5. Rename this Asset to `ball_bounce` by changing the Name field.



When you create an asset, it will detect when there are keyframes associated with the object. If the object is dynamic it will automatically be defined as an Animated Hierarchy.

6. Close *Asset Properties*. When viewed in Visualizer the blue sphere is bouncing.
7. Select the child Animation asset of ball_bounce and Right Click → *Properties*. This will display the Asset Properties dialog for the green sphere's animation.



8. Change the End Frame value to 15, about half way though the animation.
9. Again, close the *Asset Properties dialog* . When viewed in Visualizer the green sphere is now only bouncing up and not down.
10. Save exporterbasics.mb.

3.2 RenderWare Output Window

To use the asset `ball_bounce` in RenderWare Graphics you will need to export it as a `.rws` file. When a scene or an individual asset is viewed using *the Visualizer* a temporary `.rws` file is created. This is shown in the RenderWare Output Window.

1. Right Click the `ball_bounce` asset from within the Assets tab.
2. Select *View* to view the asset.



The `ball_bounce` asset has been exported to a temporary `.rws` file so that it can be viewed in Visualizer.

To use the `ball_bounce` asset file in your game, you will need to export it to a permanent file.

3. Again, in the Assets tab, right click the ball_bounce asset and select *Export* to export the file.
4. The RenderWare Output Window displays the name of the exported .rws file.



To view the exported file in Visualizer you will need to use the Launcher.

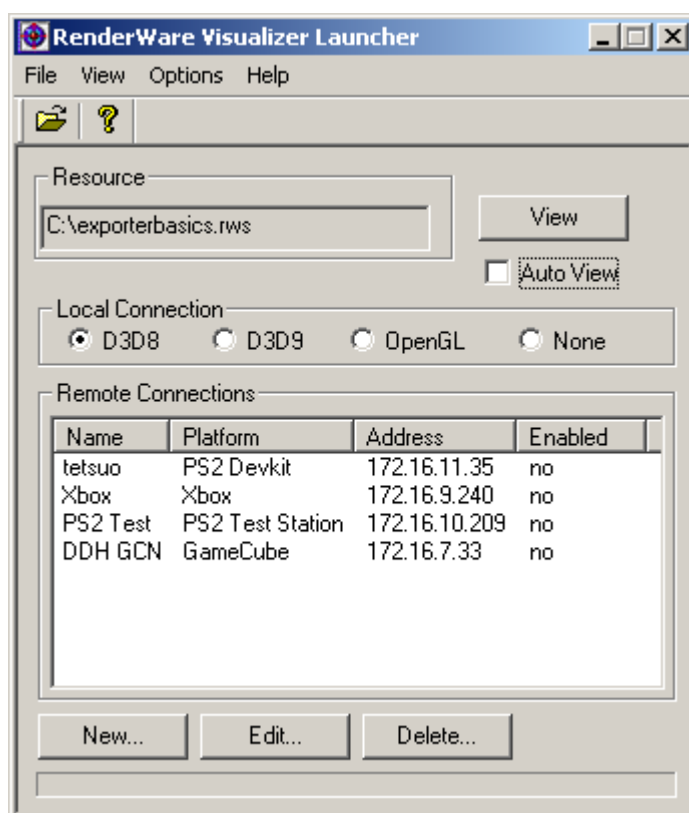


The path and filename of the .rws file are set in the Project Name and Export Path boxes of the Advanced Settings dialog.

3.3 Launcher

RenderWare Visualizer Launcher loads exported resources saved as .rws, .rf3 and legacy file .dff or .bsp and retains the *File* history for easier access to files. The Launcher sends the files to viewers for viewing on different platforms.

1. Open Launcher
Start → *Program Files* → *RenderWare* → *Graphics* → *Visualizer*
2. From the Launcher menu, *File* → *Open*
3. Open exporterbasics.rws.



4. Click *View* to view exporterbasics.rws in Visualizer.

RenderWare Visualizer Launcher

Drag and drop can be used to drag a file into the *Resource* area.

Enable *Auto View* to automatically view a file after it has been opened or dragged and dropped in the Resource area.

3.4 The Export Path

The name of the asset is set in the *Asset Properties*. So that all files for these tutorials can be found easily we'll create a directory to contain all the exported files.

1. In Windows Explorer create a directory called *rwproject* on the *C:* drive.

2. In Assets, set the Export Path field to `c:\rwproject\`
3. Close Assets.
4. Export the assets into the new directory *RenderWare* → *Export*.

3.5 Morphing

RenderWare Graphics distinguishes between static objects like walls and floors and dynamic objects like characters. Rotating, translating, or blending between morph targets can animate dynamic objects. They can also be smooth-skinned and animated using joints.

1. For the simple animation we will continue to use the `exporterbasics.mb` file.
2. Select the `blend_shape` asset.
3. Right click the `blend_shape` asset to open the Asset Properties dialog.
4. Change the *Name* to `box_morph`.
5. Right click → *View box_morph* to view the morphing box in *RenderWare Visualizer*

3.6 Skinning

RenderWare Graphics exports animated skin and bones for use in your games. The `exporterbasics.mb` displays a cylinder.

Bendy Cylinder

1. Using the `exporterbasics.mb` file, select the yellow cylinder.
2. Open the Assets tab.
3. You will notice that the *joint1* asset contains one of the bones in the cylinder skeleton. When exporting skinned objects you need to select a bone from the skeleton and not the geometry mesh as the exporter will try to export rigid geometry.
4. Rename the asset "Cylinder"
5. Right click → *Cylinder* to view the skinned joint in *RenderWare Visualizer*.

Four bone weights: RenderWare Graphics supports up to four bone weights per vertex. Using less than four bones can offer significant performance improvements.

Bone number: RenderWare Graphics has a limit of 64 bones per skin on PlayStation 2. See your target platform API Reference for the number of bones supported. Using more than 64 bones will cause the skin to be split.
(*Modules* → *Geometry* → *Skinning* → *RpSkin* → *<target platform>* → *Restrictions* → *Bone Limit*).

No negative scaling: In cases where you need two symmetrical models like arms or legs, don't be tempted to duplicate and use negative scaling. For more information see *Negative Scaling* in the *Modeling Reference* section of [MayaReferenceGuide.pdf](#).

3.7 Summary

This tutorial has explained renaming and modifying assets; exporting assets basics and viewing exported assets using the RenderWare Visualizer Launcher. It has also covered exporting files containing simple animation including morphing, skinned joints.

4. Textures

To be able to use your artwork in a game, the artwork needs to be exported. As explained in the previous tutorial there are several different export file formats that can be used. This tutorial adds textures to artwork and explains how to view and export files with and without textures using different file export formats.

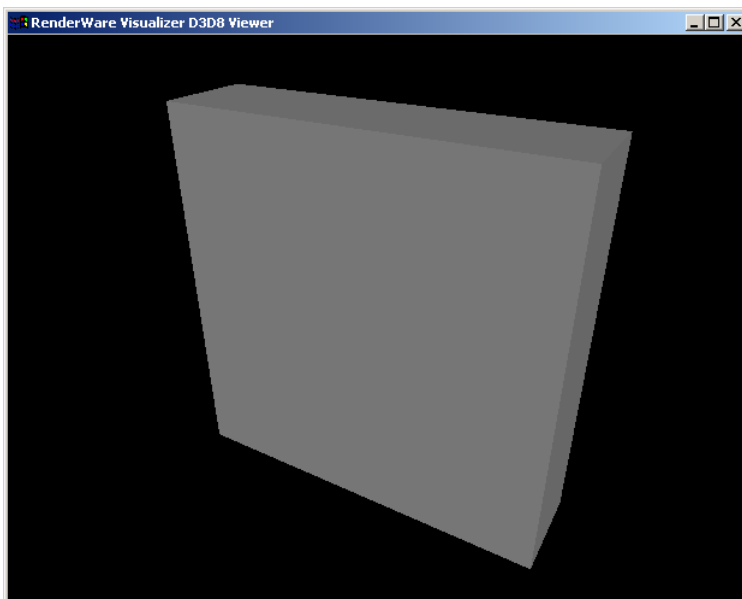
This tutorial will explain:

- embedding textures in `.rws` files.
- using Maya material to create various effects., for example, Bump Mapping and Environment mapping.
- dual texturing using the RenderWare Shader.

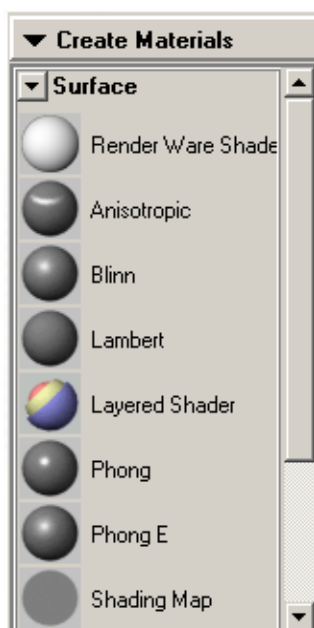
4.1 Textures and the Visualizer

Textures are embedded in .rws files as platform independent texture dictionaries. When you click on *View* a temporary .rws file is created. *View* is a good starting point to see what your artwork will look like when it's exported. The Maya example file used does not contain textures. For this example a texture and bump map are applied to the sliding door.

