Autodesk® **FBX**®

Autodesk Maya
FBX Plug-in Help

Legal Notices

Autodesk® FBX® 2013

Contents

Maya FBX plug-in What's New

<div align="right" style="font-size:3em;">1</div>

The following section contains the new features and known limitations for this version of the Autodesk Maya FBX plug-in.

NOTE

Consult the readme file for any last-minute changes to this release. Windows users can find the readme, along with this Help system, in the **Program Files** > Autodesk FBX folder. Macintosh users are offered the option to save the readme during the installation process.

What's new in this version

This section lists the bug fixes associated with this version of the Maya FBX plug-in.

"rootNode' Node problems

Nodes named "rootNode" now import correctly. Previously naming conflicts prevented nodes with this name from being read by the FBX Importer.

MotionBuilder custom property import

Problems where the FBX plug-in did not import animation on MotionBuilder custom properties have been resolved.

Tangents and Binormal Export

An issue with the export of normal/binormals on non-triangulated meshes has been resolved.

NOTE There is a known limitation with tangents and binormals. See Tangents and Binormals (page 126) in the Limitations (page 125) section.

Instability on Export

You can now export Maya files with the Referenced Containers Content (page 40) option disabled. Previously, this caused instability in Maya.

Lengthy import of large files

An issue where files with millions of polygons and multiple materials took a long time to import into Maya has been resolved.

Conversion support

The following sections are about how the Maya FBX plug-in converts Maya objects and their properties.

For a detailed report of conversion support for this version, see the *Maya Compatibility Chart*. The FBX compatibility chart explains what is supported and at what level, when you export from Autodesk Maya and import into Autodesk 3ds Max, Autodesk Mudbox or Autodesk MotionBuilder.

File textures, procedural, and map channels

The Maya FBX plug-in supports texture files in almost any standard material channel. Anything that you map in the Color, Bump mapping and other channels translate to FBX, as long as they are not procedural maps.

Map channel	Support
Color	Supported
Transparency	Supported

Map channel	Support
Ambient color	Supported
Incandescence	Supported
Bump	Supported
Diffuse	Supported
Cosine power	Supported
Specular color	Supported
Reflectivity	Supported
Reflected color	Supported

The Maya FBX plug-in supports file texture maps. If you are using either 2D or 3D procedural textures, convert them to a file texture first.

NOTE

The Maya FBX plug-in ignores any maps applied to unsupported channels on export.

Camera support

The following tables indicate how both Maya and the FBX file format treat cameras.

Camera export

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

In Maya	Becomes in FBX
Camera	Camera without interest.
Camera and Aim	Camera with interest.
Camera, Aim, and Up	Camera with interest and up vector.
Angle of View	Field of View FCurve. The view is consistent even though the focal length values change when you import the FBX file into 3ds Max.
Near/far clipping planes	Near and Far clipping plane values are supported but not animation.
Stereo Camera	StereoCamera

NOTE

Any animation applied to a Maya camera's **Up** node is baked onto the camera's rotation when you import it into 3ds Max.

Custom camera export

When the Maya FBX plug-in exports custom cameras, the exporter sets the **Render Image Size** and **Pixel Aspect Ratio** for all cameras. If no custom cameras exist, the **Render Image Size** and **Pixel Aspect Ratio** values are not exported.

NOTE

Make sure your custom camera is the current camera in the scene when exporting to FBX for the correct transport of the camera **Render image Size** and **Pixel Aspect Ratio**.

Camera import

The following lists how Maya treats MotionBuilder cameras on import:

In FBX	Becomes in Maya
Free Camera	Camera
Camera (With a look-at Target/Interest)	Camera and Aim
Orthographic Camera	Camera with an orthographic setting.

Custom camera import

When the Maya FBX plug-in imports Maya and 3ds Max custom cameras, the **Render Image Size** and **Pixel Aspect Ratio** applied to the scene is set by the current camera. That is, the **Render Image Size** and **Pixel Aspect Ratio** from additional cameras are ignored. If the current camera is not a custom camera, the **Render Image Size** and **Pixel Aspect Rati**o values are not imported.

Light support

The following tables list Maya lights and how the plug-in treats them when they are exported to the FBX file format and imported into Maya:

Light types

In Maya	When imported back into Maya
Ambient light	Point light
Directional light	Directional light
Spot light	Spot light
Area light	Point light

In Maya	When imported back into Maya
Point light	Point light

Custom properties

Because of type limitations in FBX files, the following conversions are applied.

Exported from Maya	Becomes in FBX
Vector	VECTOR
Boolean	BOOL
Integer	INTEGER
String	STRING
Enum	ENUM
Float	REAL

Imported FBX	Becomes in Maya
REAL	Float
BOOL	Boolean
INTEGER	Integer
STRING	String
VECTOR	Vector

The Maya FBX plug-in supports Extra Attributes (or custom properties) applied to Materials and Transform nodes.

Level of Detail group nodes

The Maya FBX plug-in supports LOD (level of detail) group nodes. See the Maya documentation on LOD group nodes for more information.

Joint Orients

The Maya FBX plug-in converts Maya Joint Orients to pre-rotation on export.

Installing the Maya FBX Plug-in

2

Maya uses the Maya FBX plug-in to import, export, and convert files using the FBX file format. This chapter describes how to install the Maya FBX plug-in on Windows®, Mac® OS X, and Linux systems.

The Maya FBX plug-in comes with Maya and is installed automatically. This procedure is included so you can upgrade your Maya FBX plug-in with later versions.

NOTE

The Maya FBX Plug-in that accompanies your version of Maya may not be the most recent version. It is a good practice to check for updates, as each subsequent Maya FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 27) for instructions on how to verify that your plug-in version is the latest.

IMPORTANT

Plug-ins run only on the version of Maya for which they are created; verify that the version of the Maya FBX plug-in that you are installing is appropriate for the version of Maya you are running.

The Maya FBX plug-in is available for Windows®, Mac® OS X, and Linux systems.

Windows installation

The Maya 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 Maya FBX plug-in:

1 Exit Maya or deactivate fbxmaya.mll in Maya's **Plug-in Manager** before installing.

   NOTE

   If you install the Maya FBX plug-in while the fbxmaya.mll driver is in use, the installation cannot occur and an "Error opening file for writing" message displays.

2 Download the install file from *www.autodesk.com/fbx*. See Downloading the Maya FBX Plug-in (page 15) for information on downloading the latest Maya FBX plug-in.

3 Double-click the install file to launch the Autodesk Maya FBX plug-in installer.

4 Click **I accept** to accept the terms of the license agreement, and then click **Next**.
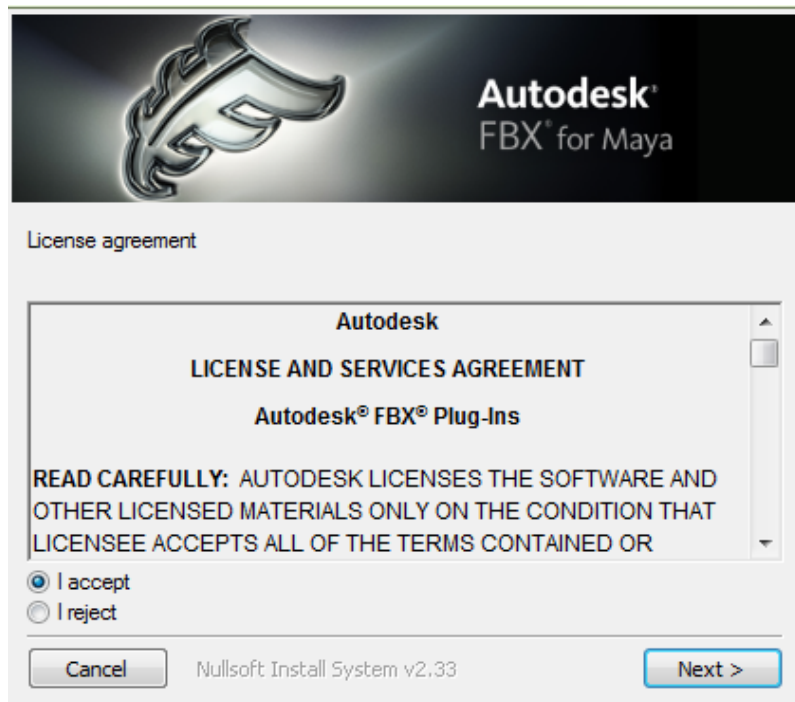
5 The next window shows the recommended installation location for the plug-in. To specify another location, click **Browse** to launch the file browser.

6 Click **Next**.

7 A dialog box appears asking if you want to view the read me file. Select **Yes** or **No**.

NOTE

The readme is located in the Program Files > Autodesk FBX folder, along with this Help system.

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

The Maya FBX plug-in is now installed.

NOTE For information on deleting the plug-in, see Removing the plug-in (page 16).

Macintosh installation

The Maya FBX plug-in is available for Mac OS X 10.6.

To install the Maya FBX plug-in:

1 Download the TGZ file from the Autodesk web site (*www.autodesk.com/fbx*) to your desktop.

2 Double-click the TGZ file to extract the Installation disk image.

3 Double-click the package icon to start the installation. The **Welcome** pane appears.
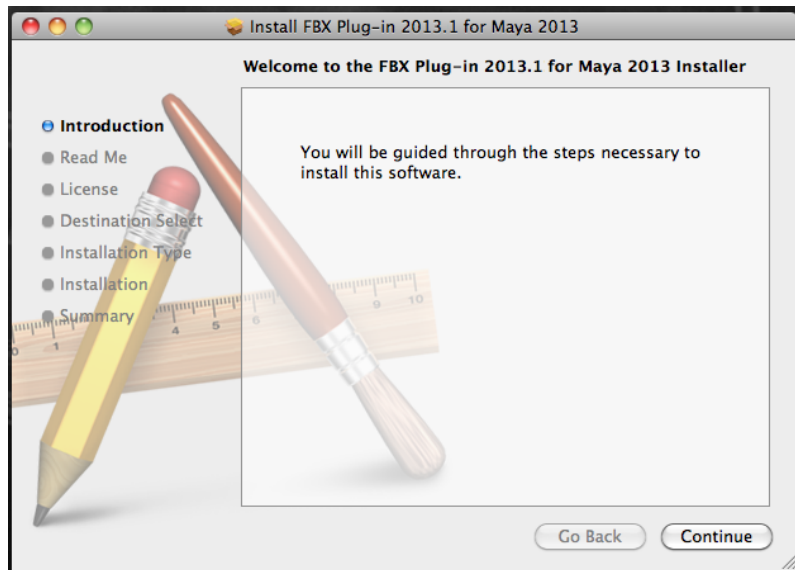
4 Click **Continue** to start the installation process. The **Software License Agreement** pane appears.

5 Read the License Agreement and click **Continue**. A dialog box appears asking if you accept the terms and continue with the installation.

6 Click **Agree** to accept. The **Select a Destination** pane appears. Select the destination disk where you want to install the Maya FBX plug-in and click **Continue**.

7 The **Easy Install** pane appears. Click **Upgrade**.

8 A dialog box appears asking you to enter your name and login password to continue the installation.

NOTE You must obtain administrator privileges to continue installation.

9 The installation begins. A progress bar indicates the time remaining of the installation. When the progress reaches 100%, the **Finish Up** pane appears.
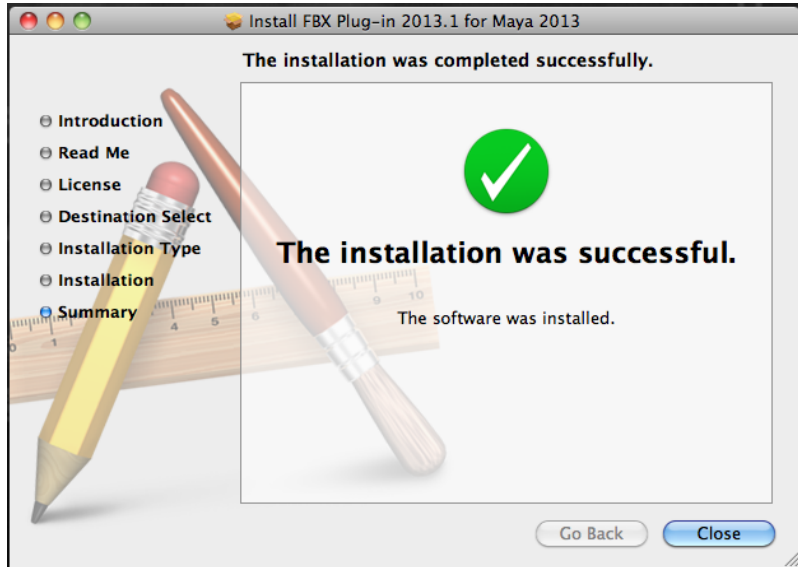
10 Click **Close** to exit the installation program.

11 Start Maya and navigate to **Window** > **Settings/Preferences** > **Plug-in Manager**.

   NOTE This installs the Maya FBX plug-in to the following directory: <Macintosh Drive>/Applications/Autodesk/maya<*ver*>/Maya.app/Contents/MacOS/plug-ins, where <*ver*> is the version of Maya you have installed.

12 Activate the **Loaded** option for *Fbxmaya.bundle* in the **Plug-in Manager**.

13 Activate the *Fbxmaya.bundle***Autoload** option so Maya loads the Maya FBX plug-in automatically at start-up.

   NOTE The FBX readme file is available during the installation process. An option to save the readme is offered at this time. This lets you save the readme so that you can determine where to store it.

NOTE For information on how to delete the plug-in, see Removing the plug-in (page 16).

Linux installation

The Maya FBX plug-in is available for Linux.

Linux compatibility

The Maya FBX plug-in is compatible with the following versions of the Linux Operating system:

■ GCC 4.0.2 (32- and 64-bit)

To install the Maya FBX plug-in:

1 Download the installation file from the Autodesk web site (*www.autodesk.com/fbx*).

2 Remove the old plug-in from the */usr/Autodesk/maya<ver>/bin/plug-ins/ (*where *<ver>* is the version of Maya you have installed,) directory by entering *rm –f fbxmaya.so* at the command prompt.

3 Type the following command to install the Maya FBX plug-in:

```
./fbx<ver>_maya<ver>_linux_enu
```

(Where *FBX<ver>* is the version of the Maya FBX plug-in you have installed).

This installs the plug-in to the following directory:

/usr/Autodesk/maya<ver>/bin/plug-ins/ (where <ver> is the version of Maya you have installed).

If you install Maya in another folder, you can specify the path on the Command Line after: ./fbx<ver>_maya<ver>_linux_enu /home/maya/mypath/

(Where *FBX<ver>* is the version of the Maya FBX plug-in you have installed.)

1 Start Maya and navigate to **Window** > **Settings/Preferences** > **Plug-in Manager**.

2 Activate the **Loaded** option for *Fbxmaya.so* in the **Plug-in Manager**.

3 Activate the *Fbxmaya.so***Autoload** option so Maya loads the Maya FBX plug-in automatically at start-up.

NOTE For information on how to delete the plug-in, see Removing the plug-in (page 16).

Downloading the Maya FBX plug-in

The Maya FBX plug-in is available for free download.

The Maya FBX Plug-in that accompanies your version of Maya may not be the most recent version. It is a good practice to check for updates, as each subsequent Maya FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 27) for instructions on how to verify that your plug-in version is the latest.

To download the Maya FBX plug-in:

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

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

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

4 Fill out the form that appears and click **Submit**. This takes you to a page where the plug-ins reside.

   NOTE

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

5 Click the **FBX plug-in** link to download the corresponding FBX installer.

   NOTE

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

Checking your version number

Once you complete the installation, run the Maya FBX plug-in. When you import and export, you can find the FBX version number in the **Options** > **Information**.

The Maya FBX plug-in that accompanies your version of Maya may not be the most recent version. It is a good practice to check for updates, as each subsequent Maya FBX plug-in version has enhanced functionality, and is available free. See Web updates (page 27) for instructions on how to verify that your plug-in version is the latest.
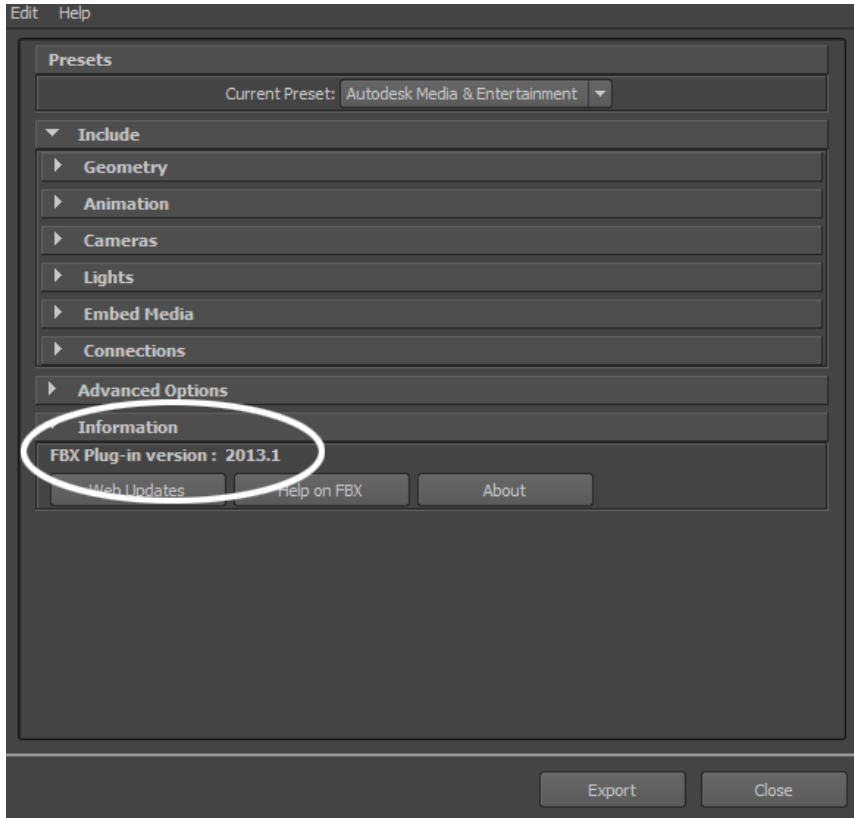
If your version is not the latest, you can update it for free. See Downloading the Maya FBX Plug-in (page 15).

