Autodesk® **FBX**®

Autodesk 3ds Max
FBX Plug-in Help

Legal Notices

Autodesk® FBX® 2013

Contents

What is New in this Version

<div style="text-align: right; font-size: 4em;">1</div>

This section lists the new features and bug fixes included with this version of the 3ds Max FBX Plug-in. Click the hyperlinks below to see more details.

NOTE Consult the readme file for any last-minute changes to this release. Find the readme, along with this Help system, in the Program Files Autodesk FBX folder.

New CAT/HIK workflow

A new option, CAT Characters as HIK (page 44), has been added to the 3ds Max FBX Plug-in to let you export CAT rigs.

Instance materials export/import

A problem with the export/import Multi/Sub-Object materials for instances has been addressed.

NOTE Some connections may not be preserved, but the visual consistency is maintained.

"ConvertUnit" and MaxScript

The "ConvertUnit" param now works when you export from Max using FBX plugin 2012.1 via MaxScript.

Conversion Support

The following sections are about how the 3ds Max FBX Plug-in converts 3ds Max objects and their properties.

For a detailed report of conversion support for this version, see the *3ds Max Compatibility Chart*. The FBX compatibility chart explains what is supported

and at what level, when you export from Autodesk 3ds Max and import into Autodesk Maya, Autodesk Mudbox or Autodesk MotionBuilder.

Camera Support

The following tables indicate how both 3ds Max and the FBX file format treat cameras.

Camera Export

The following table lists 3ds Max cameras and how the FBX file format treats them on export:

In 3ds Max	Becomes in FBX
Free Camera	Camera without interest.
Target Camera	Camera with interest.
Roll Angle Animation	Roll FCurve. The plug-in inverts Angle values when exporting to FBX to maintain a consistent orientation.
Orthographic Camera	The Orthographic setting which you apply in 3ds Max to a free or target camera is retained in FBX.
FOV channels	Field of view FCurve. The view is consistent, even though the focal length values changes.
Width-related FOV	Horizontal Aperture.
Height-related FOV	Vertical Aperture.
Near and Far plane	Near and Far values if clipping is active. Since you cannot animate Near and Far values in MotionBuilder, it uses the current

In 3ds Max	Becomes in FBX
	time value to evaluate the resulting Near and Far value.

NOTE

The Up Vector animation is plotted on the Roll FCurve. If not animated, the plug-in always exports it as (0,1,0). Camera Scale is not supported. Environment Planes are also not supported.

Render Setup

When the 3ds Max FBX Plug-in exports cameras, the exporter sets the Render Output Size and Pixel Aspect Ratio for all cameras based on the current Render Setup dialog settings. If no user-created cameras exist, the render Output Size and Pixel Aspect Ratio values are not exported.

Camera Import

The following lists how 3ds Max treats MotionBuilder cameras on import:

In FBX	Becomes in 3ds Max
Free Camera	Free camera.
Camera (With a look-at Target/Interest)	Target camera.
Orthographic Camera	Camera with an Orthographic setting.

Custom Camera Import

When the 3ds Max FBX Plug-in imports Maya and 3ds Max cameras, the Render Output Size and Pixel Aspect Ratio applied to the scene is set by the current camera in the FBX file. That is, the Render Output Size and Pixel Aspect Ratio from additional cameras are ignored. If the current camera is not a user-created camera, the Render Output Size and Pixel Aspect Ratio values are not imported.

Light Support

The following tables list 3ds Max lights and how the plug-in treats them on export to FBX and reimport to 3ds Max:

Standard Lights

In 3ds Max	When imported back into *3ds Max:*
Omni	Omni
Free Directional	Free Directional
Target Directional	Free Directional
Free Spot	Free Spot
Target Spot	Target Spot
Skylight	Omni
mr Area Spot	Target Spot
mr Area Omni	Omni

NOTE

In non-Revit to 3ds Max workflows, the 3ds Max FBX Plug-in does not support Skylights (and their targets). Instead the plug-in converts them to null objects. The plug-in also converts mr Lights to Standard lights (for example, an mr Area Omni Light becomes a standard omni light) and Photometric lights become Standard lights (where they lose any Photometric-specific values).

Photometric Lights

In 3ds Max	When imported back into *3ds Max:*
Target light	Omni. The target is exported as a null.

In 3ds Max	When imported back into *3ds Max:*
Free light	Omni light
mr Sky portal	Omni light

Custom Properties/Attributes

This section show custom properties and attributes and the status of their support in the 3ds Max FBX Plug-in.

Custom Attributes

The following table lists 3ds Max custom attributes and whether they are supported when exported to the FBX file format.

Attribute	Support
Angle spinner	Supported
Angle Slider	Supported
Array drop-down list	Supported
Array Combo box	Supported
Array list box	Supported
Boolean Check box	Supported
Boolean Check button	Supported
RGB Color picker	Supported
Float spinner	Supported
Float slider	Supported

Attribute	Support
fRGBA Color picker	Supported
Integer spinner	Supported
Integer slider	Supported
Material button	Not supported
Node pick button	Not supported
Percent spinner	Supported
Percent slider	Supported
String	Supported
Texture Map button	Not supported
World units spinner	Supported
World units slider	Supported

User-defined Properties

The FBX file format supports 3ds Max user-defined properties. They are stored in the FBX file as custom properties and labeled as UDP3DSMAX.

Installing the 3ds Max
FBX Plug-in

2

The 3ds Max FBX Plug-in is used by 3ds Max® to import, export, and convert files using the FBX file format. This chapter describes how to install the 3ds Max FBX Plug-in for Windows® XP (32/64-bit), Windows® Vista (32/64-bit), as well as Windows® 7 (32/64-bit).

The 3ds Max FBX Plug-in comes with 3ds Max and is installed automatically. This procedure is included so you can upgrade your 3ds Max FBX Plug-in with later versions.

NOTE The 3ds Max FBX Plug-in that accompanies your version of 3ds Max may not be the most recent version. It is a good practice to check for updates, as each subsequent 3ds Max FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 16) for instructions on how to verify that your plug-in version is the latest.

NOTE The 3ds Max FBX Plug-in runs only on the version of 3ds Max for which it is created. Verify that the 3ds Max FBX Plug-in you are installing is appropriate for your version of 3ds Max, and that you are using the latest plug-in version. Otherwise 3ds Max rejects it. See Downloading the 3ds Max FBX plug-in (page 11). For instruction on how to delete the plug-in, see Removing the FBX Plug-in (page 13).

Windows Installation

The 3ds Max FBX Plug-in is available for Windows.

Windows Compatibility

The 3ds Max FBX Plug-in is compatible with the following versions of Microsoft Windows®:

- Windows XP (32/64-bit)
- Windows Vista (32/64-bit)
- Windows 7 (32/64-bit)

To install the 3ds Max FBX Plug-in:

1   Exit 3ds Max.

   NOTE   If you install the 3ds Max FBX Plug-in while 3ds Max is operating, the installation cannot occur. You will receive an "Error opening file for writing" message.

   NOTE   If you have previously installed older versions of the FBX Plug-ins, you may need to remove these plug-in files manually. These files are removed automatically during the installation process, but if you receive an error or warning when you run the plug-in, check for older versions of the plug-in files and remove them manually. To do so, search and delete the following files: fbxmaxexp.dle and fbxmaximp.dli.

   The current 3ds Max FBX Plug-in is named fbxmax.dlu and must be the only installed version of the 3ds Max FBX Plug-in.

2   Download the install file from the Autodesk web site *http://www.Autodesk.com/fbx*. See Downloading the 3ds Max FBX plug-in (page 11) for information on downloading the latest 3ds Max FBX Plug-in.

3   Double-click the install file to launch the Autodesk 3ds Max FBX Plug-in installer.

4   Click I accept to accept the terms of the license agreement, and then click Next.

5 The next window shows the recommended installation location for the plug-in. To specify another location, click Browse to launch the file browser.

NOTE If you install the 3ds Max FBX Plug-in to a different location, the plug-in will not run automatically at startup. This is because 3ds Max automatically searches the default directory for the plug-ins. If you specify another directory you must run the plug-in manually from that location.

6 Click Next.

7 The next window shows the recommended installation location for the plug-in documentation. To specify another location, click Browse to launch the file browser.
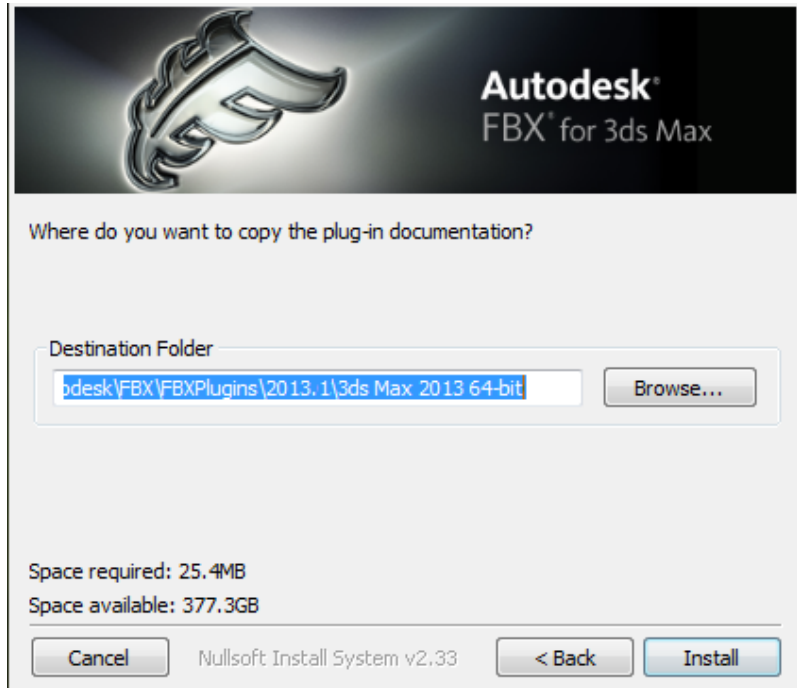
8 Click Install.

9 A series of dialog boxes appear asking if you would like to keep older versions of the plug-in (if applicable), open the plug-in documentation or view the read me file. Select Yes or No for each of these options.

> **NOTE** If you do not want to lose access to the FBX plug-in that ships with 3ds Max, select Yes to accept saving copies of the old plug-in whenever you install newer versions of the FBX plug-ins.

10 The Installation completed window appears. Click Close to exit the installer.

The 3ds Max FBX Plug-in is now installed.

Downloading the 3ds Max FBX Plug-in

The 3ds Max FBX Plug-in is available for free download.

To download the 3ds Max FBX Plug-in:

1   Go to *www.autodesk.com/fbx*.

2   Click the Download FBX Plug-ins and Tools link for the latest SDK and
    FBX plug-ins releases.

3   Click the FBX Plug-ins, Converter, and QuickTime Viewer downloads
    link.

    You are taken to a page where the plug-ins reside.

    NOTE The FBX plug-ins are categorized by type, operating system, then
    application version.

4   Click the FBX Plug-in link to download the corresponding FBX installer.

    NOTE To find older versions of the FBX Plug-ins, click the Plug-in and
    Converter Archives link at the bottom of the web page.

Checking Your FBX Version Number

Once you complete the installation, run the 3ds Max FBX Plug-in. The header
of the FBX Exporter and Importer windows in 3ds Max displays the FBX
Version number.
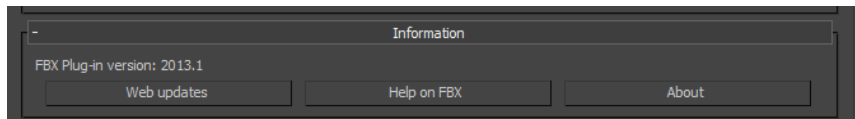
The 3ds Max FBX Plug-in that accompanies your version of 3ds Max may not
be the most recent version. It is a good practice to check for updates, as each
subsequent 3ds Max FBX Plug-in version has enhanced functionality, and is
available free. See Web updates (page 16) for instructions on how to verify
that your plug-in version is the latest.

Removing the FBX Plug-in

When you install the 3ds Max FBX Plug-in two instances of the plug-in are installed on your computer: the actual FBX plug-in that is saved in the source directory (C:\Program Files\Autodesk\3ds Max 2013\stdplugs) and a copy that is stored in the FBX folder that you specified during the installation.

When you uninstall the 3ds Max FBX Plug-in, the process removes only the plug-in copy from the destination folder you specified during the installation. To remove the FBX plug-in completely, you must delete it manually. The reason you must perform a manual deletion is because the FBX plug-in is a part of the default 3ds Max installation.
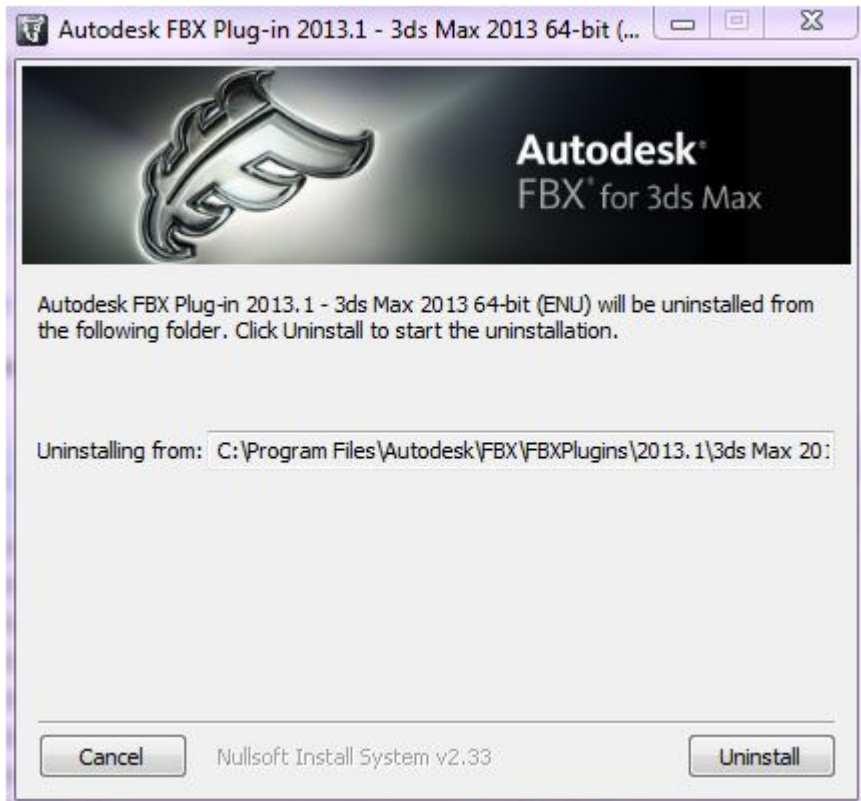
The uninstall screen specifies a destination folder

Essentially, when you uninstall, you remove the contents of the FBX **backup** folder, for example, C:\Program Files\Autodesk\FBX\FBXPlugins\2013.1\3ds Max 2013 64-bit, as well as any related entries in the Start menu.

It is good practice to keep the previous version of the plug-in, especially if you are working on a project where your workflow is heavily dependent upon the plug-in. If the newer version of the plug-in disrupts your process in some way, you can revert to the previous version. If you do not want to lose access to the FBX plug-in that ships with the 3ds Max software, select Yes when asked if you want to accept saving copies of the old plug-in. This option occurs whenever you install newer versions of the FBX plug-ins.

FBX Plug-in UI

3

This section describes the 3ds Max FBX Plug-in user interface. Options and menus are contained within rollout menus that you can expand and collapse.

Basic UI Options

The buttons in this section are common to the 3ds Max FBX Plug-in user interface (UI) and are available whenever the UI is displayed.

Help

Click the Help on FBX button in the information rollout to access the 3ds Max FBX Plug-in documentation.
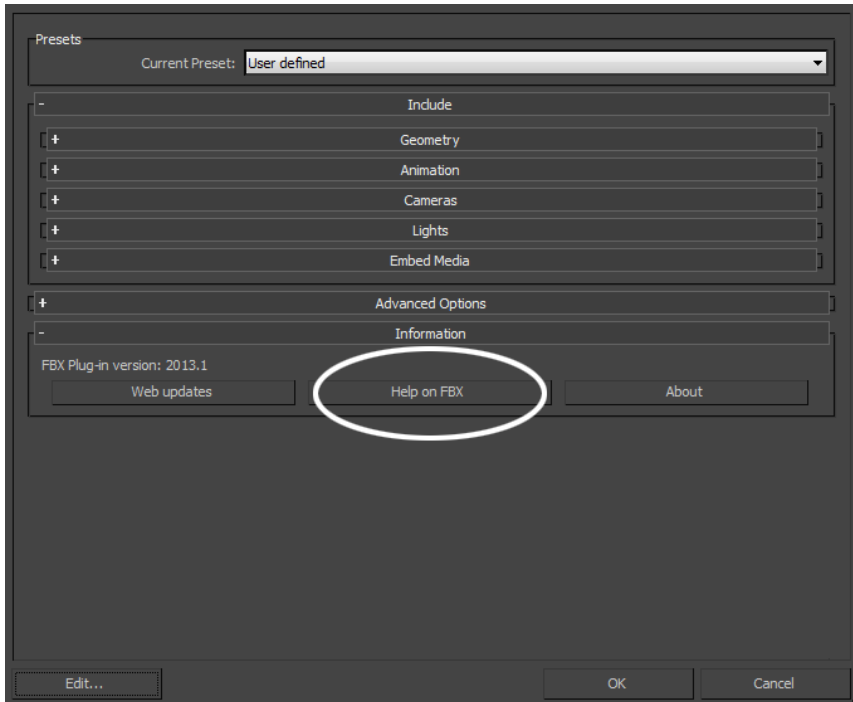
NOTE The FBX Help documentation is available from a website, rather than installed locally. To install the Help locally, the FBX help is available for download online at *www.autodesk.com/fbx-help*.

Web Updates

Click the Web Updates button to make sure that you are using the latest version of the 3ds Max FBX Plug-in.

This function searches the Autodesk web site to check if there is a newer version of the plug-in that you are currently using.
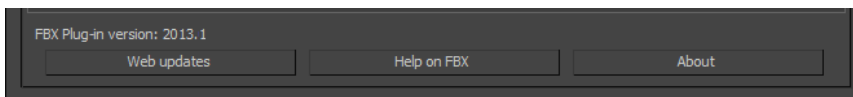
If you have the latest version, the following message appears:

Your FBX Plug-in is up to date!
Be sure to check for updates regularly.
Version 2013.1, Build Number 20120205

OK
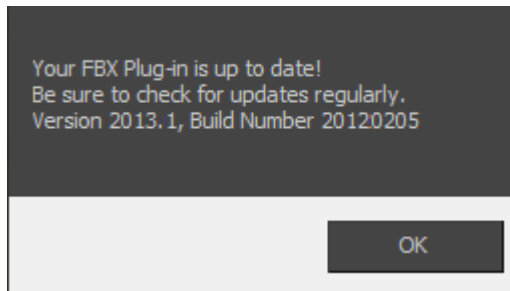
If a newer version of the 3ds Max FBX Plug-in exists, a window appears to inform you.

See Downloading the 3ds Max FBX plug-in (page 11) for information on downloading and installing the latest 3ds Max FBX Plug-in.

About

Click the About button to view information about the 3ds Max FBX Plug-in.

Edit

You can use the Edit preset button to create and save custom presets with option settings that you define.
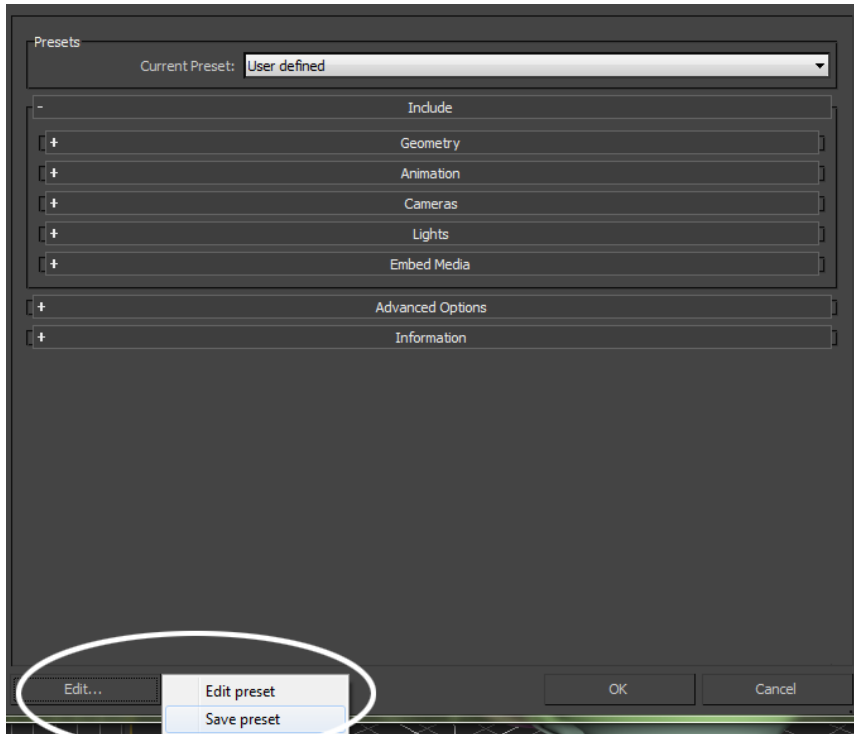
Access the Edit/Save preset options through the Edit button in the FBX plug-in UI.

The 3ds Max FBX Plug-in stores custom presets in a file so you can share them with other users. See Storing presets (page 19) for more information.

See Editing a preset (page 20) for information about how to create custom presets.

Ok

The OK button starts the export or import process.

Cancel

The Cancel button closes the FBX Export or Import window without performing any action.

Storing Presets

You can save your custom presets in a file that you can share with other users. Consult the table for the location of your saved presets.

FBX Version	Preset Location
2009.4 (and earlier)	C:\Documents and Settings\<username>\My Documents\3dsMax\FbxPre... C:\Users\<username>\Documents\3dsMax\FbxPresets (Vista) C:\Users\<username>\My Documents\3dsMax\FbxPresets (Windows 7)
2010.0 (and later)	C:\Documents and Settings\<username>\My Documents\3dsMax\FBX\Pr... C:\Users\<username>\Documents\3dsMax\FBX\Presets (Vista) C:\Users\<username>\My Documents\3dsMax\FBX\Presets (Windows 7)

Preset files have the file extension .fbximportpreset (for import) and .fbxexportpreset (for export), for example, My Preset.fbximportpreset.