1. Open texture.mb.
2. *RenderWare* → *View* to view the file in Visualizer.



3. Close Visualizer
4. To use the RenderWare Shader, in Hypershade, click RenderWare Shader.

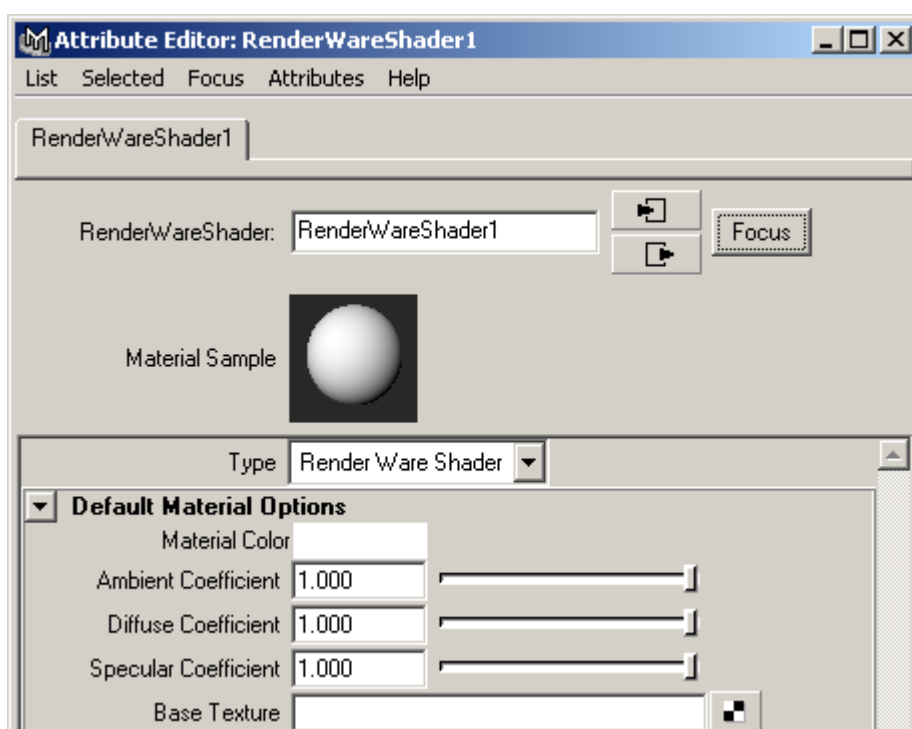


Bump mapping is now supported in RenderWare Graphics. It can be used to simulate rough surfaces such as stone, or tree bark. Bump mapping is straightforward to implement in RenderWare Graphics although there are a couple of small things that could cause problems. It uses two material channels, one for the color and one for the bump.

On the PC, D3D8, D3D9 and OpenGL targets support bump mapping and are achieved in either multi-pass or multi-texture in some instances of D3D8 and D3D9 (if the video card driver supports multi-texturing).

In Maya, it is recommended you use the RenderWare Shader rather than the built in Maya shaders. It provides direct settings for the RenderWare Graphics material and no translation of these settings is performed on export.

5. In the Attribute Editor for the new RenderWare Shader object:



6. Click the button to the right of Base Texture in the Default Material Options section.
7. In 2D Textures, click the File button
8. The image file to load is `steel.bmp` in `docs\Exporters\Artists\Examples\Maya\Textures` in your RenderWare Graphics directory.
9. In the RenderWare Shader attribute editor, select the MatFX Effect `rpMATFXEFFECTBUMPMAP`.
10. Apply the Bump Texture `steel_bump.bmp`

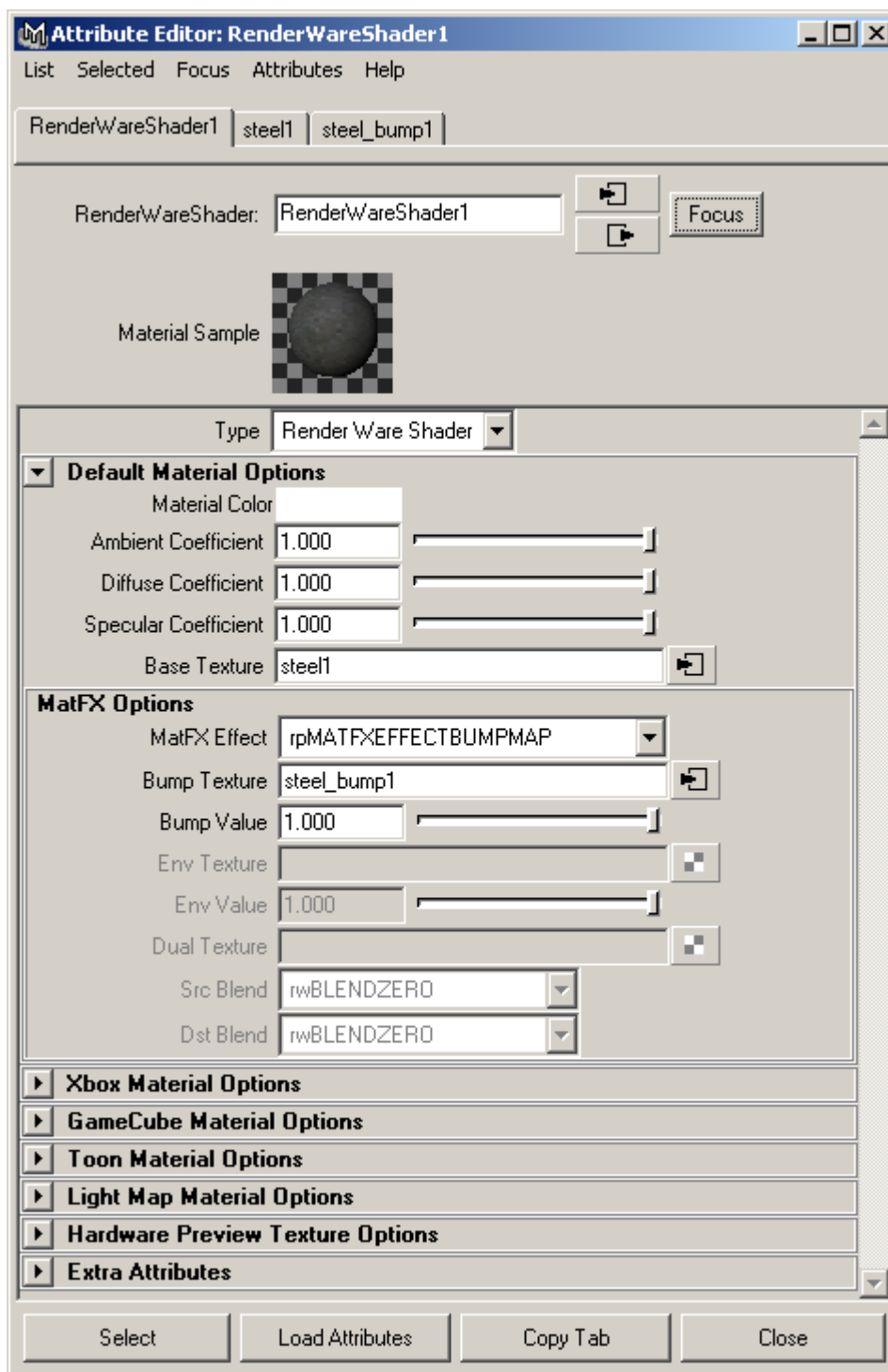


The filenames for textures should not exceed 31 characters. The exporters will warn if this limit is exceeded and truncate the name on export.

11. Set the *Bump Map* value to 1.0.

A value of 0 provides no bump mapping and a value of 0.5 gives only moderate amounts of bump mapping.

Whilst it is possible to apply values greater than 1.0 you will find increasing amounts of distortion the higher the value gets.



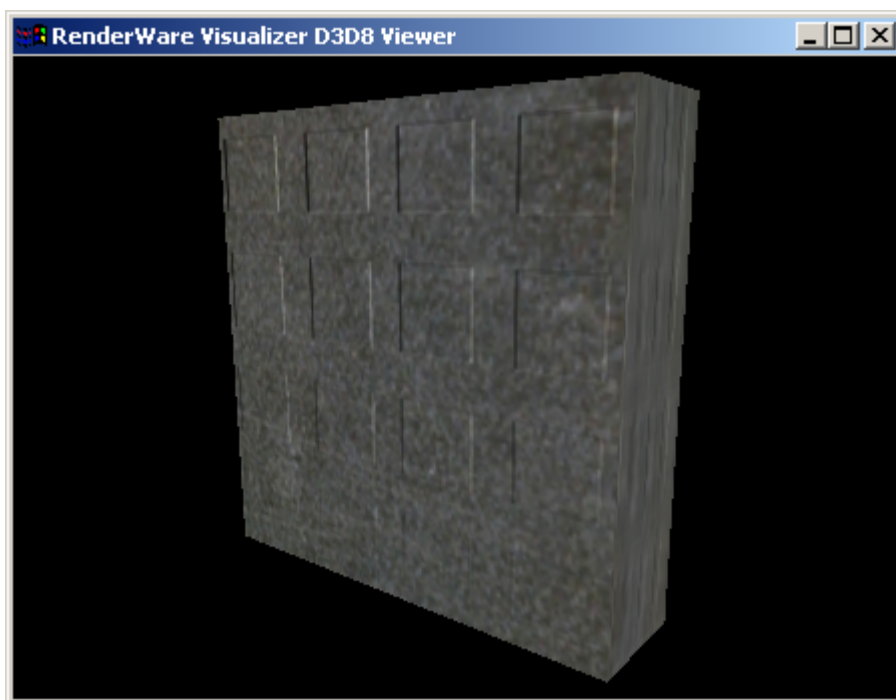
12. Assign the RenderWare Shader texture to the door



RenderWare Shader bump mapping is not displayed in Maya. However, bump mapping is displayed in RenderWare Visualizer.

