

PolyTrans Export Plug-in for 3DS MAX

This help file describes the 3DS MAX plug-in which allows 3DS MAX v1.2 and v2.x to export 3D files via the PolyTrans export converters.

Click [here](#) to learn how to export objects from 3DS MAX using the PolyTrans plug-in.

Click on one of these links for more information:

[MAX to PolyTrans dialog box](#) options

[Exporting to a SoftImage database](#) options

[Supported parameter conversions and mappings](#) options

[Successful animation export via .3ds format](#)

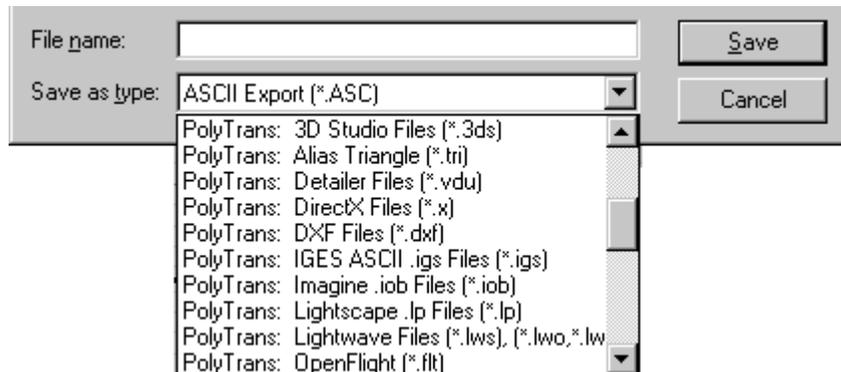
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Export Conversion Process

The export process proceeds as follows:

1. The user chooses **File/Export** from the 3DS MAX menu.
2. The file **Save-As** dialog box appears.
3. The user selects one of the export file formats shown in the following drop-down listbox:



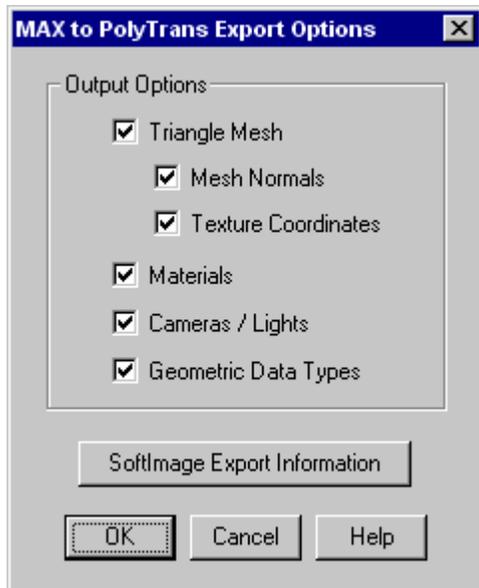
4. The user enters a filename in the file **Save As** dialog box and presses **Ok**.
5. The **MAX to PolyTrans dialog box** appears. These options control how the scene data will be exported from the 3DS MAX internal database to the PolyTrans internal database. Press **Ok** to continue.
6. The scene data is sent from the 3DS MAX internal database to the PolyTrans internal database.
7. The corresponding PolyTrans export converter DLL is loaded and executed. An export options dialog box will appear from which you can set the options used to control the export of data for that specific export converter.
8. The data will then be exported from the PolyTrans internal database to the export file converter.

See Also:

[Exporting to a SoftImage database](#)

MAX to PolyTrans Dialog Box Options:

This dialog box controls the transfer of data from the internal 3DS MAX database to the PolyTrans internal database.



Triangle Mesh

If this checkbox is checkmarked then mesh geometry will be exported from 3DS MAX.

Mesh Normals

If this checkbox is checkmarked then vertex normals will be exported along with the mesh geometry.

Texture Coordinates

If this checkbox is checkmarked then (u,v) vertex texture coordinates will be exported along with the mesh geometry.

Materials

If this checkbox is checkmarked then materials will be exported along with any associated texture maps.

Cameras/Lights

If this checkbox is checkmarked then lights and cameras will be exported.

Geometric Data Types

If this checkbox is checkmarked then geometric objects will be exported. At this time only mesh geometric objects are supported.

SoftImage Export Information

This button displays a dialog box that explains how to export directly to a SoftImage database. You can also read this information [here](#).

Exporting to a SoftImage Database:

Exporting from 3DS MAX directly into a SoftImage database requires a special series of steps. Basically, this process does not require an explicit filename to be given yet 3DS MAX forces all file exports to choose a filename before an export converter can be evoked.