Creating a Custom Preset

You can create your own preset with options specific to the kind of import or export you want to perform. You can also modify existing presets with custom option settings and UI layouts using the Edit preset mode. See Editing a preset (page 20).

To create a custom preset

1 Configure the FBX importer or exporter with the settings and UI layout you want.

2 Click Edit ➤ Save preset.

3 Type the name of the new preset for example, "My preset".
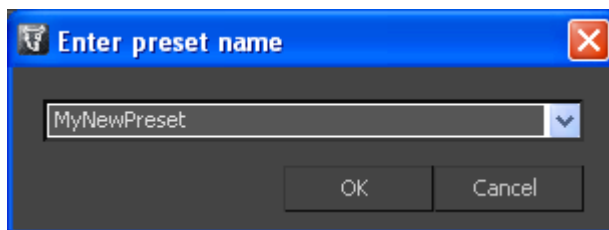
4 Click OK. For information about changing your custom preset, See
Editing a preset (page 20).

NOTE

You cannot save Bake Animation Start/End/Step values in presets. The 3ds
Max FBX Plug-in always derives these values from the scene being exported.
For more information, see Preset Bake Animation settings (page 120).

Editing a Preset

You can modify existing presets with custom option settings and UI layouts
using the Edit preset mode.

1 Click Edit ➤ Edit preset.

2 A dialog box opens to inform you that you must right-click a tree view
item to edit its parameters. Click Ok.
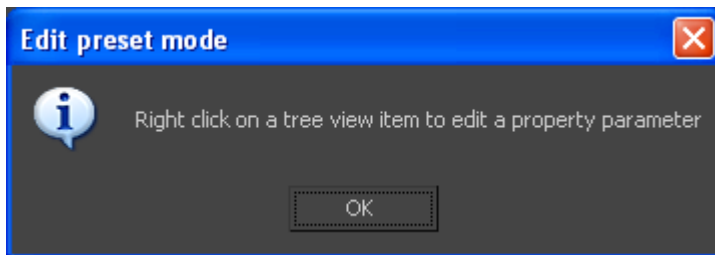
3 This action splits the UI into two sections, and adds a tree view of the
FBX options in the left section.
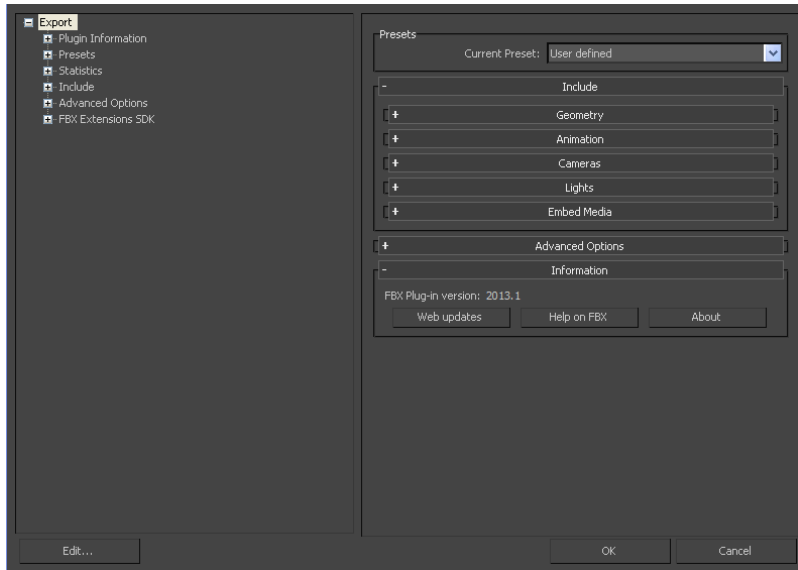
4 Right-click elements in the Tree View to access the Edit options.
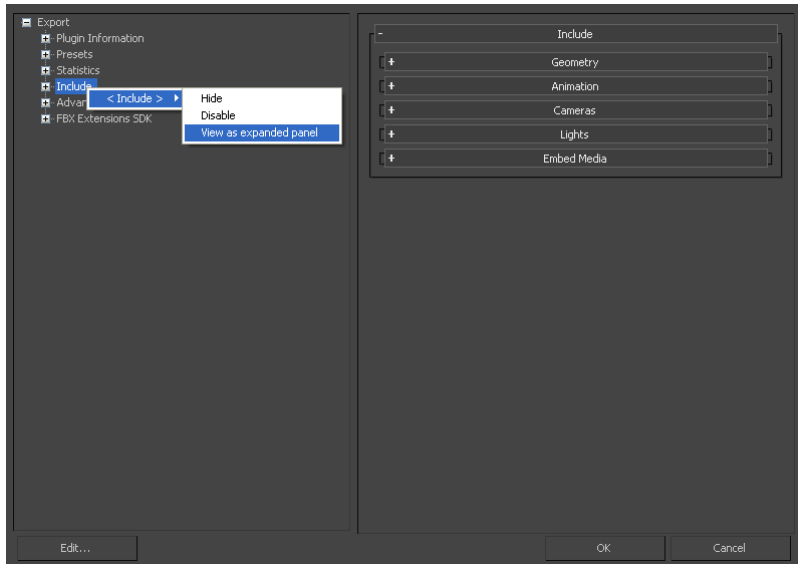
NOTE Some edit options are common to all structure levels, while some are specific to a particular structure level. You can apply some options at any level of the options structure. See Edit mode options (page 22).

Edit Mode Options

Use the Edit Mode options to customize your FBX UI preset.

Show/Hide

This option activates or disables the visibility of a group or option in the UI.

Enable/Disable

This option locks the group or option so that it appears grayed-out in the UI and cannot be modified.
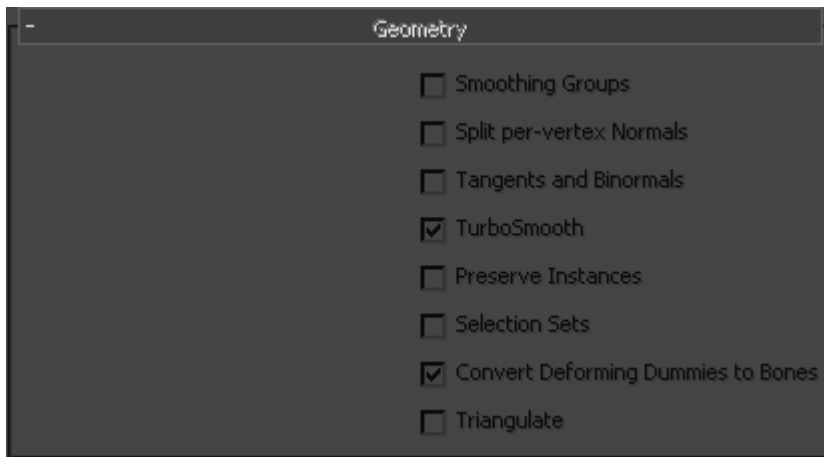
View as Expandable Group/View as Expanded Panel

This option lets you set whether a group is expandable or not.
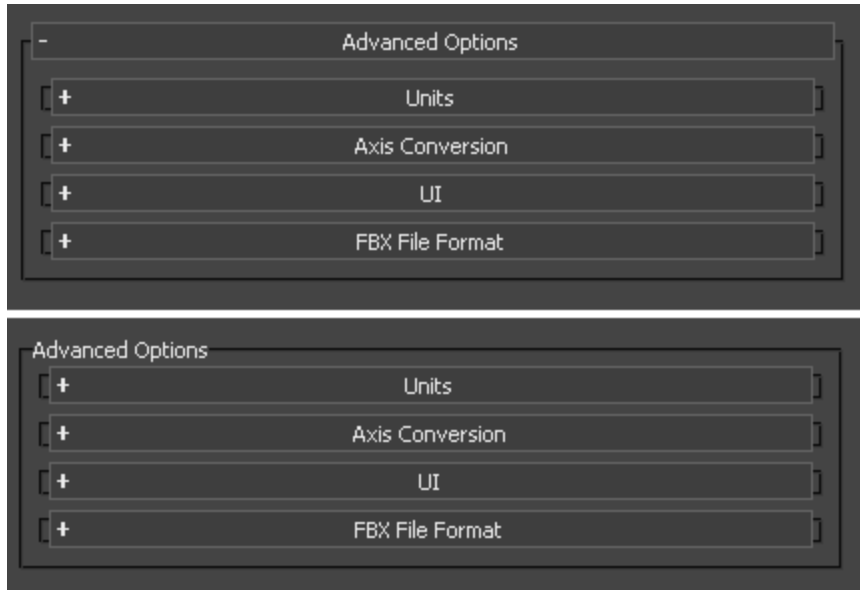
Checking Your FBX Version Number

Once you complete the installation, run the 3ds Max FBX Plug-in. The header of the FBX Exporter and Importer windows in 3ds Max displays the FBX Version number.
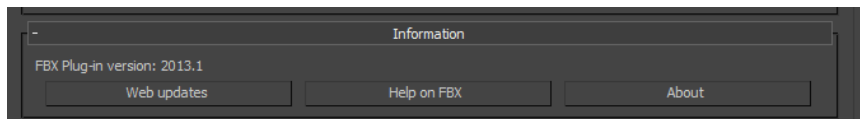
The 3ds Max FBX Plug-in that accompanies your version of 3ds Max may not be the most recent version. It is a good practice to check for updates, as each subsequent 3ds Max FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 16) for instructions on how to verify that your plug-in version is the latest.

Export

4

This chapter contains information about options you can use in the 3ds Max FBX Plug-in exporter window.
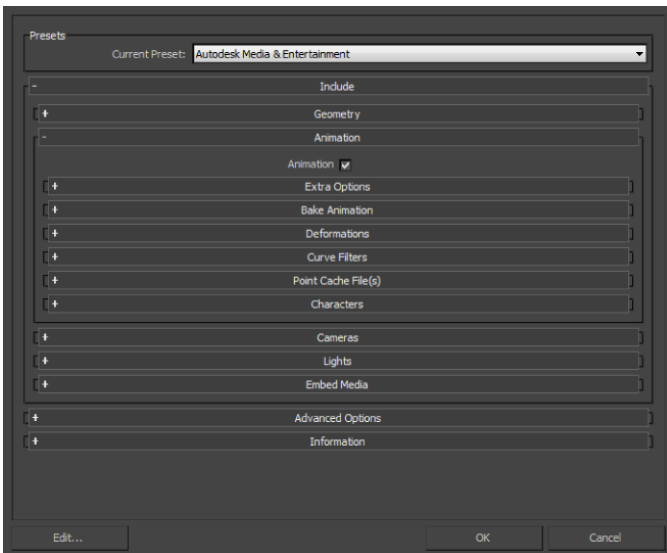
Exporting from 3ds Max to an FBX File

To export your 3ds Max scene:

1   In 3ds Max, select Application Menu ➤ Export from the main menu bar. A file browser appears.

2   Select Autodesk (.FBX) in the Save as Type field, name the file and browse to the location where you want to save the FBX file.

3 Click Save. The FBX Exporter window opens.
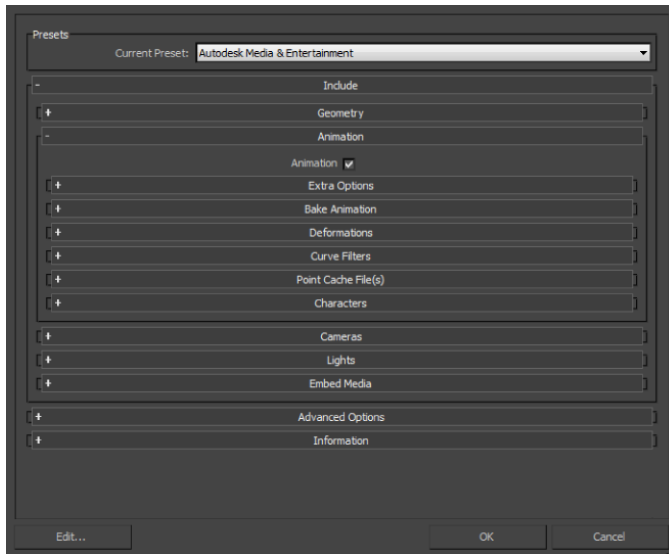
4 If you want, select a preset from the Current Preset menu. The Autodesk Media and Entertainment preset contains the best balance of options for a general animation workflow. See Autodesk Media & Entertainment preset (page 27) for more information.

You can also select your own options for export from the FBX Exporter window. For more information about export options and which are appropriate for you, review the Export (page 25) section.

5 Click Ok.

NOTE To cancel the export process, press ESC.

If conversions or errors occur during the export process, the Warning Manager reports them at the end of the process. See Show/Hide Warning Manager (page 51) for information about the Warning Manager.

NOTE There is a difference between "Errors" vs. "Warnings". The plug-in reports an error when something unexpected occurs. When the plug-in reports an error, it indicates that the consequences of that error are unknown. Warnings inform users when the plug-in applies conversions to the source data to convert the data into a format that the destination application can read.

Export Presets

The 3ds Max FBX Plug-in has one export workflow preset:

■ Autodesk Media & Entertainment preset (page 27)

Autodesk Media and Entertainment is the default preset for the 3ds Max Exporter.

Selecting a Preset

Choose your preset by selecting it in the menu of the FBX Plug-in "Presets" section.
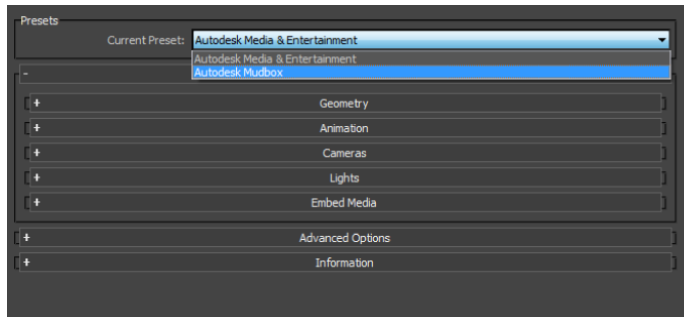
Editing Presets

If you change a preset, the preset field displays User defined, to show that the preset differs from its default state. The plug-in saves the User defined state in a temporary file so that the settings are the default the next time you use the plug-in.

You can also use Edit ➤ Save preset to save your settings as a custom preset. See Creating a custom preset (page 19) and Editing a preset (page 20).

Autodesk Media & Entertainment Preset

The Autodesk Media and Entertainment preset contains the optimal settings for most animation workflows.
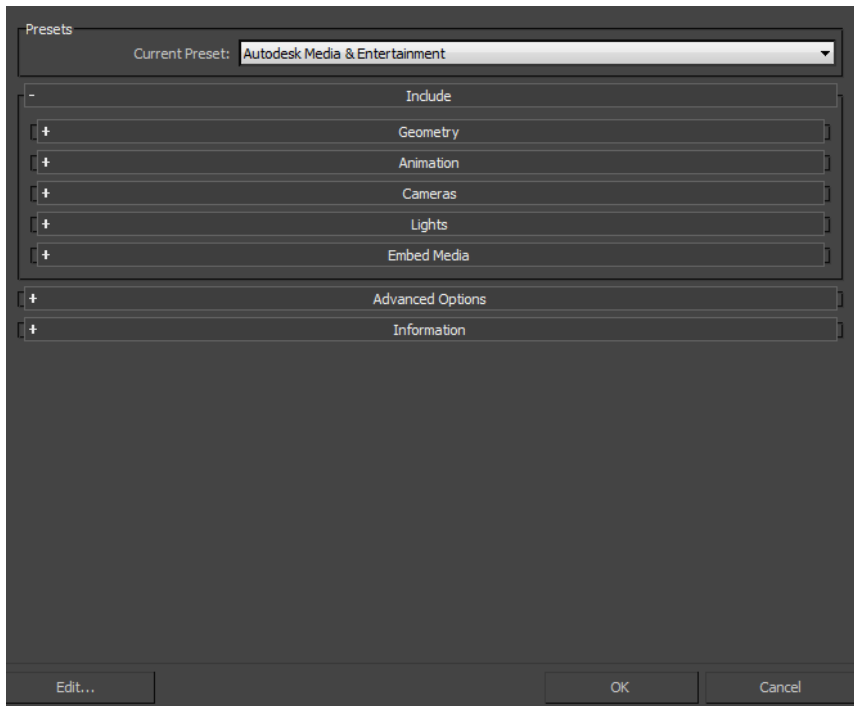
Autodesk Mudbox Preset

The Autodesk Mudbox preset lets you use export options that are the optimal default settings for work between 3ds Max and Mudbox.

This preset is the same as the default Autodesk Media & Entertainment preset except that the Preserve edge orientation option is disabled. See Preserve edge orientation (page 35) for an explanation of this setting.

Edit/Save Preset

You can use the Edit preset button to create and save custom presets with options that you define.
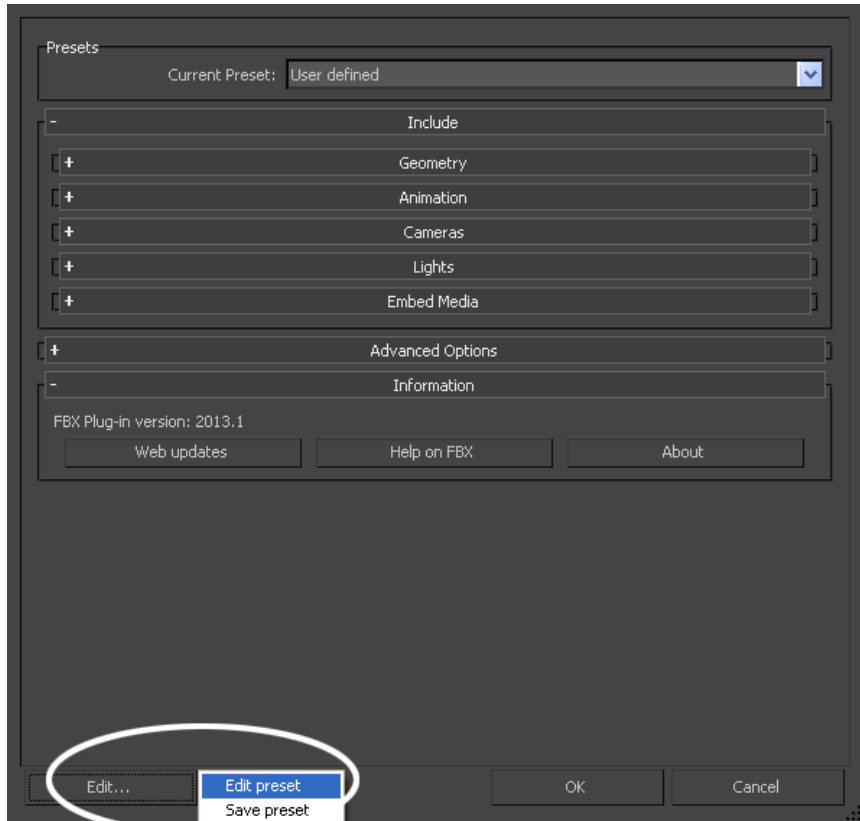
Access the Edit/Save preset options with the Edit button in the FBX Exporter UI.

The 3ds Max FBX Plug-in stores custom presets in a file so you can share them with other users. For more information, see Storing presets (page 19).

For more about creating and editing presets, see Creating a custom preset (page 19) and Editing a preset (page 20).

Include

The Include rollout lets you decide what data and conversions the plug-in applies to your scene at export from a host application.
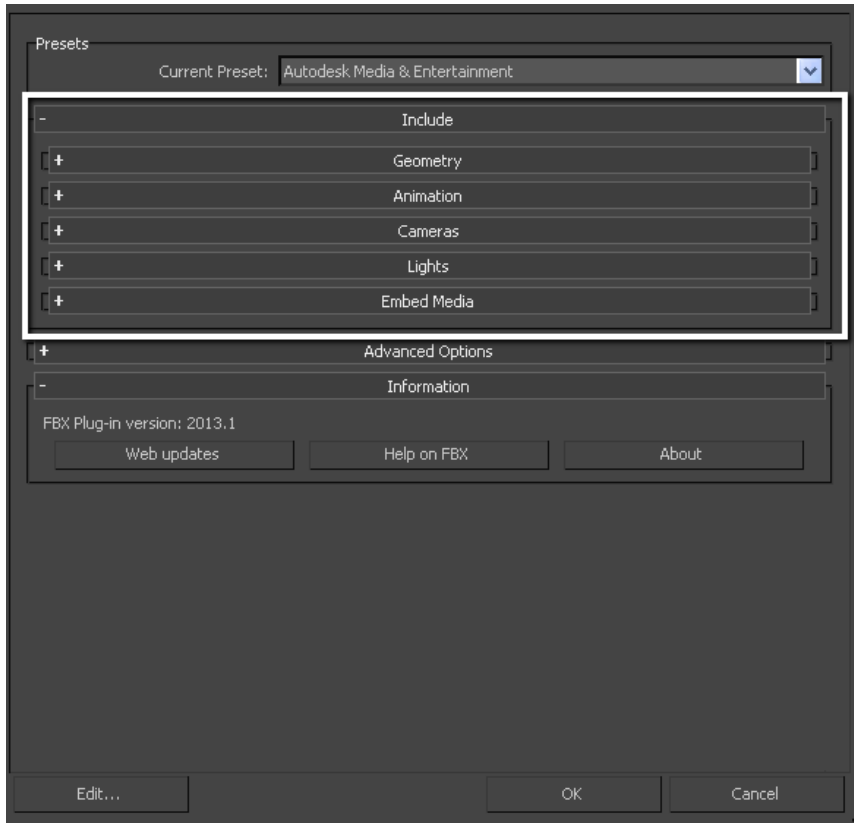
Geometry

Expand the Geometry rollout to access options related to exporting geometry from your scene.

Smoothing Groups

Activate this option when you want to include Smoothing Groups information in your exported FBX scenes.

This option is disabled by default in the Autodesk Media & Entertainment preset.

When you disable this option, only explicit normals are exported with the file.

Smoothing Groups and Collada

The FBX Collada exporter does not export Smoothing Groups data from 3ds Max. Because of this, the FBX Collada importer generates Smoothing Groups during the import process when the Smoothing Groups option is activated.

If you disable the Smoothing Groups option, which is the default state, the FBX Collada importer does not generate Smoothing Groups for a faster import.

Split Per-Vertex Normals

Activate this option in order to split geometry vertex Normals based on edge continuity.