13. *RenderWare* → *View* to view the door in Visualizer. The result should be similar though maybe not identical to the Maya result.

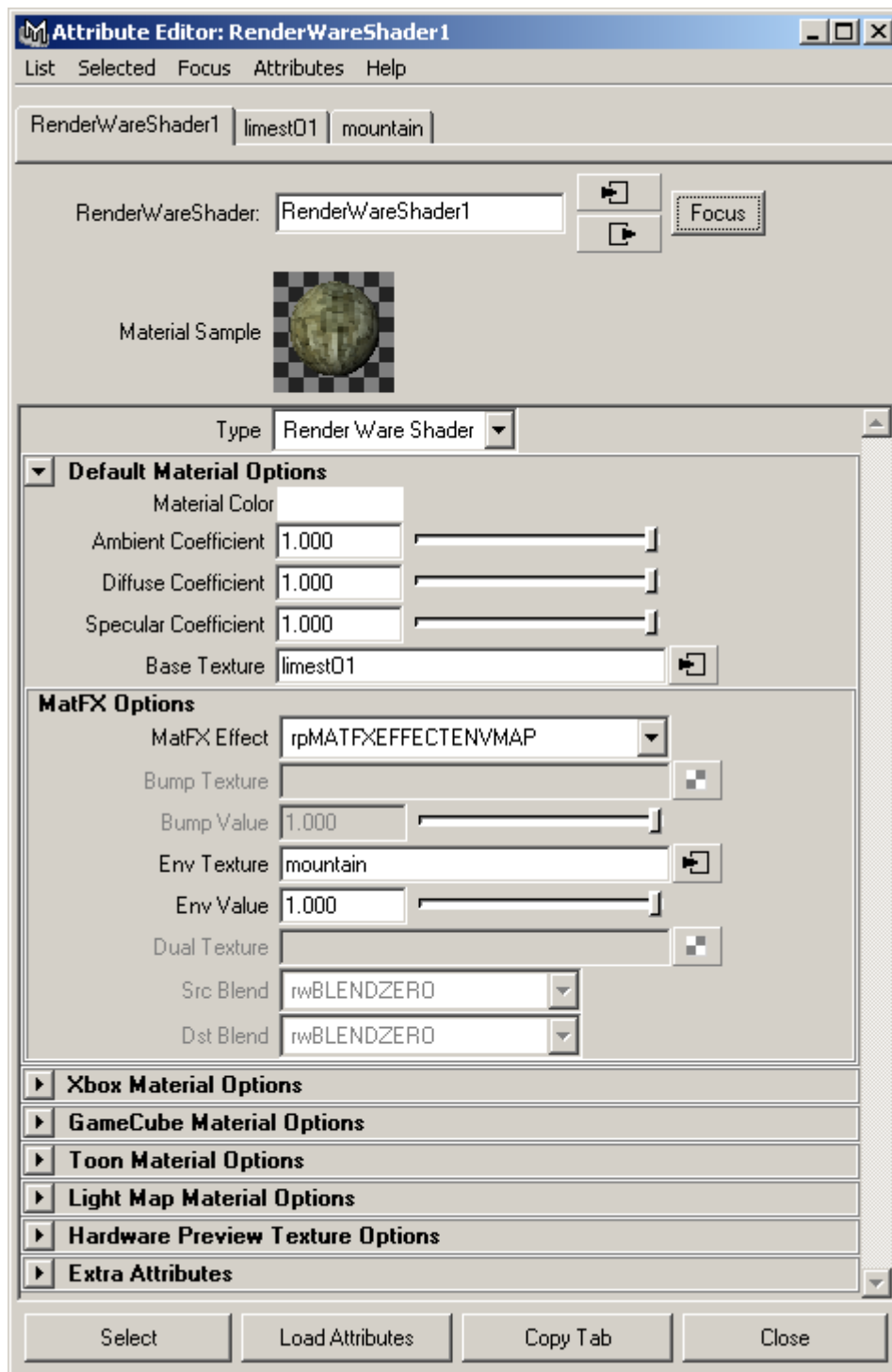
The screenshot below shows the door with a grid bump map applied.



4.2 Environment Mapping

Environment mapping is similar to bump mapping as it uses two material channels; one for the base color and one for the reflected color.

1. Create a simple sphere. *Create* → *Polygon Primitives* → *Sphere*
2. In Hypershade, create a RenderWare Shader material
3. In the RenderWare Shader material's Attribute Editor, assign the base texture file `limest01.bmp`
4. To add the reflected environment map, set the MatFX effect to `rpMATFXEFFECTENVMAP`
5. Assign the environment texture file `mountain.bmp`



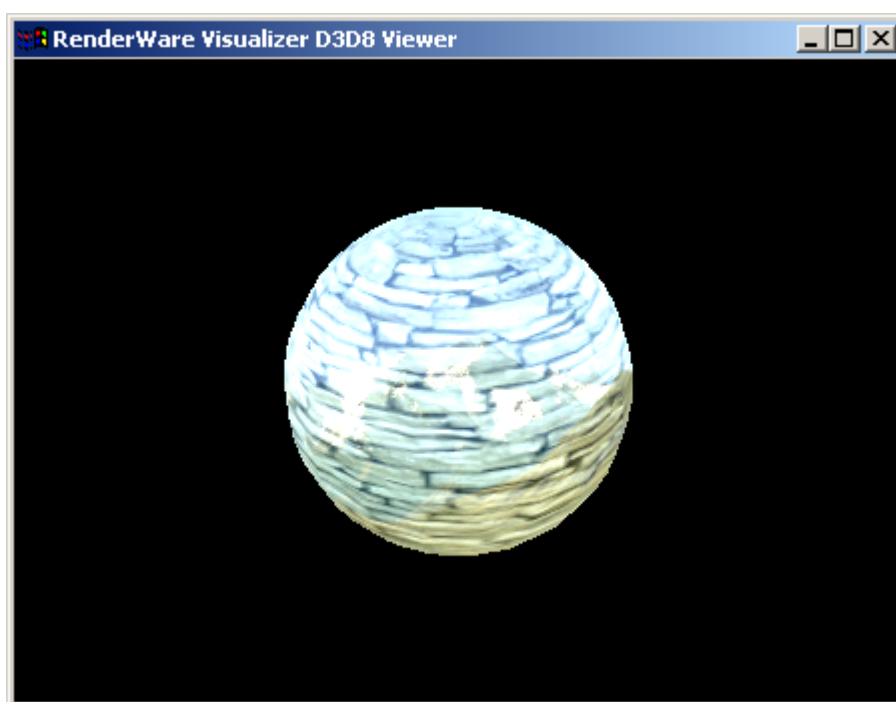
The material's reflectivity parameter is used by RenderWare Graphics to control how the environment map is blended with the color map. The process is additive so a value of 0 is 100% color map and 0% environment map; a value of 1 is 100% color *and* 100% environment map, i.e. the colors will be brighter.

6. Apply the material to your sphere object.



RenderWare Shader environment mapping is not displayed in Maya. However, environment mapping is displayed in RenderWare Visualizer.

7. View the file in RenderWare Visualizer.



2D maps only: RenderWare Graphics only accepts file textures as images for environment mapping. All other specular parameters are ignored by the exporter.

4.3 Second set of UVs with MatFX dual texture

To create a second set of UVs using the MatFX dual texture and the RenderWare Shader material you need to follow the steps below:

1. Create a sphere
2. Assign a RenderWare Shader Material to the sphere
3. Set a Base texture
4. Choose MatFX Effect `rpMATFXEFFECTDUAL` and a Dual texture.
5. Set "Src Blend" to `rwBLENDSRCALPHA` and "Dst Blend" to `rwBLENDINVSRCALPHA`.
6. Create a set of UVs for the sphere. (*Edit Polygons* → *Texture* → *Spherical Mapping*)
7. Create a second set of UV for the sphere.
 - a. Select the "*Edit Polygons* → *Texture* → *Planar Mapping*" option box. Set a panel set of UV for the second set so that you can see a clear difference.