Removing the plug-in

When you install the Maya FBX plug-in, it installs two instances of the plug-in: the actual FBX plug-in that is copied to the source directory (C:\Program Files\Autodesk\Maya2013\bin\plug-ins) and a copy that is stored in the FBX folder that you specified during the installation.

The installation screen that specifies a destination folder

When you uninstall the Maya FBX plug-in, the uninstall process only removes the plug-in copy from the 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 Maya installation.

Essentially, when you uninstall, you remove the contents of the FBX backup folder, for example, C:\Program Files\Autodesk\FBX\FBXPlugins\2013.0\Maya 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 the 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 Maya 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.

Removing the Maya FBX plug-in from Windows

To remove the Maya FBX plug-in manually:

1 In Maya, disable the fbxmaya.mll **Loaded** and **Autoload** options in the **Plug-in Manager**.

2 Exit Maya.

3 Delete fbxmaya.mll from the Maya<ver>\bin\plugins directory, where <ver> is the version of Maya you have installed.

Removing the Maya FBX plug-in from Mac OS X

To remove the Maya FBX plug-in:

1 In Maya, deactivate the *fbxmaya.bundle***Loaded** and **Autoload** options in the **Plug-in Manager**.

2 Exit Maya.

3 Locate the *fbxmaya.bundle* plug-in. This file resides in the <Macintosh Drive>/Applications/Autodesk/maya*<ver>*/Maya.app/Contents/MacOS/plug-ins directory, where *<ver>* is the version of Maya you have installed.

4 Delete the *fbxmaya.bundle* file.

Removing the Maya FBX plug-in from Linux

To remove the Maya FBX plug-in:

1 In Maya, deactivate the *fbxmaya.so***Loaded** and **Autoload** options in the **Plug-in Manager**.

2 Exit Maya.

3 Log into your system as root.

4 Remove the Maya FBX plug-in by entering the following command:

```
rm -f /usr/Autodesk/maya<ver>/bin/plug-ins/fbxmaya.so
```

FBX Plug-in UI

3

This section describes the Maya FBX plug-in user interface which appears on the right side of the Maya Import or Export dialog box under the **General options** when you select the Maya Import and Export functions from the File menu.

The FBX options and menus are contained within rollout menus that you can expand and collapse.
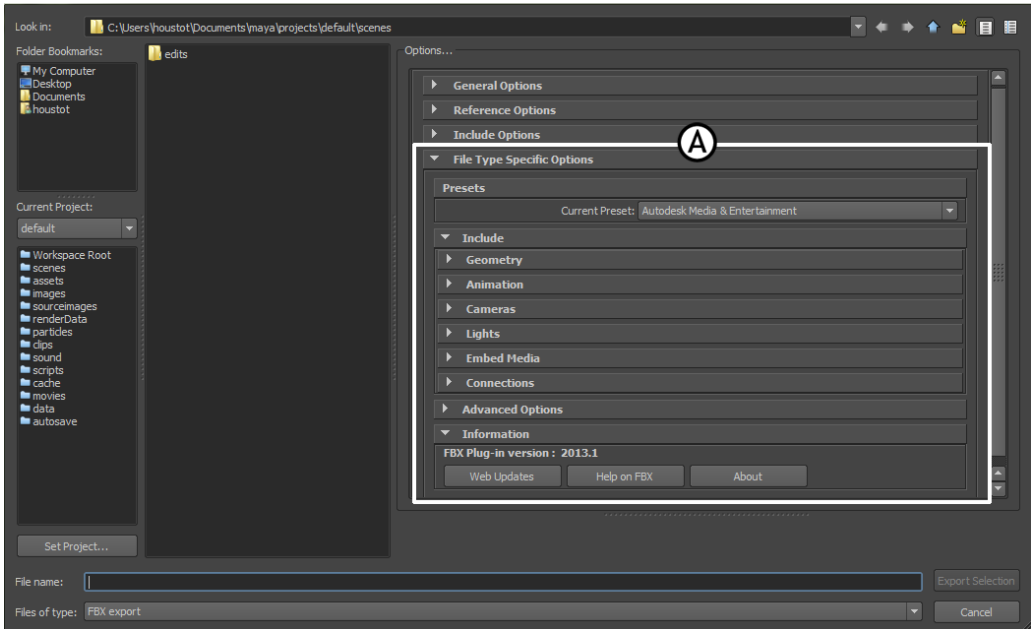
Maya Export All window A. FBX Exporter options

Switching the FBX UI

The Maya FBX plug-in is available to you in two ways: the **OS Native** UI, which shows the plug-in in a stand alone Importer or Exporter window, or the **Maya Default**, which shows the plug-in as options within the Maya Import or Export dialog boxes.
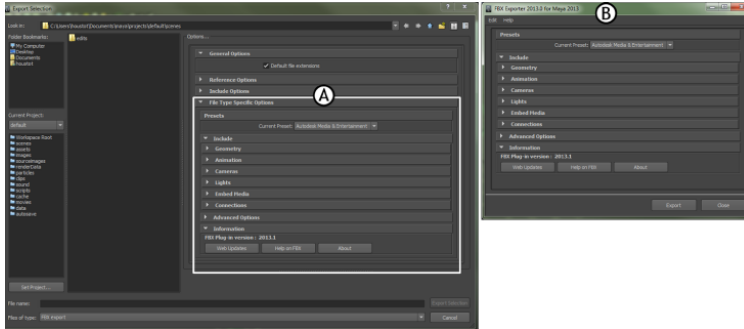
Two versions of the FBX UI A. Maya Default B. OS native

Changing the UI

To switch between the **OS Native** "classic"-look UI and the **Maya Default** UI, select **Window** > **Settings/Preferences** > **Preferences**. In the **Preferences** dialog box, locate **Files/Projects** and scroll down to the **File Dialog** options.

You can also create your own presets. See Creating a custom preset (page 21).

Hiding the UI

You can hide the plug-in when it is in the Maya Default setting if you drag the center splitter bar to the right. This collapses the FBX Plug-in options.
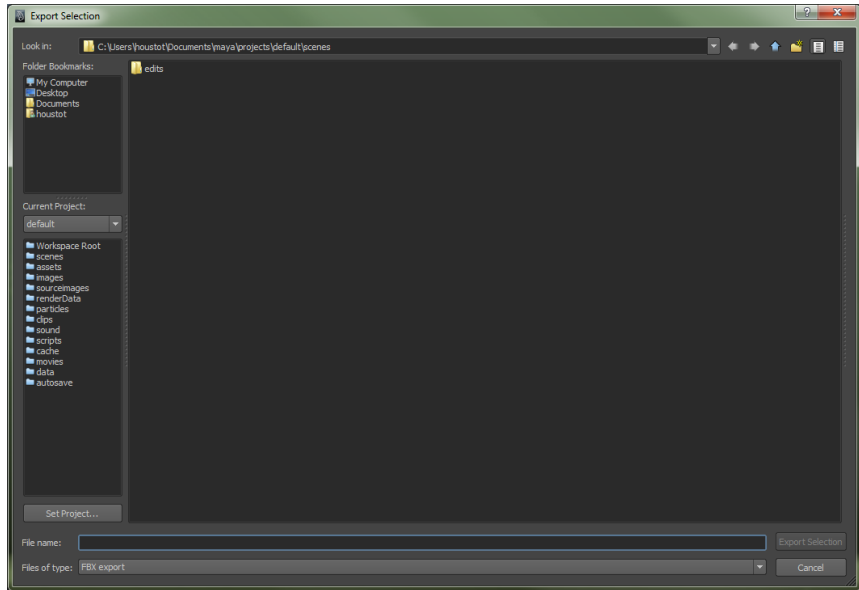
Creating a custom preset

You can design your own preset where you design the UI with options and settings specific to you needs. You can then share this preset with others.

To create a custom preset

1   Select **File** and click the option box next to **Import**, **Export All**, or **Export Selection**.
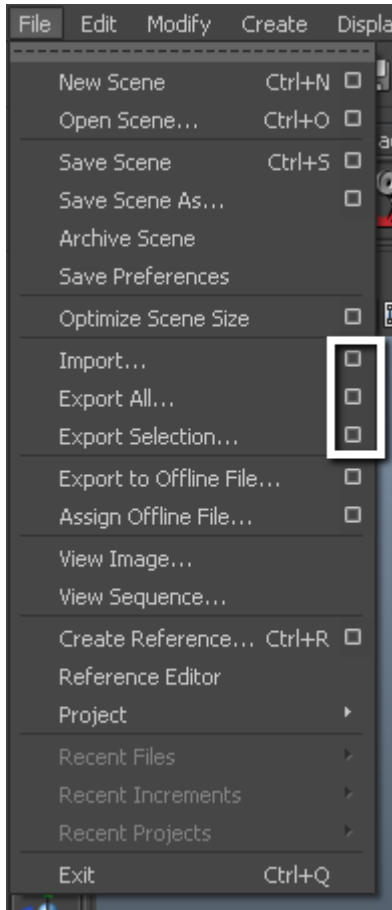
The Options dialog box appears.

2 Select **FBX export** from the **General Options File type** menu.
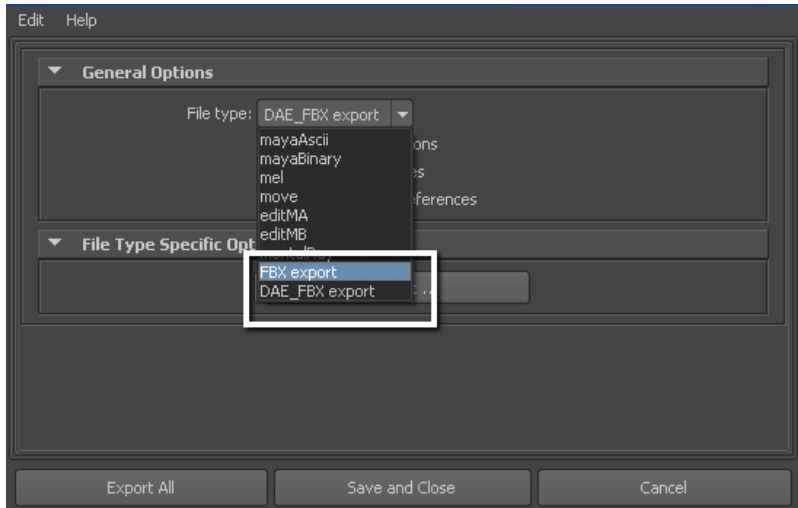
File type menu

The **Edit Preset** button appears in the **File Type Specific Options** rollout.

3 Click the **Edit Preset** button to show the **Export/Import Options** dialog box.
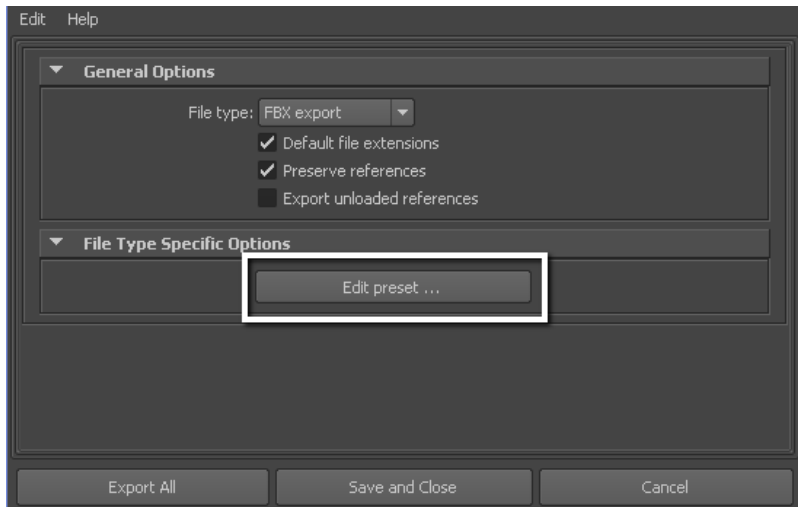
Edit preset option

4 The UI of the **Edit Preset** dialog box is split into two sections, adding a tree view of the **FBX options** in the left section.

5 Select, and then right-click elements in the Tree View to access the **Edit options**. See Edit mode options (page 26)
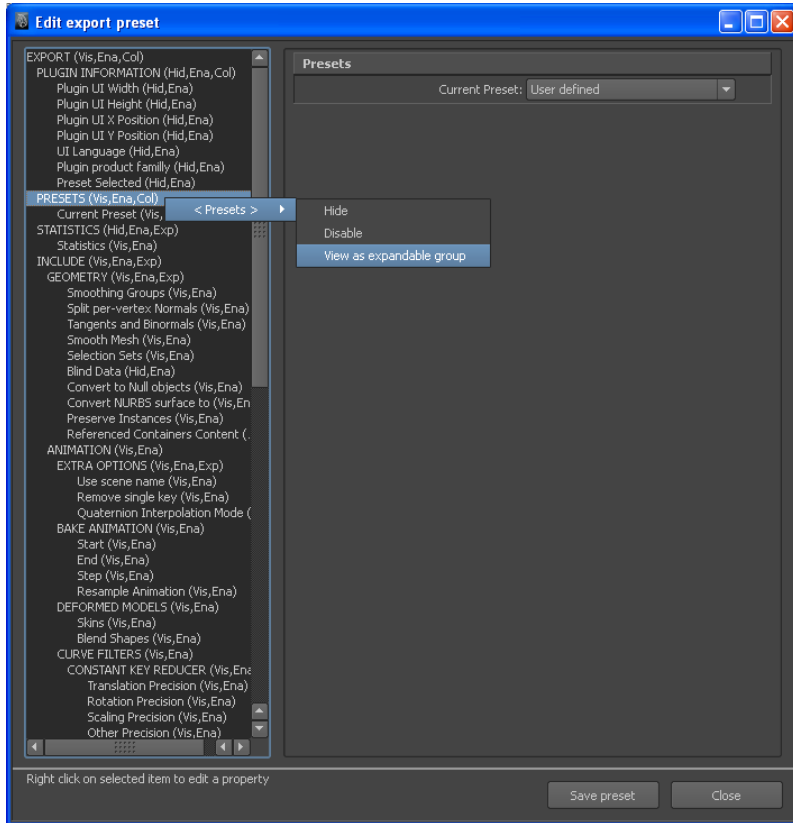
NOTE

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 26).

6 Once you have finished, click **Save preset**.

7 The **Saving new preset** dialog box appears. Type the name of the new preset for example, "MyNewPreset".
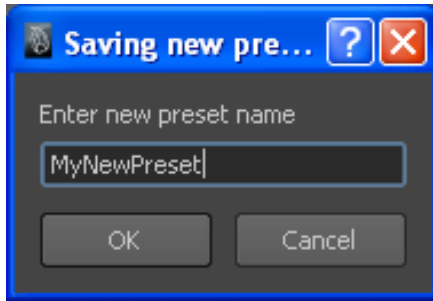
The new preset appears in the Maya FBX plug-in the next time you load Maya.
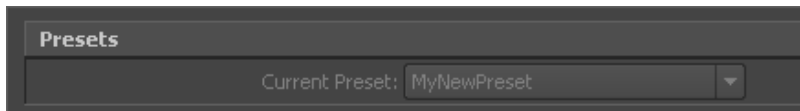
The Maya FBX plug-in stores custom presets in a file so you can share them with other users. You can find custom preset files in My Documents\Maya\FbxPresets directory.

NOTE

Bake AnimationStart/End/Step values cannot be saved in presets. The Maya FBX plug-in always derives these values from the exported scene. For more see Preset Bake Animation settings (page 126)

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.

Platform	Preset location
Windows	C:/Users/<username>/Docu-ments/maya/FBX/Presets/<current plug-in version>/import

Platform	Preset location
Macintosh	/Users/<username>/Library/Preferences/Autodesk/maya/FBX/Presets/<current plug-in version>/import
Linux	/home/<username>/maya/FBX/Presets/<current plug-in version>/import

NOTE

The table above shows the path for the import presets. Export presets follow the same path but use "export" instead.

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

These presets are stored by user name so that multiple users can store custom presets on the same machine.

You can also run the MELscript command to locate the FBX users preset path:

```
internalVar -userAppDir
```

Edit mode options

Use the **Edit Mode** options to customize your Maya FBX plug-in UI preset.

Show/Hide

Use this option to activate or disable the visibility of a group or option in the UI.

Enable/Disable

Use this option to lock the group or option so that it appears grayed-out in the UI and cannot be modified.
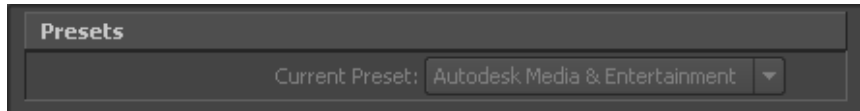
Expand/Collapse

Use this option to change whether the group or option is expanded (A) or collapsed (B) by default in the UI.

View as expandable group/View as expanded Panel

Use this option to set whether a group is expandable (A) or not (B).
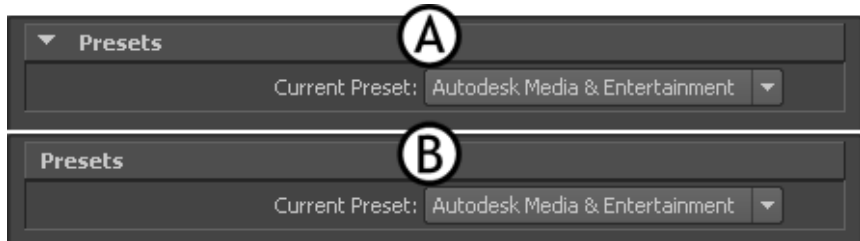
Web updates

Click the **Web Updates** button in the **Information** rollout to make sure that you are using the latest version of the Maya FBX plug-in.