NOTE   This option only applies to older MotionBuilder workflows so you can ensure visual fidelity of surface continuity. It lets you transfer hard edge information to MotionBuilder. This transfer is required because of a MotionBuilder limitation found in versions 2010 and earlier.

Do not use this option if you do not require hard edges in MotionBuilder, since this operation duplicates vertex information and converts geometry.

When Do I Use This?

Use this option to preserve whether edges are hard (divided) or not (continuous) when you operate between 3ds Max or Maya and MotionBuilder 2010 and earlier. If you disable this option, all Smoothing Groups in 3ds Max are ignored as well as all hard/soft edge information in Maya.

For example, a 3ds Max-created box that would normally have defined edges would lose them, with all faces visually connected, without visible edges dividing them, in MotionBuilder. This is result is hardly noticeable for organic objects, but is very noticeable on hard surfaces such as tables and cars, and so on.

See the Split per-vertex Normals workflow to import FBX files exported from 3ds Max into MotionBuilder with proper edge continuity while retaining the original 3ds Max edge continuity for import back into 3ds Max.

Split per-vertex Normals workflow:

1   Export from 3ds Max with the Split per-vertex Normals option activated.

2   Import your scene in MotionBuilder using FBX File Import, finalize your animation and click Save to resave the FBX file.

3   In 3ds Max, import the FBX file with your original 3ds Max scene open. Choose Include ➤ File content ➤ Update scene elements to import/update only the animation in the scene.
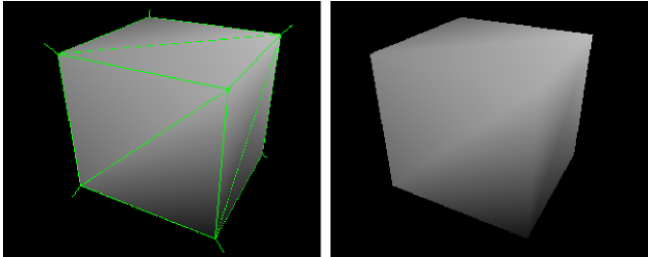
(Above) Split per-vertex Normals option **disabled** on export produces this result in MotionBuilder 2010 and earlier.
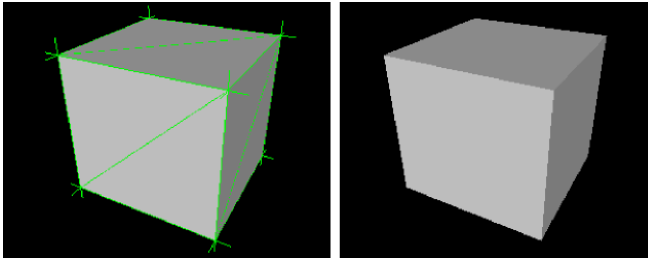
(Above) Split per-vertex Normals option **activated** on export produces this result in MotionBuilder 2010 and earlier.

Tangents and Binormals

Activate this option if you want the 3ds Max FBX Plug-in to create Tangents and Binormals data from UV and Normal information of meshes. This way you have a Tangent space representation of your meshes that you can use for advanced rendering.

NOTE Your geometry must have UV information, or the 3ds Max FBX Plug-in cannot create Tangents and Binormals.

Why Do I Want to Do This?

Exporting tangent and binormal data is useful when you need to define the local coordinate system for each vertex in the mesh, which is referred to as "Tangent space". This is often required for advanced rendering techniques such as Normal mapping.

The 3ds Max FBX Plug-in reads the UV data and uses it to calculate the Tangent space data for normal perturbation in per-pixel lighting.

NOTE There is a known limitation that affects this option. See Tangents and Binormals (page 120) for more information.

TurboSmooth

Use TurboSmooth to export the source mesh (non-tessellated version) and the TurboSmooth attributes, for objects with an active TurboSmooth modifier applied.

If you disable this option, the tessellated version of the mesh is exported. To export the source mesh, turn off the TurboSmooth modifier in 3ds Max, and export.

Preserve Instances

Activate the Preserve Instances option to preserve instances in the FBX export. If you disable this option, exported instances are made unique (converted to copies).

NOTE When you activate Preserve Instances, 3ds Max reference objects export to FBX as a copy (not an instance). The Reference objects then lose their instancing properties.

Selection Sets

Objects and all Editable Poly/Mesh & Poly/Mesh Select modifier sub-object (component) selection sets are supported for export and import with the 3ds Max FBX Plug-in.

Activate this option to export Selection sets. Disable this option if you do not want Selection Sets exported with your file. This option is disabled by default.

NOTE To avoid name clashing, the 3ds Max FBX Plug-in must rename Sub-object Named Selection sets on export. This is because the 3ds Max FBX Plug-in does not distinguish between edges and borders, or polygons and elements. Because borders contain edges, and elements contain polygons, FBX must identify these Sub-objects and add a suffix. For example, if you had a Sub-object Named selection set of one vertex called "OneVertex" that belonged to Box01, on export it becomes renamed "Box01_OneVertex".

When Should I Not Do This?

Activating this option includes extra data with your scene so be certain that you need the Selection set data before you export. Exporting a scene with Selection Sets impacts file size and if Selection Sets are not required, it is good practice to keep the file size as small as possible by excluding unwanted data.

Convert Deforming Dummies to Bones

Activate this option to convert geometry used for deforming objects into real bones in the FBX file.

3ds Max lets you use geometry to deform other geometry (as would bones), but other applications do not support this kind of deformation.

Why Do I Need This?

Use this option to keep deformations but convert geometry used as bones into actual bone objects.

In earlier versions of Maya, you could not use geometry to deform other objects instead of bones. This option lets users import objects from other software that had a Use Geometry as Bone option, such as 3ds Max and Softimage into Maya.

For example, if you had a scene in 3ds Max where a box was used to deform another box, the geometry as bone object became a proper bone object in Maya if the Convert Geometry used as Bones option was active. If you disabled this option, the box would remain a box and there would be no animation.

Maya now supports this type of deformation, so it is no longer necessary to activate this option. However, it is still a best practice to leave this option activated for improved interoperability as not all products support geometry as bones.

Triangulate

This option automatically tessellates exported polygon geometry.

NOTE This option affects polygon Meshes, not NURBS and Patches.

Preserve edge orientation

This option lets you automatically convert editable poly objects that contain hidden edge turns to editable mesh objects whenever the plug-in detects them in the file.

Editable Poly objects in 3ds Max have hidden edges which can be flipped/turned to change their direction. Because FBX only stores edge *visibility* in exported files, not edge *orientation*, turned edges are lost, and the edges of editable polys export/import back to 3ds Max with the edges in their "unturned/unflipped" state. Activating this option means that every time hidden edges are detected, editable polys always export as editable meshes (triangulated in the process).

This option is active by default. Disable this setting to stop the automatic conversion.

Animation

Activate this option to export animation found in the scene.

Expand this option to access advanced animation options and features.

Extra Options

Expand Extra options to view additional export options.

Use Scene Name

Normally, the 3ds Max FBX Plug-in saves the 3ds Max scene animation in the FBX file as Take 001. Activate this option if you want the scene animation to be named after the 3ds Max scene instead.

This option is disabled by default.

Remove Single Key

When you activate this setting, the exporter removes keys from objects on export if the plug-in determines that the animation has only one key. When two or more keys exist in the file, the keys are exported.

NOTE Rotation keys are not affected by this setting.

Disable this option to export every key to FBX, regardless of how many are found in the animation.

NOTE This option is disabled by default.

Why do I need this?

Sometimes, a file animation contains a single key that is used as a locator. If the single key is not needed, activating this option reduces the file size.

Bake Animation

This option lets you bake (or Plot) animation at export time.

When you activate this option all unsupported constraints and controllers, including the 3ds Max Biped, are resampled into animation curves. You can then import these curves into another application that does not support these 3ds Max constraints.
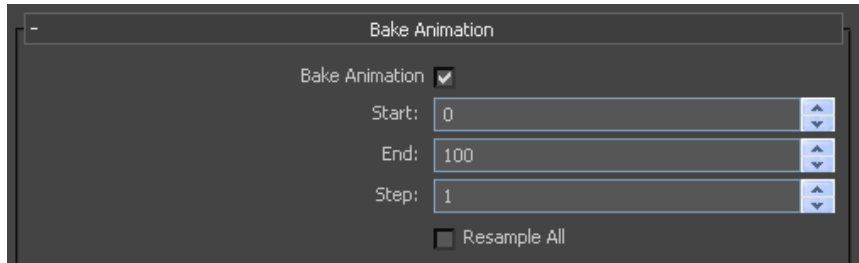
The plug-in takes the Start and End values automatically from the "timeline" current settings of the host application. You can modify them by changing the values once you activate this option.

NOTE Bake Animation Start/End/Step values cannot be saved in presets. The 3ds Max FBX Plug-in always derives these values from the scene being exported. For more, see Preset Bake Animation settings (page 120).

The Step value defines how many keys are created per frame, and has a value of 1 by default. Setting a Step of 2 for example, only bakes and exports a key every other frame.

NOTE The FBX Exporter will bake animation on any objects that have keys on FBX unsupported channels such as constraints, controllers, and so on.

Resample All

Use the Resample all option to bake even supported animated elements. This is unlike the Bake animation (page 36) option which selectively bakes unsupported elements only.

NOTE The Resample all option resamples animation using the frame rate of the host application. If you want the Resample all option to use a different frame rate for sampling, you must specify another frame rate setting in 3ds Max.

The Resample all option reacts to the state of the Bake animation option. If the Bake Animation option is disabled, the Resample all option is unavailable.

Why Do I Need This?

The Resample all option is useful if you need to bake or "flatten" the animation data in the scene.

Deformations

Activate the Deformations option to access the Skin and Morph deformation options.

Option	Description
Morphs	Activate this option to export all geometry Morphs used in your scene.
Skins	Activate this option to export all Skin deformations used in your scene.

Curve Filters

The Curve filters let you apply animation filters to function curves during the export process.

Constant Key Reducer

Activate the Constant Key Reducer filter to remove redundant keys. Redundant keys are keys that have the same value, which are equivalent to flat horizontal interpolations on a curve. Redundant keys are often a result of a resampled curve.
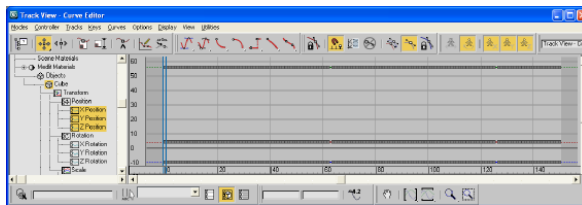
Before:
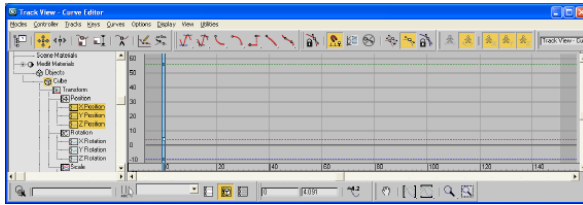
After:

You can set specific thresholds for each type of transform (Transformation, Rotation, Scaling, and Other. Other includes Morph and custom attribute curves, for example).

The default values are:
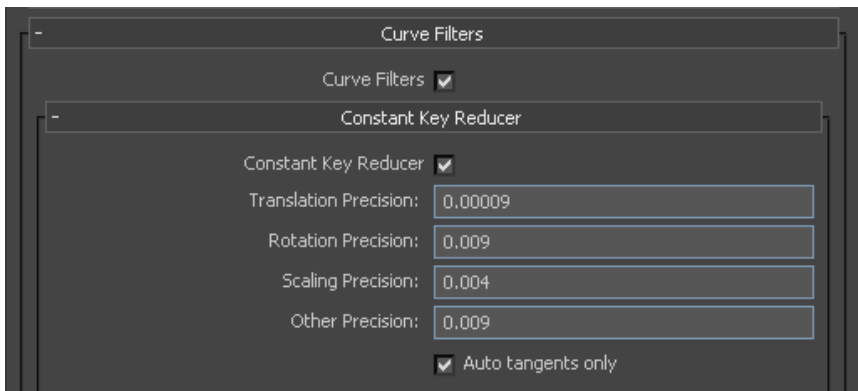
Values represent generic units. This is why you might need to modify threshold values in relation to the world scale of your scene. This is true for very large or small scale scenes.

If keys are numerically identical, use very small values to ensure that no animation is lost.

If you use this filter to eliminate noise, for example, from motion capture data, then you might need to modify values.

Setting	Description
Translation precision	Threshold for translation curves in generic units.
Rotation precision	Threshold for rotation curves in generic units.

Setting	Description
Scaling precision	Threshold for scaling curves in generic units.
Other precision	Threshold for other curves in generic units.
Auto tangents only	This option ensures that only "auto" key types are filtered. Otherwise, keys with interpolation values greater than a certain threshold might be deleted.

Unroll Rotations

Activate the Unroll Rotations filter to resample rotation curves and give unroll priority and filter intensity to a specific component, X, Y, or Z.

This filter re-evaluates rotation curves to reduce the number of 180' degree rotation jumps for a specified component. You can modify or displace these rotation jumps and/or Gimbal lock with this filter, and not affect the resulting animation visually.
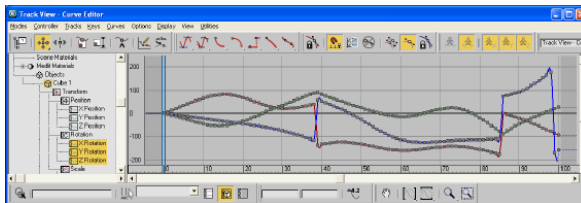
Before:
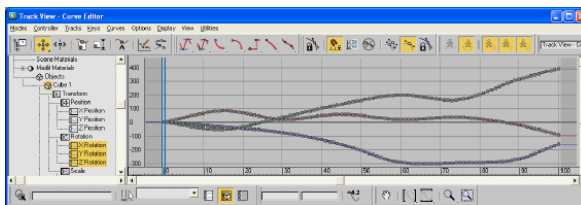
After:

NOTE The Unroll Rotations filter must resample the entire vector of a rotation curve (X, Y & Z components). This resampling lets the plug-in find a new path of values that represent the same rotation.

Setting	Description
Filter precision	The precision value affects how the plug-in re-evaluates the curve and defines the importance given to the unrolled curve.
Follow Y-up	Activate this option to give priority to the Y component, normally used for Y-up scenes.

Key Reducer

Activate the Key Reducer filter to reduce the number of keys on animation curves by setting tangents in order to keep precision of the animation.

You also can use this filter to reduce the number of keys on resampled curves, which lets you edit keys, not dense data.
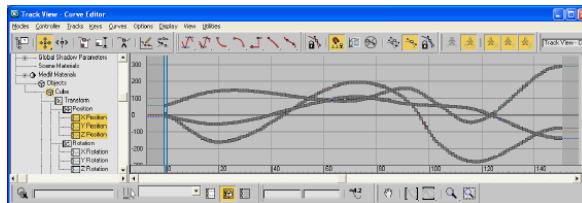
Before:
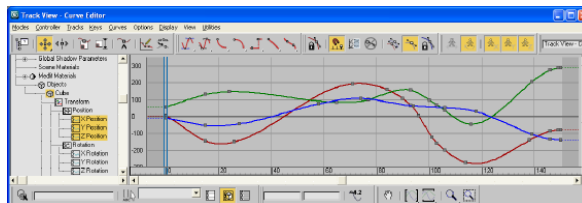
After:

NOTE There is always a trade-off between the number of keys needed versus the precision of the animation. The more keys you have, the more precise the animation. The fewer keys you have, the easier it is to edit the keys, but there is less precision.

Setting	Description
Filter intensity	Generic value. A value of "1" keeps the filter intensity of the original visual result, in most cases.
XYZ Curve Synchronization	On X, Y, Z curves, this option adds keys to other curves (X,Y, or Z) at every added key. This setting increases the number of keys. It also ensures that they always exist on all three curves of the same vector (X, Y, and Z) for each key over time.
	NOTE
	Game engines often require this for real-time animation playback.

The default values for the Key Reducer filter are a precision value of 1.0 and the XYZ Curve Synchronization option disabled.
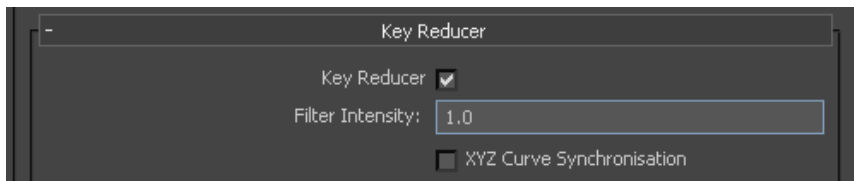
Point Cache File(s)

Activate this option to create a cache file of a chosen selection set so you can retain vertex animation data during export. To use this option, you must first create a selection set of the objects for which you want to retain the vertex animation in 3ds Max. Use the Selection Set menu to select an appropriate set to export the cache file.

The stored vertex animation data is stored in a folder in the same location as the FBX file.

NOTE You must place the folder wherever the FBX file is placed, so that when an importer processes the FBX file, it will find the Point Cache data.

What is Vertex Animation?

Object animation occurs when you move a sphere from one place to another. If you rotate or scale this object, it is still considered object animation; Any TRS animation on the object is considered standard object animation and is what is kept on regular exports.

Vertex animation occurs at the sub-object (vertex) level. For example, if you were to move 4 vertices on a sphere, this animation is lost on export unless you create a Point Cache file for this animation.

What is a Point Cache?

A Point Cache is a local sub-object animation of an object. To export this local sub-object animation from a program like 3ds Max, every vertex position must be evaluated and stored in a file or series of files called Point Cache files. You must make a selection set of the object(s) for which to store Point Cache data because the exporter needs to know for which objects you want the vertex animation evaluated.

In 3ds Max, you create a Point Cache for your object(s) so you can have better playback for complex animating. If, for example, you had a scene with 20 controllers driving the animation of 500 different characters, creating a Point Cache file would let you store all the vertex animation and play it back on all 500 characters, so that 3ds Max does not evaluate the animation controllers for each character. This in turn, creates a more smooth playback.

By default, any Point Cache files created are in .MC format. When you activate this option, three files are generated:

■ an FBX file

■ an XML file

■ an MC file

The 3ds Max FBX Plug-in stores the XML and MC files in a subfolder named after the FBX file and has the suffix FPC (_fpc).

For example, if you export a scene containing a cube named box01 to the FBX file myTest.fbx, you create the following files and folders:

- myTest.fbx
- myTest_fpc
- box01.xml
- box01.mc

The plug-in keeps any PC2 or MC Point Cache files that are already recorded (within the selection set).

Characters

The Characters options let you specify how the 3ds Max FBX Plug-in treats character and HumanIK data when you export.

CAT Characters as HIK

Activate the CAT Characters as HIK option when you want export your CAT rig as an HIK Skeleton Definition to an FBX file.

If this option is disabled, the CAT rig is exported as a skeleton with standard bones.

Cameras

Activate this option to export all cameras contained in the scene.

The plug-in exports camera settings, and some render settings. Activating the Cameras option can change rendering results depending on the source application used in comparison. When you export, 3ds Max cameras are converted into FBX camera types for interoperability. The plug-in supports camera settings and converts them. For a list of supported cameras, see Camera support (page 2).

Lights

Activate this option to export all lights contained in the file. The 3ds Max FBX Plug-in exports and converts light types to ensure FBX interoperability.

The 3ds Max FBX Plug-in supports Standard Point, Spot and Directional light types exported to FBX for Autodesk Maya, Autodesk MotionBuilder, and other Autodesk applications. For a list of supported lights, see Light support (page 4).

Embed Media

Activate this option to include (or embed) all media associated with your scene in the FBX file itself. For example, texture images.

When you activate "Embed Media", the FBX plug-in includes (embeds) associated media (textures, for example) within the FBX file. The plug-in then extracts the media to an .fbm folder at import. The plug-in copies the embedded media to a <fileName>.fbm folder in the same location as the FBX file and is named after the FBX file. Since this media is contained within the FBX file itself, this has an impact on file size. Therefore, it is good practice to use this option only when you transport an FBX file to a location where the original media source is no longer accessible by the receiver.

NOTE When you import an FBX file with embedded media, the embedded files extract to a folder in the same location as the FBX file. If you do not have write permission to create that new folder, the media files are Imported to the user's temp folder, such as C:\Documents and Settings\<username>\Local Settings\Temp.

Why Embed Media?

If you disable the Embed Media option, the FBX plug-in stores the relative and absolute paths of the associated media files at export time. This causes problems if, for some reason, the path is no longer accessible. Make sure that the associated media is accessible to ensure the proper import of these media files.

If you export a file to FBX and do not activate the Embed Media option, no problems occur if you open the file on the same computer and all the images used in the scene are in the same locations that they were when the file was exported. However, if you move or delete any texture from that location, and use the FBX file afterwards, you will get an Importer message stating that you have missing texture files. This message also appears if you give this FBX file to someone using a different computer and who does not have that same texture in that same directory on the same computer drive.

It is a good practice to embed media when you are going to give the FBX file to another person. It is also a good practice to embed when you use FBX for storing assets, as you may eventually delete the reference images or move all the files to another drive or computer with different paths.

NOTE You can embed media with ASCII-formatted files, as long as they are exported to FBX 2011 and later. Versions FBX 2010 and earlier do not support embedded media in ASCII files.

Advanced Options
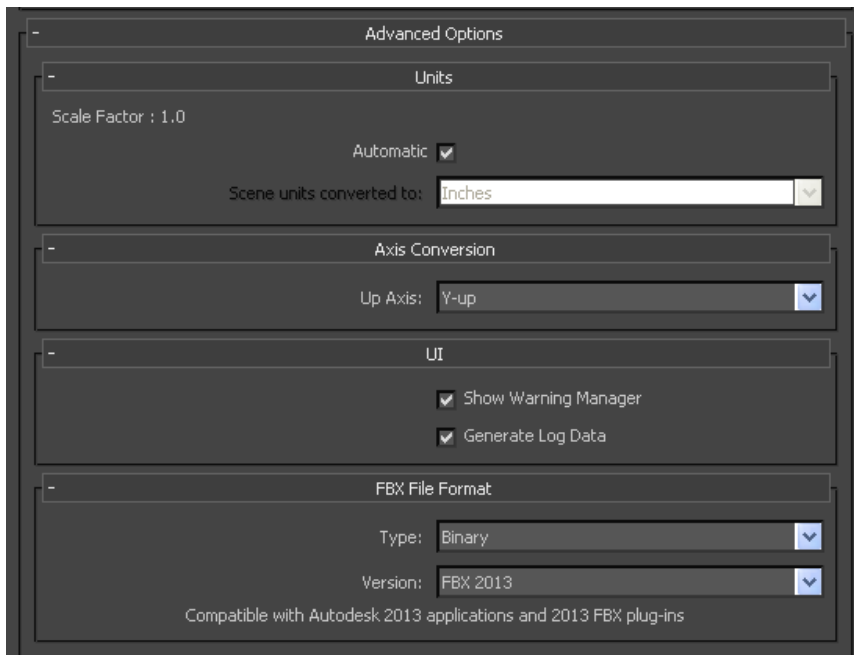
The Advanced Options rollout primarily contains additional options that let you modify the default plug-in behavior. In most cases you do not need to modify these options to have a successful export. The section also holds additional settings specific to the Collada file type.