- b. Enable "Create New UV Set" and set "UV Set Name" to "uvSet2".
 - c. Click "Project" button.
8. View your UVs sets.
 - a. Go to one of you view panels and go to the "Panels" rollout.
 - b. Go to "Panel" and select "UV Texture Editor".
 - c. The new "UV Texture Editor" view panel may have a white square for the texture in the middle.
 - d. To turn this off so you can see the UV sets, open the mouse menu on the "UV Texture Editor" view panel. Goto the "Image" option of the mouse menu rollout and disable the "Display Image" option.
 - e. You can now see a UV set. To switch which UV set you are looking at display the mouse menu again, goto the "Image" option again, but this time goto "UV Sets" this will open another rollout with the name of the different UV sets. You should see "pSphereShape1 | map1" and "pSphereShape1 | uvSet2". Choice the one you wish to view and it will be displayed in the "UV Texture Editor" view panel.
9. Now you have you second set of UVs you need to connect them up so something is using them.
 - a. Goto the "Window" rollout at the top.
 - b. Go down to the "Relationship Editors" rollout.
 - c. Go down to the "UV Linking" rollout and select "Texture-Centric".
 - d. In the "Textures" side of the "Relation Editor" window select "Default Base Texture".
 - e. In the "UV Sets" side of the "Relation Editor" window select
 - f. You have now linked you base texture to your first set of UVs.
 - g. In the "Textures" side of the "Relation Editor" window select "Default Dual Texture".
 - h. In the "UV Sets" side of the "Relation Editor" window select "uvSet2".
 - i. You have now linked you dual pass texture to your second set of UVs.
10. The sphere will now export with two sets of UVs set up for MatFX dual passing.

4.4 Exporting Textures

When you view a scene using *View* a temporary .rws file is created and the textures are embedded in this. The textures embedded are listed in the Output Window.



Textures are embedded in .rws files if the Embed Texture Dictionary flag is set in the Active Project Template.



Textures
embedded
in .rws file

RenderWare Output Window displaying "Medium" verbosity.

Conclusion

Textures are embedded in .rws files. Textures should be saved as .bmp or .png files.

4.5 Summary

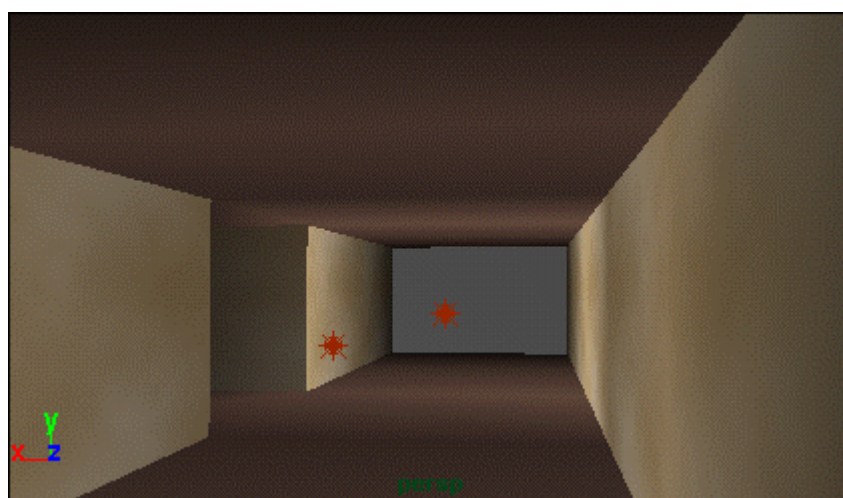
This tutorial has explained the steps required to export and view .rws files containing textures. Artwork needs to be exported into a RenderWare Graphics compatible file format in order to be compatible with the RenderWare Graphics SDK.

5. Vertex Lighting

Vertex lighting (or pre-lighting) is a very efficient way to bake lighting into a scene's geometry. Effectively the lighting is an extra piece of information stored in the geometry's vertices. The downside to pre-lighting is that it remains static as the scene changes.

Setting Up

1. Open `city.mb`. This world does not contain vertex lighting.
2. In your city scene, create a point light and move it into the tunnel. In its attributes set the *Intensity* to 6 and the *Decay* to *Linear*. The point light creates a spherical lit zone with a gentle fall-off which illuminates the interior of the tunnel.
3. Duplicate the light two or three times and move the copies around inside the tunnel.
4. Render in Maya to see the overall effect. Experiment by moving the lights. In the illustration below the walls are mapped with a simple repeating texture and the floor and ceiling has a flat brown material.



The next step is to prelight.

5. Select *Edit Polygons* → *Colors* → *Prelight* to prelight the scene. After a few seconds the viewer will update.

When you've prelit a scene in Maya you need to make sure you're viewing just the prelight colors. In the shaded view you're using make sure *Lighting* is set to *Use Default Lighting*. And in the *Display* → *Custom Polygon Display* tool make sure *Color in Shaded Display* is set on and *Color Material Channel* is set to *Emission*.

For more information on prelighting in Maya see under *Polygonal Modeling* → *Coloring Polygons* in the Maya Help Library.



Prelighting is geometry based: Prelight values are stored with the vertices and then averaged over the surface of your geometry. This means that if you have very few vertices, which usually is a good thing, then the lighting might not be as expected. So you may need to add in some geometry solely for the prelights.

6. View the file in RenderWare Visualizer. The prelighting should be visible in your scene.

If you're feeling adventurous add other light types with varied attributes, prelight, then export and view them.



Viewer Options: Changing the viewer options is a good way to learn about RenderWare Graphics features. Try turning backface culling on and off or change to wireframe. Explore the environment and see how your location affects the sectors.

5.1 Summary

This tutorial has explained the steps required to export and view vertex lighting (or pre-lighting).

6. Export Templates

This tutorial introduces the concept of Export Templates. The previous tutorials have introduced the idea of creating, viewing, exporting and modifying assets. There are also a number of other options that can effect the way in which assets are exported. These options are stored in Export Templates. There are two types of Template, Asset Templates and Project Templates.

- Before you use this tutorial, you should be familiar with the RenderWare Graphics export process, and know how to create an `.rws` file from a scene.

This tutorial will explain:

- What is an Export Template?
- Creating a new Asset Template
- Editing Asset Templates
- Editing Project Templates

6.1 What is an Export Template?

An Export Templates contains the options settings for exporting assets in a particular format. All templates are stored in `.rwt` files and can be edited using the template editor, a standard XML editor or a text editor

Each asset in the Assets tab is associated with an Asset Template and each Asset Template can be shared by multiple assets. Asset Templates contain various options that affect the way in which the assets are to be exported, for example, tri-stripping info, skinning info, etc.. Project Templates on the other hand affect the global setting for the all assets to be exported, for example, file format, pre instance, etc..

Export templates contain many options that are specific to RenderWare Graphics. It is therefore recommend that only technical artists and programmers create and edit the Template files. After the template files have been created and setup it is expected that the artist will then use these templates to create and export their artwork.

There are four default Asset Templates which you can use or create your own. The default templates are read-only and we recommend that you set up your own templates based on the default templates. The default templates are:

- `Animated Hierarchy.rwt` - exports a single hierarchy within a scene as a RenderWare Graphics container object, called `RpClump`.

- `Animation.rwt` - exports animation data. Animated assets only contain animation data and require an animated hierarchy asset to contain the geometry.
- `Spline.rwt` - exports spline data and requires an animated hierarchy asset to contain the world.
- `Static World.rwt` - exports worlds. Worlds do not contain any hierarchy or animation information and are typically used for static level geometry in a game. They are automatically split into sections (PVS world sectors) that RenderWare Graphics uses to speed up the rendering process.

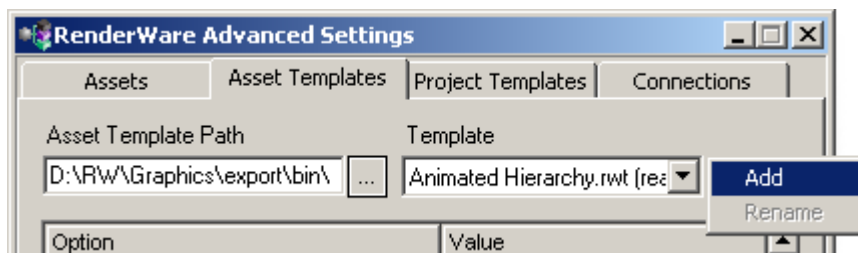
There are four default Project Templates, each one fine tuned for each specific platform. Please note that these are only suggested settings that can always be customized for a specific project. Each default project template is named after the target platform that it is tuned for, and only has its platform option enabled in the platform section. Users should also take note, that although these default project templates only enable one platform, it is possible to enable and specify settings for all the platforms within a project template.

- `Generic.rwt` used for exporting files to the PC (e.g. D3D8, D3D9 or OpenGL), exports files with the extension `.rws`.
- `GameCube.rwt` used for exporting files to GameCube exports files with the extension `.rg1`.
- `PS2.rwt` used for exporting files to PlayStation 2 exports files with the extension `.rp2`.
- `Xbox.rwt` used for exporting files to Xbox exports files with the extension `.rx1`.
- See [TechnicalArtistGuide.pdf](#) for a detailed description of Project and Asset Templates.

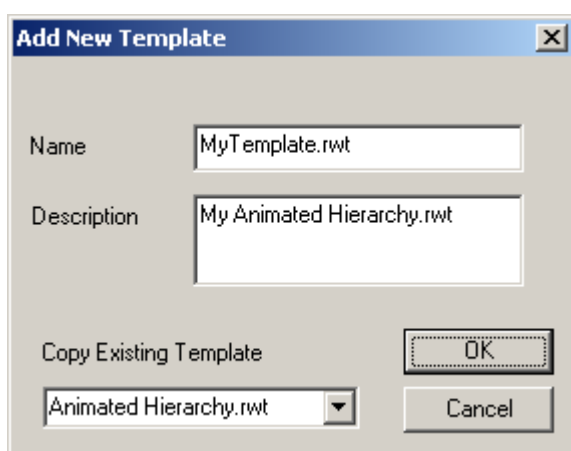
6.2 Creating a new Asset Template

The following section will step through the stages required to create a new Asset Template. Project Template are also created in exactly the same way from the Project Templates tab.