This function searches the Autodesk web site for a newer version of the plug-in you are currently using.
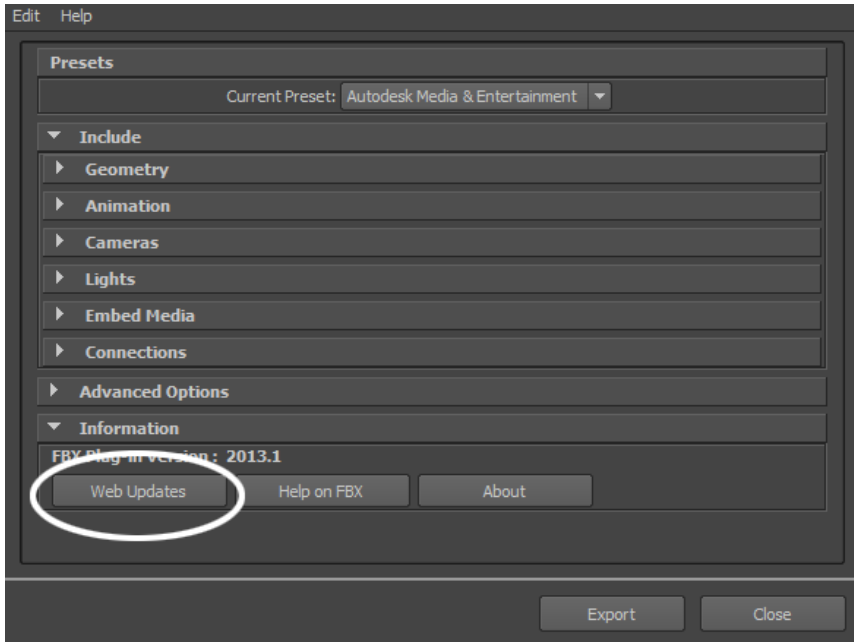
If you have the latest version, the following message appears:
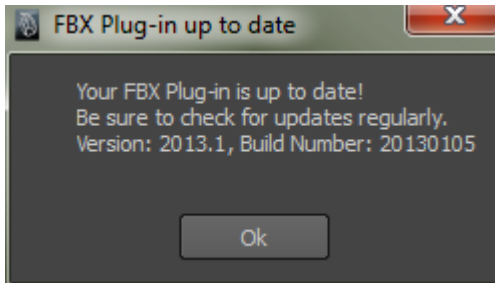
If a newer version of the Maya FBX plug-in is available, a window appears to inform you.

See Downloading the Maya FBX plug-in (page 15) for information on downloading the latest Maya FBX plug-in.

Help

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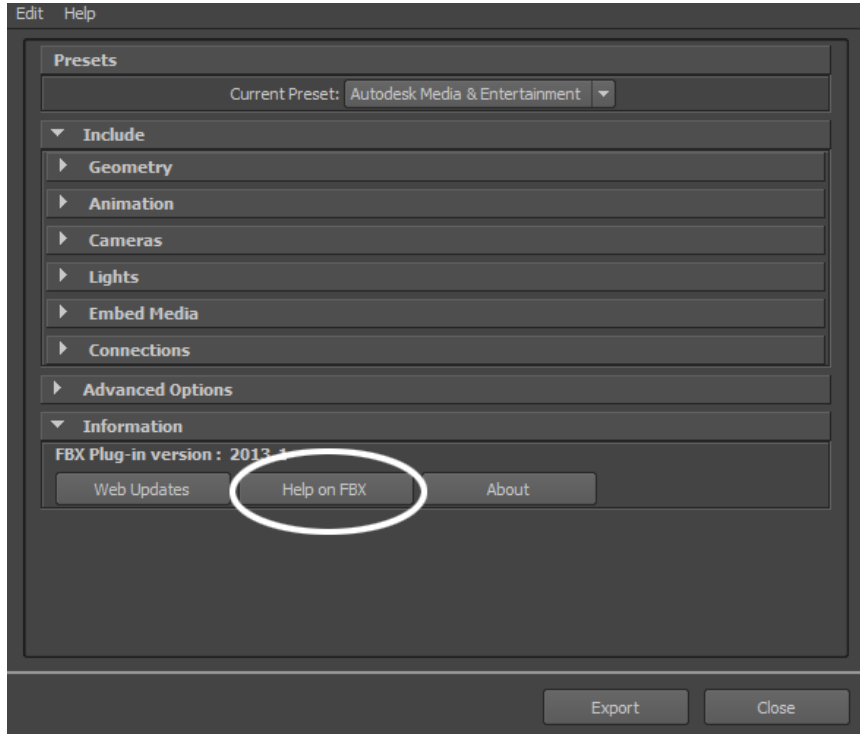
NOTE The FBX Help documentation is available from a website, rather than installed
locally. To install the Help locally, the FBX help is available for download online at
www.autodesk.com/fbx-help.

About

Click the **About** button to view information about the Maya FBX plug-in.
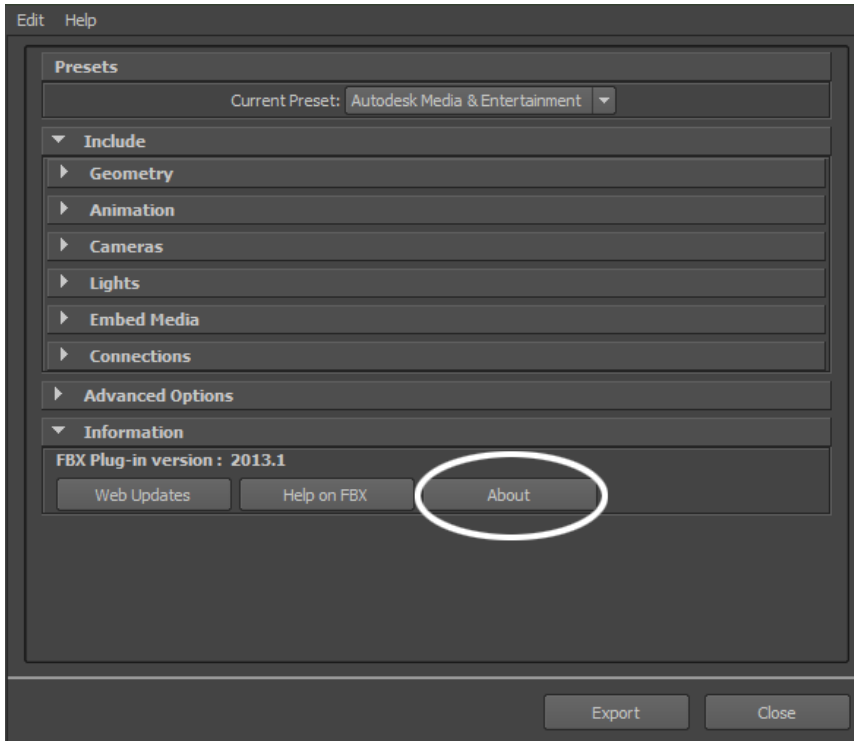
Export/Import or Close

At the bottom of the Maya Import or Export window, you can find **Export/Import** and **Close** buttons.
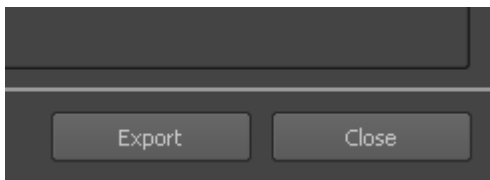
Export/Import

Use the **Export All**, **Export Selection**, or **Import** button to start the export or import process.

Close

The **Close** button closes the **Export** or **Import** window without performing any action.

Export

4

This section contains information about options you can use in the Maya FBX plug-in**Exporter** window.
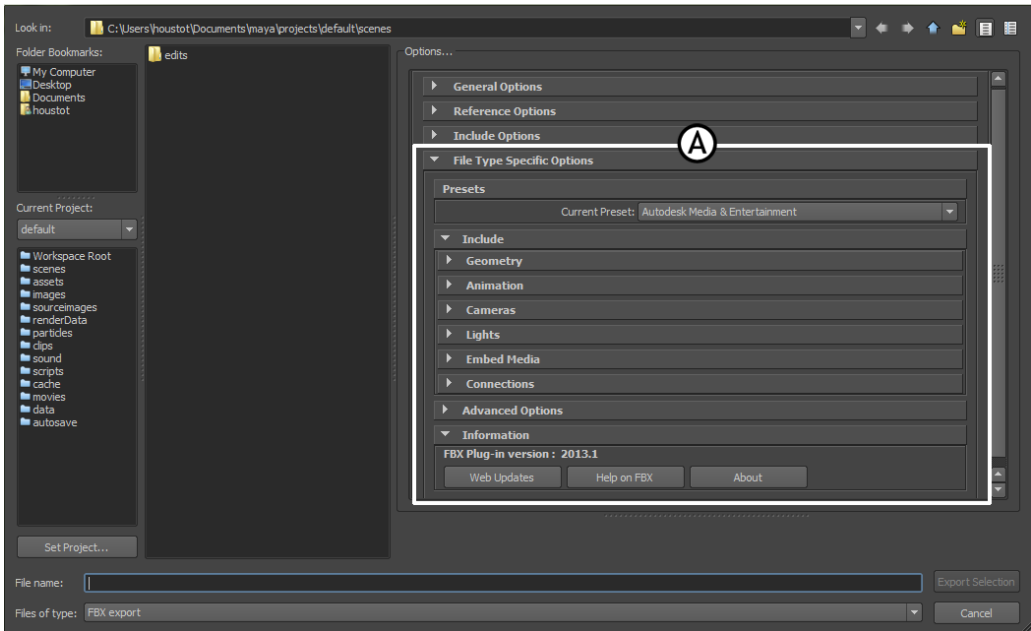
Maya Export All dialog box A. FBX Export options

Exporting from Maya to an FBX file

To export your Maya scene:

1 Launch Maya.

2 Select **File > Export All**, or **File > Export Selection**. The **Export All**, or **Export Selection** dialog box appears.

3 Select **FBX** from File of Type menu.

> **NOTE**
>
> If you do not see the FBX file extension in the **File of Type** menu, activate fbxmaya.mll in Maya's Plug-in Manager.

4 Enter a name for the FBX file you want to export.

5 The **FBX Export** options appear at the right of the **Maya Export** dialog box.

6 Set the export options you want to use or select a preset from the **Presets** menu. The **Autodesk Media and Entertainment preset** contains the best balance of options for a general animation workflow. The **Autodesk MotionBuilder preset** contains options set for character animation using Maya and MotionBuilder.

See for more information about presets.
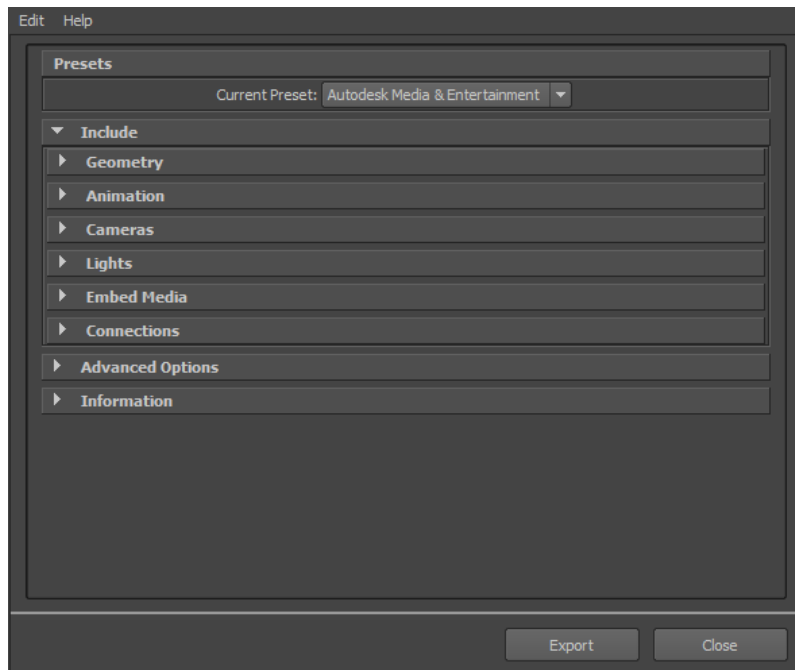
7 Click **Export** in the Maya Export dialog box.

NOTE To cancel the export process, press ESC.

8 If conversions or errors occur during the export process, the **Warning Manager** reports them at the end of the export process. See Show/Hide Warning Manager (page 80) 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.

File Type Specific options

Export Preset Options

Presets The Maya FBX plug-in has two export workflow presets:

Autodesk Media & Entertainment preset The **Autodesk Media and Entertainment** preset is the default preset for the Maya FBX plug-in Exporter. The **Autodesk Media and Entertainment** preset contains the optimal settings for most animation workflows.

Autodesk MotionBuilder preset The **Autodesk MotionBuilder** preset is used for exporting animation files to MotionBuilder.Use the **Autodesk MotionBuilder** preset if you are using a Maya to MotionBuilder back to Maya workflow. This preset uses the Constraints (page 48) and Skeleton defintions as (page 74) options set for optimal Character animation using Maya and MotionBuilder.

Selecting a preset

Choose your preset by selecting it in the menu of the Maya FBX plug-in **Presets** section.
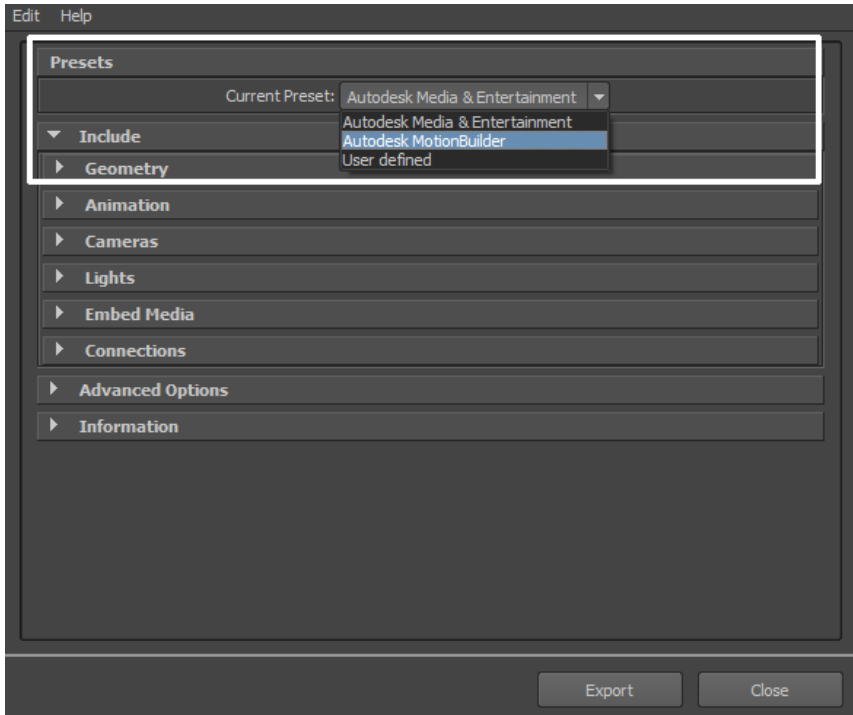
Editing presets

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 save your settings as a custom preset. See Creating a custom preset (page 21).

Include

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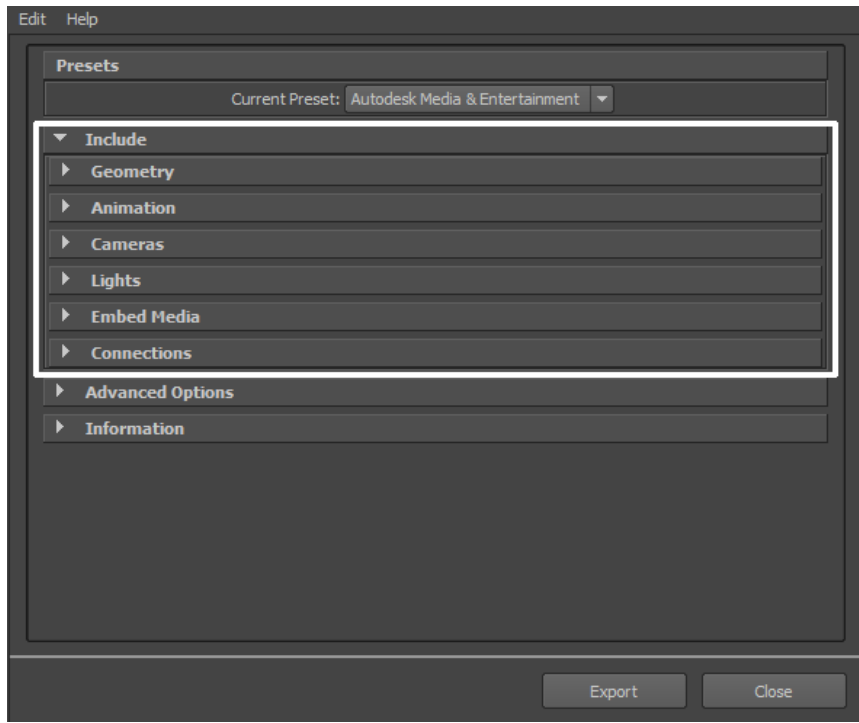
Geometry

Smoothing Groups When you activate this option the Maya FBX plug-in converts edge information to **Smoothing Groups** and exports them with the file.

When this option is disabled, no edge information is converted to **Smoothing Groups**.

NOTE The FBX Collada exporter does not export **Smoothing Groups** data from 3ds Max. Because of this, the FBX Collada importer will generate **Smoothing Groups** during the import process.

Split per-vertex Normals Activate this option to split geometry vertex normals based on edge continuity. Vertex normals determine the visual smoothing between polygon faces. They reflect how Maya 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.

This workflow is required because of limitation in MotionBuilder versions 2010 and earlier where there is no support ByPolygonVertex Normals.

Why would I use this?