Units

The following rollout includes unit settings for your exported files.

Automatic

Activate the Automatic option if you want the 3ds Max FBX Plug-in to automatically identify and set the units of the destination file to match units of the host application

When you activate Automatic, the Scene units converted to option is disabled, although it shows the resolved unit & Scale Factor. If you disable the Automatic option, the Scene units converted to option becomes available.

When Automatic is active, the File Units will match the system units, and the plug-in applies no conversion. The displayed Scale Factor is 1.0 in this case.

Scale Factor

Displays the conversion value or Scale Factor that the plug-in applies to the entire scene during export.

By default, the 3ds Max FBX Plug-in uses the system units set in the host application to determine what units to use to export the FBX file. This means that the default export Scale Factor is always 1.0, and the plug-in applies no unit scale conversion during the export process.

You can modify what units the 3ds Max FBX Plug-in uses to export your scene if you change the Scene Units converted to option. If you change the Scene Units converted to option, you modify the Scale Factor value and units applied to the exported data.

For information about incorrect or unwanted scaling issues, see Why is my scene scaled differently in 3ds Max? (page 112).

Scene Units Converted To:

Use this menu to specify the units to which you want to convert your exported scene. Modifying this setting directly affects the Scale Factor value applied to the exported data.

The plug-in determines the default units by looking at the System Unit Scale in the System Unit Setup dialog box in 3ds Max.

NOTE To view the default units, click System Unit Setup in the Units Setup dialog box that appears when you select Units Setup from the 3ds Max Customize menu.
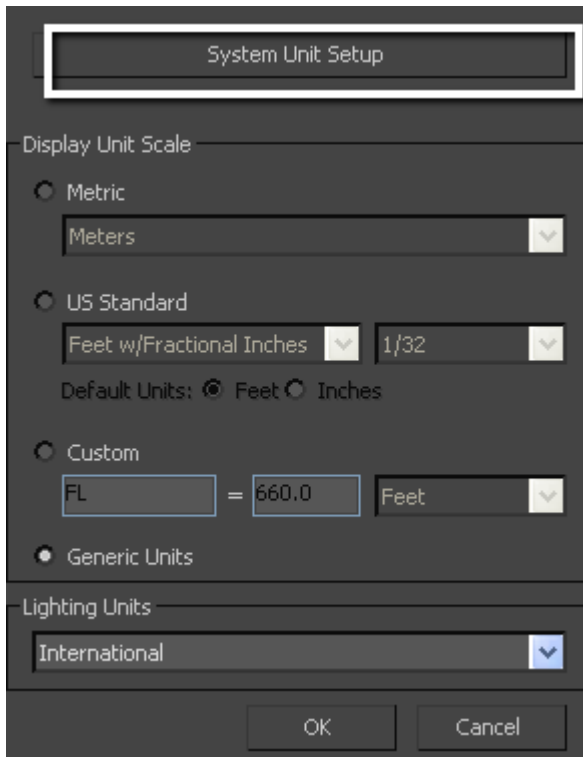
3ds Max Customize menu

On export, the plug-in applies no default scaling since the export and system units match. This results in a Scale Factor of "1.0".

For information about incorrect or unwanted scaling issues, see Why is my scene scaled differently in 3ds Max? (page 112).

Example

If you export a file that is in the same unit setting as the System Units of your 3ds Max scene, there is a match of units and the displayed Scale Factor will be "1.0". No scale conversion is applied.
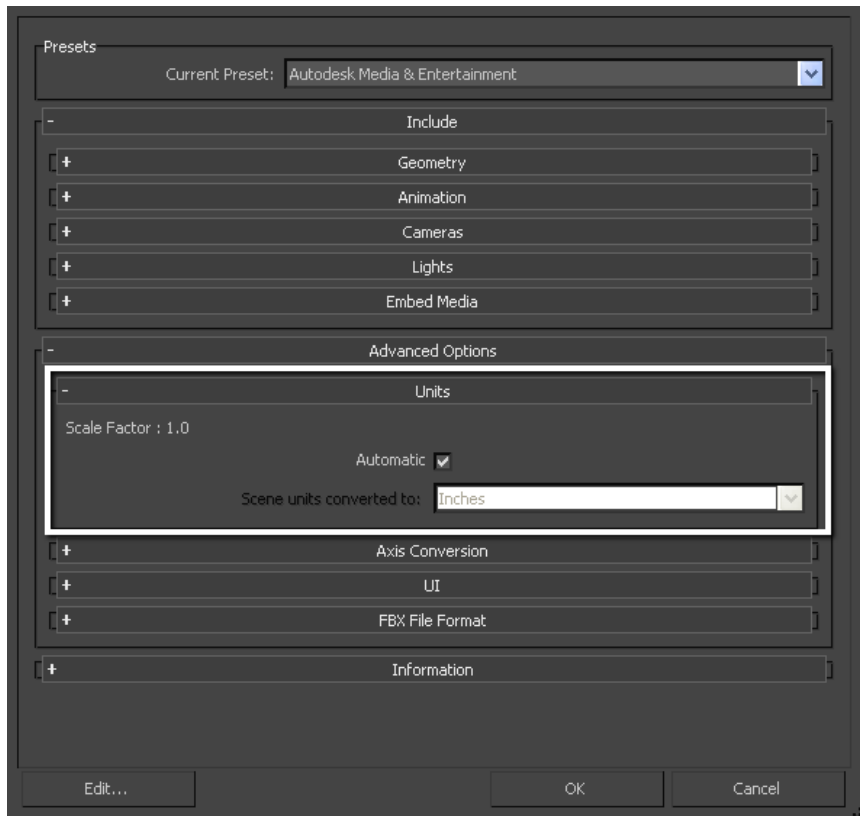
A unit match, with a Scale Factor of 1.0

Axis Conversion

The FBX export plug-ins have two options for Axis Conversion, Y-up, or Z-up.
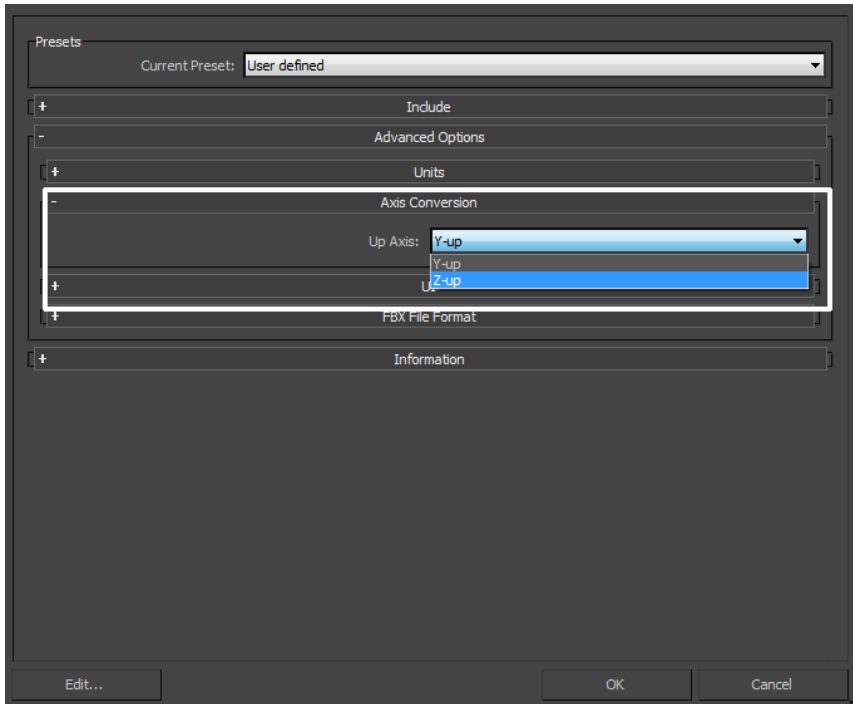
When you use the Autodesk Media & Entertainment preset, the 3ds Max FBX Plug-in exports using the Y-Up Axis.

You can export your scene to a Z-up axis if the destination application does not support the Y-up world axis and cannot convert the Y-up world axis of your scene.

NOTE The exporter applies Axis Conversions only to root elements of the outgoing scene. If you have animation on a root object that must be converted on export, these animation curves are resampled to apply the proper axis conversion. To avoid resampling of these animation curves, make sure to add a root node (dummy object) as a parent of the animated object in your scene, before you export to FBX.

UI

These options let you set display options of the UI, such as show or hide the Warning Manager.

You can customize these display options, save them as a new Preset, and share this preset file. See the Edit/Save preset (page 28) section for more information.

Show/Hide Warning Manager

This option lets you disable the Warnings and Errors dialog box that appears during the export process. The Warning manager is active by default.

What is the Difference Between an Error and a Warning?

The 3ds Max FBX Plug-in uses errors and warnings to alert you of conversions and potential problems during the export process.

When something unexpected occurs during the conversion, the plug-in reports an error. An error occurs when the plug-in encounters an unknown behavior and the conversion is going to produce an unexpected result.

When the plug-in must apply a conversion to the source data for it to be in a format that the destination application can read, the plug-in reports a warning. This warning is not the indication of a problem, but is there to provide a report of conversions that the plug-in has applied to the outgoing data.

Generate Log Data

Deactivate the Generate log data option if you do not want warning and error information written to the log. However, if you deactivate this option, the FBX Exporter/Importer records the file name and time stamp in the log file, but does not include error and warning data.

The 3ds Max FBX Plug-in stores log files in

- C:\Documents and Settings\<username>\My Documents\3dsMax\FBX\Logs (Windows XP)

- C:\Users\<username>\Documents\3dsMax\FBX\Logs (Vista)

- C:\Users\<username>\My Documents\3dsMax\FBX\Logs (Windows 7)

Why Do I Want to Do This?

Occasionally, some batch imports/exports create very large warning/error files, and in this case you might want to disable this option.

Normally, it is recommended to leave the Generate log data option active, which is the default, as this helps you identify problems with file conversions.

Log files are important for tracking errors and warnings on export. It is not recommended to deactivate this option when you export a series of files, for example, in an automation or batch export because you will not receive any feedback about any issues that concern files during export. This lack of feedback can make it difficult to identify problem files which, in turn, makes diagnosing problems difficult.

TIP Because log data is appended to the same log file, after a while the size of this file become large. It is a good practice to delete the log file after a few exports, or before processing batch export or import.

FBX File Format

This section lets you determine the format of your FBX file.

Type

Save your FBX file as one of these two types, binary or ASCII. While binary is the normal format for FBX files, ASCII files give you a plain text version of the file format, which lets you search the file for information retrieval.

NOTE You cannot view ASCII FBX files in the FBX for QuickTime viewer. Instead, save your FBX file as a binary file.

Mode	Function
Binary	Activate this option to save the FBX file in the standard format.
ASCII	Activate this option to save the FBX file in ASCII format. **NOTE** If you export your file to ASCII format in FBX versions 2010 and earlier, you cannot embed media.

Version

Expand the FBX Version menu to select an FBX version.

The following table lists the different versions available for you to select from the FBX exporter.

Version	Description
FBX 2013	Select this FBX version to export a file that is compatible with Autodesk 2013 applications and 2013 FBX plug-ins. This is the default FBX version.
FBX 2012	Select this FBX version to export a file that is compatible with Autodesk 2012 applications and 2012 FBX plug-ins.
FBX 2011	Select this FBX version to export a file that is compatible with Autodesk 2011 applications and 2011 FBX plug-ins.
FBX 2010	Select this FBX version to export a file that is compatible with Autodesk 2010 applications, 2010 FBX plug-ins and MotionBuilder 2009.
FBX 2009	Select this FBX version to export a file that is compatible with Autodesk 2009 applications and 2009 FBX plug-ins.
FBX 2006	Select this FBX version to export a file that is compatible with Autodesk 2006 FBX plug-ins and MotionBuilder 7.5, 7.0, and 6.0.

When Do I Use This?

You do not need to change this option if you are using the latest FBX Plug-ins in the source and destination applications. You only need to use this option if you plan to import your file using an older plug-in version.

For example, if you want to export from 3ds Max 2013 and import to 3ds Max 2012 using the latest FBX 2013 versions of the plug-ins in both applications, you do not need to change the export FBX version. The file is compatible when you use the FBX 2013 versions of the plug-in.

Collada

The Collada options only appear when you select the Collada (.DAE) file type from the file browser when you export.

NOTE When you export to Collada you are not able to embed textures, even if the Embed media option is activated. This is because exporting to Collada results in an ASCII-format file, which does not allow binary information, such as textures, and so on. See Embed media (page 45)

Triangulate

This option automatically tessellates the exported polygon geometry.

Single matrix

This option ensures that there is only a single animation matrix for each node/object by baking all animation matrices into one.

Frame Rate

Use this field to set the frame rate of the scene on export.

NOTE The 3ds Max FBX Plug-in now supports Lines and Linestrip nodes.

NOTE The Smoothing Groups option in the Collada importer does not import Smoothing Groups from the FBX file. Instead, when you activate this option, the Importer creates the Smoothing Groups during the import process. The Collada importer must create Smoothing Groups on Import when this option is active, because the FBX Collada exporter does not export Smoothing Groups data from 3ds Max. If you disable the Smoothing Groups option (this is the default setting), no Smoothing Groups are generated by the Importer.

Information
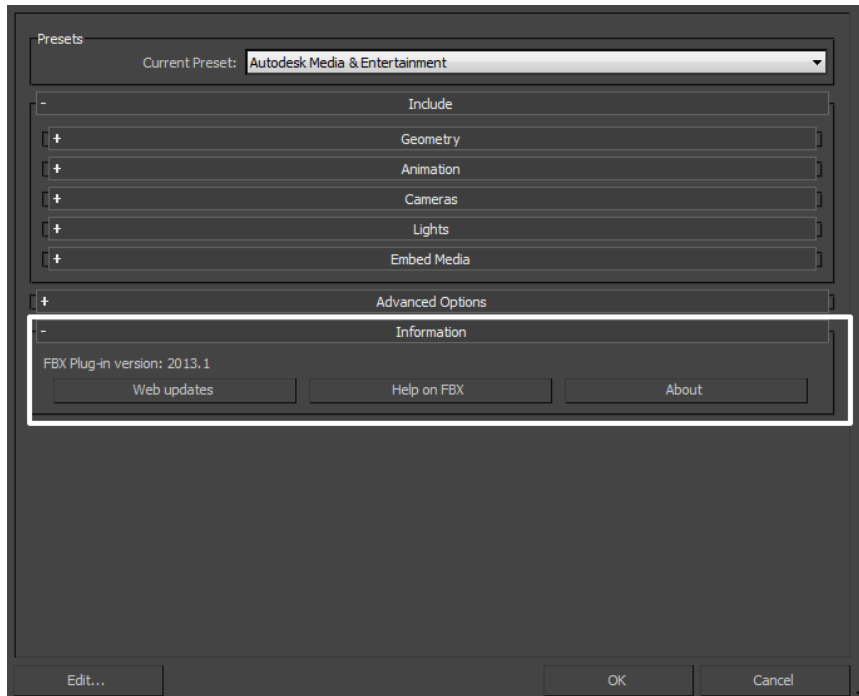
The Information rollout contains data about the 3ds Max FBX Plug-in as well as buttons you can use to check for more recent versions of the software and accessing the 3ds Max FBX Plug-in Help.

Web Updates

Click the Web Updates button to make sure that you are using the latest version of the 3ds Max FBX Plug-in. This function searches the Autodesk web site to check if there is a newer version of the plug-in that you are currently using. See Web updates (page 16)

Help

Click the Help button to launch the 3ds Max FBX Plug-in online user documentation.

NOTE The FBX Help documentation is available from a web site, rather than installed locally. If you want to install the Help locally, you can download the FBX help at *www.autodesk.com/fbx-help*.

Import

5

This chapter contains information about options you can use in the 3ds Max FBX Plug-in importer window.
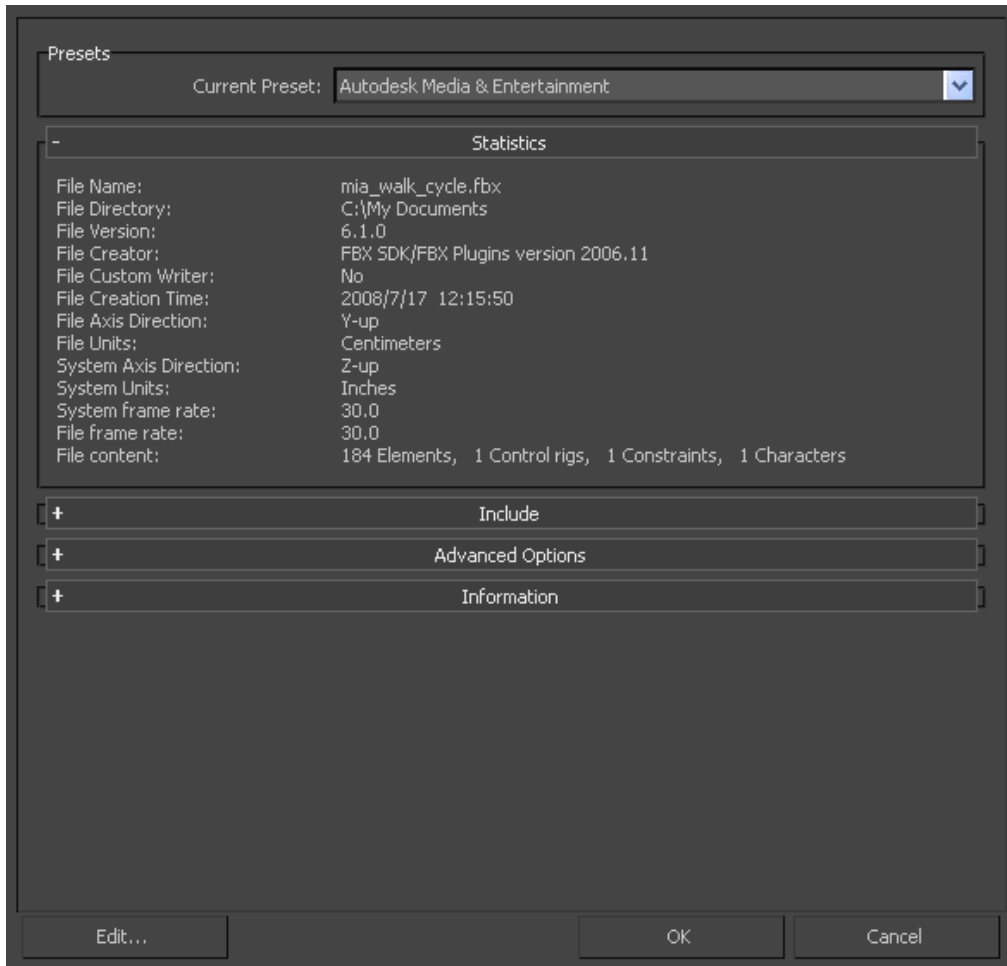
FBX Import window

Importing FBX Files into 3ds Max

This section describes how to import files using the 3ds Max FBX plug-in:

To import an FBX file:

 1 Launch 3ds Max.

2 Select Application Menu ➤ Import, and use the file browser to locate the FBX file you want to import.

   NOTE If you do not see FBX file extension the File of Type menu, it did not correctly install or is not the correct version. Check that you have the correct version of the 3ds Max FBX Plug-in and reinstall it. Do not run 3ds Max while you install the plug-in. See Web updates (page 16) for information on how to verify your plug-in version.

3 The FBX Importer window opens. Set the import options you want.
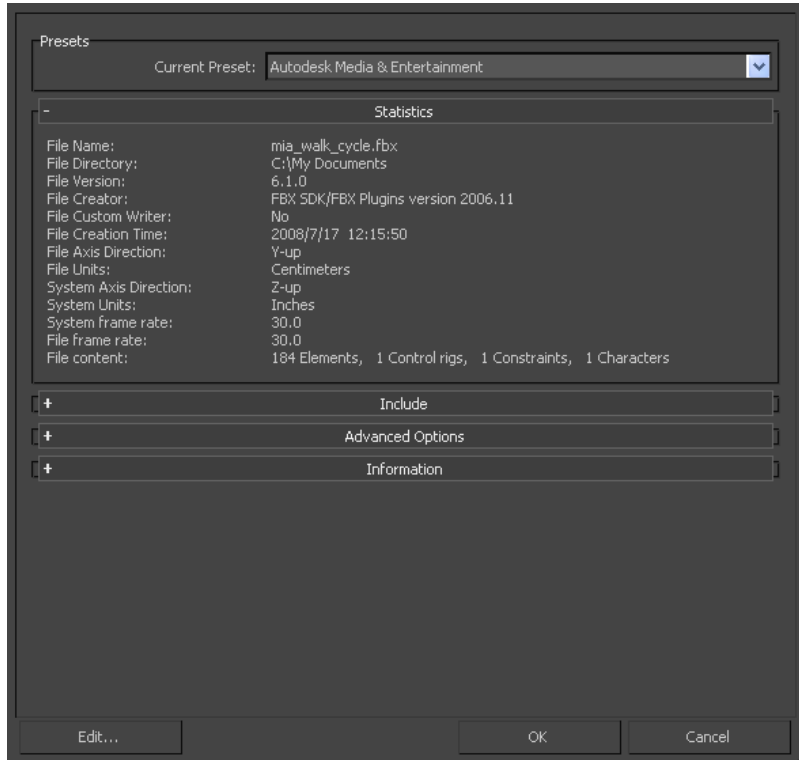
4 Click Ok.

NOTE To cancel the import process, press ESC.