1. Open the Advanced Settings window. *RenderWare* → *Advanced Settings...*
Select the *Asset Template* tab. This will display the Asset Template Editor.



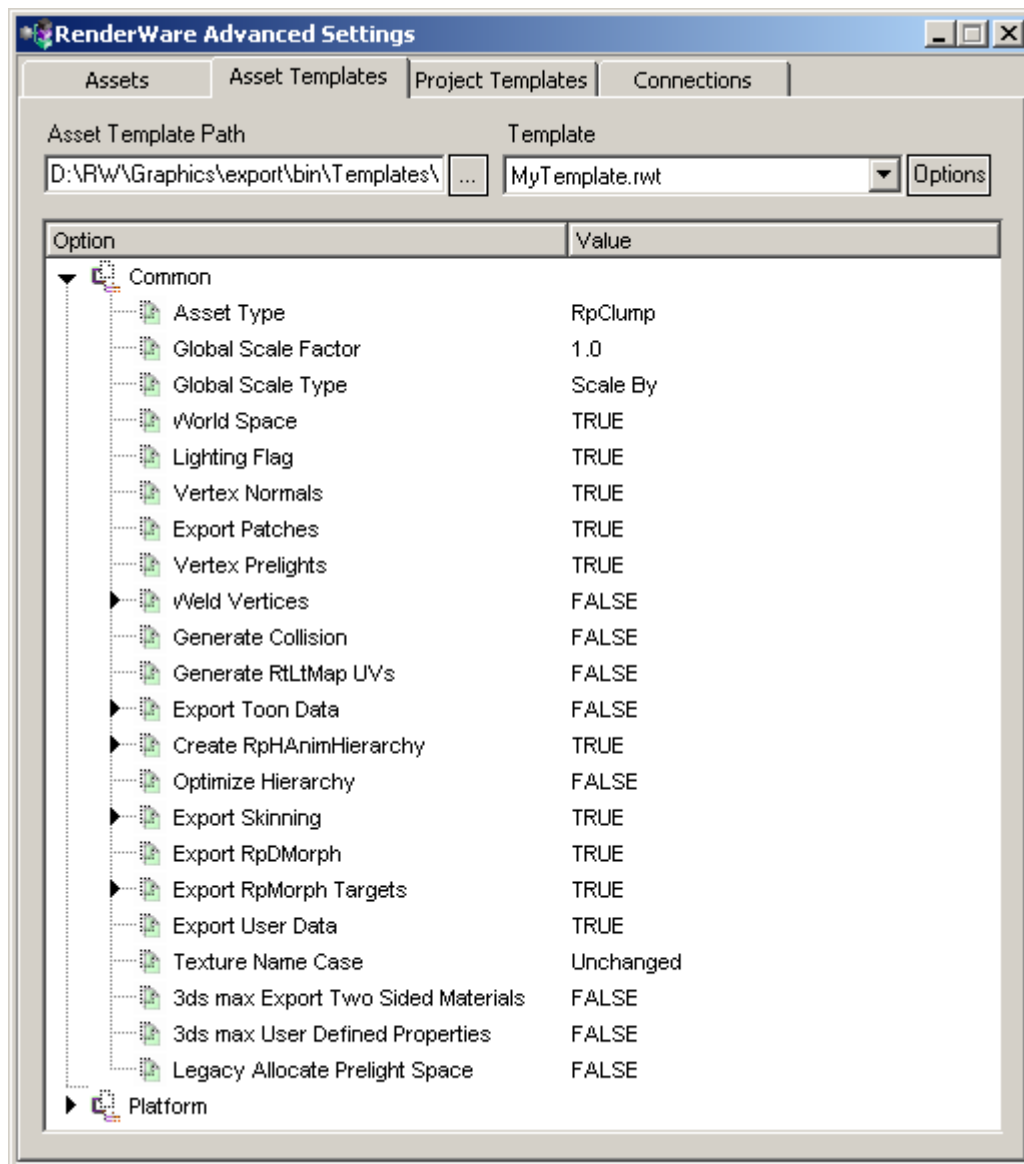
2. Click on the *Options* button to the right of the Template field. Select the *Add* option from the menu.
3. The *Add New Template* dialog will be displayed. Change the *Name* field to *MyTemplate.rwt* and change the *Copy Existing Template* drop down selection box to *Animated Hierarchy.rwt*. Click OK to create the new Asset Template.



Once the new template has been created it can be assigned to assets from within the Assets tab by selecting an asset and clicking the browse button in the template column. This will display a dialog from which to select the new template.

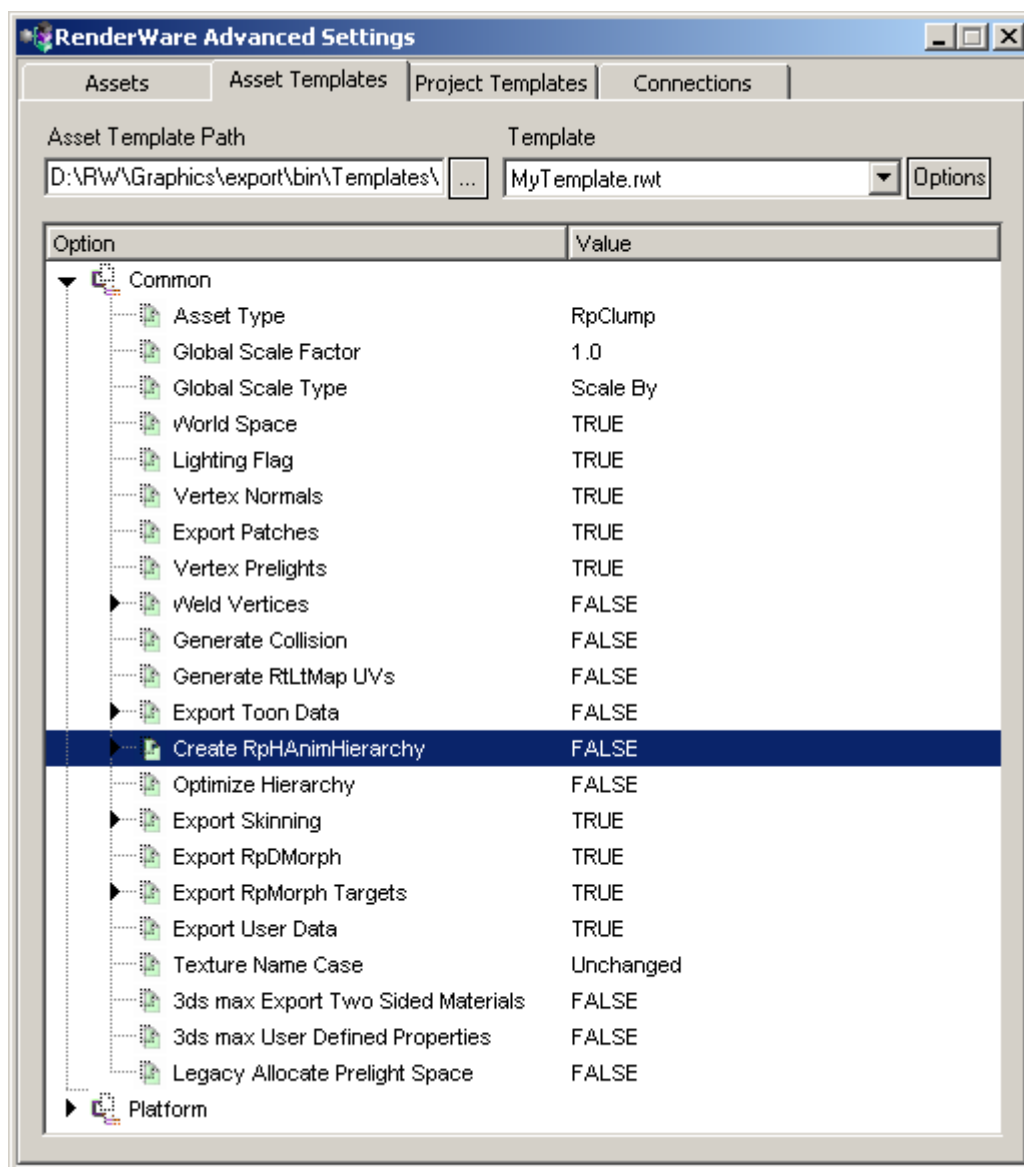
6.3 Editing Asset Templates

Each asset template contains 2 sections: Common and Platform. The Common section contains all of the export options that are common to all platforms. The Platform section contains options that are specific to only specific platforms. Each option is in the form of a key pair value, a name and a value. Each option can also contain sub options which can be edited in the same way.



Each option can be edited by clicking on the value and selecting or typing in the appropriate value.

1. Open the `exporterbasics.mb` example.
2. Open the Asset Templates tab. Select the 'MyTemplate.rwt' Template from the Template field. You will see that this template contains a property called 'Create RpHAnimHierarchy'
3. Change the 'Create RpHAnimHierarchy' property to FALSE by clicking on the TRUE value.