This option lets you keep the same hard/soft edge look that you get from Maya in MotionBuilder.

Do not use this option if you do not require hard edges in MotionBuilder, since this operation duplicates vertex information and converts the geometry itself. You can use the **Combine per-vertex Normals** option in the **FBX Importer** to perform the inverse operation, but this may result in incorrect UV texture maps, see the note that follows this entry.

If you are not using a merge-back workflow (merging FBX into existing scene) using this option may result in incorrect UV mapping when reimporting the FBX file into Maya. Import your FBX file into to your original Maya scene, to avoid geometry UV issues with split geometry.

Exporting with the **Split per-vertex Normals** option **disabled** produces the following result in MotionBuilder 2010 and earlier:
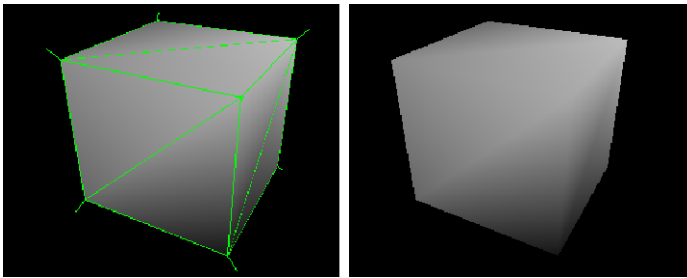
Exporting with the **Split per-vertex Normals** option **activated** produces the following result in MotionBuilder:
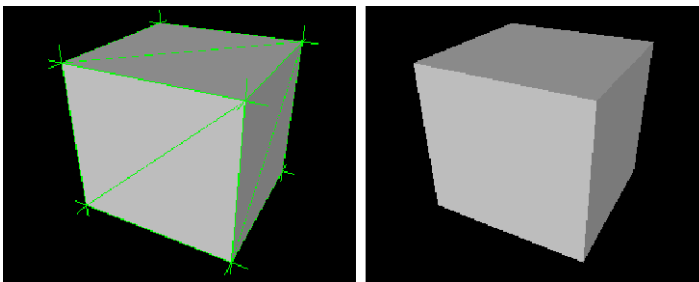
Using this option alters UV maps applied to geometry permanently. The UVs are then properly reassigned to the newly split geometry. When you import this geometry into an empty Maya scene, there is a UV limitation where using **Combine per-vertex Normals** in the **FBX Importer** might result in incorrect UV assignments.

Tangents and Binormals Activate this option if you want the Maya 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.

Your geometry must have UV information or the Maya FBX plug-in cannot create tangents and binormals.

Why do I want to do this?

Exporting tangent and binormal data is useful when you 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 Maya 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 for more information.

Smooth Mesh The **Smooth Mesh** option lets you export source mesh with Smooth mesh attributes. To export the source mesh, disable the Smooth mesh Preview attribute in Maya, and then export.

If you activate the **Smooth Mesh** option, the mesh is not tessellated, and the source is exported with **Smooth Mesh** data. If you disable the **Smooth Mesh** option, the mesh is tessellated and exported without **Smooth Mesh** data.

If you export a **Smooth Mesh** Preview from Maya with the FBX Exporter **Smooth Mesh** option disabled, it will not affect the mesh in the scene. Instead your result is a tessellated mesh in the file, but with the original source mesh unaffected/unchanged in the Maya scene.

Selection Sets The **Selection Sets** option lets you include or exclude **Selection Sets** during the export process.

Because including **Selection Sets** can potentially increase the file size, this option is disabled by default, and the **Selection Sets** not are exported.

You must activate this option to export **Selection Sets**.

Convert to Null Objects Activate this option to convert all geometry into locators (dummy objects) during the export process.

This option is often used for animation only files. It creates a smaller file size, and is supported by **FBX Importer** when you import it into the original scene.

In this case, the plug-in imports only animation onto original geometries, and does not add incoming Nulls to the existing scene. If you import the same file into a new scene, the plug-in imports Nulls with the animation applied.

Convert NURBS surface to This option lets you convert NURBS geometry into a mesh geometry during the export process. This option is useful if you are exporting a scene to a package that may not support NURBS.

By default, this option is set to "NURBS", meaning the plug-in applies no conversion and NURBS geometry is exported as NURBS.

Option	Function
NURBS	No conversion applied.
Interactive display mesh	Converts geometry based on the NURBS display settings.
Software Render Mesh	Converts geometry based on the NURBS render settings.

Preserve Instances Activate the **Preserve Instances** option to retain Maya instances in the FBX export. If you disable this option, instances are converted to objects.

NOTE

The Maya FBX plug-in does not support the duplication of input connections. The use of Instances is supported but duplicating the inputs is not.

Referenced containers content Activate the **Referenced containers content** option so that the content of referenced containers is not exported. In other words, the containers are exported but their content is ignored.

You can only use the **Referenced containers content** option when you export an FBX file. If you import this file back into Maya, the contents of your containers are not imported.

Disable this option to export the content of referenced containers. Doing this means that they are no longer references, but instead become objects in the exported FBX file. This is the default behavior.

This option has been added to the Maya FBX plug-in for use with Maya versions 2009 and later. For more information on Maya Containers, see the Maya documentation.

Triangulate This option automatically tessellates exported polygon geometry.

This option affects Polygon Meshes, not NURBS.

Animation

Animation Activate this option to export animation found in the scene.

Expand this option to access advanced animation options and features. See Animation (page 43).

Cameras

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

The Maya FBX plug-in exports camera settings, but not render settings associated to the camera with the file. This can change rendering results depending on the source application used in comparison. For more information on why this occurs, see Why are my cameras inconsistent? (page 122)

When you export, Maya cameras are converted into FBX camera types for interoperability.

Lights

Lights Activate this option to export all lights contained in the file. The Maya FBX plug-in exports and converts light types to ensure FBX interoperability.

The Maya FBX plug-in supports **Standard Point**, **Spot**, and **Directional light** types exported to FBX for Autodesk 3ds Max, Autodesk MotionBuilder, and other Autodesk applications.

Embed Media

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

Activate the **Embed Media** option to make the Maya FBX plug-in include (embed) associated media (textures, for example) within the FBX file, which it then extracts to an **.FBM** folder at import. The Maya FBX 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, 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.

If you disable the **Embed Media** option, the Maya 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.

NOTE

If you export your file in ASCII format in FBX versions 2010 and earlier, no textures are embedded. See Type (page 54).

Why do I want to do this?

Embed your media to ensure that all your textures are carried over and loaded when you open the FBX file on another computer. You do not need to do this if you are working on a local machine or over a network database that ensures that the paths to media are not changing.

Connections

Input Connections This option causes the Maya FBX plug-in to export selected objects without automatically exporting all related input connections. In Maya, when you do an export selection to FBX, the **Input Connections** option appears in the Maya FBX Exporter.

If this option is disabled, no input connections associated with the selected object are exported during the **export selection** operation. If the option is active, however, all associated input connections to the selected object are exported.

This option is active by default, so the Maya FBX plug-in includes any objects that influence the selected ones.

Animation

Extra options

Use scene name Normally, the Maya FBX plug-in saves Maya scene animation in the FBX file as Take 001. If you want the scene animation to instead be named for the Maya scene, activate this option.

This option is deactivated by default, so the take is automatically named Take 001, and so on.

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.

If you disable this option, the plug-in does not remove keys from the animation on export.

NOTE

This option is disabled by default.

Why do I need this?
Sometimes, even though objects in a file contain no animation, they have a single key assigned to them for use as a locator. If you do not need these single keys in your file, you can reduce the file size by activating **Remove single keys** to discard them.

Quaternion interpolation mode Use the **Quaternion interpolation mode** menu to select how to export your quaternion interpolations from the host application. Select from the following three options:

Resample as Euler interpolation This is the default conversion setting for quaternion interpolations.

This option converts and resamples quaternion interpolations into Euler curves to ensure interoperability.

Retain quaternion interpolation This option retains quaternion interpolation types during the export process.

Use this option when you export animation that has quaternion interpolations. This option is only compatible with applications supporting this interpolation type, such as Autodesk MotionBuilder. Also note that the resulting animation will not be identical since quaternion evaluations are different in Maya vs. MotionBuilder. Use the default option (**Resample as Euler interpolation**) to obtain visual results identical to your animation in MotionBuilder, or other applications.

Set as Euler interpolation This option changes the interpolation type of quaternion keys to a Euler type, without resampling the animation curves themselves.

Using this option results in the same number of keys, set as Euler types. The visual result will be different since it is now evaluated as a Euler interpolation. Use the default (**Resample as Euler interpolation**) option in order to obtain visual results identical to your animation in MotionBuilder, or other applications.

Bake animation

Activate this option lets you Bake (or Plot) Animation at export time.

Bake animation This bakes all unsupported constraints, including Maya-supported and FBX constraints, into animation curves. You can then import these curves into another application that does not support these Maya constraints.
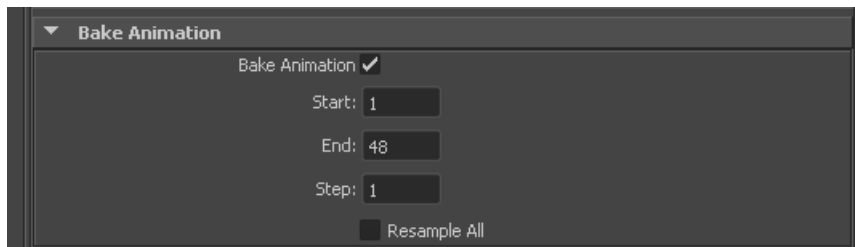
bake animation (export)exportbake animation

By default the Maya FBX plug-in takes the **Start** and **End** values automatically from the current Timeline settings of the host application. You can manually enter in a custom start, end, and step value to bake a specific section of time.

Bake AnimationStart/End/Step values cannot be saved in presets. The FBX plug-in always derived these values from the exported scene. For more see Preset Bake Animation settings (page 126).

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

Resample All Use the **Resample All** option to bake even the supported animated elements. This is unlike the Bake Animation (page 44) option which selectively bakes unsupported elements only.

The **Resample All** option resamples animation using the host application's frame rate or **Time** setting.

The **Resample All** option reacts to the state of the **Bake Animation** option. If **Bake animation** is activated, **Resample All** is also activated.

Why do I want to do this?
If you have animation in a scene that has a small section that contains unsupported constraints or controllers, you can use this setting to customize the Maya FBX plug-in export process to avoid resampling an entire scene worth of animation data when only a small part of it is unsupported.

Deformed Models

Deformed Models Activate the **Deformed Models** option to export Skin and Blend Shape deformations.

You can choose to export Skins and Bend Shapes specifically by expanding **Deformed Models** to access individual options.

Blend Shapes Activate this option to export all geometry Blend Shapes used in your scene.

Skins Activate this option to export all skin deformation into your scene.

Curve filters

Curve filters Activate **Curve filters**to 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 FCurve before filtering.

Before:
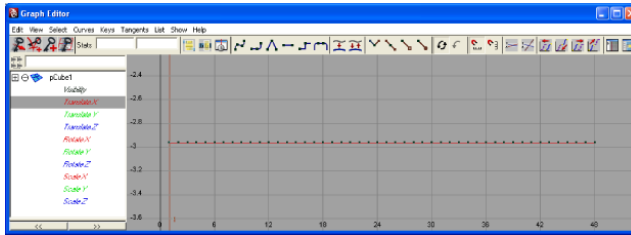
Resampled FCurve before filtering

After:
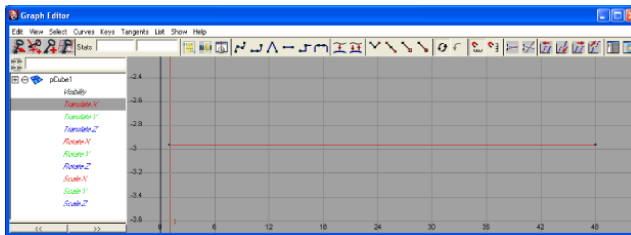
Filtered FCurve with redundant keys removed (based on Threshold setting)

You can set specific thresholds for each type of transform. **Translation Precision**, **Rotation Precision**, **Scaling Precision**, and **Other**. **Other** includes transforms like Blend Shapes and custom attribute curves.

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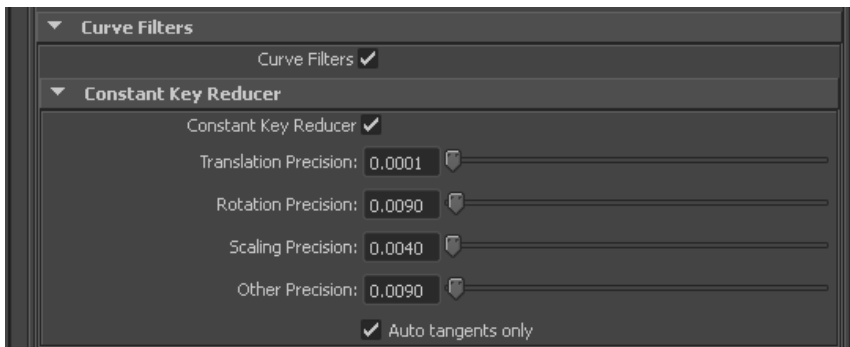
Values represent generic units. This is why you may need to modify threshold values in relation to the world scale of your scene, for example with very large or small scale scenes.

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

Setting	Description
Translation Precision	Threshold for translation curves in generic units.
Rotation Precision	Threshold for rotation curves in generic units.
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 may get deleted.

NOTE

The Maya FBX plug-in converts all animation keys to User, which is not an **Autoauto tangent**. To ensure that constant key reducing occurs, deactivate **Auto Tangents Only** in the **Constant Key Reducer** options.

Geometry cache file(s)

Geometry cache file(s) Activate this option to create a geometry cache file of a chosen selection set. To use this option, create a selection set of the objects for which you want to retain the vertex animation in Maya.

You must apply the set to the **Objects Transform node** and not the **Shape node**. By default, any Geometry 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 Maya 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 pCube1 to the FBX file myTest.fbx, you create the following files and folders:

■ myTest.fbx

■ myTest_fpc

■ pCubeShape1.xml

■ pCubeShape1.mc

The plug-in retains any MC geometry cache files that are already recorded (within the selection set).

Use the **Set** menu to select an appropriate set to export the geometry cache file.

When would I use this?

Use this option when you export nCloth deformations on an object to 3ds Max.

Constraints

Constraints Activate this option to ensure that certain supported constraints are exported to FBX.

FBX supported constraints include:

■ **Point**

■ **Aim**

■ **Orient**

■ **Parent**

■ I**K handle** (including **Pole Vector**)

This option lets you export your constraints effectively without the need to bake the animation first, if you are transferring to a package that which supports these constraints, like MotionBuilder.

NOTE

If you export your scene with the intention of importing it into a package that does not support these constraints (such as 3ds Max), bake the animation first. See Bake Animation (page 44) for more information.

Skeleton definitions Activate this option to include your **Skeleton definitions** (FBIK/HumanIK) in the file on export. This can be useful if you are transferring to MotionBuilder, which also supports characters.

Display Layers

NOTE

The export of display layers occurs automatically and does not appear as an option in the Maya FBX plug-in user interface.

The Maya FBX plug-in automatically exports Display Layers found in your Maya scene to FBX. This lets you transfer display layers from Autodesk Maya to 3ds Max, and so on.

The following Maya Display layer properties are supported by the Maya FBX plug-in:

■ Layer Membership List
■ Display Layer name
■ Level of Detail
■ Display types
■ Visibility
■ Color

Advanced options

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

NOTE

This does not change the System unit settings in Maya.

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

By default, the Maya 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 Maya FBX plug-in uses to export your scene if you change the **File units converted to** option. If you change the **File units converted to** option, you modify the **Scale Factor** value and units applied to the exported data.

Automatic option Activate the **Automatic** option if you want the Maya 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.

File 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 Maya **System Units** option in the **Window > Settings/Preferences > Preferences > Settings** category.
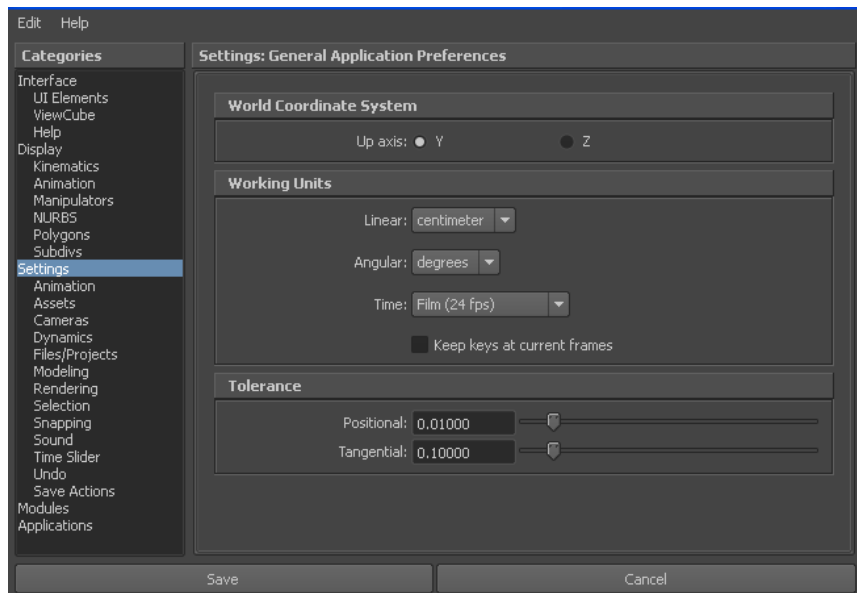
In the FBX UI, the displayed **Scale Factor** uses the FBX Unit setting for its calculation. The plug-in determines the FBX Unit setting from the host application system units.

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.

Verify the system units your Maya scene uses so that you can control whether the plug-in needs to scale your scene. This way, it exports with the units you want. Maya lets you change the **System Units** without affecting the scale of your scene. Changing the system unit in Maya avoids scaling on export when not required.