5 If conversions or errors occur during the import process, the Warning Manager reports them at the end of the import process. See Show the Warnings and Errors dialog box (page 82) for information about the Warning Manager.

NOTE There is a difference between "Errors" vs. "Warnings". The plug-in reports an error when something unexpected occurs. When the plug-in reports an error, it indicates that the consequences of that error are unknown. Warnings inform users when the plug-in applies conversions to the source data to convert the data into a format that the destination application can read.

Import Presets

The 3ds Max FBX Plug-in includes two import workflow presets:

■ Autodesk Media and Entertainment

■ Autodesk Architectural (Revit)

The default preset is based on the application version you are using. If you use 3ds Max, Autodesk Media and Entertainment is the default preset. If you use 3ds Max Design, Autodesk Architectural (Revit) is the default preset.

Selecting a preset

You can choose your preset by selecting it in the menu of the FBX Plug-in "Presets" section.
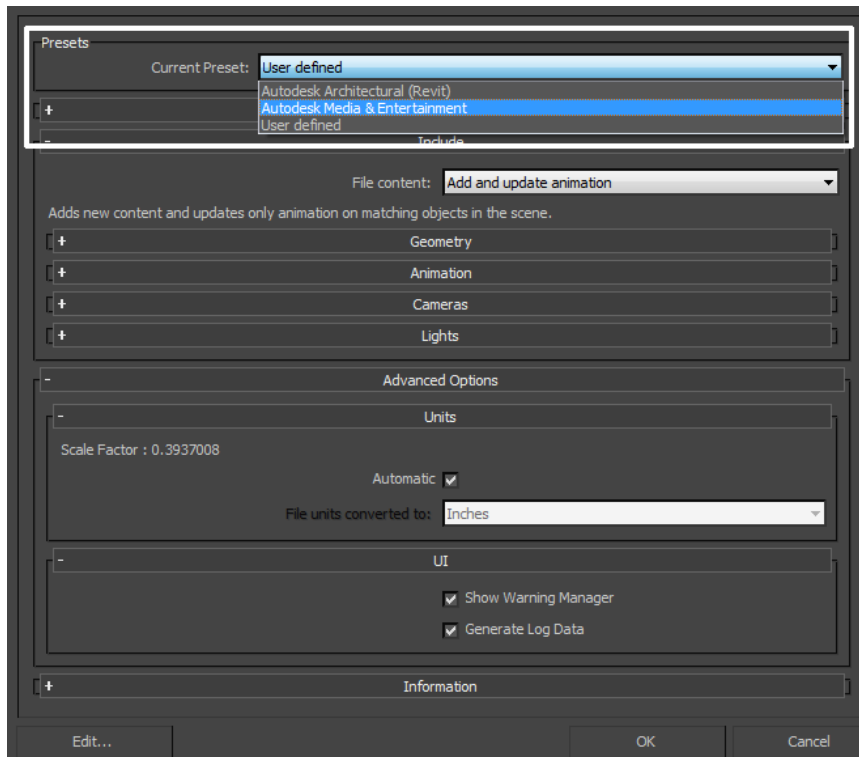
The Presets area

Editing presets

If you change a preset, the preset field displays User defined, to show that the preset differs from its default state. You can find the User defined states in a temporary file so that the settings are the default the next time you use the plug-in.

You can also use Edit ➤ Save preset to save your settings as a custom preset. See Creating a custom preset (page 19) and Editing a preset (page 20).

Autodesk Media & Entertainment preset

The Autodesk Media and Entertainment preset contains the optimal settings for most animation workflows. All available options are visible in the UI so you can access and customize them.
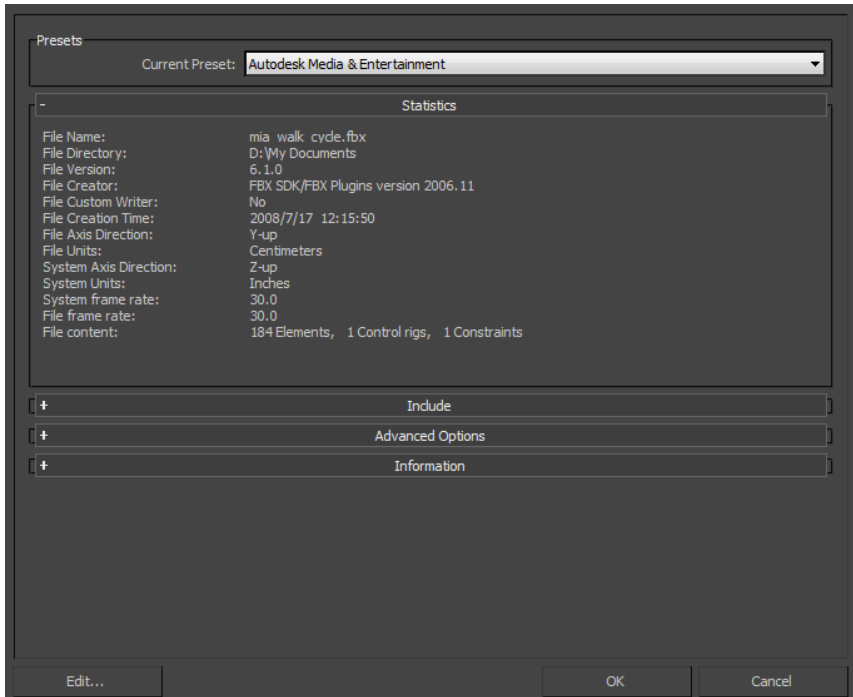
FBX Media & Entertainment Preset

Autodesk Architectural (Revit) Preset

The Autodesk Architectural (Revit) preset is a simplified version of the FBX UI. It has optimal settings for architectural workflows translating data from the Autodesk Revit application, to Autodesk 3ds Max Design. The preset exposes no options, only the Preset, and Statistics sections. This preset contains all the basic settings necessary for a Revit to 3ds Max workflow, but you can edit the preset so that it contains any other settings you require. See Edit/Save preset (page 63).

In this preset, Animation (page 71) options are disabled, the Smoothing groups (page 68) option is disabled, the Sun and Sky (page 75) option is activated, and the File content (page 68) option is set to Add to scene.
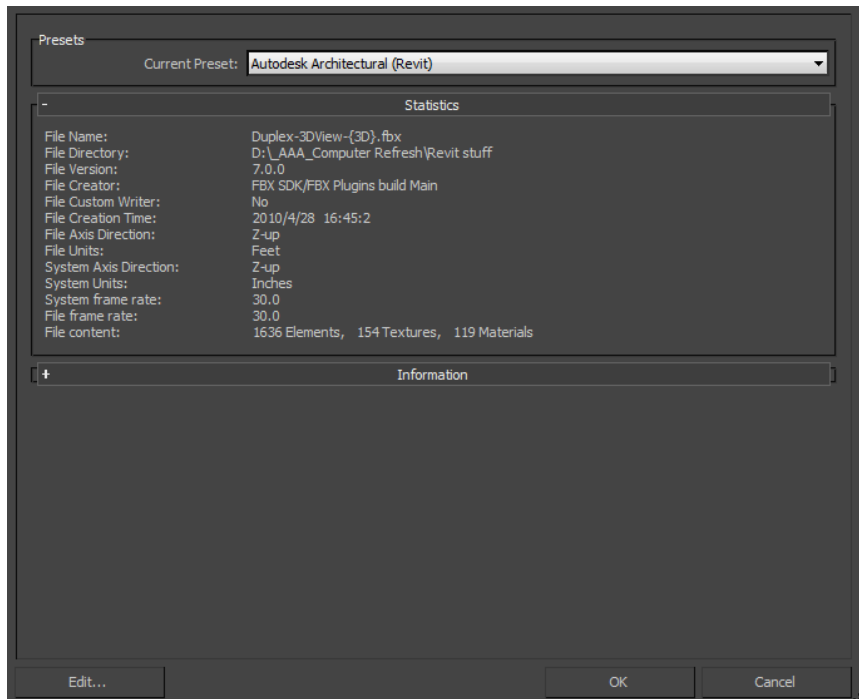
FBX Autodesk Architectural Preset

Edit/Save Preset

You can use the Edit preset button to create and save custom presets with option settings that you define.
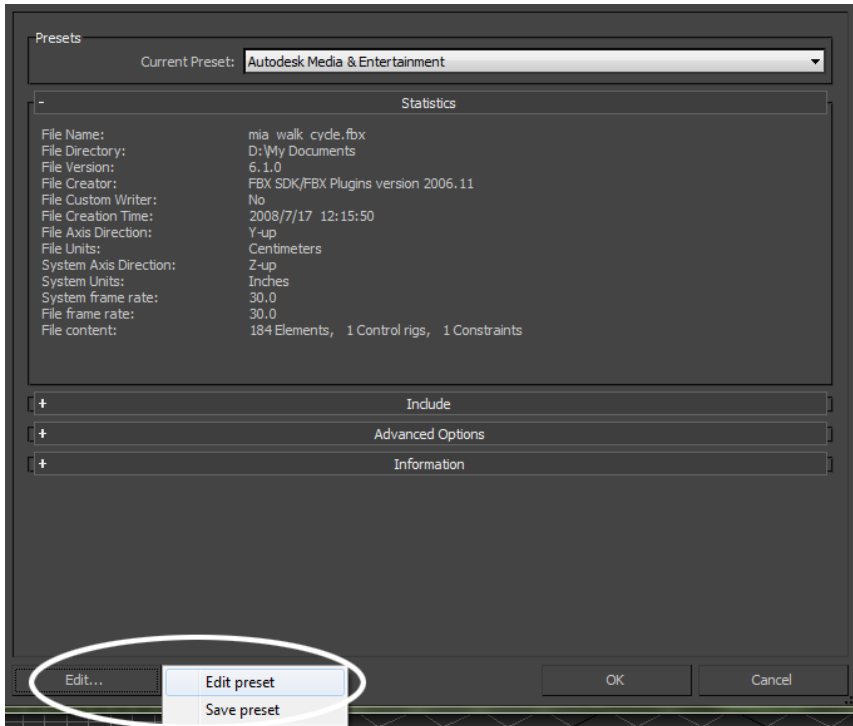
Edit/Save Preset option

Access the Edit/Save preset options through the Edit button in the FBX Importer UI.

The 3ds Max FBX Plug-in stores custom presets in a file so you can share them with other users. For more information, see Storing presets (page 19).

For more about creating and editing presets, see Creating a custom preset (page 19) and Editing a preset (page 20).

Statistics

The Statistics window lets you view relevant Meta information about the incoming (FBX) file and system (application) settings. Information varies depending on what is in the file.
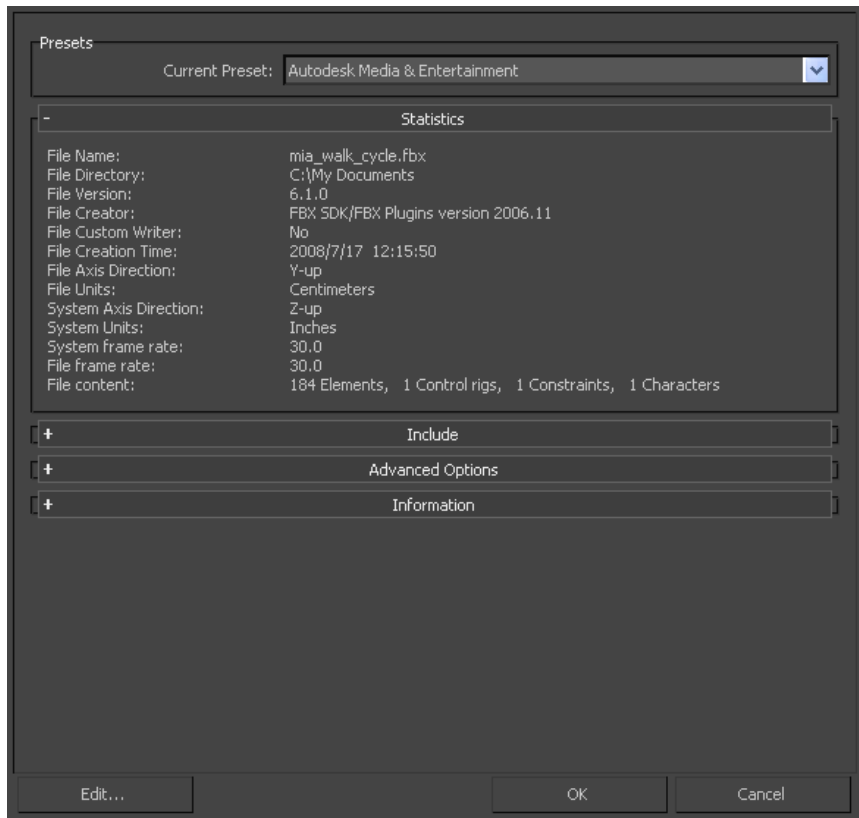
File Name

Displays the name of the file.

File Directory

Displays the location of the file directory.

File Version

Displays the FBX version of the file.

File Creator

Displays the name and version of the application that created the file.

File Creation Time

Displays the date and time that the file was created.

File Axis Direction

Displays the up-axis of the file.

File Units

Displays the unit of measurement in the file.

System Axis Direction

Displays what the up-axis is in the current application.

System Units

Displays the unit of measurement used in the current application.

File Content

Displays the number of Elements, Textures, Materials, and Caches in the file.
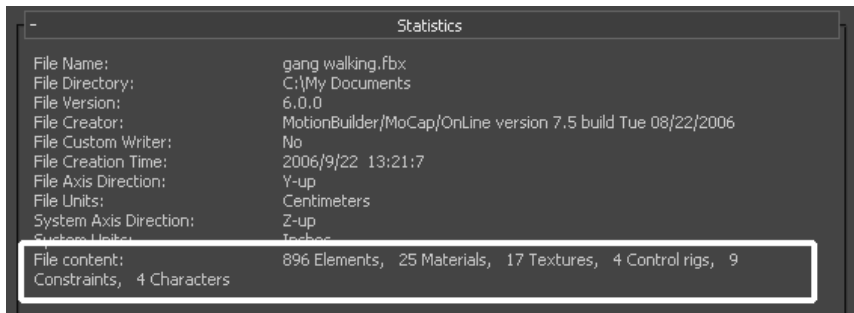
File content area

FPS

Displays the frame rate used (frames per second) in the imported scene and the application. If the frame rate is not one of the standard rates (24, 25, 30, 48, 50, 60, 100, 120 fps), it is not displayed. For example, an FBX file that uses a frame rate of 8 frames per second does not display in the Importer statistics.
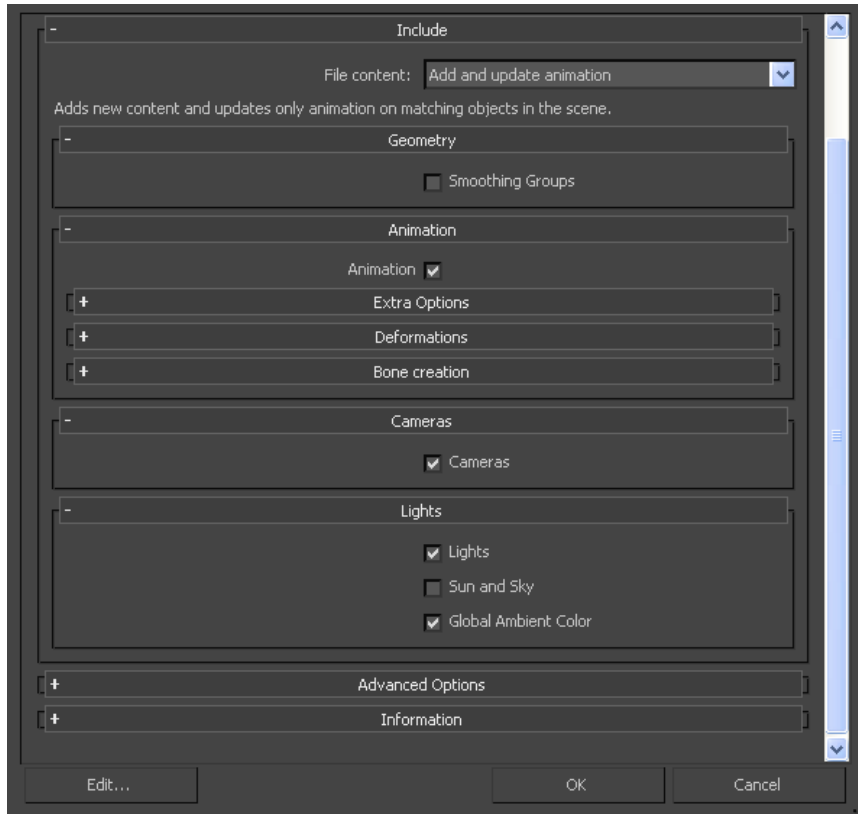
Include

Include rollout

The Include rollout lets you choose what data and conversions to apply to your scene when you import from a host application.

File Content

Use the File content menu to select how to import the content of your file into the host application. Select from the following three options:

Add

This option adds the content of the FBX file to your scene.

If elements exist in the host application they are duplicated, so use this option to add non-existing elements to your scene.

This is the default setting for the Autodesk Architectural (Revit) preset.

Add and Update Animation

This option adds new content and updates animation from your file to matching objects in your scene.

For example, if there is animation on any object in the FBX file and the object name is identical to an object in the destination application, that animation is replaced. If the object with the same name does not have animation, the new animation is added

This is the default option for the Media & Entertainment preset.

Update Animation

This option adds the content of the FBX file to your scene but only updates existing animation; any objects in the file that are not already in the scene are ignored.

Geometry

Expand the Geometry rollout to access options related to importing geometry into your scene.

Smoothing Groups

Activate this option when you want to retain the Smoothing Groups information in the imported FBX file. When the FBX file contains no Smoothing Group data and this option is activated, the plug-in re-evaluates

the geometry and creates Smoothing Groups for all imported geometry based on the explicit normals data.

Activating this option directly affects performance. This performance loss occurs because the plug-in must re-evaluate all the geometry.

NOTE You can use this option when you import Revit-exported or MotionBuilder-saved FBX scenes, as they contain no Smoothing Group information, but some Smoothing Groups may not generate properly, and could potentially cause shading inconsistencies.

This option is disabled by default in the Autodesk Media & Entertainment preset (page 61). It is also disabled in the Autodesk Architectural (Revit) preset (page 62).

If the FBX scene already contains Smoothing Group data and this option is disabled, the 3ds Max FBX Plug-in imports only explicit normals data (and ignores all Smoothing Group information).

NOTE There is a limitation that involves explicit normals and Smoothing Groups. See Importing Explicit normals and Smoothing Groups (page 121) for an explanation.

When Do I Use This?

Activating this option is ideal for 3ds Max users who import scenes intending to use and modify Smoothing Groups information.

NOTE

If your scene contains thousands of objects and you know that you do not want to work with Smoothing Groups, do not use this option. Otherwise the 3ds Max FBX Plug-in must re-evaluate every object during import, which is time consuming.

If you are a Maya user, the plug-in already exports smoothing information (Hard/Soft edges). Activating this option usually gives the same visual results as disabling the option. The difference is the additional Smoothing Group information/IDs (for example, faces identified as belonging to Smoothing Group 1, 2, and so on).

Example

For example, if you want to edit the smoothing of objects that come from Revit, activate this option to create Smoothing Groups when you import. You can then edit these Smoothing Groups in 3ds Max.

Since Revit has no Smoothing Group data to export, the 3ds Max FBX Plug-in importer must create it. Similarly, Maya also does not export Smoothing Group data by default. Maya uses Hard/Soft edge information that it directly applies to geometry normals, unless you activate the Maya FBX Exporter Plug-in Smoothing Group option, and then Smoothing Groups are generated from Hard/Soft edge information.

Smoothing Groups and Collada

The Smoothing Groups option in the FBX Collada importer does not import Smoothing Groups from the FBX file. Instead, when you activate this option, the Importer creates the Smoothing Groups during the import process. The Collada importer must create Smoothing Groups on Import because the FBX Collada exporter does not export Smoothing Groups data from 3ds Max. If you disable the Smoothing Groups option, no Smoothing Groups are generated by the Importer.

Display Layers

The 3ds Max FBX Plug-in automatically imports Display layers and does not appear in the 3ds Max FBX Plug-in user interface. This option imports 3ds Max Design objects with Object Properties set to By Layer. It imports 3ds Max objects with Object Properties set to By Object.

NOTE Layer properties are only supported by layers that are not layer 0; FBX does not recognize layer 0. For example, if you have objects in Layer 0 and Layer 1, FBX ignores the Layer 0 properties but retains the layer property information for Layer 1.

The following Display Layer properties are imported:

- Layer Member List
- Layer names
- Display as box
- Freeze attribute

- Hide
- Color

Animation

Activate this option to import animation found in the scene.

Expand this option to access advanced animation options and features.

Extra Options

Expand extra options to view additional options for import.

Animation Take

Displays the current animation take in the FBX file.

If no animation take exists in the file, the field shows a "No animation" message.

If several animation takes exist in the file, the currently selected take is displayed in the field.

You can change the selected take of animation by choosing another take from the menu. The plug-in lists all available takes of animation contained in the file.

NOTE You can only select and import a single take of animation at a time.

Fill Timeline

Activate this option when you want to update the application Timeline by the animation range in the incoming FBX file. The term "Animation range" refers to the first and last keys of animation contained in the file.

Bake Animation Layers

Bake animation layers lets you bake (or Plot) animation layers contained in the incoming file.

If your incoming file contains animation layers, make sure that this option is activated so that the plug-in considers all animation curves. This process bakes all layers to the base layer and makes them compatible with 3ds Max Curve editor. This option is Active by default.

If you disable this option, the plug-in imports only the Base (or first) layer of animation and ignores all additional layers.

If there are no additional animation layers in the file, you can leave this option active with no effect.

Optical Markers

Activate this option to convert optical markers contained in the file into dummy objects on import.

If you disable this option, the import process ignores this data.

Optical markers normally come from motion capture data, as a cloud of animated points or markers. The plug-in does not import the animation as the data type is incompatible. However, the plug-in converts optical data into a cloud of static dummy objects in 3ds Max.

NOTE If your optical data originates from MotionBuilder, you can set the state of all optical markers to "Done" in MotionBuilder. Setting the markers this way lets you import the animation data as curves in 3ds Max.

Point Cache File(s)

Activate this option to import FBX-exported Point Cache data during the FBX import process.