4. In the Assets tab, Right Click → *View* on the ball_bounce asset
5. In Visualizer you should see that the ball is static and is not animated. Setting *Create RpHAnimHierarchy* to TRUE will ensure that the hierarchy is exported. The green sphere will then bounce and the red hierarchy path will be displayed in Visualizer when *Hierarchy* is selected in Visualizer's control panel.
6. Save exporterbasics.mb.

6.4 Creating a new Project Template

The following section will step through the stages required to create a new Project Template.

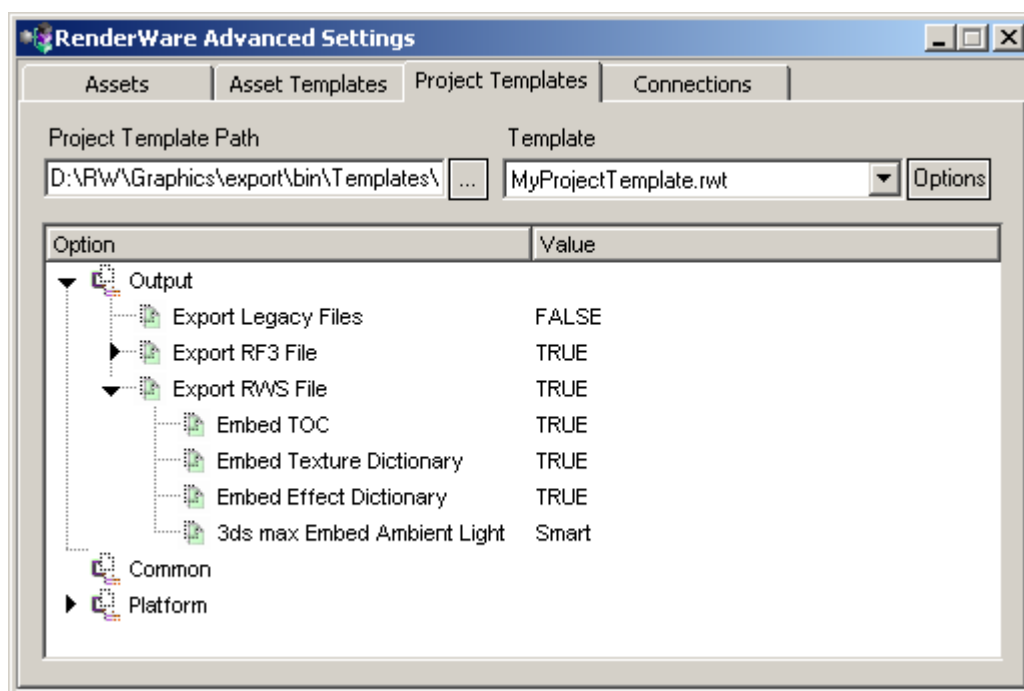
1. Open the Advanced Settings window. *RenderWare* → *Advanced Settings...* Select the *Project Templates* tab. This will display the Project Template Editor.
2. Click on the *Options* button to the right of the Template field. Select the *Add* option from the menu.
3. The *Add New Template* dialog will be displayed. Change the *Name* field to *MyProjectTemplate.rwt* and change the *Copy Existing Template* drop down selection box to *Generic.rwt*. Click OK to create a new Project Template.

Once the new template has been created it can be used to change the output format and other settings in Project Templates.

6.5 Editing Project Templates

This section is a brief introduction to the Editing Project Templates. The Project Template manager dialog is explained in more detail in the exporter section of `\docs\exporters\artists\MayaReferenceGuide.pdf` in your RenderWare Graphics directory.

1. In the Advanced Setting Window click on the Project Templates Tab.



Options in the Project Templates are edited in the same way as the

2. Set the Export RF3 flag to TRUE. This enables the export of RF3 files as well as RWS files.

The main Project Template options

The Project Template options are briefly explained below.

Export Legacy Files: exports assets as legacy files *bsp*, *dff*, *anm*, etc.

Export RF3 File: exports all data from all/selected assets into one *.rf3* file. The filename used will be that of the Project Name given in the Assets tab.

Export RWS File: exports all data from all/selected assets into one *.rws* file. The filename used will be that of the Project Name given in the Assets tab.

Embed TOC: embeds separate data at the beginning of the *.rws* file and creates a table of contents listing all assets.

Embed Texture Dictionary: embeds the texture dictionary at the start of a *.rws* file.

Embed Effect Dictionary: controls whether to generate a *RpMatFX* effect dictionary for all RenderWare shaders produced during export.



The Project Template options are explained fully in the [TechnicalArtistGuide.pdf](#)

6.6 Summary

This tutorial has given a brief overview of what Export Templates are and explains how to create and edit Export Template files.

7. Hints and Partitions

This tutorial introduces the two closely related topics of Hints and Partitions.

- Before you use this tutorial, you should be familiar with the RenderWare Graphics export process, and know how to create a .rws file from a scene.

The tutorial will explain:

- The relationship between hints and partitions
- Visualizing the results of an export with the partitions
- Manipulating hints to adjust the results of the partitions

7.1 What are hints?

Hints are a special type of primitive that affect the sectorization of the scene on export but do not get exported as geometry to the final model.

Just a few hints placed strategically in the scene can significantly improve the sectorization, and they provide a way to affect the partitioning more controllably than before.

The hints are used in conjunction with the automatic partitioning of a scene.

7.2 What are partitions?

Partitions are a result of exporting a world, they define the Sectors in the world. However, in this tutorial, we refer to partitions as their visualization using the partition object.

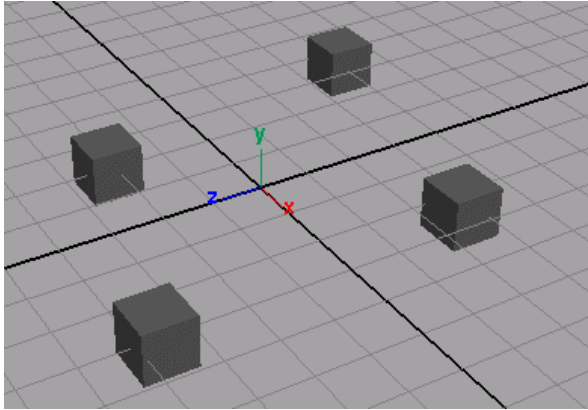
7.3 How they fit together

Hints are input to the export process, and affect the way the world is partitioned; Partitions are the output/result of the world. Simply put, hints can affect partitions but not vice versa.

7.4 Visualizing partitions

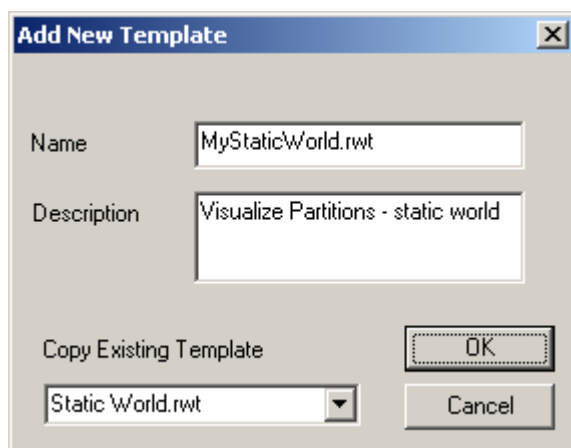
To visualize the partitions in a simple scene, follow these steps:

1. Create a simple scene comprising four boxes

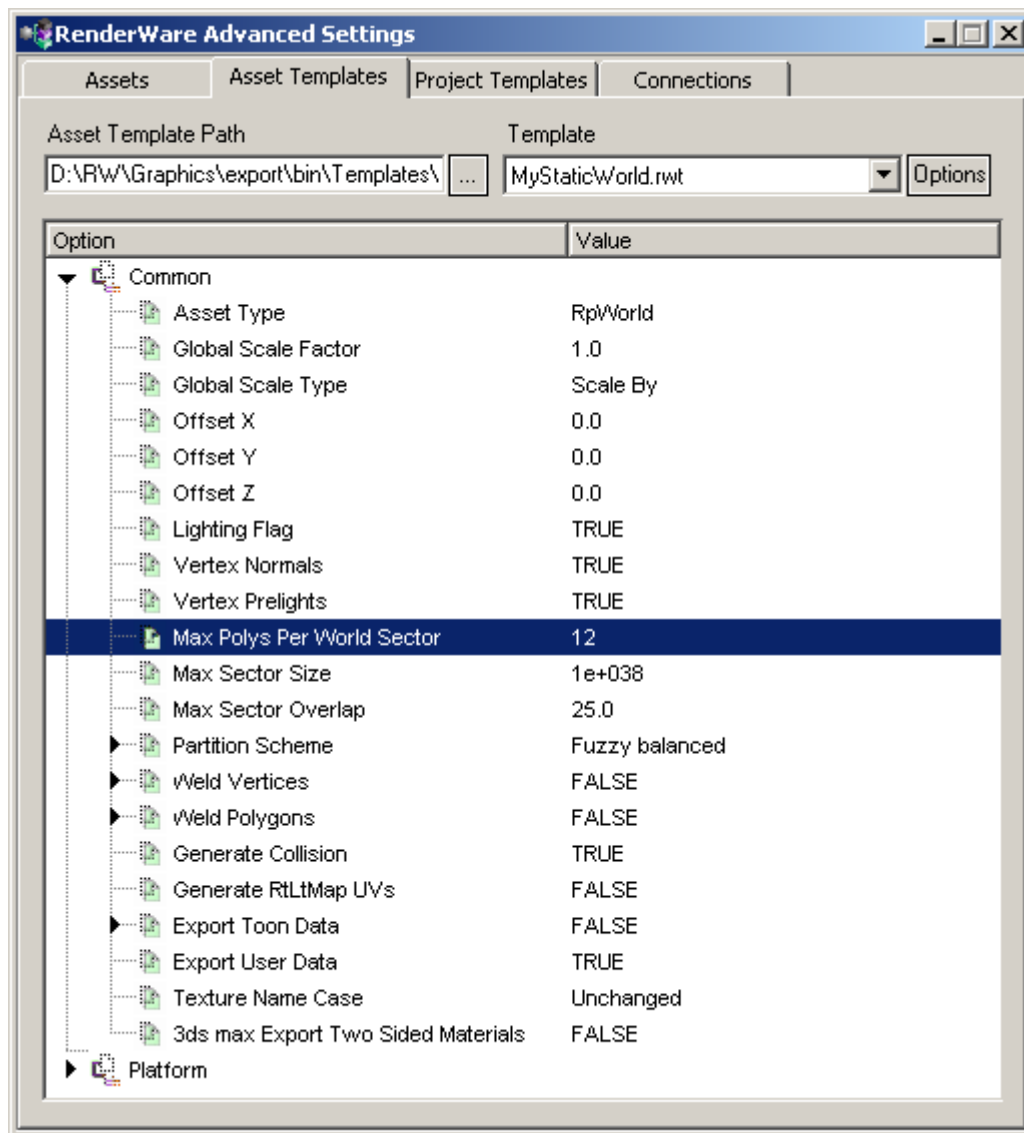


Next we need to create a project template based on `Static World.rwt` and reduce the maximum number of polygons per world sector.

2. From the menu open the Advanced Settings window.
RenderWare → *Advanced Settings...*
3. Select the Asset Templates tab, click the *Options* button and choose *Add*.
4. Create a new template based on the existing template `Static World.rwt`

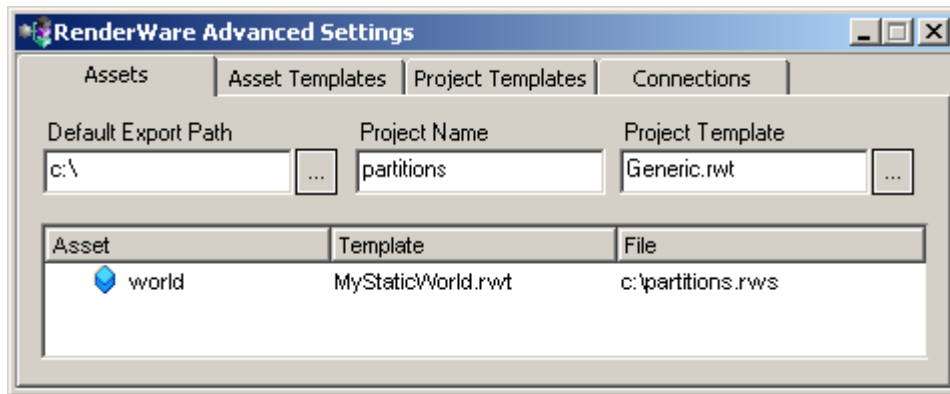


5. In your new template change the `Max Polys Per World Sector` to 12 so that the export world contains several sectors and partitions.

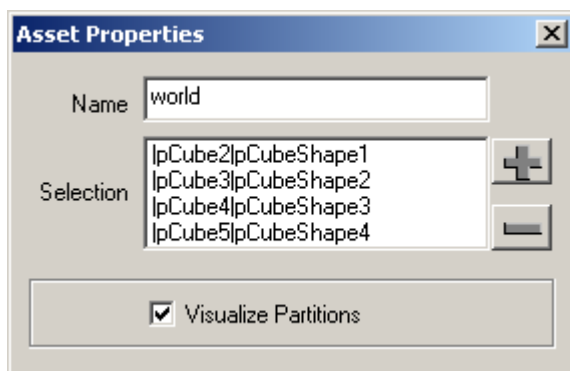


Next, we need to assign out newly created template and enable the *Visualize Partitions* option.

6. Select the Assets tab.
7. Right click in the Assets area and choose *Customize*. The asset properties can now be modified.
8. Double click the "untitled" asset to open the Asset Properties dialog.
9. Name the asset "world".
10. Assign the "world" asset's template to "MyStaticWorld.rwt".

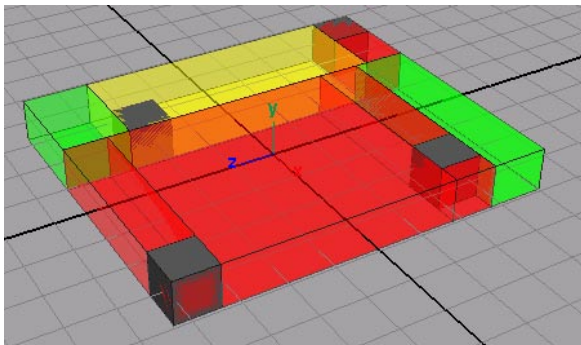


11. Edit the world Asset and enable the *Visualize Partitions* option.



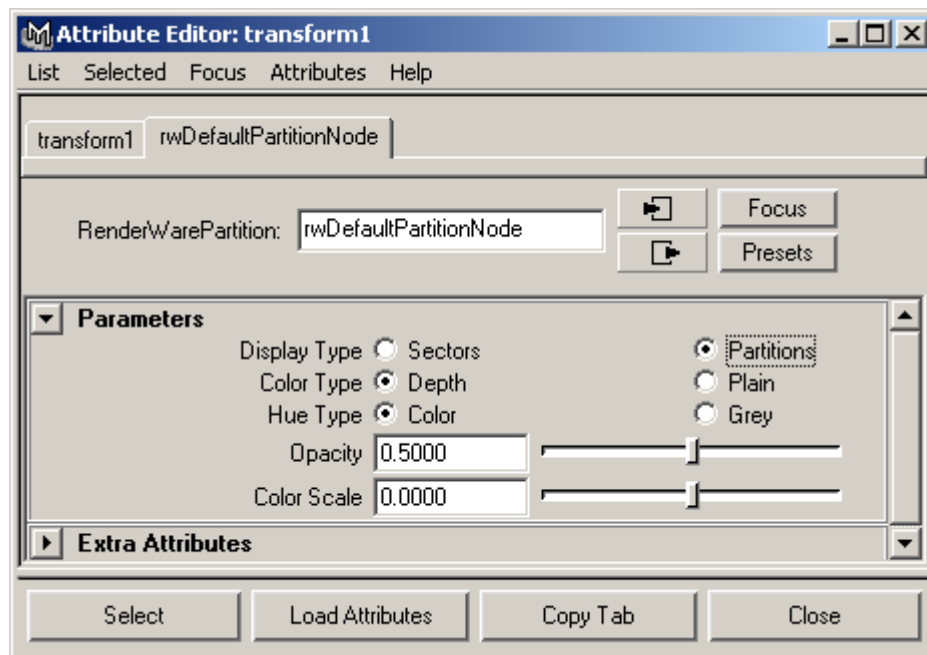
12. Close the Advanced Settings window.

13. Export the world, *RenderWare* → *Export*

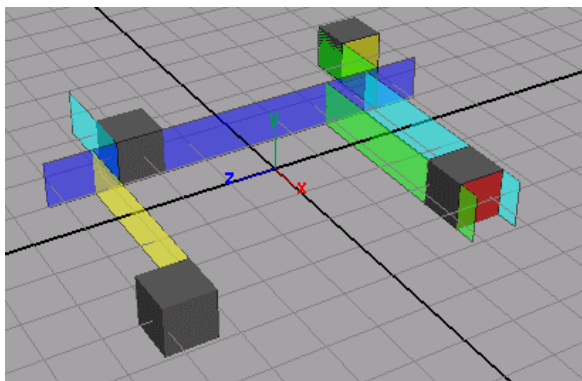


The scene's sectors are now displayed.

14. Using the *Attribute editor* on the object, select the partitions button.

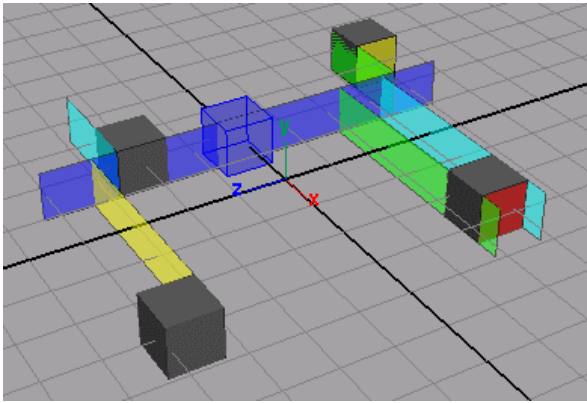


The partitions are now displayed.