Example

If you export a file that is in the same Unit setting as the **System Units** of your Maya scene, there is a match of units and the displayed **Scale Factor** is 1.0. No scale conversion is applied.
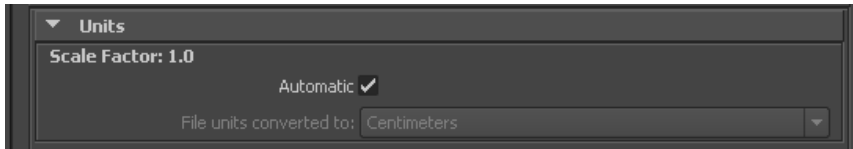
Axis conversion

The Maya **FBX Exporter** has two options for **Axis Conversion** in the UI. Y-up, or Z-up.

By default, the **FBX Exporter** always exports the Up Axis of the Host application. For Maya, this means that all scenes are exported with a Y-up world 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.

The **FBX 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. 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 Creating a custom preset (page 21) 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 Maya 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. This 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 Maya FBX plug-in reports a warning. This warning is not the indication of a problem, but instead exists to provide a report of conversions that the plug-in has 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 Maya FBX plug-in stores log files with the FBX presets, in C:\My Documents\Maya\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 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.

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

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 what form you want your FBX file to take.

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.

FBX 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 Maya 2013 and import to Maya 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.

Information

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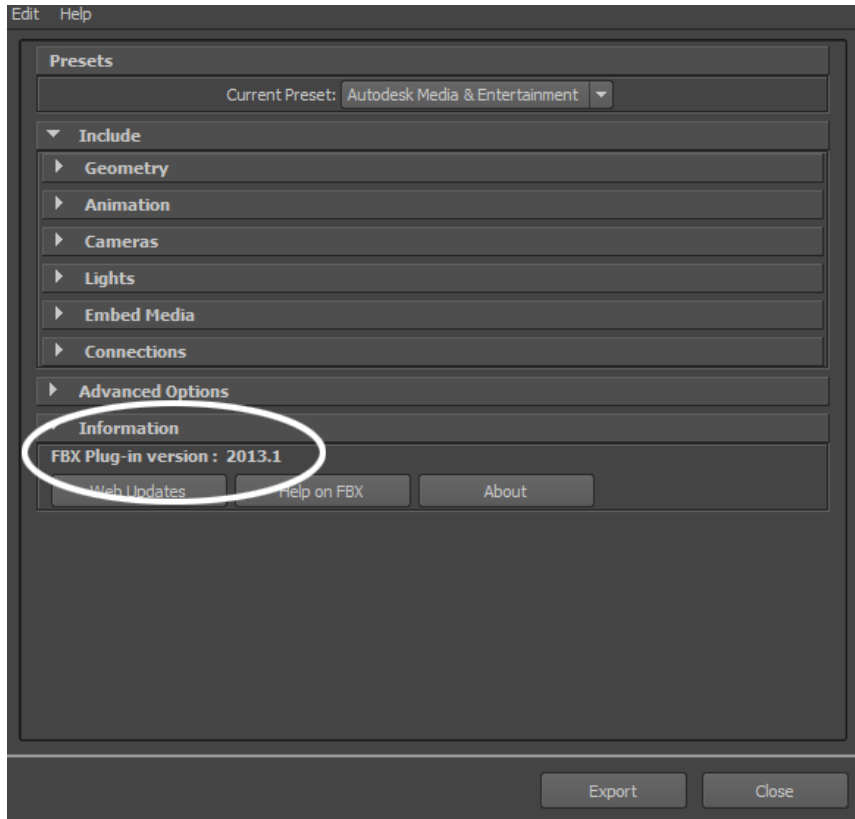
The Information rollout contains data about the Maya FBX plug-in as well as buttons you can use to check for more recent versions of the software and accessing the Maya FBX plug-in Help.

Web Updates
Click **Web Updates** to make sure that you are using the latest version of the Maya 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

Help on FBX

Click **Help on FBX** to launch the Maya 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*.
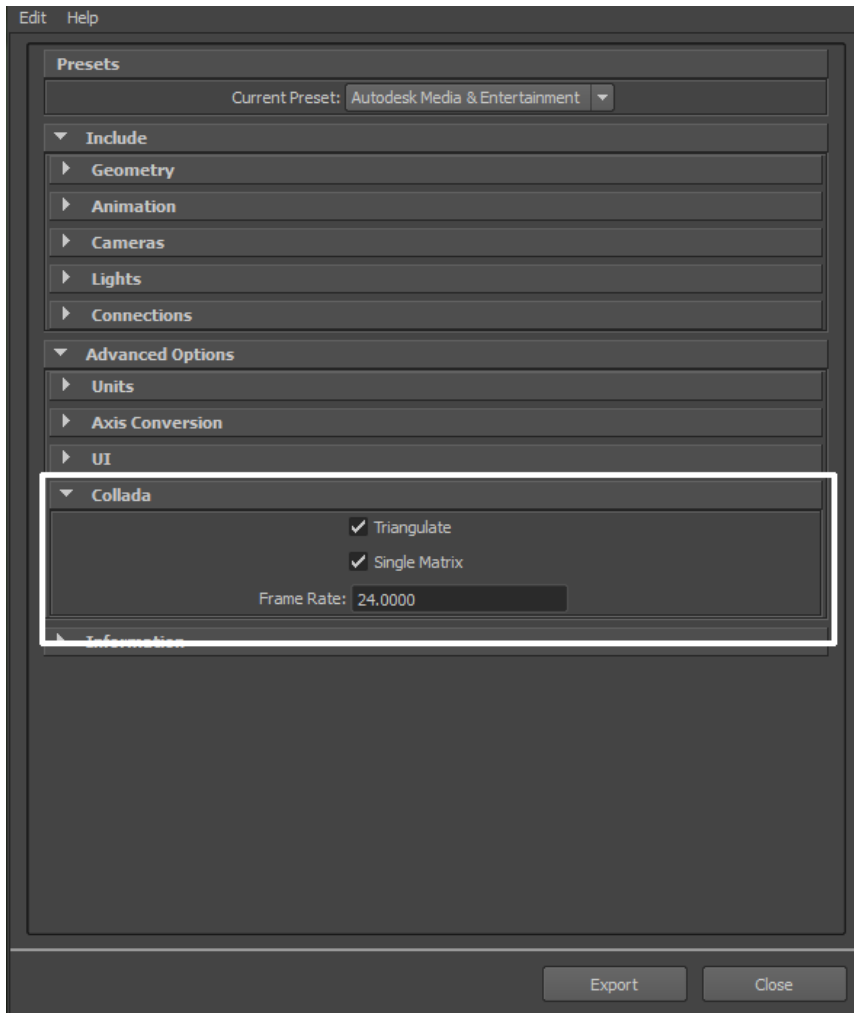

About

Click **About** to display information about the version of the Maya FBX plug-in.

Collada

The **Collada** options only appear in the UI when you select the **DAE_FBX**
file type from the file browser when you export.

NOTE

When you export in Collada format, textures are not embedded, even when
the Embed Textures option is activated. See Embed Media (page 42).

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
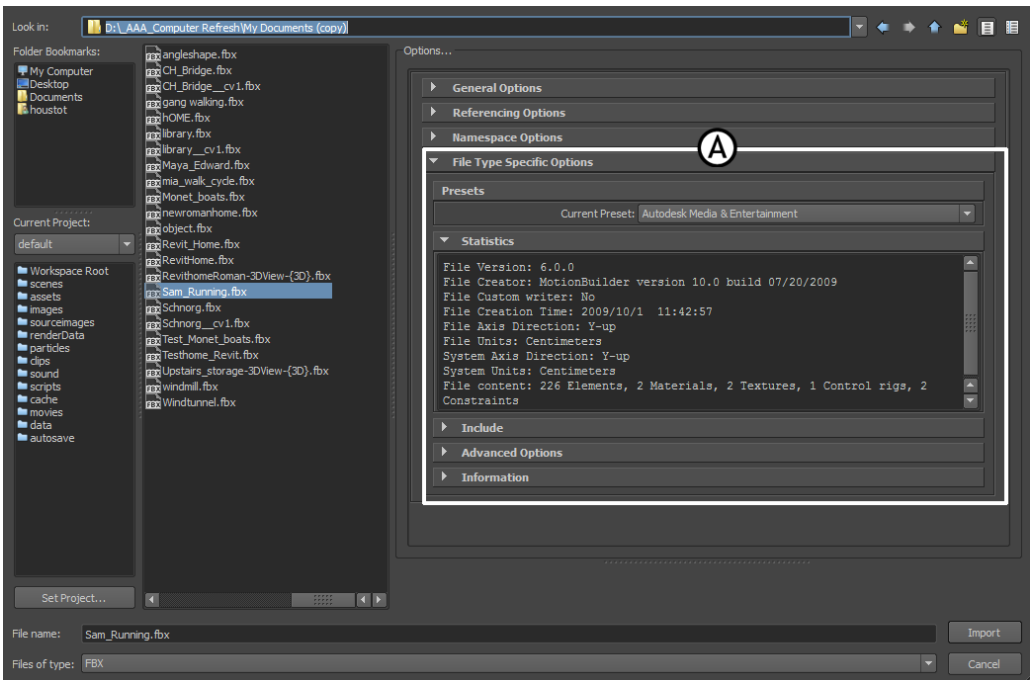
The Maya FBX plug-in now supports Lines and Linestrip nodes.

Import

5

This chapter contains information about options you can use in the Maya FBX plug-in Importer functions that appear to the right of the Maya **Import** window.

Maya Import dialog box A. FBX Import options

Importing FBX files into Maya

This section describes how to import files using the Maya FBX plug-in:

To import an FBX file:

1 Launch Maya.

2 Select **File > Import**. The **File Import** dialog box appears. Locate the FBX file you want to import.

3 Select FBX from the **File of Type** menu.

NOTE

If you do not see the FBX file extension in the **File of Type** menu, activate fbxmaya.mll in Maya's Plug-in Manager.
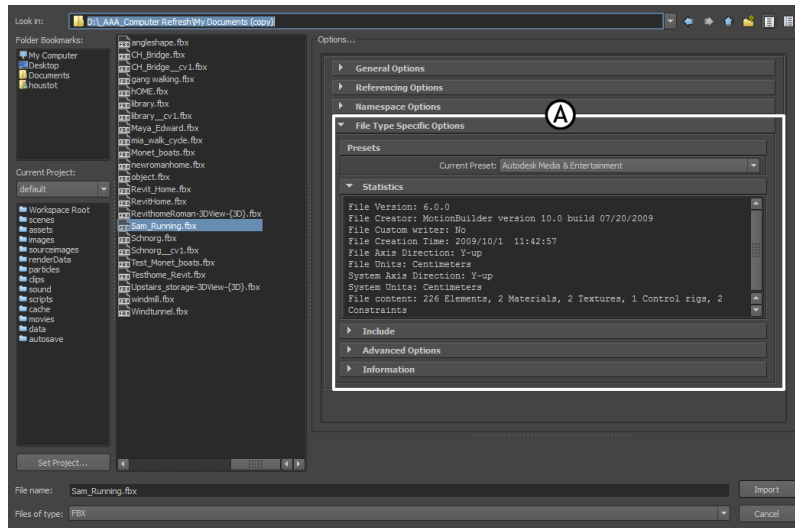
Maya Import dialog box A. FBX options

4 The **FBX Import** options appear at the right of the Maya **Import** dialog box.

Import options

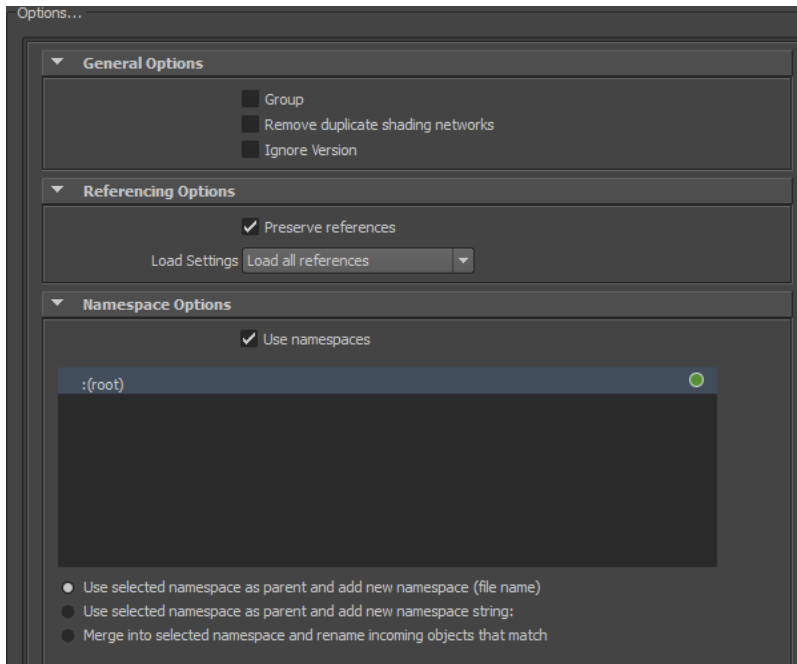**5** Set the import options you want to use or select a preset from the **Presets** menu. The **Autodesk Media and Entertainment** preset contains the best balance of options for a general animation workflow. Use the **Autodesk MotionBuilder** preset if you are using a Maya to MotionBuilder back to Maya workflow.

See Import presets (page 64) for more information about the Autodesk presets and for information about import options and which are appropriate for you, review the Import (page 61) section.

6 Click **Import** in the Maya **Import** dialog box.

   NOTE To cancel the import process, press ESC.

7 If conversions or errors occur during the import process, the **Warning Manager** reports them at the end of the import process. See Show/Hide Warning Manager (page 80) 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.

File type specific options

These settings concern what gets included with your file on import.
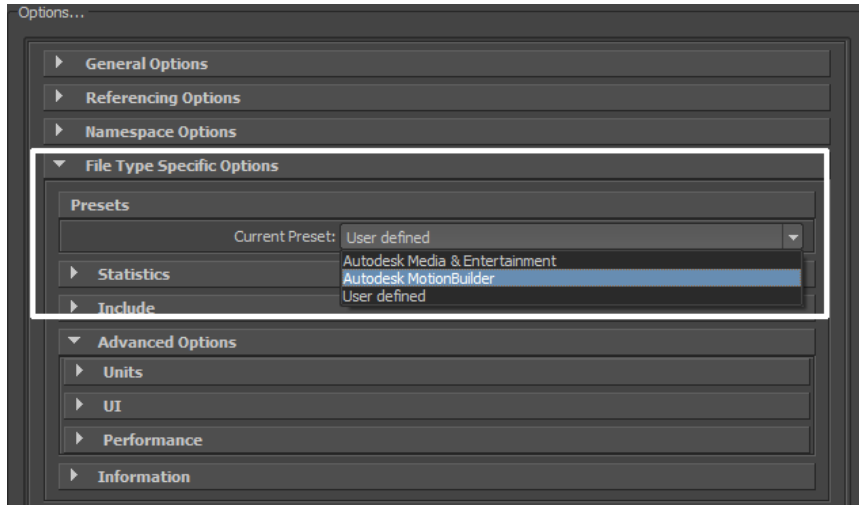
Import Preset Options

Presets The Maya FBX plug-in includes the following import workflow presets:

■ **Autodesk Media and Entertainment**

■ **Autodesk MotionBuilder**

Selecting a preset

Choose your preset by selecting it from the **Current Preset** menu in the **File Type Specific Options** rollout of the Maya FBX plug-in.

Current Preset menu

Preset	Description
Autodesk Media and Entertainment	The **Autodesk Media and Entertainment** preset contains the most options since it contains the optimal settings for most animation workflows. All available options are visible in the UI so you can access and customize them.
Autodesk MotionBuilder	Use the **Autodesk MotionBuilder** preset if you are using a Maya to MotionBuilder back to Maya workflow. This preset uses the **Constraints** and **Skeleton Definitions** options set for optimal Character animation using Maya and MotionBuilder.
User Defined	**User Defined** preset label displays whenever you modify a setting that is different from the preset default.

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 save your settings is a custom preset. See Creating a custom preset (page 21).

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.

NOTE

Sometimes statistics information is hidden below the window edge; use the scroll bar to view it.
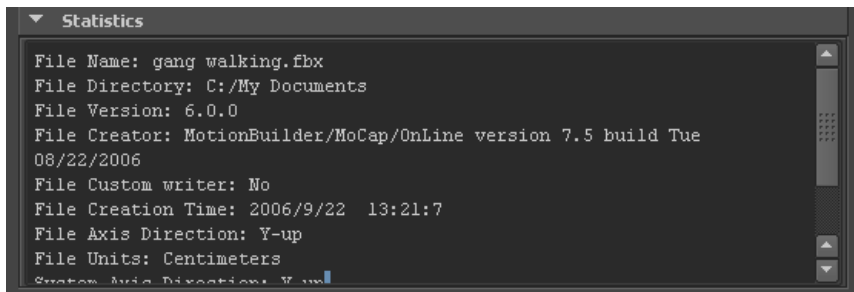
File name Displays the name of the file.

File directory Displays the location of the file directory.

File version Displays the FBX file format 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.

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.

NOTE If the frame rate does not match between the FBX file and its host application, a warning appears next to the **System Frame Rate** value. If the frame rate is not a standard rate, the Importer displays the system frame rate but no warning.

File content Displays the contents of the file.

Include
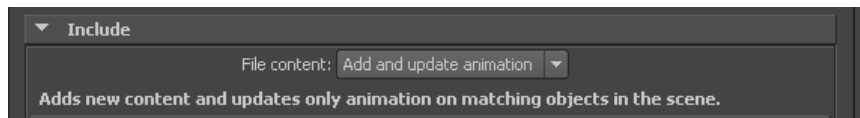
The **Include** rollout lets you decide what data and conversions to apply to your scene at import from a host application.

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.

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.

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 and MotionBuilder presets.