Follow these steps to export a scene to a SoftImage database:

1. Choose '**File/Export**' from the 3DS MAX main menu.
2. Choose the **SoftImage Files** export option from the file name selector drop-down box.
3. Enter **any** arbitrary filename in the file name selector with a file extension of **.dsc**, such as a.dsc.
4. Press **OK** on the (MAX to PolyTrans) dialog box which appears next.
5. When the **SoftImage Export Filter** dialog box appears click on the **Output SoftImage Scene Files** checkbox so that it is enabled then click on **OK**.
6. When the **Scene Name Request** dialog box appears enter a name for the SoftImage database scene. This is the name by which the scene will be named within SoftImage. Click **OK** to start exporting.
7. The scene will then appear within the chosen SoftImage database.

Supported Parameter Conversions and Mappings:

This section describes which 3DS MAX entities are exported to the PolyTrans converters.

Entities Yet to be Exported

The following 3DS MAX entities are expected to be supported over time:

- **Hierarchy and animation.** These go hand-in-hand for conversion purposes. 3DS MAX has one of the most feature- and technically rich animation systems of any 3D animation package. For example, it provides for linear, TCB, Bezier, nosie, quaternion, angle/axis, Euler and many more types of animation controllers. The problem is that there is not a 1-to-1 conversion path to external animation file formats such as Lightwave, DirectX, SoftImage and Alias. To solve this problem the developers of PolyTrans have, and are creating an *animation engine* that supports all of these different controller methods (TCB, Bezier, quaternion, etc). This allows any and all sorts of animation data to be exported to the internal PolyTrans database with complete accuracy; once exported to PolyTrans, the animation data can be mathematically played back and resampled to the new destination animation format. For example, sending quaternion rotation keyframes from 3DS MAX to Lightwaves Euler rotations can be accurately accomplished with this system of keyframe resampling within PolyTrans. At the time of writing, PolyTrans supports animation conversion between 3D Studio r4 (.3ds) (angle/axis and TCB controllers), Lightwave (Euler and TCB controllers), and DirectX (quaternion controller).
- **Trimmed NURBS.** This should be supported by the MAX 2.5 release or thereafter.
- **Planar and cubical environment maps.**

Polygon Geometry

3DS MAX inherently handles all polygon data as triangular meshes. Hence, all polygonal data exported from 3DS MAX will be triangles.

If multiple materials are assigned to a mesh then they will be exported as materials assigned to each polygon, else a single material will be assigned to the object. If no 3DS MAX material is assigned to an object then one is created and exported which uses the wireframe color of the object.

The following object attributes will be exported along with the basic mesh geometry:

- Vertex normals
- Vertex (u,v) texture coordinates
- Casts Shadows flag
- Receive Shadows flag
- Is Hidden flag.

And these are the currently unsupported polygon geometric parameters:

- Face mapping

NURBS Geometry

Export of trimmed NURBS from 3DS MAX will be supported in MAX 2.5. This will allow trimmed NURBS data to be exported to such file formats as IGES, SoftImage and Renderman RIB.

Material Assignments on Mesh Geometry

3DS MAX provides for a wide variety of material plug-ins to be assigned to an object or to a polygon of a mesh. The following material classes are recognized:

1. **Multi-Sub.** One or more materials are assigned to the polygon mesh. If each material is a 3DS MAX standard material then the multi-sub is exported to the best extent possible.
2. **Top/Bottom Material.** Only the first material will be exported.
3. **Double Sided Material.** Only the first material will be exported.
4. **Mix (Blend) Material.** Only the first material will be exported.
5. **Standard Material.** It will be exported to the best extent possible.
6. **Unknown Material.** This is a custom material plug-in, such as Lightscape. As many of the basic material parameters will be exported.

Cameras

The following camera types and camera parameters are converted:

3DS MAX Entity	Converted PolyTrans Entity
Targeted camera	Targeted camera
Free camera	Targeted camera
Field of view and lens	Window width and height
Hither & yon clipping	Hither & yon, if manual clipping enabled, else ignored.

Lights

The following light types and light parameters are converted:

3DS MAX Entity	Converted PolyTrans Entity
Omni light	Point light
Targeted spot light	Targeted spot light
Free spot light	Targeted spot light
Directional light	Directional light
Targeted directional light	Directional light
Color	RGB color
On/Off	Enabled
Intensity	Intensity
Affect Diffuse	Diffuse Enabled
Affect Specular	Specular Enabled
Shadow mapped shadows	Shadow mapped shadows
Ray traced shadows	Ray traced shadows
Hot size (spot light)	Delta angle (spot light)
Fall off (spot light)	Cut off angle (spot light)

Use Atten + start + end	Distance, decay, divisor (calculated)
Map bias	Bias0 = Bias, Bias1 = Bias + 0.3
Range	ResFactor
Shadow map size	Shadow map size
Use global	Use global values

Ignored light parameters:

- Exclude light list.
- Orientation parameters for projectors.
- Overshoot toggle
- Projector options.
- Ray trace bias.
- Absolute map bias.