The plug-in generates three files when you export Point Cache files using FBX:

- an FBX file
- an XML file

- an MC file

The plug-in stores XML and MC files in a subfolder named after the FBX file and has the suffix FPC (_fpc).

For example, if you export a scene containing a cube named Box01 to the FBX file myTest.fbx, you create the following files:

- myTest.fbx
- myTest_fpc
- Box01.xml
- Box01.mc

Deformations

Activate the Deformations option to access the Skin and Morph deformation options.

Option	Description
Morphs	Activate this option to import all geometry Morphs contained in the incoming file.
Skins	Activate this option to import all skin deformations contained in the incoming file.

Bone Creation

Expand Bone creation to customize the creation of 3ds Max bones.

Use the Bone creation option to choose if you want to create "real" 3ds Max bones or dummy objects that behave the same way that 3ds Max bones do. This way you get better visual results.

You can also use this option to create bone objects that are a specific size. The plug-in only uses these values on rare occasions when the plug-in does not compute bone size automatically.

Setting	Description
Lock width and height	Locks the values entered in the Width and Height field. (This setting is active only if you enter the same value in the Bone Width and Height fields.)
Convert as Dummy OR Leave as Bones	Select Convert as Dummy to convert joints or bones into Dummy objects on import. They resemble bones but do not have the limitations of a "real" 3ds Max bone. Select Leave as Bones to convert joints or bones into "real" or true 3ds Max Bones.
Width	The size of the bone width. (This setting only affects how the bone looks and does not affect how it behaves.)
Height	The size of the bone height. (This setting only affects how the bone looks and does not affect how it behaves.)
Taper	The percentage of the Width or Height (or thickness) applied to the end or the tip of the bone.

Cameras

Activate this option to import all cameras contained in the file.

The plug-in imports camera settings, and some render settings. This can change rendering results depending on the source application used in comparison.

Cameras are saved as FBX types in the FBX files for interoperability. This means they must convert into 3ds Max camera types on import. For a list of supported cameras, see Camera support (page 2).

Lights

Activate this option to import all lights contained in the file.

FBX supports Standard Point, Spot, and Directional light types from Autodesk Maya, Autodesk MotionBuilder, and other Autodesk applications.

Photometric light types coming from the Autodesk Revit 2009 (and later) application into Autodesk 3ds Max Design 2009 (and later) application are currently supported. For a list of supported lights, see Light support (page 4)

Global Ambient Light

Activate this option to import the ambient color of the FBX file into the scene.

This option is disabled by default and the ambient light is not imported.

Sun and Sky

Activate this option to import FBX exported scenes that contain daylight systems.

This option is activated by default in the Autodesk Architectural (Revit) preset (page 62), and disabled by default in the Autodesk Media & Entertainment preset (page 61).

Advanced options
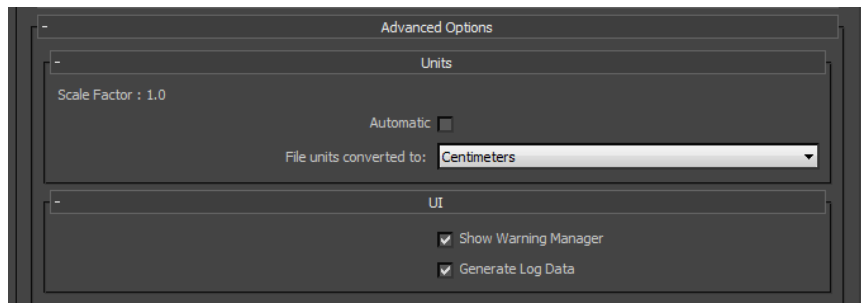
Advanced options Rollout

Use the Advanced Options rollout to customize your general settings and import process.

Units

The Units option lets you view the conversion factor (scaling value) the plug-in uses as well as modify the conversion units.

Automatic

Activate the Automatic option if you want the 3ds Max FBX Plug-in to automatically identify, set, and convert units of the incoming file to match units of the host application.

When you activate the Automatic option, the Scene Units converted to option is disabled, although it shows the resolved unit & Scale Factor. If you disable the Automatic option, the Scene Units converted to option becomes available.

If you activate the Automatic option and the File Units match the system units, there is no need for scale conversion and the plug-in applies no conversion. The displayed Scale Factor is 1.0 in this case.

NOTE This conversion affects only incoming data. This does not change the settings in 3ds Max.

Scene Units Converted To

If you disable the Automatic option, you can select your own units with which to convert the file using the Scene units converted to menu.

For information about incorrect or unwanted scaling issues, see Why is my scene scaled differently in 3ds Max? (page 112)

Scale Factor

Displays the conversion value or Scale Factor that the plug-in applies to the entire incoming scene.

The plug-in compares the units used in the host application with the units used in the file imported to determine the Scale Factor value. The plug-in then proposes a unit conversion that matches the system units in the host application. The displayed Scale Factor is the result of this calculation.

This option is always active, but if your file units match the system units, the plug-in does not need to apply a scale conversion. The plug-in applies no conversion. The displayed Scale Factor is 1.0 in this case. You can enhance

import speed and performance when your units match, especially in Revit to 3ds Max workflows.

NOTE If you change the File Units Converted to option, you can modify the Scale Factor value applied to incoming data.

For information about incorrect or unwanted scaling issues, see Why is my scene scaled differently in 3ds Max? (page 112).

File Units Converted To:

Use this menu to specify the units to which you want to convert the file. Modifying this setting directly affects the Scale Factor value applied to the incoming data.
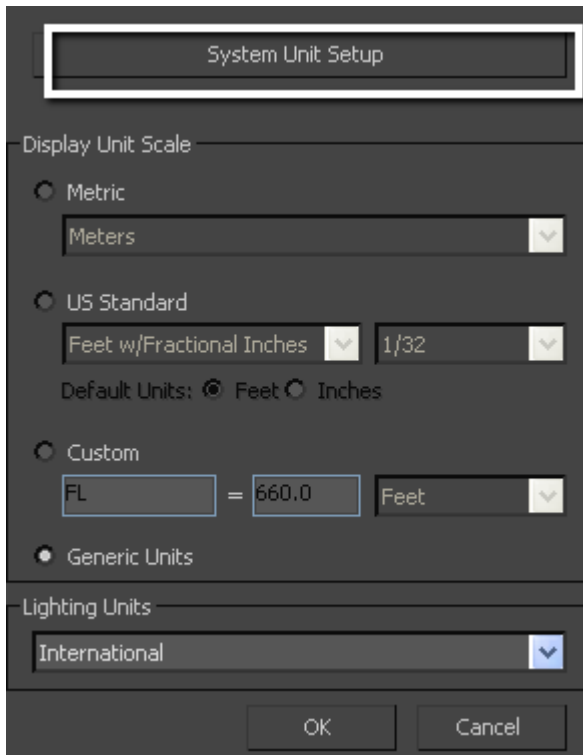
The plug-in determines the default units by looking at the System Unit Scale in the System Unit Setup dialog box in 3ds Max.

NOTE

To view the default units, click System Units Setup in the Units Setup dialog box that appears when you select Units Setup from the Customize menu.

System Units Setup option

The displayed Scale Factor uses this unit setting for its calculation.

This automatic behavior ensures that the plug-in respect the Units, and proper scaling is applied by default.

NOTE Verify the System Units your 3ds Max scene uses so that you can control whether the plug-in needs to scale your scene. See Why is my scene scaled differently in 3ds Max? (page 112) for information about the System Units setup in 3ds Max.

Example

If you import a file that is in the same Unit setting as the System Units of your 3ds Max scene, there is a match of units and the displayed Scale Factor will be "1.0". No scale conversion is applied.
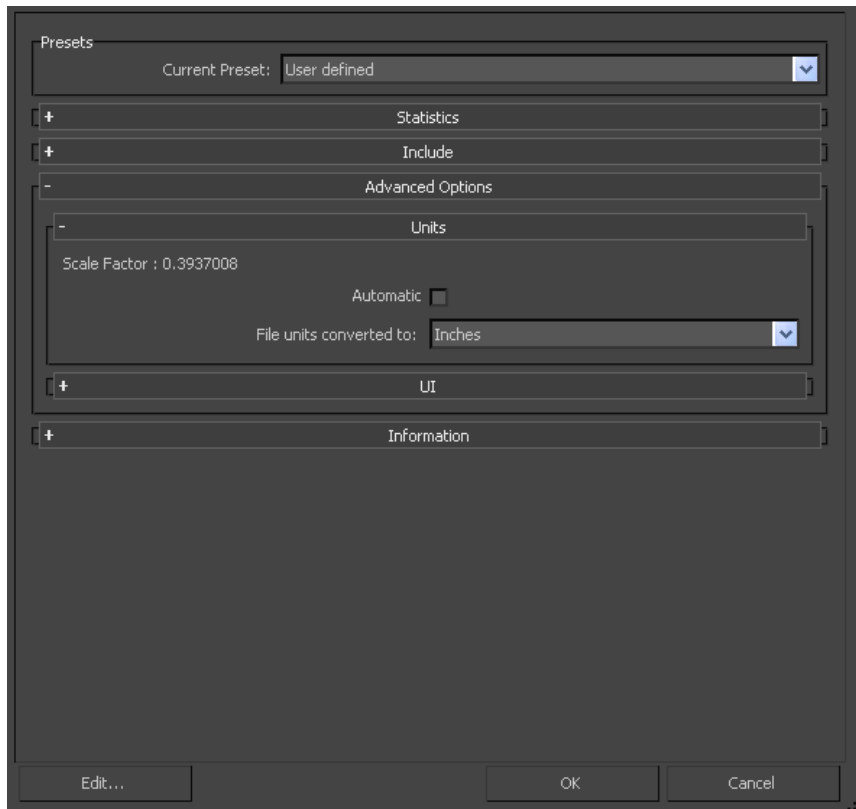
Units Rollout

If the units do not match and your 3ds Max scene is empty and/or changing the System Units is not a concern, change the 3ds Max System Units to match the File Units used in the incoming file before you start to import. This results in a match of units, Scale Factor of "1.0", and no scale conversion is applied.

If, for example, you import a file that is in centimeters into a 3ds Max scene set to inches, with a resulting Scale Factor of 0.3937008. In this case, the incoming data will be scaled down to match the scene's unit system.

NOTE   If the Scale Factor is 1.0, no scaling is applied. If the Scale Factor is greater than 1.0, the incoming data is scaled up. If the factor is smaller than 1.0, the incoming data is scaled down.
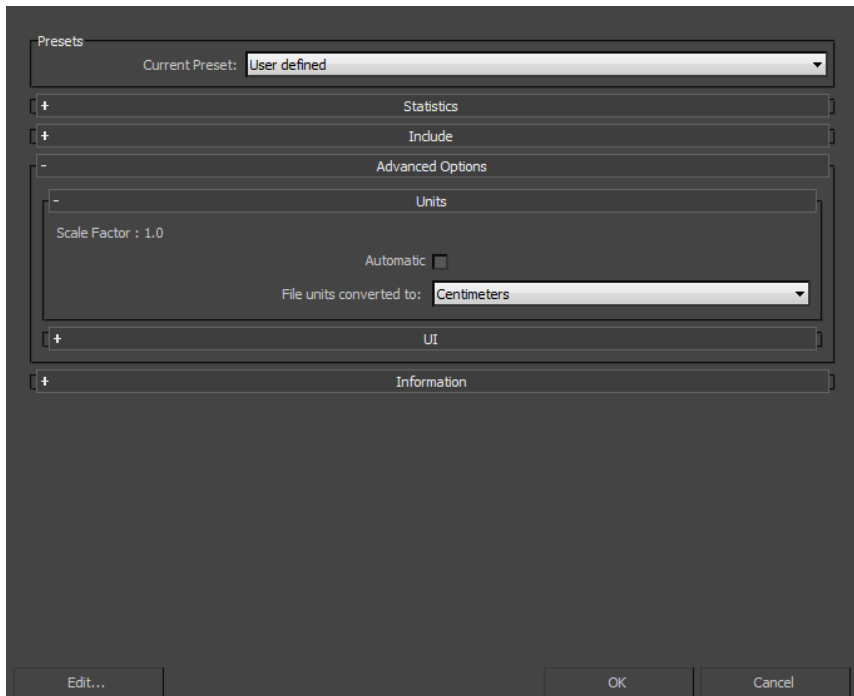
Scale Factor 1.0

If, with the previous example, you do not want to change the System Units of your 3ds Max scene and do not want the plug-in to scale your incoming data, you have another option:

Change the File Units Converted To option to match the File Units. This results in a Scale Factor of "1.0", and no scaling is applied, even though units do not match between the file and the 3ds Max System Units.

NOTE 3ds Max System and Display units are discussed in depth in the Troubleshooting (page 103) section, see Why is my scene scaled differently in 3ds Max? (page 112)
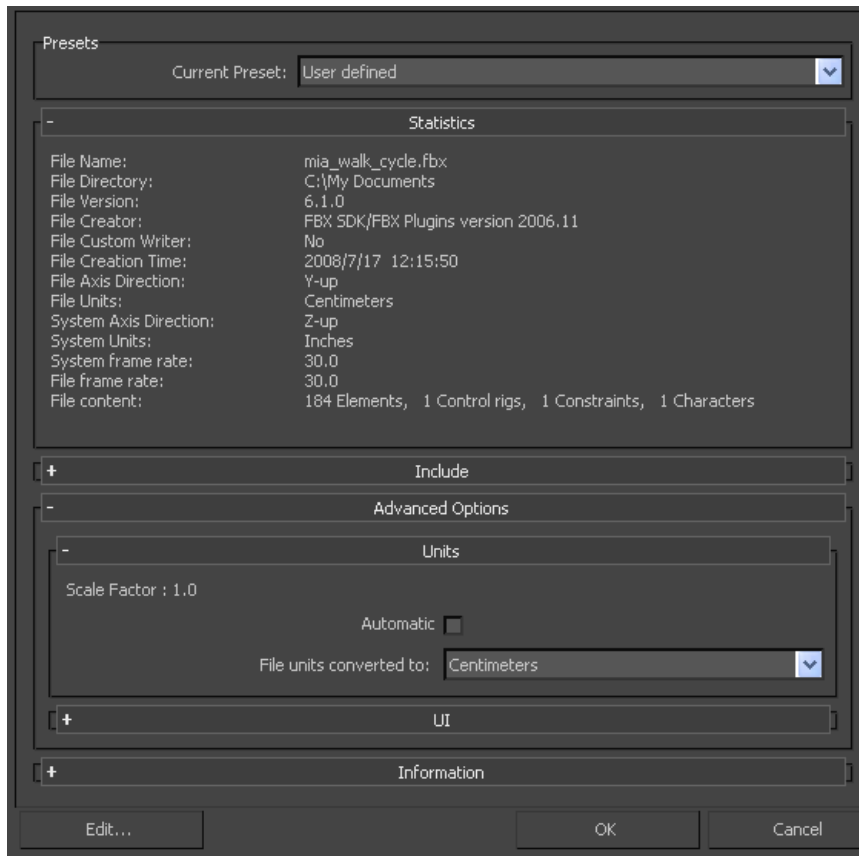
System Unit Shown as Inches

UI

These options let you set display options of the UI. This lets you Show or Hide the Warning Manager and FBX UI windows.

You can customize these display options, save them as a new Preset, and share this preset file. See the Edit/Save preset (page 63) section for more information.

Show/Hide Warning Manager

This option lets you disable the Warnings and Errors dialog box that appears during the import process. The Warning Manager is active by default.

What is the Difference Between an Error and a Warning?

The 3ds Max FBX Plug-in uses errors and warnings to alert you of conversions and potential problems during the import process.

When something unexpected occurs during the conversion, the plug-in reports an error. This error occurs because the plug-in encounters an unknown behavior and the conversion is going to produce an unexpected result.

When the plug-in must apply a conversion to the source data for it to be in a format that the destination application can read, a warning is reported. This warning is not the indication of a problem, but instead exists to provide a report of conversions that have been applied to the incoming data.

Generate Log Data

Deactivate the Generate log data option if you do not want warning and error information written to the log. However, if you do deactivate this option, the FBX Exporter/Importer does not write log data (such as errors and warnings,) to the generated log file. However, the file name and time stamp are still recorded in the log.

The 3ds Max FBX Plug-in stores log files with the FBX presets, in C:\My Documents\3dsmax\FBX\Logs.

Why Do I Want to Do This?

Occasionally, some batch imports/exports create very large warning/error files, and in this case you might want to disable this option.

Normally, it is recommended to leave the Generate log data option active, which is the default, as this helps you identify problems with file conversions.

Log files are important for tracking errors and warnings on import. It is not recommended to deactivate this option when you import a series of files, for example, in an automation or batch import because you will not receive any feedback about any issues that concern files during import. This lack of feedback can make it difficult to identify problem files which, in turn, makes diagnosing problems difficult.

Information

Information Rollout

The Information rollout contains data about the 3ds Max FBX Plug-in as well as buttons you can use to check for more recent versions of the software and accessing the 3ds Max FBX Plug-in Help.

Web Updates

Click the Web Updates button to make sure that you are using the latest version of the 3ds Max FBX Plug-in. This function searches the Autodesk web site to check if there is a newer version of the plug-in that you are currently using. See Web updates (page 16)

Help

Click the Help button to launch the 3ds Max FBX Plug-in user documentation.

Axis Conversion

The FBX importer does not have an Axis Conversion option in the UI. Only exporters have this option exposed in the UI. This is because the 3ds Max FBX Plug-in calculates and applies the Axis Conversion automatically upon import.

What Does the Automatic Axis Conversion Do?

The importer looks at the up-axis used in the host application. In 3ds Max, this is always Z-up. It then compares this to the up-axis set in the incoming file. If both up-axes match, the importer applies no conversion. If they do not match, the importer applies a conversion to the imported data to match the host application's up-axis automatically.

When the up-axes do not match, it creates in a longer import process, because the 3ds Max FBX Plug-in must rotate each root object 90 degrees to match the host application up-axis. This is especially true of Maya or MotionBuilder to 3ds Max workflows.

NOTE The importer applies Axis Conversions only to root elements of the incoming scene. If you have animation on a root object that must be converted on import, these animation curves are resampled to apply the proper axis conversion. To avoid resampling of these animation curves, make sure to add a root node (dummy object) as a parent of the animated object in the source scene (source application) before you export to FBX.

3ds Max FBX Plug-in Workflows

6

Because you can use 3ds Max FBX Plug-in for so many purposes, it is difficult to provide with instruction for every situation.

However, here are a few of the more commonly used workflows:

Revit Architecture to 3ds Max Workflow

When you complete the initial design, layout, and modeling of a project in Revit Architecture, you can use Autodesk® 3ds Max® or Autodesk® 3ds Max® Design to produce high-end renderings and add final details.

■ 3ds Max is a 3D animation package that provides animation, modeling, and workflow functionality for complex problems in design visualization and visual effects.

■ 3ds Max Design is a 3D design visualization solution for architects, engineers, designers, and visualization specialists. Designed for interoperability with FBX® files from Revit Architecture, 3ds Max Design preserves model geometry, lights, materials, camera settings, and other metadata from Revit projects. With Revit Architecture and 3ds Max Design working together, designers can extend the building information modeling process to include design visualization.

NOTE For simplicity, the following topics refer to 3ds Max Design, but this information applies to 3ds Max as well.

You can export a 3D view from a Revit project to an FBX file and import it into 3ds Max. You can then create enhanced renderings of the design to share with clients in 3ds Max.

The FBX file format passes rendering information to 3ds Max, including lights, render appearances, sky settings, and material assignments for the 3D view. By preserving this information during the export process, Revit Architecture maintains a high degree of fidelity and reduces the amount of work required in 3ds Max.

NOTE There are some limtations created with Revit. For information on why these limitations occur and how to address them, see Troubleshooting and Limitations (page 103).

Exporting from Revit Architecture to 3ds Max Design

1 In Revit Architecture, open a 3D view, and prepare it for export.

2 Click File menu ➤ Export ➤ FBX.

   NOTE If this menu option displays as gray, open a 3D view of the project. Then try the menu option again.

3 On the Export dialog, for Save in, navigate to the target folder for the exported file.

4 For Naming, do one of the following:
   - To specify a file name manually, select Manual (Specify file name). For File name/prefix, specify the name of the output file.

   - To use an automatically generated file name, select Automatic – Long (Specify prefix), or Automatic – Short.

5 Click Save.

   Revit Architecture generates the FBX file and saves it in the target location.

   You can now import the FBX file into 3ds Max, using the 3ds Max FBX Plug-in.

6 In 3ds Max Design, Click File ➤ Import, and select the FBX file you want to import, and Click OK.

7 In the 3ds Max FBX Plug-in, make sure that the Autodesk Architectural (Revit) preset (page 62) is the selected preset.

8 Click OK in the FBX UI window, and your FBX file is imported.

   You can download a high level that details FBX 3ds Max Design interoperability.

NOTE Revit 2011 FBX files are fully compatible with only 3ds Max and 3ds Max Design 2011. When you import Revit 2011 FBX files into 3ds Max 2009 or 2010, lights, materials, RPCs, and environments are lost; only cameras and geometry are imported. If you are using Revit 2010/2009 FBX files, use 3ds Max version 2009 or later.

IFFFS

The following section is relevant for Autodesk Inferno, Autodesk Flint, Autodesk Flame, Autodesk Fire, and Autodesk Smoke (IFFFS) products.

Importing and Exporting Cameras.

You can either create or import a camera from an FBX file, then edit this 3D camera in IFFFS. You can then export this camera with animation to an FBX file so you can import this camera into a 3D application, such as 3ds Max, Maya, or MotionBuilder.

Flame Cameras

Flame supports the import and export of 3D data saved in the FBX format. The FBX format provides a way to exchange 3D data for scene compositions—such as cameras—between tools and packages developed by different manufacturers.

To export a camera to FBX format:

1   In Flame, select the camera you want to export.

2   In the Object menu, select the Camera menu and click Export. The Export Camera file browser appears

3   Make sure FBX is selected in the Export Type box.

4   Select which elements of the FBX files you wish to export by clicking the corresponding filter button.

Element	Description
Rotate Axis	Rotate the exported camera by -90° on the X-axis so that it is compatible with the coordinate system of the 3D application.

Element	Description
Export Axes	Export the animated axes present in the Action scene.
Export Point Cloud	Export the 3D-point cloud created by the 3D Tracker.

5   Navigate to the location where you want to export the FBX file.

6   Enter a name for your FBX file in the file field.

7   Click Save.

Single-Step Workflows

FBX technology drives the Autodesk single-step workflow.