Geometry

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

Unlock Normals Activate this option to unlock geometry normals and force Maya to re-compute the edge continuity.

NOTE

Normals are automatically unlocked for all deformed geometry imported into Maya.

When you disable the **Unlock Normals** option, Maya imports the locked geometry normals as they were represented by the application that generated the FBX file.

NOTE

Locked normals can create shading issues for geometry if a deformer is applied after import. Unlocking geometry normals resolves this.

Maya fully smooth or faceted geometry

If you activate the **Unlock Normals** option, the object imports with unlocked normals.

If you then unlock the normals faceted edges may appear. This occurs when importing from 3ds Max. If this happens, select the object in Maya and apply the Maya soften edge function to smooth the object.

If you disable **Unlock Normals**, the object imports with the correct look and the normals will be unlocked.

Maya combination of soft and hard edges

With the **Unlock Normals** option activated, the object imports correctly with its normals locked. If you intend to deform this geometry you must to unlock the normals, but if you do this the object becomes hard edged in Maya.

Re-import the FBX file with the **Unlock Normals** option activated to resolve this issue.

If you disable the **Unlock Normals** options, the object imports correctly with unlocked normals.

Maya deformations

When you activate **Unlock Normals**, Deformed geometry always imports unlocked. The unlock function does not apply in this case.

If you do not have the **Unlock Normals** option activated, deformed geometry imports unlocked. The unlock function does not apply in this case.

Maya smooth mesh preview

If you activate **Unlock Normals**, objects imported with smooth meshes import with unlocked normals

If you disable the **Unlock Normals** option, the normals of objects with smooth meshes import locked.

Combine per-vertex Normals Activate this option to combine geometry vertex Normals.

Common uses of this option include reverting the **Split per-vertex Normals** option of the FBX Export window. For more information regarding this workflow see Split per-vertex Normals (page 37).

When you use the **Combine per-vertex Normals** option in the **FBX Importer**, the Maya FBX plug-in performs the inverse operation of the **Split per-vertex Normals** option in the **FBX Export** window. This can result in incorrect UV texture maps (see the note below).

If you are not using a merge-back workflow (merging FBX into an existing scene) this option might result in incorrect UV mapping when you re-import the FBX file into Maya. Import your FBX file into to your original Maya scene to avoid geometry UV issues with split geometry.

NOTE

Using this option permanently alters any UV maps applied to geometry. The plug-in properly re-assigns the UVs to the newly split geometry. There is a limitation in regards to UVs, when importing this geometry into an empty Maya scene, using the **Combine per-vertex Normals** option in the **FBX Importer**, as it may result in incorrect UV assignments.

Animation

Activate this option to import animation found in the scene. See Animation (page 70) for a description of the options.

Cameras

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

The plug-in imports camera settings, but not render settings. This can change rendering results depending on the source application used in comparison. See Why are my cameras inconsistent? (page 122) for more about render settings limitations.

The plug-in saves cameras as FBX types in the FBX file for interoperability. This means they must convert into Maya camera types on import.

Lights

Activate this option to import all lights contained in the file. The Maya FBX plug-in exports and converts light types to ensure FBX interoperability.

FBX supports **Standard Point**, **Spot**, and **Directional** light types from Autodesk 3ds Max, Autodesk MotionBuilder, and other Autodesk applications.

Animation

Activate this option to import animation found in the scene.

Extra Options

Expand this section to view additional import options

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 selecting another take from the menu. The Maya FBX 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. "Animation range" refers to the first and last keys of animation contained in the file.

Bake Animation Layers When the **Bake Animation Layers** option is active, the plug-in collapses all layers into the base layer. If you disable the

Bake Animation Layers option, all the layers in the FBX file will be imported.

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 Maya FBX plug-in does not import the animation as the data type is incompatible. However, the Maya FBX plug-in converts optical data into a cloud of static null objects in Maya.

If your optical data originates from MotionBuilder, you can set the state of all optical markers to **Done** in MotionBuilder which lets you import the animation data as curves in Maya.

Why Do I Want to Do This?

This option is useful if you need to import optical data that is stored within an FBX file. For example, if you wanted to send an FBX file containing optical data that someone needs to use in Maya but they do not use MotionBuilder, you can activate this option to use the FBX file format to store optical data.

Quaternion Interpolation Mode

Use this option to convert and resample quaternion interpolation into Euler curves to ensure interoperability.

Resample as Euler interpolation	This is the default conversion setting for quaternion interpolations . This option converts and resamples quaternion interpolations into Euler curves to ensure interoperability.

Retain Quaternion Interpolation	This option retains quaternion interpolation types during the import process.
	TIP
	Use this when you import animation that has quaternion interpolations. This is only compatible with applications supporting this interpolation type, such as Autodesk MotionBuilder. Also, the resulting animation is not identical since quaternion evaluations are different in Maya and MotionBuilder. Use the default (Resample as Euler interpolation) option in order to obtain visual results identical to your animation in MotionBuilder, or other applications.
Set as Euler Interpolation	This option lets you change the interpolation type of quaternion keys to a Euler type, without resampling the animation curves themselves.
	TIP
	Using this option results in the same number of keys, set as Euler types. The visual result will be different since it will now be evaluated as a Euler interpolation. Use the default (Resample as Euler interpolation) option to obtain visual results identical to your animation in MotionBuilder, or other applications.

Protect Driven Keys Activate this option to prevent any incoming animation from overwriting channels with driven keys. Maya has special driven keys that link one attribute value to another object attribute. These keys are exclusive to Maya and are not supported by FBX. When this option is active, the Maya FBX plug-in prevents the disconnection or overwrite of attributes that use driven keys.

If the option is active, the driven keys are protected and no incoming animation is applied to the driven channels.

If the option is not active, the driven keys are discarded and the incoming animation is applied to the driven channels.

Deforming Elements to Joints Activate this option to convert deforming elements into Maya joints. This option was originally provided because Maya did not support locator elements (that is, transform nodes that are not joints,) within a joint chain.

If this option is not active, all elements other than joints being used to deform are converted to locators. See Cluster import (page 127) for information about cluster problems.

Update Pivots from Nulls Activate this option only when you import older (pre-MotionBuilder 5.5) FBX files that contain an animated joint hierarchy, for example, an animated character.

This option lets you assign the rotation transformation of the null (or joints) elements in the hierarchy that are used as pre- and post-rotation to the joint orient and the rotate axis of the original node.

The pre-rotation and post-rotation nodes are then deleted. Older files created with the **Export Pre/Post Rotation as Nulls** option are merged back to the original Maya setup.

Geometry Cache File(s) Activate this option to import FBX-exported geometry cache data during the FBX import process.

The Maya FBX plug-in generates three files when you export Geometry 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 pCube1 to the FBX file myTest.fbx, you create the following files:

- myTest.fbx
- myTest_fpc
- pCubeShape1.xml
- pCubeShape1.mc

Deformed Models

Activate the **Deformed Models** option to import Skin and Blend Shape deformations.

You can choose to import Skins and Blend Shapes specifically by expanding **Deformed Models** to access individual options. You also have the option to Pre-normalize weights. Pre-normalizing weights normalizes the weight assignment of skin deformations so that smooth skin weights add up to one.

Skins Activate this option to import all skin deformation into your scene.

Blend Shapes Activate this option to import all geometry Blend Shapes into your scene.

Pre-Normalize Weights Activate this option to normalize weight assignment.

What is pre-Normalizing?

During the import process, the Maya FBX plug-in can pre-Normalize weights to ensure that every vertex on a skinned mesh has a weight no less than a total of 1.0. You can have many joints that influence a single vertex, however, the percentage of each deforming joint always equals a sum total of 1.0.

Why do I want to do this?

Use this function if you import older FBX files that result in abnormal mesh deformations.

Constraints

Activate this option to ensure that certain supported constraints contained in the FBX file are imported into Maya.

If this option is not active, no supported constraints are imported.

FBX supported constraints include:

- **Point**
- **Aim**
- **Orient**
- **Parent**
- **IK handle** (including **Pole Vector**)

Skeleton Definitions as Select the Skeleton definition to include (**FBIK/HumanIK/None**) in the file on export. This can be useful if you are transferring to MotionBuilder, which also supports characters.

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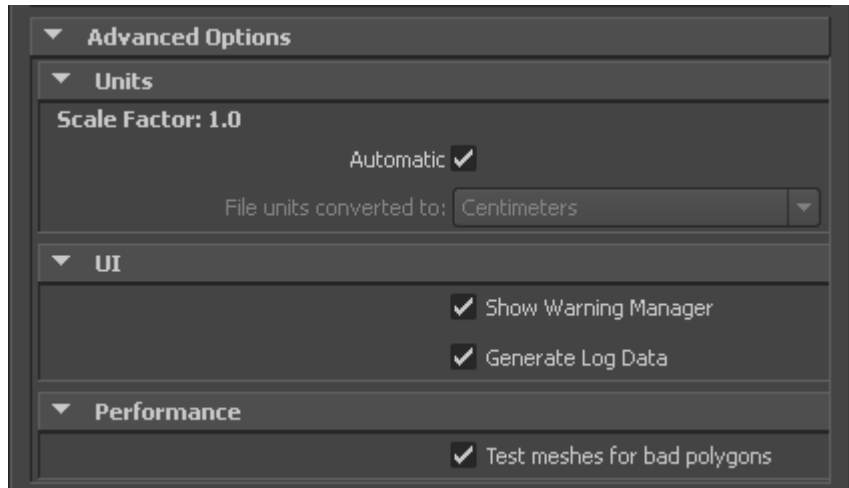
Use the **Advanced Options** to customize your general settings and import process.

Units

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

This option automatically identifies, sets, and converts units of the incoming file to match units of the host application.

If this option is active, but 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 conversion does not change the settings in Maya.

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

The Maya FBX 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.

For example, if you import a scene from software that used centimeters as the working units to software that uses feet as units, the Scale Factor will be 2.54.

This option is always active, but if your File Units match the system units, the plug-in does not apply a scale conversion. No conversion is applied. The displayed **Scale Factor** is 1.0 in this case.

NOTE

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

Automatic Activate the **Automatic** option if you want the Maya FBX plug-in to automatically identify, set, and convert units of the incoming 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 and scale factor. If you disable the **Automatic** option, the Scene units converted to option becomes available.

When **Automatic** is active but 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 Maya.

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 Maya FBX plug-in looks at the **Settings/Working Units** in the **Preferences** window of Maya.
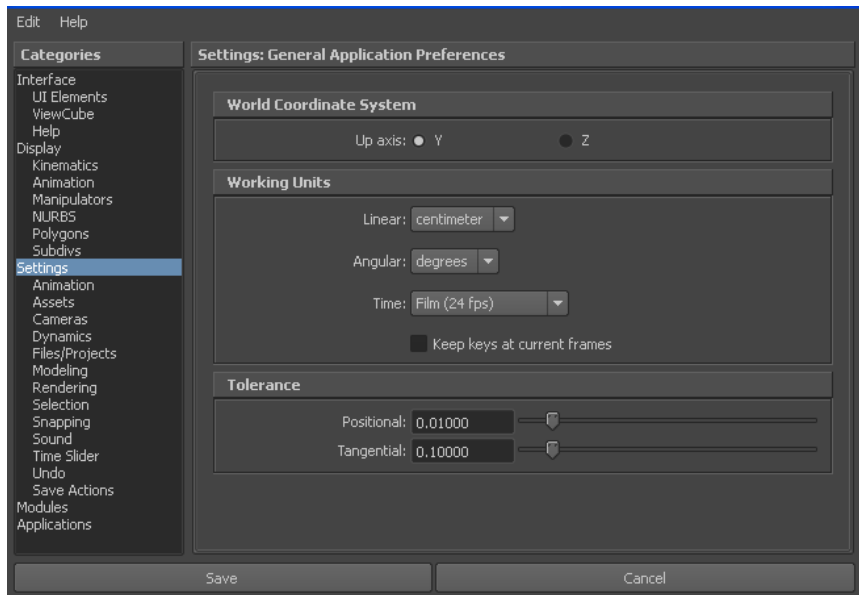
The displayed **Scale Factor** uses this unit setting for its calculation.

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

Verify the **System Units** your Maya scene uses so that you can control whether the Maya FBX plug-in needs to scale your scene.

Example
If you import a file that is in the same unit setting as the **Working Units** of your Maya scene, there is a match of units and the plug-in displays "1.0" as the **Scale Factor**. No scale conversion is applied.
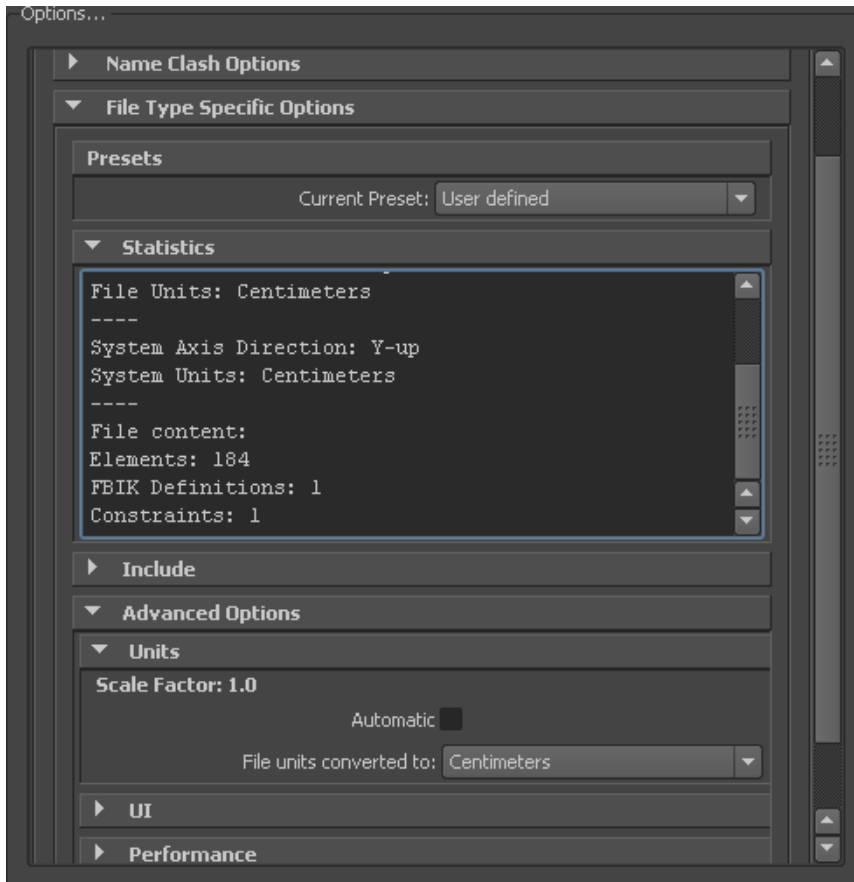
If the units do not match and your Maya scene is empty and/or changing the **System Units** is not a concern, change the **Maya System Units** to match the **File Units** used in the incoming file before you start to import. This results in a match of units, **Scale Factor** of "1.0", and no scale conversion is applied.

For example, if you import a file that is in centimeters into a Maya scene set to inches, it results in a **Scale Factor** of 0.3937008. In this case, the incoming data is 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.
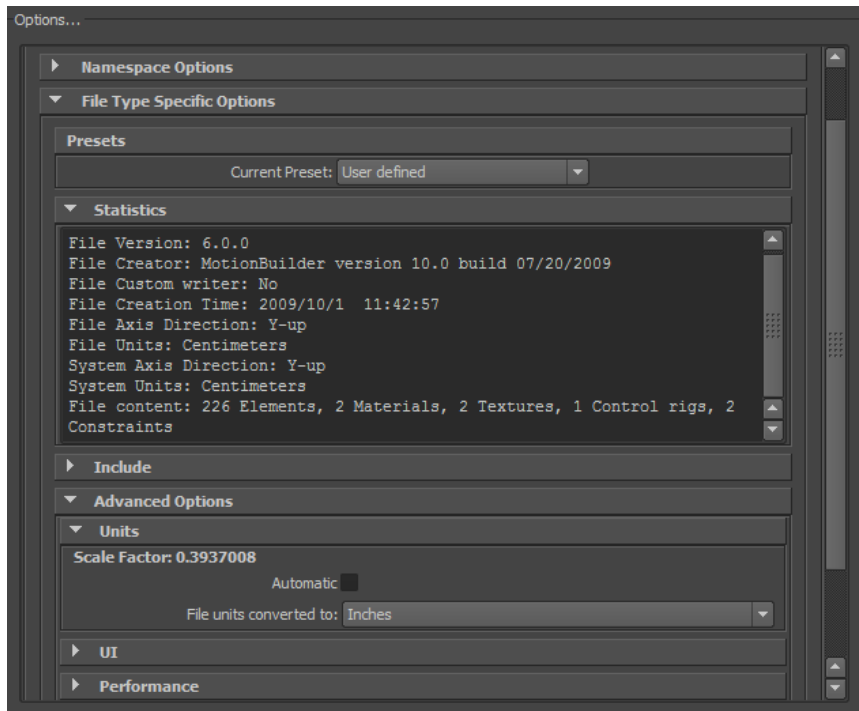
If, with the previous example, you do not want to change the **System Units** of your Maya scene and do not want the plug-in to scale your incoming data, you have another option:

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 **Maya System Units**.
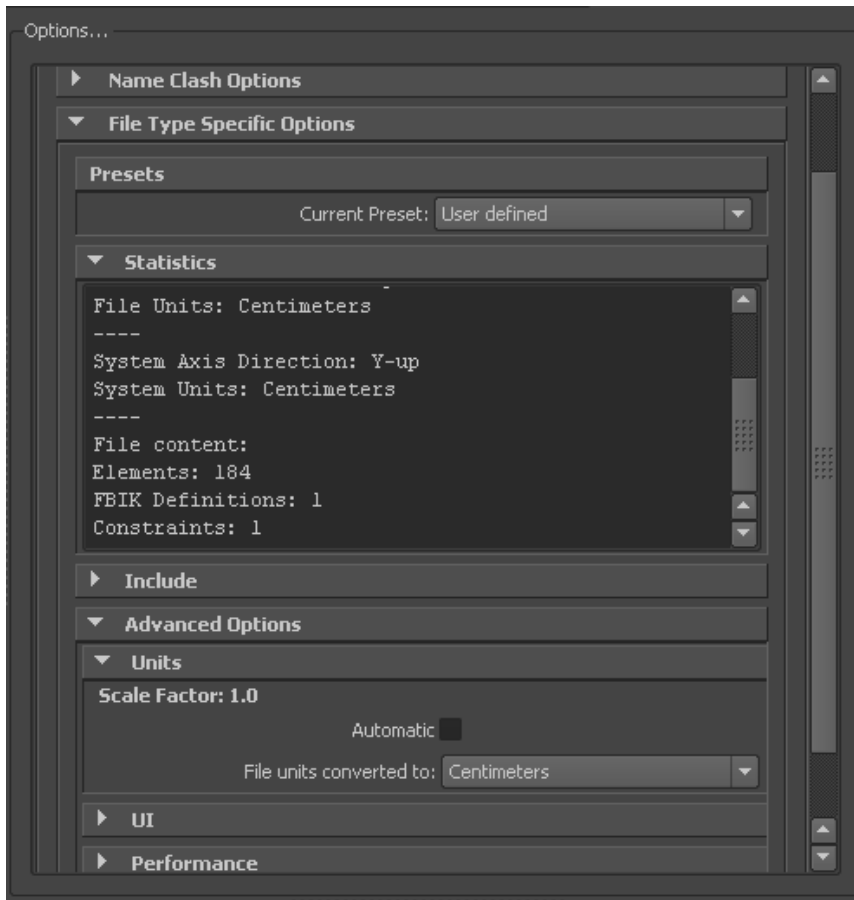
UI

These options let you set display options of the UI. This lets you 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 Editing presets (page 66) 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 **Show Warning Manager** option is active by default.