7.5 Adding hints to a scene


15. To see how hints affect the scene, create one. A hint can be created by selecting *RenderWare* → *Create* → *RenderWare Sectorization Hint*.
16. Draw a box roughly the same size as the cubes in the scene.
17. Position it so that it straddles the dark-blue partition this is the root partition. (Partitions near the root of the tree or colored towards the blue end of the spectrum.)

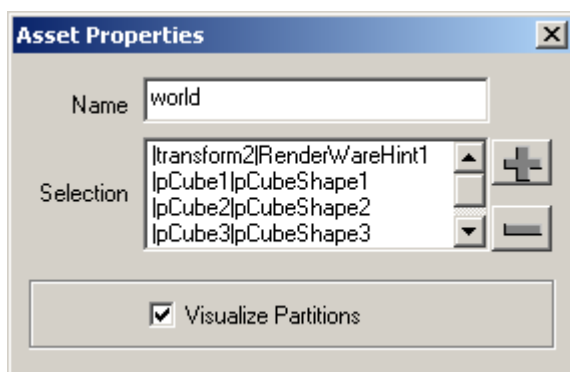


18. Select the hint.

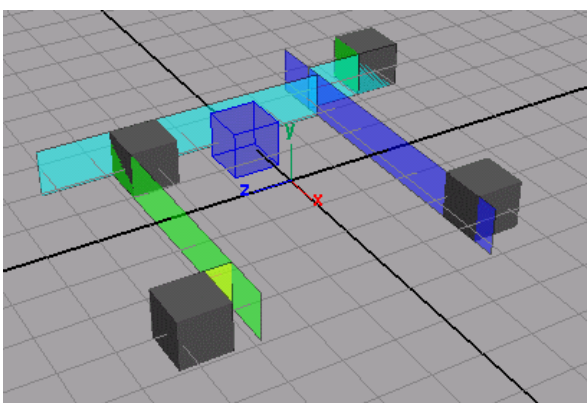
19. Open *RenderWare* → *Advanced Settings...*

20. Select the Assets tab

21. Double click the world asset and click on the  to add the hint. For convenience hints can be selected or deselected as any other object.

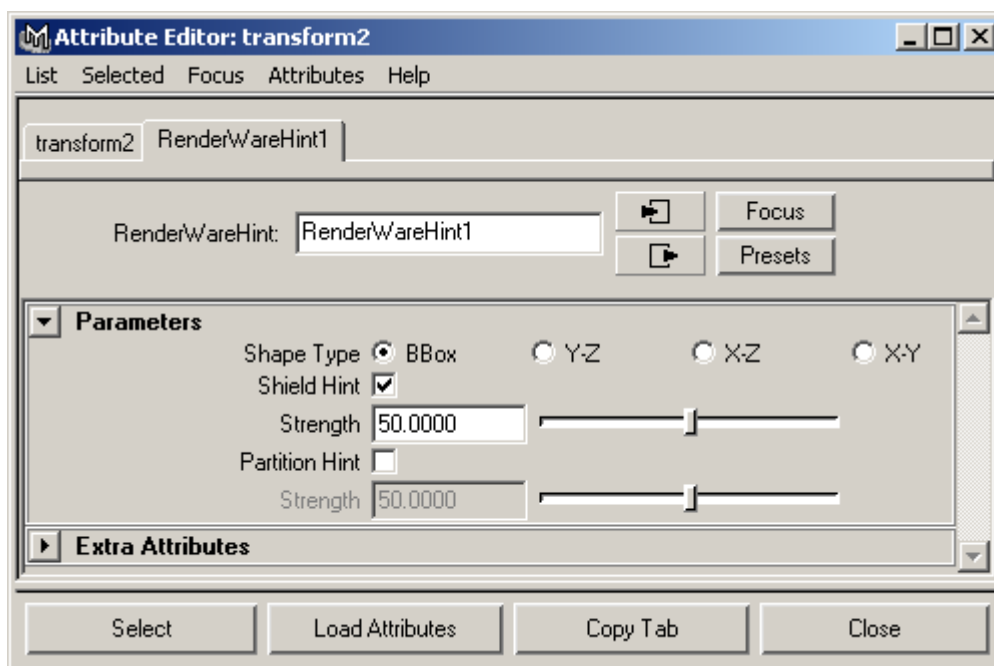


22. Export the world again.



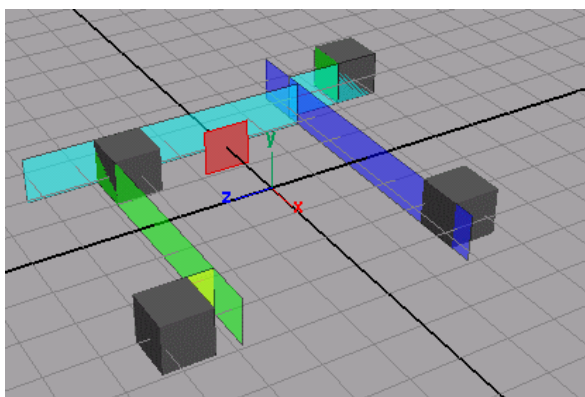
The partitioning has changed. The algorithm has considered the hint – a shield hint – and avoiding cutting through it. Note, shield hints are color coded blue.

23. Select the hint and activate the attribute editor. The hints attributes dialog box appears as below:

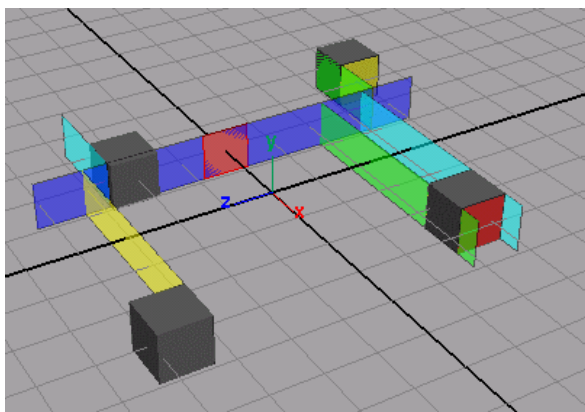


24. Now, deselect the Shield Hint check box and select the Partition Hint check box. Also, change the hint to one of the Shape types.

25. Click Select.



26. Export the world again making sure that the hint is included in the export.



This time, the blue, root partition will run parallel to the hint. This type of hint tells the export process where to place hints, and these (usually) override automatic ones. Note, partition hints are color coded red.

Further exercises

To become more familiar with hints and partitions:

- Try adding more hints, each a different type
- Experiment with the strengths of each hint, especially partition hints.
- Add some hints to a larger scene, and see how much you can affect the partitioning of the world
- Try some different schemes from the partition selector menu.

8. Batch Exporting

This tutorial will explain:

- exporting multiple scenes using the batch exporter.

8.1 The Batch Export Tool

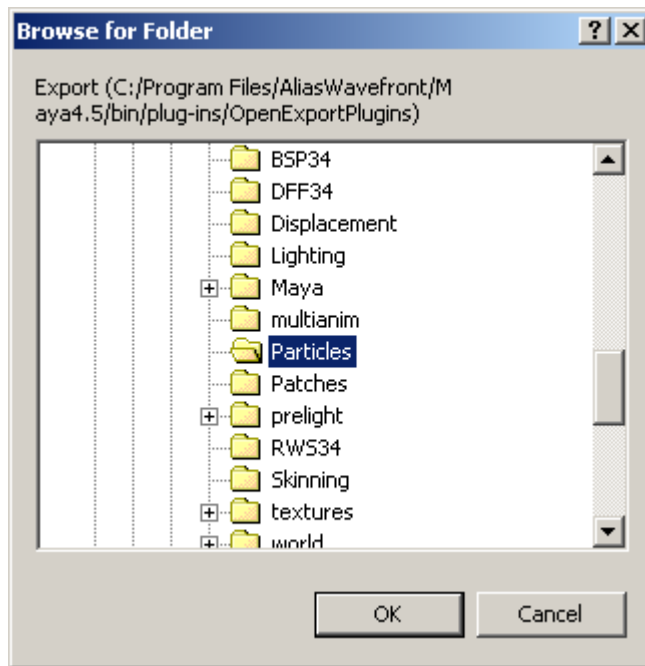
So far you've exported one scene at a time. This works for simple examples but in a working situation you are likely to have complex scenes with elements that need different export settings spread across many file.

The RenderWare Graphics exporter has a batch tool that enables the export of multiple scene files automatically.

1. Select the Batch Export from *RenderWare* → *Tools* → *Batch Export*
2. Select either Yes or No from the Recursive Export? dialog that appears. If you choose recursive every scene file in every child directory will be processed, otherwise only the scene files in the selected directory will be processed.



From the browse dialog select the directory from which the batch export will be performed and Click OK. The batch export process will begin.



8.2 Summary

This tutorial has shown how the Batch Export tool can be used to export multiple scene files.

9. Appendix

The example Maya scene files used in this tutorial can be found in your docs\exporters\artists\examples\maya in your RenderWare Graphics directory.

The files used in these tutorials are associated with the following texture files:

city.mb

highris1.bmp

highroof.bmp

limest01.bmp

mountain.bmp

wall.bmp

exporterbasics.mb

None

texture.mb

steel.bmp

steel_bump.bmp