Materials

3DS MAX has a very rich set of material attributes of which most of the standard shading parameters can be exported to the PolyTrans material database:

<i>3DS MAX Material Parameter</i>	<i>Converted PolyTrans Material Parameter</i>
Ambient color	Converted to normalized ambient color and weighted ambient shading coefficient.
Diffuse color	Converted to normalized diffuse color and weighted diffuse shading coefficient.
Specular color	Converted to normalized specular color and weighted specular shading coefficient.
Filter color	Not converted
Lock ambient + diffuse	Lock ambient + diffuse
Lock diffuse + specular	Lock diffuse + specular
Shading model	Constant -> Flat, Phong -> Phong. Metal mode simulated in PolyTrans by using Phong mode, doubling the Phong power, setting metal mode =1, doubling the specular intensity and halving the diffuse intensity.
2-sided	Ignored. No material equivalent in PolyTrans (2-sided is an object attribute).
Wire shader	Parameters mapped over to the PolyTrans wireframe shader.
Face map	Not converted.
Shininess	Specular shading coefficient.
Shininess strength	Remapped to an equivalent Phong power value with similar

	characteristics.
Self-illumination	Luminous shading coefficient.
Opacity	Face and reflect opacity.
Soften flag	Not converted.
Inside transparency	Mapped to equivalent edge, face and reflect opacity parameters.
Outside transparency	Mapped to equivalent edge opacity parameters.
Transparency type	Not converted
IOR (index of refraction)	IOR (index of refraction)

Texture Maps

3DS MAX has a very extensive array of plug-ins that can feed RGB texture data to a material shader. For the purpose of conversion only 2D bitmap textures are converted (no 3d procedurals, no PhotoShop plug-ins and no gradients).

The following are the various texture modulation methods supported and their equivalent texture modulation method in PolyTrans. If a material has more than one texture map enabled then each will be converted to a different texture layer within PolyTrans:

3DS MAX Texture Map	Converted PolyTrans Texture Map
Ambient map	Ambient color texture map
Diffuse map	Diffuse color texture map
Specular map	Specular color texture map
Shininess map	Reflection opacity texture map
Shininess strength map	Specular coefficient texture map
Self illumination map	Luminous coefficient texture map
Opacity map	Opacity texture map
Filter color	Not converted
Bump map	Bump map
Reflection map	Spherical reflection map
Refraction map	Not converted

As for the texture definition itself, the following 2d bitmap texture parameters are supported:

3DS MAX Texture Parameter	Converted PolyTrans Texture Parameter
u & v tiling	u & v repeat
u & v offset (relative to center of texture map).	u & v offset (relative to lower left corner of texture map).
Texture strength	Texture mixing values
u & v tile flags	u & v wrap flags
Angle	Not converted
Blur	Not converted
Blur offset	Not converted
Mirror	Not converted

Animation Conversion Notes:

Currently the 3DS MAX export converter plug-in does not export hierarchy or animation data directly (see explanation in the [parameter conversions and mappings](#) section).

Nonetheless, the stand-alone version of PolyTrans and NuGraf provide for bi-directional conversion of camera and object animation data between 3D Studio r4 (.3ds) and Lightwave, plus object animation export to DirectX.

Thus, to export animation data to Lightwave or DirectX you must export the 3DS MAX scene to a .3ds file using the Kinetix 3D Studio r4 .3ds export converter (not the PolyTrans .3ds export converter). Once exported, use the stand-alone version of PolyTrans or NuGraf to convert the animation data to Lightwave or DirectX.

Warnings and Notes:

It *is* possible to successfully convert Character Studio biped animation data out of 3DS MAX and into Lightwave or DirectX animation data. No physique deformations are possible though. You may find in some cases that some models get completely skewed once exported - this is due to the fact that **off axis** scaling was applied to the model inside 3DS MAX (ie.: scaling was not applied in **local** coordinate mode). Such off-axis scaling does not get exported to the .3ds file by the Kinetix .3ds export converter because it requires that a rotation occur *before* the application of the scale effect; such is not at all possible with traditional keyframe animation in which the scale always comes before the rotation. What is the solution? Simple: change your model so that no off-axis scaling is used. People have done this before and have received great results. How can you tell when all the off-axis scaling is removed? You export a .3ds file from 3DS MAX then re-import once again back into 3DS MAX; if the model looks fine then it should export fine through PolyTrans.