What is the difference between an Error and a Warning?

The Maya 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 Maya FBX plug-in encounters an unknown behavior and the conversion is going to produce an unexpected result.

When the Maya FBX 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 file name and time stamp are still recorded in the log.

Why do I want to do this?

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.

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

Performance

The **Performance** options let you detect performance issues with your file.

Test meshes and remove bad polygons Activate this option when you want to test your mesh objects for degenerate polygons, such as two-sided polygons, single vertex polygons, and so on. The Maya FBX Plug-in will evaluate the scene for any degenerate polygons and remove them from mesh.

Axis conversion

The **FBX Importer** does not have an **Axis Conversion** option in the UI. Only the **FBX Export** window has this option exposed in the UI.

This is because the Maya FBX plug-in calculates and applies the **Axis Conversion** automatically upon import.

What does the automatic conversion do?

The **FBX Importer** looks at the up-axis used in the host application. It then compares this to the up-axis set in the incoming file. If both up-axes match, the **FBX Import** window 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.

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.

Information

The information rollout contains information about the Maya FBX plug-in.

Web Updates Click the **Web Updates** button in the **Information** rollout to make sure that you are using the latest version of the Maya FBX plug-in.

This function searches the Autodesk web site for a newer version of the plug-in you are currently using.
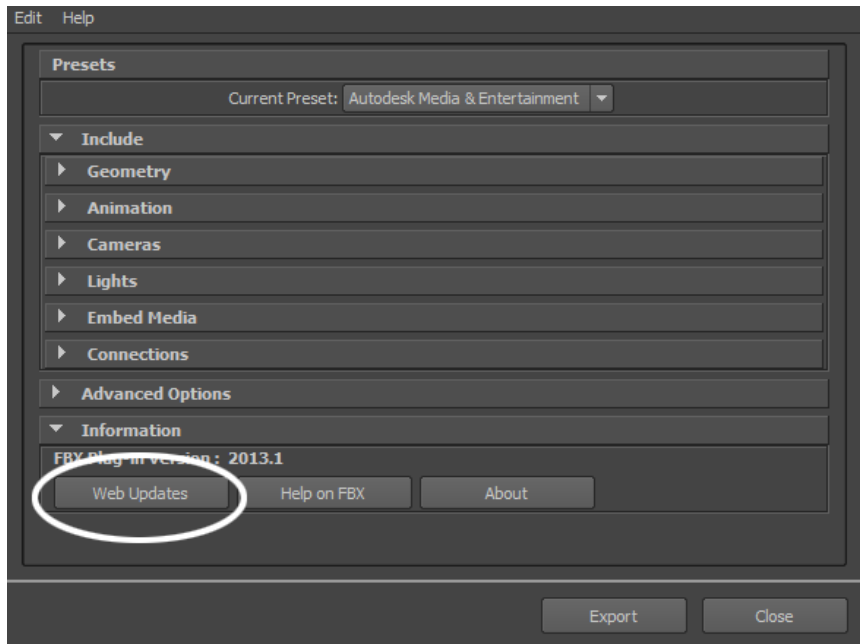
If you have the latest version, the following message appears:
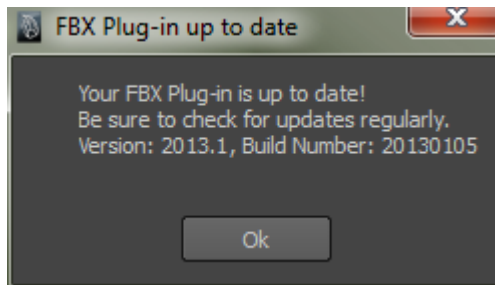
If a newer version of the Maya FBX plug-in is available, a window appears to inform you.

See Downloading the Maya FBX plug-in (page 15) for information on downloading the latest Maya FBX plug-in.

Help on FBX Click **Help on FBX** in the **Information** rollout to access the Maya FBX plug-in documentation.
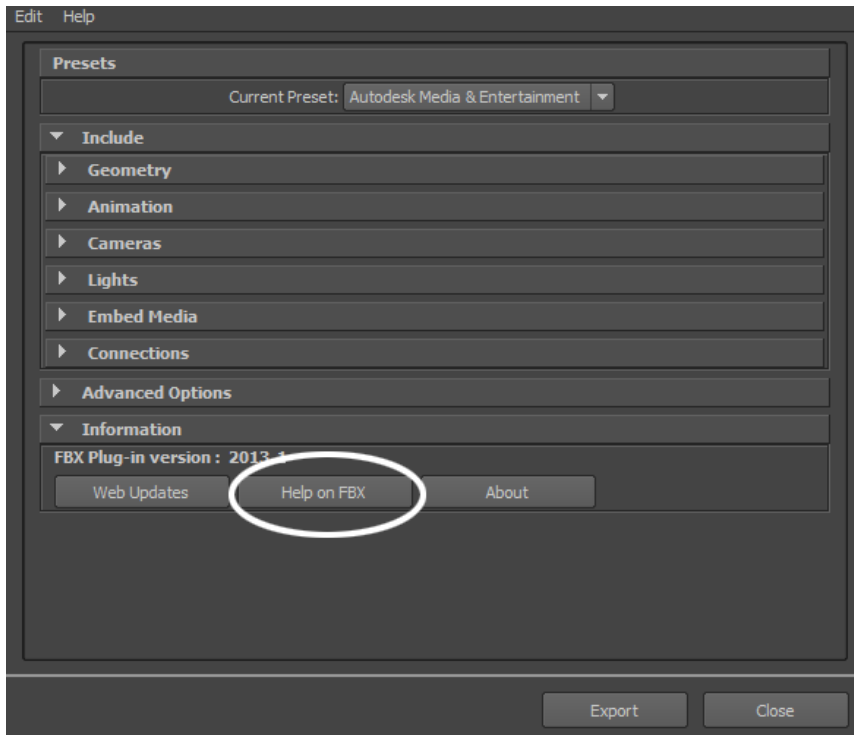
Information rollout: Help button

About Click **About** for information about this version of the Maya FBX plug-in.

Maya FBX Plug-ins Workflows

6

The following are some tips for certain workflows that will provide optimal results.

IFFFS

Importing and Exporting Cameras

You can either import a camera you created and edited in **Action**, or import one from another 3D application. Once a camera is imported, you can edit its parameters, change its animation, and then export it back to the application it came from.

Flame Cameras

Flame supports the import and export of 3D data saved in the FBX 3D format. The FBX standard format provides a means for exchanging 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   IIn 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.

Enable:	To:
Rotate Axis	Rotate the exported camera by -90° on the X-axis so that it is compatible with the co-ordinate system of the 3D application.
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 camera animation.

6   Enter a name for your exported camera in the file field.

7   Click **Save**.

Renaming strategy

When the Maya FBX plug-in discovers objects or elements that have the same name, a naming conflict occurs. The Maya FBX plug-in compensates for this by renaming the elements on import or export. The same is true for any upper- and lower-case conflicts.

When does this happen?

This occurs when, for example, you export an FBX scene from 3ds Max that contains two objects named "Box01". The result in Maya is that the first object called "Box01", and the second object, originally called "Box01" as well, is now named "Box01_ncl1_1". This must happen because Maya does not support objects with the same names.

The following is a description of what happens:

Redundant names

When the Maya FBX plug-in finds multiple instances of the same name in the scene, a symbolic code is used. The Maya FBX plug-in can read older files, although it no longer writes them this way.

The new suffix is then: _ncl1_*x* (where *x* is the instance number).

Case conflicts

When the Maya FBX plug-in finds upper- and lower-case conflicts in the names of objects or elements in the scene, a more complex suffix is used to keep track of which character was/is upper- or lower-case so it can be converted back on import/merge.

The following suffixes are used to indicate the case:

Situation	Suffix
Indicates case	_ncl2
To depict characters that were originally upper case and have become lower case	_ulXXXX
To depict characters that were originally lower case and have become upper case	_lu*xxxx*. (Where *xxxx* is a four-digit integer representing the character position in the string (bit-wise). For example, _ul5 indicates that the first and third characters in the string have been changed from upper to lower case. A suffix can be made of the combination of _ul and _lu sub-suffixes.)

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.

Maya MEL Scripting

7

This section contains scripts required for scripting with Maya MEL commands.

All of the Maya FBX plug-in's MEL commands begin with the FBX prefix. When error conditions are encountered, they will display error messages in the script editor window. The MEL commands that are registered by the Maya FBX plug-in are listed in the **Plug-in Manager information** dialog box.

NOTE

To use the following MEL commands, the Maya FBX plug-in must be installed on your computer.

Hiding the UI

If you are writing a script and want to prevent the FBX UI from appearing each time a file is imported you can use a specific command:

```
FBXImport -file "c:/myfile.fbx";
```

This automatically suppresses the FBX UI on import.

Scripting commands

Use these script commands to list, query, or set FBX I/O Settings properties for the Maya FBX plug-in, including properties created with a plug-in extension.

The scripting commands do not affect the settings in the FBX Export/Import Presets window.

The FBXProperty command lets you use every option available in the FBX plug-in user interface.

There is generally a scripting command that represents every option found in the Maya FBX plug-in. However, if an option is added at the last moment and there is not yet a corresponding scripting command for it, you can use FBXProperty to access the new unscripted option.

Another use for the FBXProperty command is if no scripting command exists for you to use for a specific scripting workflow. With FBXProperty, you can still access the command.

NOTE

We recommend using the normal scripting command if one exists. But if a command does not exist for an option, you can use the FBXProperty to reach it.

Command	Description
FBXProperties	Use this command to list all import and export properties available. This command returns the property path, type, and current value. If the property is an Enum, it returns every possible value.
FBXProperty Import|IncludeGrp|Light-Grp|Light -v true;	Use this command to set an import value to true.
FBXProperty Import|IncludeGrp|Light-Grp|Light -q;	Use this command to query an import value.
FBXProperty Export|IncludeGrp|Light-Grp|Light -v true;	Use this command to set an export value to true.
FBXProperty Export|IncludeGrp|Light-Grp|Light -q;	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 them so you can have the exact path for the IO Settings when querying for a list of properties and their path.

NOTE

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

FBXClose

Closes the FBX importer so that any FBX files launched with the FBXRead command are unlocked.

When you use the FBXRead command, it opens and locks the FBX file. To release the file, you must either call the FBXClose command, or use call commands that open a new file, for example, FBXRead or FBXImporter, and so on.

FBXExport

FBXExport -f [filename] [-s];

Exports the specified file.

Add the -s flag if you want to change the export process so it exports the selected objects instead of an "export all" operation.

For example:

```
FBXExport -f myfile.fbx -s
```

FBXExportAnimationOnly

FBXExportAnimationOnly -v [true|false];

FBXExportAnimationOnly -q;

Use this script to export only animation. See Animation (page 43) for more information.

FBXExportApplyConstantKeyReducer

FBXExportApplyConstantKeyReducer -v [true|false];

FBXExportApplyConstantKeyReducer-q;

This is the script equivalent of theConstant Key Reducer (page 46).

True

Filters FBX animation **FCurves** through a **Constant Key Reducer**. This eliminates constant keys on a **FCurve** and helps to reduce the size of resampled **FCurves**, especially **Scale**.

False

Setting this command to False ensures that the animation data is not filtered.

FBXExportAxisConversionMethod

FBXExportAxisConversionMethod [none|convertAnimation|addFbxRoot];

FBXExportAxisConversionMethod -q;

This command lets you set an export conversion method. See Axis conversion (page 52) for more information.

None

No conversion takes place and the exported data is unaffected.

Convert animation

Recalculates all animation **FCurves** so their values reflect the new World system.

Add FBX_Root node

Adds a transformation node to the top of the scene to contain the transformations needed to transport the data into the new World system. This option facilitates backward compatibility as it generates the FBX file the same way as earlier releases of the plug-in.

If the plug-in does not detect a need for the conversion, no Fbx_Root node is added.

FBXExportBakeComplexAnimation

FBXExportBakeComplexAnimation -v [true|false];

FBXExportBakeComplexAnimation -q;

This command is the script equivalent of the **Bake animation** option. See Bake Animation (page 44).

FBXExportBakeComplexEnd

FBXExportBakeComplexEnd -v [int];

FBXExportBakeComplexEnd -q;

This command is the script equivalent of the **End** field in the **Bake animation** option. The passed value is an integer number. See Bake Animation (page 44) for more information.

FBXExportBakeComplexStart

FBXExportBakeComplexStart -v [int];

FBXExportBakeComplexStart -q;

This command is the script equivalent of the **Start** field in the **Bake animation** option. The passed value is an integer number. See Bake Animation (page 44) for more information.

FBXExportBakeComplexStep

FBXExportBakeComplexStep -v [int];

FBXExportBakeComplexStep -q;

This command is the script equivalent of the **Step** field in the **Bake animation** option. The passed value is an integer number. See Bake Animation (page 44) for more information.

FBXExportBakeResampleAnimation

FBXExportBakeResampleAll -v [true|false];

FBXExportBakeResampleAnimation - q;

This command is the script version of the Resample Animation option in the **FBX Exporter**. See Resample All (page 45).

FBXExportCacheFile

FBXExportCacheFile -v [true|false];

FBXExportCacheFile -q;

This command is the script version of the **Geometry Cache file(s)** option in the **FBX Exporter**. See Geometry Cache File(s) (page 47).

NOTE

You must apply the set to the **Objects Transform node** and not the **Shape node**.

FBXExportCameras

FBXExportCameras -v [true|false];

FBXExportCameras -q;

Use this function to either include or exclude cameras in your FBX export. See Cameras (page 41) for more information.

FBXExportColladaFrameRate

FBXExportColladaFrameRate [float];

FBXExportColladaFrameRate -q;

This function is the script equivalent of the Collada option.

FBXExportColladaSingleMatrix

FBXExportColladaSingleMatrix [true|false];

FBXExportColladaSingleMatrix -q;

This command is the script equivalent of the Collada Single matrix (page 58) option.

FBXExportColladaTriangulate

FBXExportColladaTriangulate [true|false];

FBXExportColladaTriangulate - q;

This command is the script equivalent of the Collada Triangulate (page 58) option

FBXExportConstraints

FBXExportConstraints -v [true|false];

FBXExportConstraints -q;

Causes all the constraints defined in the Maya scene to be either included or excluded from the exported FBX file. See Constraints (page 48).

FBXExportConvertUnitString

FBXExportConvertUnitString [mm|dm|cm|m|km|In|ft|yd|mi];

This command returns the Scale Factor required to convert one centimeter to the specified unit and is the script version of the File Units Converted To menu in the FBX Exporter and Importer windows. SeeScene units converted to (page 51) for more information.

FBXExportDxfTriangulate

FBXExportDxfTriangulate [true|false];

FBXExportDxfTriangulate -q;

NOTE

This command is for the Macintosh and Linux platforms only.

FBXExportDxfDeformation

FBXExportDxfDeformation [true|false];

FBXExportDxfDeformation - q;

NOTE

This command is for the Macintosh and Linux platforms only.

FBXExportEmbeddedTextures

FBXExportEmbeddedTextures -v [true|false];

FBXExportEmbeddedTextures -q;

True

Saves all textures in the FBX file. This command performs the same action as the **Embed Media** option in the **FBX Exporter** window. See Embed Media (page 42).

FBXExportFileVersion

FBXExportFileVersion [version];

Where [version] is the following:
- FBX201300
- FBX201200
- FBX201100

- FBX201000
- FBX200900
- FBX200611

See FBX Version (page 54) for more.

FBXExportGenerateLog

FBXExportGenerateLog -v [true|false];

FBXExportGenerateLog -q;

Use this command to generate a log file on export. See Generate log data (page 53) for more information.

FBXExportHardEdges

FBXExportHardEdges -v [true|false];

FBXExportHardEdges -q;

Duplicates all vertices in the scene's meshes for each polygon connected to them. The vertices' normals are set accordingly, depending on whether they are connected to a hard or smooth edge.

NOTE

This function allows MotionBuilder to display hard edges.