Single-Step Workflow Texture Location

Textures in files that use the single-step workflow process are stored in the following location (unless otherwise specified).

Maya Default:

C:\Documents and Settings\<username>\My Documents\maya\projects\default\images\myscene-files\ (Windows XP)

C:\Users\<username>\Documents\maya\projects\default\images\myscene-files\ (Vista)

C:\Users\<username>\My Documents\maya\projects\default\images\myscene-files\ (Windows 7)

3ds Max Default:

C:\Documents and Settings\<username>\My Documents\3dsMax\sceneassets\images\myscene.max-files\ (Windows XP)

C:\Users\<username>\Documents\3dsMax\sceneassets\images\myscene.max-files\ (Vista)

C:\Users\<username>\My Documents\3dsMax\sceneassets\images\myscene.max-files\ (Windows 7)

NOTE Unnamed scenes produce an "untitled-files" folder. This untitled-files folder is re-used and overwritten for each unnamed scene.

Scripting for the 3ds Max FBX Plug-in

7

This chapter contains the commands for scripting 3ds Max FBX Plug-ins. The 3ds Max FBX Plug-in must be loaded before you run any script commands with MAXScript, otherwise an error message occurs.

If you use a MAXScript FBX command in the MAXScript listener when the 3ds Max FBX Plug-in is not loaded, commands are ignored even if you load the plug-in afterward.

NOTE

When you export or import files in MAXScript, use the command #noPrompt to prevent the FBX Exporter/Importer user interface from appearing during the process. For example: ImportFile "C:\test.fbx" #noPrompt. If the UI appears before an export or import command executed through MAXScript, the last used preset is chosen, and effectively ignores any recent scripted changes.

Loading the FBX Plug-ins

You can load the FBX plug-ins two ways, manually and using MAXScript.

Loading the 3ds Max FBX Plug-in Manually

1 Start 3ds Max.

2 Go to the main menu and select Customize ➤ Plug-in Manager.

3 Locate the FBXMAX.DLU name in the list box, right-click it, and choose Selected Plug-ins ➤ Load.

Loading the 3ds Max FBX Plug-inUsing MAX-Script

Run the following scripts to load the FBX plug-ins through MAXScript:

FBX Importer

```
pluginManager.loadClass FBXIMPORTER
```

FBX Exporter

```
pluginManager.loadClass FBXEXPORTER
```

NOTE The 3ds Max FBX Plug-in must be loaded before you run any script commands with MAXScript, otherwise an error message occurs.

Scripting Commands

Use these script commands to list, query, or set FBX I/O Settings properties for the 3ds Max FBX Plug-in, even properties created with a plug-in extension.

Command	Description
FBXImporterGetParam "FBXProperties"	Use this command to list all the import properties available with path, type, and the specified value.
FBXExporterGetParam "FBXProperties"	Use this command to list all the export properties available with path, type, and the specified value.
FBXImporterSetParam "Import|Include-Grp|Animation|Markers" true	Use this command to set an import value to true.
FBXExporterSetParam "Export|Include-Grp|LightGrp|Light" true	Use this command to set an export value to true.

Command	Description
FBXImporterGetParam "Import|IncludeGrp|LightGrp|Animation|Markers"	Use this command to query an import value.
FBXExporterGetParam "Export|Include-Grp|LightGrp|Light"	Use this command to query an export value.

All script commands and paths in this section are case sensitive, so it is good practice to copy and paste these commands so you have the exact path for the IOSettings when querying for a list of properties and their path.

NOTE These script commands support only Integer, Double, Bool, and Enum properties.

FBXExporterGetParam [arg]

The getparam scripts queries the export plug-in parameters where [arg] is a recognized export parameter.

FBXExporterGetParam returns the value of the named parameter. If the parameter is unrecognized or the wrong number of arguments are provided, the value "unsupplied" is returned.

For a list of supported parameters, see FBXExporterSetParam [arg] [value] (page 93).

FBXExporterSetParam [arg] [value]

The setparam scripts set the specified argument for export where [arg] is a recognized export parameter and [value] is an appropriate value for the supported parameter. For example, to prevent the export of cameras:

```
FBXExporterSetParam "Cameras" false
```

"FBXExporterSetParam" returns "OK" if successful or "unsupplied" if it is sent an unrecognized parameter.

"FBXExporterSetParam" returns "unsupplied" if the wrong number of arguments are passed.

"FBXExporterSetParam" recognizes the following parameter and values:

Name	Value
"Animation"	True or false. See Animation (page 35) for an explanation of this setting.
"ASCII"	True or false. See Type (page 52) for an explanation of this setting.
"AxisConversionMethod"	"None", "Animation", or "Fbx_Root". See Axis conversion (page 49) for an explanation of this setting.
"BakeAnimation"	True or false. See Bake animation (page 36) for an explanation of this setting.
"BakeFrameStart"	Integer value. See Bake animation (page 36) for an explanation of this setting.
"BakeFrameEnd"	Integer value. See Bake animation (page 36) for an explanation of this setting.
"BakeFrameStep"	Integer value. See Bake animation (page 36) for an explanation of this setting.
"BakeResampleAnimation"	True or false. See Resample animation (page 37) for an explanation of this setting.
"Cameras"	True or false. See Cameras (page 44) for an explanation of this setting.
"CAT2HIK"	True or false. See Characters (page 44) for an explanation of this setting.
"ColladaTriangulate"	True or false. See Triangulate (page 54) for an explanation of this setting.
"ColladaSingleMatrix"	True or false. See Single matrix (page 54) for an explanation of this setting.

Name	Value
"ColladaFrameRate"	Float (in frames). See Triangulate (page 54) for an explanation of this setting.
"Convert2Tiff"	True or false. This converts non-TIFF-formatted texture images into TIFF format which makes them readable in other applications that do not support other image types.
"ConvertUnit"	"mm" or "cm" or "dm" or "m" or "km" or "in" or "ft" or "mi" or "yd". See Scene units converted to: (page 47) for an explanation of this setting.
"EmbedTextures"	True or false. See Embed media (page 45) for an explanation of this setting.
"FileVersion"	"FBX201300" or "FBX201200" or FBX201100" or "FBX201000" or "FBX200900" or "FBX200611". See FBX version (page 53) for an explanation of this setting.
"FilterKeyReducer"	True or false. See Constant key reducer (page 38) for an explanation of this setting.
"GeomAsBone"	True or false. See Convert Geometry used as Bones (page 34) for an explanation of this setting.
"GenerateLog"	True or False. See Generate log file (page 51) for an explanation of this setting.
"Lights"	True or false. See Lights (page 44) for an explanation of this setting.
"LoadExportPresetFile"	"x" where x is the name of the preset file. See Export presets (page 27) for an explanation of this setting.
"NormalsPerPoly"	True or false. See Split per-vertex Normals (page 31) for an explanation of this setting.

Name	Value
"PointCache"	True or false. See Point cache file(s) (page 42) for an explanation of this setting.
"PopSettings"	This setting preserves the current state of the settings when you perform a One-Click operation. FBXExporterSetParam "PopSettings" loads all I / OSettings.
"Preserveinstances"	True or false. See Preserve Instances (page 33) for an explanation of this setting.
"PushSettings"	This setting preserves the current state of the settings when you perform a One-Click operation. FBXExporterSetParam "PushSettings" saves all I / OSettings.
"Removesinglekeys"	True or false. See Remove single keys (page 36) for an explanation of this setting.
"Resampling"	Float. See Unroll rotations (page 40) for an explanation of this setting.
"ResetExport"	Loads the Autodesk Media & Entertainment export preset.
"ScaleFactor"	Float. See Scale Factor (page 47) for an explanation of this setting.
"SelectionSet"	Name of the selection set to use. See Point cache file(s) (page 42) for an explanation of this setting.
"SelectionSetExport"	True or false. See Selection Sets (page 34) for an explanation of this setting.
"Shape"	True or false. See "Morphs" in Deformations (page 38) for an explanation of this setting.
"Skin"	True or false. See "Skin" in Deformations (page 38) for an explanation of this setting.

Name	Value
"ShowWarnings"	True or false. See Show/Hide Warning Manager (page 51) for an explanation of this setting.
"SmoothingGroups"	True or false. See Smoothing Groups (page 30) for an explanation of this setting.
"SmoothMeshExport"	True or false. See TurboSmooth (page 33) for an explanation of this setting.
"SplitAnimationIntoTakes"	"takename" which is the name of the take to use, followed by "frameStart", "frameEnd" to define the interval. Use "-c|-clear" to clear the accumulator.
	NOTE Take001 exists regardless of how many splits are defined. Do not set a "frameEnd" < "frameStart". If "frameStart" and "frameEnd" do not define an interval with keys the split function will not validate it. If no animation keys are in the range, a take is created with no keys.
"TangentSpaceExport"	True or false. See Tangents and Binormals (page 32) for an explanation of this setting.
"Triangulate"	True or false. See Triangulate (page 35) for an explanation of this setting.
"UpAxis"	"Y" or "Z". See Axis conversion (page 49) for an explanation of this setting.
"UseSceneName"	True or false. See Use scene name (page 36) for an explanation of this setting.

For example, to query the export camera's state:

```
FBXExporterGetParam "Cameras"
```

Export Selected

A specific MAXscript exists for performing the export of only selected objects ("Export Selected"). Use the following

```
exportFile "<path>" #noPrompt selectedOnly:true
```

Where <path> is the location to where you want to export your object(s).

FBXImporterGetParam [arg]

The getparam script queries the import plug-in parameters where [arg] is a recognized import parameter.

"FBXImporterGetParam" returns the value of the named parameter. If the parameter is unrecognized or the wrong number of arguments are provided, the value "unsupplied" is returned.

For a list of supported parameters, see FBXImporterSetParam [arg] [value] (page 98).

FBXImporterSetParam [arg] [value]

The setparam script sets the specified argument for import where [arg] is a recognized import parameter and [value] is an appropriate value for the supported parameter.

- "FBXImporterSetParam" returns "OK" if successful or "unsupplied" if it is sent an unrecognized parameter.

- "FBXImporterSetParam" returns "unsupplied" if the wrong number of arguments are passed.

FBXImporterSetParam recognizes the following parameter and values:

Name	Value
"Animation"	True or false. See Animation (page 71) for an explanation of this setting.
"AxisConversion"	True or false. See Axis conversion (page 84) for an explanation of this setting.

Name	Value
"BakeAnimationLayers"	True or false. See Bake animation layers (page 72) for an explanation of this setting.
"Cameras"	True or false. See Cameras (page 74) for an explanation of this setting.
"ConvertUnit"	"mm" or "cm" or "dm" or "m" or "km" or "in" or "ft" or "yd". See File units converted to: (page 77) for an explanation of this setting.
"FillTimeline"	True or false. See Fill timeline (page 71) for an explanation of this setting.
"FilterKeyReducer"	True or false. See Constant key reducer for an explanation of this setting.
"FilterKeySync"	True or false. See Key Reducer for an explanation of this setting.
"GenerateLog"	True or False. See Generate log file (page 82) for an explanation of this setting.
"ImportBoneAsDummy"	True or false. See Bones (page 73) for an explanation of this setting.
"KeepFrameRate"	True or false.
"Lights"	True or false. See Lights (page 75) for an explanation of this setting.
"LoadImportPresetFile"	"x" where x is the location of the preset file. See Import presets (page 60) for an explanation of this setting.

Name	Value
"Markers"	True or false. See Optical markers (page 72) for an explanation of this setting.
"Mode"	#create (Add) #exmerge (Add and Update Animation) #merge (Update animation). See File content (page 68) for an explanation of this setting.
"PopSettings"	This setting preserves the current state of the settings when you perform a One-Click operation. This setting loads all settings saved by FBXImporterSetParam "PushSettings".
"PushSettings"	This setting preserves the current state of the settings when you perform a One-Click operation. This setting saves all I/O settings
"PointCache"	True or false. See Point cache file(s) (page 72) for an explanation of this setting.
"Resampling"	Float.
"ResetImport"	Restores factory defaults. If ResetImport is called without argument for: ■ **3DS Max**: Loads the Autodesk Media & Entertainment import preset. ■ **3DS Design**: Loads the Autodesk Architectural (Revit) import preset Using the **file name only** as the argument: If we pass "Autodesk Media & Entertainment.fbximportpreset" or "Autodesk Architectural (Revit) .fbximportpreset", it searches the factory preset directory to load the preset file. Use this command to load a factory preset without knowing the directory.

Name	Value
	NOTE This command is used by the OneClick functionality.
"ScaleConversion"	True or false. See Units (page 76) for an explanation of this setting.
"ScaleFactor"	Float. See Scale Factor (page 76) for an explanation of this setting.
"Shape"	True or false. See Deformations (page 73) for an explanation of this setting.
"Skin"	True or false. See Deformations (page 73) for an explanation of this setting.
"SmoothingGroups"	True or false. See Smoothing groups (page 68) for an explanation of this setting.
"TakeCount"	This parameter is only available for the "get" function.
"TakeIndex"	An integer number from 1 to the number of takes in the FBX file. This parameter is only available for setting. When you specify the take, use 0 to indicate no animation. (This is the default value of this property.) Use 1 to specify the first take in the FBX file, 2 to indicate the second take, and so on. See Animation Take (page 71) for an explanation of this setting.
"UpAxis"	"Y" or "Z". See Axis conversion (page 84) for an explanation of this setting.

For example, to import an FBX file using the Add and Update scene elements mode and the skin modifier, but without loading animation FCurves:

```
FBXImporterSetParam "Mode" #merge
FBXImporterSetParam "Skin" true
FBXImporterSetParam "Animation" false
```

Troubleshooting and Limitations

8

Because FBX technology is supported by so many software applications, it is inevitable that occasional problems will occur or some details will not yet have attained perfect support.

Occasionally, the default settings of the plug-in do not respect a particular workflow, or the conversion process creates conflicts between two packages with similar but not identical functions. Sometimes a file is exported correctly but becomes inexplicably larger, or the assets in the file are no longer in the same location as they were before conversion.

This section contains a troubleshooting guide for problems with the import or export process as well as contains details on known limitations for the 3ds Max FBX Plug-in.

Troubleshooting

This section contains descriptions of some advanced problems, explains why they occur, and if available, offers workarounds.

If none of the topics in the Troubleshooting or Limitations section help you, search the *FBX Forums*. The forums contain ongoing discussion about the 3ds Max FBX Plug-in, as well as an e-mail address where you can contact support and alert the FBX team to your issues.

What Happened to My Textures?

Textures disappear from files if you move or delete any textures from the relative and absolute paths of the associated media files location. This can happen when

you give the FBX file to someone using a different computer who does not have that texture in that directory on your computer drive.

Use the Embed media (page 45) option to make the FBX plug-in include (embed) associated media (textures, for example) within the FBX file. The plug-in then extracts the media to an .fbm folder at import. The plug-in copies the embedded media to a <fileName>.fbm folder in the same location as the FBX file and is named after the FBX file.

NOTE When you activate Embed Media, the media is contained within the FBX file itself, and this has an impact on file size. It is good practice to use this option only when you transport an FBX file to a location where the original media source is no longer accessible by the receiver.

If you disable the Embed Media option, the FBX plug-in stores the relative and absolute paths of the associated media files at export time. This causes problems if, for some reason, the path is no longer accessible. Make sure that the associated media is accessible to ensure the proper import of these media files.

Embed Media is Active, But I still Do Not See My Textures

In previous versions of the 3ds Max FBX Plug-in, when you saved an FBX file with the Embed Media option activated, the embedded files were extracted to a folder in the same location as the FBX file. If you did not have write permission for the folder, then the media files were not extracted. You can experience this lack of write permission when you work over a network.

With the current version of the 3ds Max FBX Plug-in, if you do not have write permission for the folder creation, the media files are sent to a temp folder instead. See Embed media (page 45).

NOTE If you export your file in ASCII format using FBX versions 2010 and earlier, no textures can be embedded.

Why Are My Textures Mapped Incorrectly?

You will get incorrect texture mapping when you import objects into 3ds Max Design that meet the following conditions:

■ Objects are created in 3ds Max Design with the Real-World Map Size (UV Mapping) option activated

■ Materials have the Use Real-World Scale (Bitmap Coordinates rollout) option disabled

■ UV Tiling is set to anything other than 1.0.

If you have objects that fit all these criteria you will have mapping issues when importing into 3ds Max Design because the imported materials reset the Real-world Scale option back to On. This inconsistency occurs because 3ds Max Design has different defaults from 3ds Max.

To compensate for this, once the file is imported into 3ds Max Design, disable Real-world Scale in the Material Editor Bitmap Coordinates rollout.

Poser-created Collada (DAE) Files in Maya

Files lose their texture maps if you import Collada (DAE) files created in Poser. When the FBX plug-in encounters this limitation the Missing Map Files dialog box appears when you render. This is because 3ds Max cannot locate the files.

You can address this if you add the location to the External Files path list.

To keep textures visible:

1   In 3ds Max, click Customize ➤ Configure User Paths.

    The Configure User Paths dialog box appears.

2   Select the External Files tab and click Add.

3   Navigate to the location of the texture files in the Choose New External Files Path dialog box.

4   Click Use Path.

    When you render your file, the texture maps are shown.

For a description of this limitation, see Missing texture maps in DAE files (page 125).

Why Does My Mudbox Model Render Incorrectly?

If you are exporting a mesh that has been used as the source in a texture map extraction (for example, if you used this model as the source to extract a displacement map), be aware that any extracted texture maps are automatically exported with your model.

This can result in unexpected deformation when you import the model into another application, as the texture maps are automatically assigned to the model on import. If you experience this issue, you can remove any unwanted

texture map from the associated channel (such as the displacement or bump channel) after importing the model.

Why is My File So Much Larger?

Sometimes when you export a file from Revit, the file size dramatically increases. For example, a 30 mb Revit file can become 60 mb on export to FBX.

Why Does This Happen?

The original Revit file size is smaller because it contains less data than an FBX file. Revit scene file information accesses much scene information from libraries that reside **within** the Revit software, for example, Revit-specific construction data and textures. This information that is normally read from the Revit software now must be added on top of the FBX file on export so it can be reproduced accurately by software that cannot access Revit libraries.

This over-sizing problem also occurs with 3ds Max (.max) files on export for the same reason. A .max file must contain only the instructions that 3ds Max requires to create the scene. Materials and lighting information is read directly from the 3ds Max software libraries.

On top of this, when the Revit or 3ds Max file becomes an FBX file, it is converted to complex FBX scene information based on geometric data, such as vertex coordinates, UVs, and so on. This way, the FBX file contains the actual geometric data so it can be read in any software that supports the FBX format.

File sizes also tend to grow between Revit and FBX because all material data is embedded with the FBX file. The growth in file size means FBX files must contain every Revit texture used as materials so you can later import the FBX file into 3ds Max. A Revit scene file does not need to contain any texture files because the textures reside in the Revit software, where the scene file can refer to them.

Occasionally, large files do not import properly into 3ds Max due to memory constraints. If a file contains a massive amount of metadata and geometry, the import process can take hours.

Working with Large Files

There is also a known issue that affects few users when an extremely large FBX file is imported.

If you switch the 3ds Max System (not Display,) units to feet, so they match the Revit Imperial units exported to FBX, the import process takes much less time to complete. The unit conversion process is a complicated one for the FBX Importer and takes a long time to complete. Matching the units between an FBX file and the host program is often the deciding factor whether or not a large FBX file imports successfully into 3ds Max.

For more about System Units conversion problems, see Why is my scene scaled differently in 3ds Max? (page 112).

Why is the Geometry Offset?

Geometry exported from Revit does not have a correct local pivot point or center, as is normal when you create objects in 3ds Max. Object centers are offset from the object, but have a correct position in global space. If you are not manipulating or animating the position of your objects in 3ds Max, this offset has no impact.

Why Are My Objects Offset?

Objects can lose some transformation data when they have local axes that are not perpendicular to each other (non-orthogonal). This is due to a limitation. See Non-orthogonal matrices (page 121).

Why Are Edges Visible on My Models?

Visible edges are hidden lines that are normally invisible in 3ds Max. The problem typically occurs with Revit models because everything exported from Revit is triangulated. This causes edges that 3ds Max would normally hide to become visible.

NOTE This visible edge problem applies if you export from Revit version 2010 and earlier. This problem has been addressed for Revit 2011, so as of that version, objects now export with hidden edge information.

What Are Visible Edges?

You can recognize a visible edge, for example, if you have a wall in Revit that should only be represented in 3ds Max with four edges which are the four

sides of the wall. Instead, 3ds Max displays the middle triangle that connects both corner vertices. This middle triangle is normally hidden.

Use this script to hide any unwanted edges from imported models, typically Revit version 2010 and earlier models loaded in 3ds Max using FBX. The script will read all edges and determine which ones can be hidden by evaluating whether they are next to any neighboring edges. Hiding these unwanted edges makes the model much easier to view.

To use this script:

1 Select all objects in the scene.

2 Select MAXScript ➤ New Script in the 3ds Max main menu.

3 Copy and paste the script below into the dialog.

4 Press CTRL-E to Evaluate All and run the script.

You can also save this script in 3ds Max and drag and drop the .ms file in the Viewport while objects are selected.

NOTE This script works only for editable meshes, and ignores editable polys, patches, or other entities.

```
(
-- do this in a local scope so I don't pollute the global
scope.
function setVisibilityEdges obj =
(
 local edgeSelSet = #()
 -- Go through all faces
 local numFaces = obj.numfaces
 for faceIndex = 1 to numFaces do
 (
  -- And for every one of the 3 edges
  for edgeIndex = 1 to 3 do
  (
   --collect the edge
   append edgeSelSet ( ((faceIndex-1)*3) + edgeIndex )
  )
 )
 -- Select all visible edges
 meshop.autoedge obj edgeSelSet 5 type:#setclear
)
```

```
--=============================================
-- Start of the runtime script
--=============================================
local timestart = timestamp()
-- turn off undo during this operation.
with undo off
(
 local editMeshArray = #()
 for obj in Selection do
 (
  if (classof obj == Editable_Mesh) do
  (
   -- collect all the edit meshes first, because the
   -- user could have selected some helper objects too,
which we
   -- don't want to process.
   append editMeshArray obj
  )
 )
 -- we don't need to hold the selection anymore, clear it
out.
 clearselection()
   -- Array of object handles that have already had their
edges hidden
 local allReadyProcessed = #()
 -- iterate through all selected edit meshes...
 for editMeshobj in editMeshArray do
 (
  local found = (FindItem allReadyProcessed
editMeshobj.handle) > 0
  if (not found) then
  (
   setVisibilityEdges editMeshobj
   append allReadyProcessed editMeshobj.handle   -- Mark
all the instances as processed too!
   InstanceMgr.GetInstances editMeshobj &repeatArray
   if (repeatArray.count > 0) then
   (
    -- mark them as processed by adding their handle to
the array
    for repeat in repeatArray do
    (
     append allReadyProcessed repeat.handle
```

```
        )
      )
    )
   )
  )
  redrawviews()
  local timeend = timestamp()
  format "Total time: % (seconds)\n" ((timeend -
timestart)/1000.0))
```

Why Are My Revit Lights Reoriented on Import?

If your exported Revit IES lights have incorrect tilt angles or incorrect IES Web Distributions orientation in 3ds Max, this is due to a known issue.

This problem occurs in Revit version 2011 and earlier importing to 3ds Max version 2011 and earlier. You can find a fix for this problem in Revit 2011 UR1 and 3ds Max 2011 SP1.

Click *Autodesk Revit Architecture Services & Support* to go to the Revit Updates page.

Click *Autodesk 3ds Max Services & Support* to go to the 3ds Max Updates & Service Packs page.

Why Does it Take So Long For My Revit file to Import or Export?

Performance may be slow for large projects that contain many objects and data when exporting from Revit Architecture and importing into 3ds Max.

To improve performance, limit the model geometry you export. Try using a section box or hide categories of model elements that you do not need in Revit Architecture and set an appropriate level of detail level.

If the FBX Importer does not perform unit conversion, such as switching 3ds Max to Feet, the import process is much faster. See Working with large files (page 106).

Where Are My Revit Cameras?

Revit Architecture exports only one camera to FBX, which corresponds to the active 3D view. This means only the current Revit 3D view or camera imports into 3ds Max as a 3D camera view.

Why Are My Revit Cameras Different After Import and Export?

The 3ds Max FBX Plug-in does not support the cropping region and optical center of Revit cameras. However, the field of view (FOV) or perspective of the Revit cameras is correct in 3ds Max. So, this does not translate precisely in 3ds Max if you modify your Revit camera by resizing and/or offsetting the cropping region (frame) of your 3D view in Revit.

This is caused by a combination of FBX not transporting the render resolution settings, and a limitation that the 3ds Max camera model does not support an optical center

Where Are My Revit Massing Objects?

Massing objects in Revit are not supported, and do not export to FBX.

Why Are Revit Objects Hidden or Missing?

In Revit, you can "hide" and "temporarily hide" elements. The 3ds Max FBX Plug-in imports "temporarily hidden" objects exported from Revit. Although they exist, these elements are not visible in 3ds Max, since they are "hidden".

"Hidden" elements in Revit do not export and do not exist when you import your FBX into 3ds Max.

Where Are My Revit Groups?

Revit Groups have no 3ds Max equivalent so the 3ds Max FBX Plug-in ignores all Revit Groups. For example, if you export lights within a Revit Light Group, the 3ds Max FBX Plug-in converts the lights but loses any grouping.

What is Revit's Internal Unit System?

Revit calculates system units in Imperial units (Feet and Fractional Inches). When Metric units are set as the "Project Units", Revit dynamically converts the Imperial units into Metric units, in the UI. This means that FBX always exports in the actual system units, Imperial (Feet). There are no issues in working with Metric units in Revit and 3ds Max, but this results in an Imperial (Feet) FBX file, that automatically converts to Metric (Meters) on FBX import into 3ds Max. When you use an Imperial (Feet) Project Unit in Revit and Feet System Units in 3ds Max, no conversion is needed.

For more on Revit units, see

Where Are My Revit Daylight Portals?

Revit uses daylight portals differently from 3ds Max. They exist in both applications but because they are calculated differently when you render, 3ds Max FBX Plug-in does not import these daylight portals into 3ds Max. Doing so would result in low performance. This performance issue is because Revit systematically creates daylight portals for each individual window, and for each side of the window. This does not affect the rendering performance of Revit since only windows relevant to the camera view are only calculated when you render.

However, 3ds Max renders all daylight portals systemically. Therefore, it is better to create one single daylight portal for an entire wall of windows manually in 3ds Max as you would normally when you work in 3ds Max. This results in better performance and gives better visual results.

Why is My Scene Scaled Differently in 3ds Max?

3ds Max has two unit settings, System and Display, that can create conflicts when you try to exchange data between 3ds Max and MotionBuilder, Maya, or Revit.

If they are set differently (for example, inches and centimeters), the 3ds Max System and Display units settings do not create issues as long as you are only working within 3ds Max. However, MotionBuilder and Maya use centimeters, and Revit uses feet/meters, so conversions might occur each time an FBX file is moved between those programs.

Generally in 3ds Max, changing the System Unit Setup is discouraged as it can create confusion. But for the purposes of file exchange and interoperability, altering 3ds Max System Units is necessary as FBX files do not take 3ds Max Display units into account. Consult the following sections for a detailed explanation of the scaling problem.

MotionBuilder and Maya Scaling

Unlike 3ds Max, which uses inches as its base system unit, MotionBuilder and Maya both use centimeters. To compensate for this, 3ds Max users are generally instructed to switch their Display units to centimeters, and leave the default system units setting (inches) unchanged. This creates problems when exchanging files between other software applications.

For example, if you export a 3ds Max object when you have your Display units set to one measurement (such as centimeters), and your System Units set to another measurement, the FBX exporter only considers the 3ds Max System Units, even if they differ from the Display units.

This becomes more complex if you then save the FBX file in MotionBuilder and import it back into 3ds Max. The FBX Importer evaluates the 3ds Max System Units, but once you save the FBX file in MotionBuilder, it is converted to centimeters. The FBX Importer accordingly converts the incoming FBX file to match the 3ds Max System Units. This now scales your object even though you had no expectation of scaling because your Display units have always been in centimeters.

If you want to exchange FBX files between 3ds Max and MotionBuilder, change your System Unit settings to centimeters to match. If you want to exchange FBX files between 3ds Max and Maya, change your 3ds Max System Unit settings to match the Maya Working units.

Revit Scaling

Similar issues occur with Revit as Revit System Units are Feet/Meters and 3ds Max System Units are inches by default. If you import an FBX file from Revit that uses "Imperial: Feet" as system units into 3ds Max while the 3ds Max default units are inches, the FBX conversion scales all objects in the scene during the import process.

The Revit scale is 12.0 (or 12 inches per foot). This is because, if the scaling did not occur, your units would become one foot = one inch which would then create distortion in any bitmap used in the scene.

For example, if you do not scale objects upon import, a Revit imported house ends up with walls that are 12 inches long, instead of 12 feet long. The FBX conversion scaling is also done to ensure that bitmaps are mapped properly in size in relation to the objects in the scene. If your wall is 12 feet long, it has to be converted to 144 inches long for the bitmap used to display in an appropriate real-world scale.

If you want to exchange FBX files between 3ds Max and Revit, change your System unit settings to feet to match Revit.

NOTE We do not recommend that you change the FBX Revit Import preset Units setting in the so that the scale units are feet instead of inches. It is true that if you do this, you create a 1:1 match for objects and avoid any scaling conversion. However, if you change the Revit Preset units setting so that no conversion is performed, all units become non-real-world and then materials do not render at the right scale.

Revit Workaround

If you do not want to change the 3ds Max default System Units, there is another work-around for this scaling problem; manually convert every object to real world scale after you import the file into 3ds Max. If you do this, you must have Inches set as system units, which is the 3ds Max default.

1   Import your FBX file into 3ds Max Design using Inches as System Units.

2   Select any of the objects in the scene and verify their scale: 1200%

3   Apply a Standard material with a check pattern in the diffuse map channel to any object in the scene.

4   Create a cube primitive and apply the new material to that object as well. It is apparent that the mapping is not the same scale.

5   In the Material Editor, in the Checker procedural map Coordinates rollout, ensure that real-world scale is active, and adjust the size 48 value to 4 for both Width and Height.

    NOTE 4 is 48 divided by 12, which compensates for the 1200% scaling.

6   Do this for every object in the scene and the mapping appears identical.

What Happened to My 3ds Max Turned edges?

The 3ds Max FBX Plug-in supports the turning of hidden edges. This support is through triangulating the affected Poly objects into Editable Mesh objects. Once the mesh is triangulated, all invisible edges are exposed and baked, whether they are turned or not.

NOTE You can disable the plug-in's Preserve edge orientation option or use the Mudbox preset to stop the automatic triangulation. See Preserve edge orientation (page 35).

Editable polys have hidden edges. When you view a polygon in 3ds Max, the hidden edge is invisible unless you turn on its Visibility. A hidden edge with Visibility turned on appears as a dotted line when the Turn tool is activated. This gives the impression that the Editable poly model is composed of polygons when it is composed of triangles. The only difference is that the edges that complete the triangles are normally hidden from view.

You can turn hidden edges in editable poly and mesh objects to modify the shape of the hidden triangles within your polygons. This is a refining process useful if you want to modify how polygons are subdivided. Turning the edges lets you avoid thin triangles in your polygons, for example. Turning hidden edges is a refining process some 3ds Max modelers go through as a last step.

To turn an edge in 3ds Max:

1 Create a Plane primitive in 3ds Max.

2 Convert the Plane001 object to Editable Poly.

3 Go to the Polygon sub-object level in the modifier stack and choose Edit Polygons ➤ Turn.

4 Press F4 to show hidden edges in the viewport.

5 If you click any hidden edges you can see that the edge is still a dashed line.

When you export this scene, hidden edge directions are retained by converting editable poly objects to editable mesh objects.

Why Does My Geometry Have Facets?

If you see faceted geometry when you import files into 3ds Max using the 3ds Max FBX Plug-in, the Re-evaluate Smoothing groups (page 68) option might

have been activated. Disable this option to correctly import, for example, Revit objects into 3ds Max.

Whenever you import a Revit file using FBX, deactivate the Re-evaluate Smoothing groups option. This option is now deactivated by default in the Autodesk Architectural Preset for all future releases of the 3ds Max FBX Plug-in.

The Smoothing groups re-evaluation process potentially slows down the import process, so your import process will speed up (depending upon file size) if you deactivate it. This increase in speed occurs because the importer no longer must evaluate every face in each of the geometries that already has a smoothing group associated with it and then, assigning one or more when required.

Why Do My MotionBuilder Edges Look Different?

Older versions of MotionBuilder (versions 2010 and earlier) do not support Geometry Vertex Normals and can present issues with edge definition.

If you are using an earlier version of MotionBuilder and this problem occurs, you must activate the Split per-vertex Normals (page 31) option. When you activate this option, geometry vertex normals are split based on edge continuity. Vertex normals determine the visual smoothing between polygon faces. They reflect how 3ds Max renders the polygons in smooth shaded mode.

This option only applies to older MotionBuilder workflows to ensure visual fidelity of surface continuity. It lets you transfer hard edge information to MotionBuilder.

Why Would I Use This?

Use this option to preserve whether edges are hard (divided) or not (continuous) when you operate between 3ds Max or Maya and MotionBuilder 2010 and earlier. If you disable this option, all smoothing groups in 3ds Max are ignored as well as all hard/soft edge information in Maya.

For example, a 3ds Max-created box that would normally have defined edges would lose them, with all faces visually connected, without visible edges dividing them, in MotionBuilder 2010 and earlier. This is result is hardly noticeable for organic objects, but is very noticeable on hard surfaces such as tables and cars, and so on.

See the Split per-vertex Normals (page 31) section for a workflow to import FBX files exported from 3ds Max into MotionBuilder with proper edge

continuity while retaining the original 3ds Max edge continuity for import back into 3ds Max.

Where Are My Display Layer Properties?

Display layer properties are only supported by layers that are not layer 0; the 3ds Max FBX Plug-in does not recognize layer 0.

For example, if you have objects in Layer 0 and Layer 1, the 3ds Max FBX Plug-in ignores the Layer 0 properties but retains the layer property information for Layer 1.

Where Are My Animation Layers?

There are some specific situations where the 3ds Max FBX Plug-in does not export animation layers by default.

Animation that exists on multiple layers does not export correctly as the 3ds Max FBX Plug-in conditionally supports Biped animation layers.

As long as you are at the uppermost (top) layer, and use the Bake animation (page 36) option in the FBX exporter, you can export all animation from the top down on the layers that reside beneath the top layer.

If you do not activate Bake Animation, only the top layer of animation is exported. This is because the 3ds Max FBX Plug-in Bake Animation option scans through any unsupported controllers in 3ds Max and then re-samples the animation for export.

TIP You can also avoid this problem by collapsing all your layers into one before export.

Where Are My LOD Attributes?

The 3ds Max FBX Plug-in does not support Maya LOD attributes, due to incompatibility with 3ds Max LOD attributes. See Maya LOD attributes (page 121) for more information about this limitation.

Where Are My Normals?

If you import an FBX file that contains Smoothing group data into 3ds Max with the Smoothing groups option activated the FBX importer will import only the smoothing group data and ignore any modifications made to the normals. For example, this would happen if you modified the normal directions, but the object also had smoothing group information.

This is due to a limitation, see Importing Explicit normals and Smoothing Groups (page 121) for more.

Where Did My Constant Keys Go?

If you are missing keyframes at the end of your animation in an exported FBX file, they may have been cleaned by the 3ds Max FBX Plug-inConstant Key Reducer (page 38) filter. When this filter is enabled, the plug-in removes any consecutive keys that have the same value.

For example, if you set five consecutive keys of the same value at frame 10, 12, 15, 20, and 24, the constant key reducer filter will remove all the redundant keys except the one at frame 10.

During import, the plug-in may resample some animation curves. If this resampling occurs, the 3ds Max FBX Plug-in automatically applies the Constant Key Reducer filter to reduce the amount of keys allocated in memory.

Why Does the Plug-in Not Match the Help Documentation?

If you find something in your version of the 3ds Max FBX Plug-in that does not appear in the documentation, consult the readme file that accompanied the plug-in. The readme will contain last-minute changes to the software that are not reflected in the documentation.

It is also possible that your version of 3ds Max may not be the most recent version. It is a good practice to check for updates, as each subsequent 3ds Max FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 16) for instructions on how to verify that your plug-in version is the latest.

How Can I Revert to Using the Plug-in that Shipped With the Software?

When you install the 3ds Max FBX Plug-in, two instances of the plug-in are installed: the actual FBX plug-in that is copied to the source directory (C:\Program Files\Autodesk\3ds Max 2009\stdplugs) and a copy of the plug-in that is stored in the FBX folder that you specified during the installation.

When you uninstall the 3ds Max FBX Plug-in, the uninstall process removes only the plug-in copy which is stored in the destination folder that you specified during the installation.

NOTE If you do not want to lose access to the FBX plug-in that ships with 3ds Max, select Yes to accept saving copies of the old plug-in whenever you install newer versions of the FBX plug-ins.

Can I Turn Off Display Layer Export/Import

The 3ds Max FBX Plug-in display layer support is not shown anywhere in the FBX Plug-in interface because the plug-in does not need user input to execute this process. This is because the plug-in assumes if there are display layers included with the file, they are needed. There are no scripting options to disable the FBX layer support.

If you still want to export without the display layers being considered by the FBX plug-in, you must collapse the layers in the 3ds Max scene.

To collapse 3ds Max layers:

This example is for a scene with multiple objects and layers, such as 3 objects with 3 layers (one object in each).

1 Select all objects in the scene.
2 Select the Display Layer 0 in the Layer Manager, and click the plus sign that adds all selected objects to the selected layer.

3 Then delete each display layer, one by one, to eliminate the layers from being exported. (3ds Max does not allow multiple layers to be deleted at once.)

Limitations

The following section contains a list of known limitations for this version of the 3ds Max FBX Plug-in. If you have problems with the plug-in that are not listed here, refer to the Troubleshooting (page 103) section.

Tangents and Binormals

There is a known FBX limitation where exported binormal and/or tangent information does not appear, even if you activate the Export ➤ Include ➤ Geometry ➤ Tangents and Binormals option.

The Tangents and Binormals option only works on meshes that have only triangle polygons, so you may need to triangulate the mesh before activating this option.

Animation Controllers

During export, if the plug-in detects that an animation controller has an undefined time range, it automatically adjusts it to use the scene animation interval. This way, the number of animation keys generated are limited.

Preset Bake Animation Settings

You cannot save Bake animation (page 36) settings (Start/End/Step values) in Preset files. If you created a preset that had specific settings for the Bake Animations values, these values will not be used the next time you load the preset. Instead, the FBX plug-in will always default to the values set for the scene's timeline.

For example, if the animation in the scene is 102 frames long, the Start value will be 1, the End value will be 102, and the Step value will be 1, regardless of what values you may have stored in the preset for this setting.

Non-Orthogonal Matrices

"Orthogonal" is a term used to describe two vectors that are perpendicular (at 90 degrees) to each other. In 3D space, when the X, Y, or Z-Axes are not perpendicular, they are considered "non-orthogonal" and the FBX plug-in does not support their representation as a matrix. For example, a non-orthogonal set of axes can occur when you use rotation and scaling to skew an object.

Because the FBX plug-in assumes that there is always a 90 degree angle between the X, Y, and Z axes, it can support only orthogonal matrices. Any transformed axes that have non-orthogonal TRS matrices are ignored by the FBX plug-in, so it does not import or export effects created when axes are not orthographic. Because of this, any non-orthogonal effect (such as skewing) is lost.

This can cause problems even when you have transformation data that has been inherited from other objects, for example, scaling via a parent object where the result is a non-orthogonal local TRS matrix.

Maya LOD Attributes

LOD (Level of Detail) attributes in Maya files are ignored when you import them into 3ds Max.

In 3ds Max, the group will be created and the LOD Utility will be applied to the group. Default values will be used for threshold attributes. Since Maya uses a camera distance and 3ds Max a pixel resolution, these LOD attributes are incompatible and the 3ds Max importer and exporter ignores them.

Importing Explicit Normals and Smoothing Groups

A limitation occurs when you import an FBX file that contains Smoothing group data into 3ds Max with the Smoothing groups option activated.

If any objects in the file contain explicit normal modifications, the FBX importer will import only the smoothing group data and ignore modifications made to the normals. For example, if you modified the normal directions, but the object also has smoothing group information.

The 3ds Max FBX Plug-in does not export smoothing group data by default.

Environmental Texture Maps

The 3ds Max FBX Plug-in does not support environmental texture maps (Environ option).

Standard Material Map Channel Values

The 3ds Max FBX Plug-in does not retain amount values for most Standard material map channels, such as Diffuse and Specular level when exporting. The FBX format saves only the bump map channel amount and sets all other channels to a value of 100 on import.

The 3ds Max FBX Plug-in reads the glossiness and specularity amounts from Shader Basic Parameters and not from the Maps rollout in the Material Editor.

Morph Information

The 3ds Max FBX Plug-in does not export Morph information with Patch geometry.

Locked Ambient and Diffuse Channels

The 3ds Max FBX Plug-in does not export 3ds Max Lock information from Ambient and Diffuse channels. If you define a texture in the Ambient channel when you import an FBX file into 3ds Max, the Ambient, and Diffuse channels become unlocked. To preserve the locked state of the channel, you must lock them after you import the scene.

Photometric Lights

The FBX Exporter converts Photometric lights to Standard lights. Photometric lights from Revit 2009 and later are supported by 3ds Max 2009 and later.

Export Issue

A limitation exists where objects exported with the FBX format remain in the last state shown in the Viewport. The plug-in exports any vertex animation on an object in its current PRS coordinates. For example, if you export a cylinder with a 100-frame animated Bend modifier at frame 50, the scene shows the cylinder at a 50-percent bend.

Workaround

To accommodate this limitation, position your time slider at the point in the animation you want to export. To retain the entire animation, create a selection set for animated objects. Then, activate the Include ➤ Animation ➤ Point Cache File(s) option in the 3ds Max FBX Exporter window.

Biped Layers

Multiple layer animation may not export.

The 3ds Max FBX Plug-in conditionally supports Biped animation layers. If you highlight a layer and export it with the Media & Entertainment default preset, you will only export the animation from that specific layer. See Where are my keys/animation layers? (page 117) for more.

TCB Interpolation Controllers

For improved interoperability, keyframe animation set on controllers with TCB interpolation or tangent slopes set to Fast, Slow, or User resamples systematically.

Scale Compensation

If you modify the scale of joints that are parents of other joints in Maya, they do not import correctly into 3ds Max. This import problem occurs because 3ds Max does not support scale compensate settings in Maya.

What Does Scale Compensate Do?

If you scale a parent joint in Maya using scale compensation, it creates an offset for the child joint rather than scaling it.

But if you do the same thing in 3ds Max, the child scales and creates no offsets.

Since 3ds Max does not support Scale Compensate, any joint hierarchy you use in Maya with scale compensate looks wrong in 3ds Max.

When Do I De-Activate Scale Compensate So it Imports Correctly into 3ds Max?

Deactivate the scale compensate for joints only if you have modified the scale of any joints that are parents of other joints.

If all your joints are the same scale, you do not have to deactivate this setting in Maya.

To deactivate scale compensate in Maya:

1   In Maya, select the child joint.
2   In the Attribute Editor, deactivate the Segment Scale Compensate attribute.

    This option deactivates the scale compensation setting.

Bitmaps, Procedural, and Map Channels

The 3ds Max FBX Plug-in processes any type of image map in almost any standard material channel. Anything that you map in the Diffuse, Specular and other channels translate to FBX, as long as they are not procedural maps.

The FBX plug-in can transfer bitmap image and Composite Layer maps. However, the FBX plug-in ignores files created with procedural mapping systems like Dent or Smoke as it does not currently support these mapping types.

Map Channel	Support
Ambient	Supported
Diffuse	Supported

Map Channel	Support
Specular color	Supported
Specular level	Supported
Glossiness	Supported
Self-Illumination	Supported
Opacity	Supported
Bump	Supported
Reflection	Supported
Displacement	Supported

NOTE The FBX Plug-in ignores any maps applied to unsupported channels on export.

Selection Sets

A known limitation exists where sets that contain NURBS subcomponents, such as Isoparm, Control Vertex, or Surface Patch, do not retain the NURBS subcomponent information. This results in an empty set on import.

Missing Texture Maps in DAE Files

A 3ds Max limitation causes texture maps to disappear from objects when they are imported into Maya in Collada (DAE) format.

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