If two vertices are located exactly at the same position, a warning is issued, as this causes unpredictable results when **FBXImportHardEdges** is set to **True**.

This command is the script version of the **Split per Vertex Normals** option in the **FBX Exporter**. See Include (page 37).

FBXExportInAscii

FBXExportInAscii -v [true|false];

FBXExportInAscii -q;

Use this function to export as an ASCII file. See Type (page 54) for more information.

FBXExportInputConnections

FBXExportInputConnections -v [true|false];

FBXExportInputConnections –q;

Use this function to query the current value of the input connection option. The function returns 0 for False, and 1 for True.

Use this function with the FBXExport -f [filename][s] (page 91) script if you are performing an export of selected objects. Set False so that the input connections to selected objects are not considered during export. The default value for this command is True, which makes the plug-in include all the objects that influence the selected ones.

This is the script equivalent of the Connections (page 42) option in the UI.

NOTE

This command is ignored during the "Export All" process.

FBXExportInstances

FBXExportInstances -v [true|false];

FBXExportInstances -q;

This is the script equivalent of the Preserve Instances (page 40) option in the UI.

FBXExportLights

FBXExportLights -v [true|false];

FBXExportLights -q;

Use this function to either exclude or include lights in the exported FBX file. See Lights (page 41) for more information.

This option is activated by default.

FBXExportQuaternion

FBXExportQuaternion -v [quaternion|euler|resample];

FBXExportQuaternion -q;

Use the quaternion interpolation script to select how to export your quaternion interpolations from the host application.

FBXExportQuickSelectSetAsCache

FBXExportQuickSelectSetAsCache –v "setName";

FBXExportQuickSelectSetAsCache –q;

This command stores the setName as the set to be used when exporting the cache file.

This command does not validate the received string. However, if the string used here does not correspond to an existing (and valid) set in the Maya scene, the cache export fails.

FBXExportReferencedContainersContent

FBXExportReferencedContainersContent -v [true|false];

FBXExportReferencedContainersContent -q;

This command is the script version of the **Referenced Containers Content** option in the **FBX Exporter**. See Referenced Containers Content (page 40) .

FBXExportScaleFactor

FBXExportScaleFactor [float];

FBXExportScaleFactor -q;

This command is the script version of the **Scale Factor** field in the **FBX Exporter**. See Scale Factor (page 50) for more information.

FBXExportShapes

FBXExportShapes -v [true|false];

FBXExportShapes -q;

Use this function to either exclude or include shape deformations with your FBX file. See Deformed Models (page 45) for more information.

NOTE

This option is on by default.

FBXExportSkeleton

FBXExportSkeleton -v [true|false];

FBXExportSkeleton -q;

Use this function to either include or exclude **Skeleton definition** in your export.

NOTE This command is the same as the deprecated FBXImportCharacter command.

FBXExportSkins

FBXExportSkins -v [true|false];

FBXExportSkins -q;

Use this function to either exclude or include skin deformations in your FBX file. See Deformed Models (page 45) for more information.

NOTE

This option is on by default.

FBXExportSmoothingGroups

FBXExportSmoothingGroups -v true|false;

FBXExportSmoothingGroups -q;

This command is the script version of the **Smoothing Groups** option in the FBX Exporter. See Smoothing Groups (page 37) for more information.

FBXExportSmoothMesh

FBXExportSmoothMesh -v true|false;

FBXExportSmoothMesh -q;

Use this function to export the subdivision level of the mesh.

FBXExportSplitAnimationIntoTakes

FBXExportSplitAnimationIntoTakes -q

FBXExportSplitAnimationIntoTakes -c

FBXExportSplitAnimationIntoTakes -v

This command lets you export an ainmation file into multiple takes.

FBXExportSplitAnimationIntoTakes -v

The FBXExportSplitAnimationIntoTakes -v option requires extra arguments. Its syntax is: *FBXExportSplitAnimationIntoTakes -v "takename" frameStart frameEnd* This sets the form "takename frameStart frameEnd" in memory. Subsequent calls to the function append new entries in the table.

For example:

■ FBXExportSplitAnimationIntoTakes -v \"toto\" 1 5

■ FBXExportSplitAnimationIntoTakes -v \"tata\" 10 25

■ FBXExportSplitAnimationIntoTakes -v \"titi\" 3 20

Internally, frames are expressed in seconds. The conversion from frame to seconds is performed using the current application framerate. After definitions are available, calling *FBXExportSplitAnimationIntoTakes -q*. This returns:

```
// Result: name=toto start=1 end=5 name=toto start=10 end=25
name=toto start=3 end=20 //
```

NOTE

■ The accumulator is not automatically cleared, if new definitions need to be set for a second export; the caller is responsible for clearing the accumulator by calling the command using the *-clear* option.

■ Take001 always exists regardless of how many splits are defined.

■ Setting a frameEnd < frameStart returns an error.

■ frameStart and frameEnd do not necessarily define an interval with keys and the split function does not try to validate. If no animation keys are in the range, the take will still be created with no keys.

FBXExportUpAxis

FBXExportUpAxis [y|z];

FBXExportUpAxis -q;

This command lets you define the up axis in your FBX file. The up axis is the global axis that points upwards. See Axis conversion (page 52) for more information.

By default, the up axis in Maya is the Y axis.

Y

Sets the up axis to Y-up. This setting is the default.

Z

Sets the up axis to Z-up.

FBXExportUseSceneName

FBXExportUseSceneName -v [true|false];

FBXExportUseSceneName -q;

This command is the script version of the Use scene name (page 43) option in the **FBX Exporter**.

FBXExportTangents

FBXExportTangents -v [true|false];

FBXExportTangents -q;

This command is the script version of the Tangents and Binormals (page 39) option in the **FBX Exporter**.

FBXExportTriangulate

FBXExportTriangulate -v [true|false];

FBXExportTriangulate -q;

This command is the script version of the Triangulate (page 41) option in the **FBX Exporter**.

FBXImport

FBXImport -f [filename] -t [take index];

Imports the file specified in [filename] and the take specified in [take index].

The file imported is the one accessible for take querying after the execution of the command.

Specify the appropriate take number to load the corresponding take. If you specify 0, the plug-in imports no animation. (This is the same as if you select **No Animation** from the menu in the Maya FBX plug-in user interface.)

If you specify -1, the plug-in retrieves the last take in the take array. The plug-in considers any number of takes greater than the amount of takes contained in the file or any negative value less than -1 to be invalid. If this occurs, a **No such take** error displays.

NOTE Do not open FBX files with the Python File(...) command. Instead, use the FBXImport(...) command.

FBXImportAxisConversionEnable

FBXImportAxisConversionEnable -v [true|false];

FBXImportAxisConversionEnable -q;

This command is the script version of the **Axis conversion** option in the **FBX Importer**. See Axis conversion (page 81) for more information.

FBXImportCacheFile

FBXImportCacheFile -v [true|false];

FBXImportCacheFile -q;

This command is the script version of the **Import geometry Cache file(s)** option in the **FBX Importer**. See Geometry cache file(s) (page 73) for more information.

FBXImportCameras

FBXImportCameras -v [true|false];

FBXImportCameras -q;

Use this script to either import or exclude cameras with your FBX file. See Cameras (page 69) for more information.

NOTE

This function is on by default

FBXImportConstraints

FBXImportConstraints -v [true|false];

FBXImportConstraints -q;

Causes all constraints defined in the FBX file to be ignored by the importing process and excluded from the Maya scene. See Constraints (page 74) for more information.

FBXImportConvertDeformingNullsToJoint

FBXImportConvertDeformingNullsToJoint -v [true|false];

FBXImportConvertDeformingNullsToJoint -q;

Converts deforming elements into Maya joints.

True

Transforms all deforming elements into joint nodes.

NOTE

This option was originally provided because Maya did not support locator elements (that is, transform nodes that are not joints,) within a bone hierarchy. While Maya now supports this, in some cases this option improves the skinning behavior.

See Deforming elements to joints (page 73) for more information.

FBXImportConvertUnitString

FBXImportConvertUnitString [mm|dm|cm|m|km|In|ft|yd|mi];

This command returns the Scale Factor required to convert one centimeter to the specified unit and is the script version of the File Units Converted To menu in the FBX Exporter and Importer windows. See File units converted to (page 76) for more information.

FBXImportDxfWeldVertice

FBXImportDxfWeldVertice [true|false];

FBXImportDxfWeldVertice -q;

NOTE

This command is for the Macintosh and Linux platforms only.

FBXImportDxfReferenceNode

FBXImportDxfReferenceNode [true|false];

FBXImportDxfReferenceNode -q;

NOTE

This command is for the Macintosh and Linux platforms only.

FBXImportDxfObjectDerivation

FBXImportDxfObjectDerivation [layer|entity|block];

FBXImportDxfObjectDerivation -q;

NOTE

This command is for the Macintosh and Linux platforms only.

FBXImportFillTimeline

FBXImportFillTimeline -v [true|false];

FBXImportFillTimeline -q;

Fills the scene timeline on import (instead of using the Maya default).

FBXImportGenerateLog

FBXImportGenerateLog -v [true|false];

FBXImportGenerateLog -q;

Use this command to generate a log file on export. See Generate Log Data (page 81) for more information.

FBXImportHardEdges

FBXImportHardEdges -v [true|false];

FBXImportHardEdges -q;

Merges back all vertices located at the same exact position as a unique vertex. The Maya FBX plug-in then determines if the edges connected to each vertex are hard edges or smooth edges, based on their normals.

Use this function when FBXExportHardEdges is set to **True** on export.

This command is the script version of the **Combine per-vertex Normals** option in the **FBX Importer**. See Combine per-vertex Normals (page 38) for more information.

FBXImportLights

FBXImportLights -v [true|false];

FBXImportLights -q;

Use this function to either include or exclude lights from the import process. See Lights (page 70) for more information.

FBXImportMergeBackNullPivots

FBXImportMergeBackNullPivots -v [true|false];

FBXImportMergeBackNullPivots -q;

True

Assigns the rotation transformation of the null (or joints) elements in the hierarchy that are used as pre-rotation and post- rotation to the joint orient and the rotate axis of the original node.

The pre-rotation and post-rotation nodes are then deleted.

The look-up is done by name as the pre-rotation node's name contains the "__Pre_ "suffix, while the post-rotation node's name has a "__Post_" suffix.

NOTE

When the import mode is set to **Update animation** or **Add and Update animation** this option is automatically set to **True**.

FBXImportMergeAnimationLayers

FBXImportMergeAnimationLayers -v [true|false];

FBXImportMergeAnimationLayers -q;

Activate **Bake animation layers** to bake (or Plot) animation layers contained in the incoming file.

FBXImportMode

FBXImportMode -v [exmerge|add|merge;]

FBXImportMode -q;

This command has three possible states:

Exmerge

Merges the imported FBX file to the current scene in the following way:

Nodes of the same name and nature have only their animation curve replaced. No new nodes are created. This command is the same as the **Update animation** option in the plug-in UI.

Add

Adds the content to the current scene content. This command is the same as the **Add** option in the plug-in UI.

Merge

Merges the imported FBX file to the current scene in the following way: any node without its equivalent in the scene is created. Nodes with the same name but not of the same nature, for example, sphere and bone, are replaced. Nodes with the same name and nature only have their animation replaced. This command is the same as the **Add and Update animation** in the UI

NOTE To view these in the UI, see

FBXImportProtectDrivenKeys

FBXImportProtectDrivenKeys -v [true|false];

FBXImportProtectDrivenKeys -q;

Use this script to prevent any incoming animation from overwriting channels with driven keys.

If set to **True**, the driven keys are protected and no incoming animation is applied to the driven channels.

If set to False, the driven keys are discarded and the incoming animation is applied to the driven channels. See Protect Driven Keys (page 72) for more information.

FBXImportQuaternion

FBXImportQuaternion -v [quaternion|euler|resample] ;

FBXImportQuaternion -q;

Lets you specify how quaternion rotations should be treated on import into Maya. This option compensates for differences between Maya and MotionBuilder quaternions. This command is the equivalent of the Quaternion interpolation mode settings. See Quaternoin interpolation mode (page 71) for more information.

FBXImportResamplingRateSource

FBXImportResamplingRateSource -v [Maya|FBX|Custom];

FBXImportResamplingRateSource -q;

This command lets you set the rate that the **FBX Importer** uses to produce keyframes when it needs to resample data.

Resampling is used when the interpolation of the Maya animation curve cannot be accurately represented by curves in MotionBuilder.

FBXImportScaleFactorEnable

FBXImportScaleFactorEnable [true|false];

FBXImportScaleFactorEnable -q;

This command is the script version of the **Scale Factor** option of the **FBX Importer**. See Scale factor (page 75) for more information.

FBXImportScaleFactor

FBXImportScaleFactor [float];

FBXImportScaleFactor -q;

This command is the script version of the **Scale Factor** menu in the **FBX Importer**. See Scale factor (page 75) for more information.

FBXImportSetMayaFrameRate

FBXImportSetMayaFrameRate -v [true|false];

FBXImportSetMayaFrameRate -q;

This command lets you import the frame rate from the FBX file. This overwrites the rate used in Maya.

FBXImportSetLockedAttribute

FBXImportSetLockedAttribute -v [true|false];

FBXImportSetLockedAttribute -q;

This command is the scripting equivalent of the UI dialog box **Keep all locked** or **unlock all** options. Use this command when you import an FBX file that contains animation onto an object that has locked channels.

When you use the UI, the Maya FBX plug-in prompts you to either keep all the channels locked or unlock the locked channels, which imports the animation correctly. This had created problems for users who tried to do this without working in the UI.

False

Unlocks all channels.

True

Channels remain locked.

Example code

```
FBXImportSetLockedAttribute -v False;

FBXImport -f "C:/myFile.fbx";
```

FBXImportShapes

FBXImportShapes -v [true|false];

FBXImportShapes -q;

Use this script to import or exclude shapes from your FBX file. See Deformed models (page 74) for more information.

FBXImportSkeletonType

FBXImportSkeletonType -v [none|fbik|humanik];

FBXImportSkeletonType -q;

Use this function to either import or exclude Skeleton definitions with your FBX file. See Skeleton Definitions As (page 74) for more information.

NOTE This command is the same as the deprecated FBXImportCharacterType command.

FBXImportSkins

FBXImportSkins -v [true|false];

FBXImportSkins -q;

Use this function to import or exclude skin deformations from your FBX file. See Deformed models (page 74) for more information.

FBXImportUnlockNormals

FBXImportUnlockNormals -v true|false;

FBXImportUnlockNormals -q;

Overrides the default Maya locking of normals.

True

Recomputes the normals on the objects using Maya internal algorithms.

FBXImportUpAxis

FBXImportUpAxis [y|z];

FBXImportUpAxis -q;

This command is the script version of the **Axis conversion** option in the **FBX Importer** but is not available in the plug-in UI. See Axis conversion (page 81).

FBXGetTakeComment

FBXGetTakeComment [index];

Returns the comment attached to the take at the specified index in the take array. This command uses the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

You must enter numbers from 1 to the number of takes contained in the file otherwise the script returns the message: **No such take**. The Maya FBX plug-in considers any number of takes greater than the amount of takes in the file, negative values, or zero, to be invalid.

FBXGetTakeCount

FBXGetTakeCount;

Returns the number of takes saved in the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

If Maya FBX plug-in does not find any takes in the file, the script returns a value of 0.

FBXGetTakeIndex

FBXGetTakeIndex [take name];

Returns the index of the first take named as the parameter in the take array. This command uses the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

If [take name] does not contain a valid name, the script returns the message: **No such take**.

FBXGetTakeLocalTimeSpan

FBXGetTakeLocalTimeSpan [index];

Returns the local start and stop time of the take at the specified index in the take array. This command uses the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

You must enter numbers from 1 to the number of takes contained in the file, otherwise the script returns the message: **No such take**. The Maya FBX plug-in considers any number of takes greater than the amount of takes in the file, negative values, or zero, to be invalid.

FBXGetTakeName

FBXGetTakeName [index];

Returns the name of the take in the take array's specified index. This command uses the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

You must enter numbers from 1 to the number of takes contained in the file otherwise the script returns the message: **No such take**. The Maya FBX plug-in considers any number of takes greater than the amount of takes in the file, negative values, or zero, to be invalid.

FBXGetTakeReferenceTimeSpan

FBXGetTakeReferenceTimeSpan [index];

Returns the reference start and stop times of the take at the specified index in the take array. This command uses the file stored in the file buffer.

You can load a file into the file buffer with the **FBXRead** command.

NOTE

You must enter numbers from 1 to the number of takes contained in the file, otherwise the script returns the message: **No such take**. The Maya FBX plug-in considers any number of takes greater than the amount of takes in the file, negative values, or zero, to be invalid.

FBXLoadExportPresetFile

FBXLoadExportPresetFile -f [filepath];

Sets the export preset file path.

FBXLoadImportPresetFile

FBXLoadImportPresetFile -f [filepath];

This command lets you set the import preset file path.

You can use this to load the MotionBuilder Import presets without knowing their file path.

For example: FBXLoadMBImportPresetFile; loads "C:\maya2013\bin\plug-ins\FBX\Presets\2013.0\import\Autodesk MotionBuilder.fbximportpreset" (The path may be different on your machine.)

FBXLoadMBExportPresetFile

This command loads the MotionBuilder presets provided with each release.

You can use this to load the MotionBuilder Import/Export presets without knowing their file path.

For example: FBXLoadMBExportPresetFile; loads `"C:\maya2013\bin\plug-ins\FBX\Presets\2013.0\export\Autodesk MotionBuilder.fbxexportpreset"` (The path may be different on your machine.)

FBXLoadMBImportPresetFile

This command loads the MotionBuilder presets provided with each release.

You can use this to load the MotionBuilder Import/Export presets without knowing their file path.

For example: FBXLoadMBImportPresetFile; loads `"C:\maya2013\bin\plug-ins\FBX\Presets\2013.0\import\Autodesk MotionBuilder.fbximportpreset"` and FBXLoadMBExportPresetFile; loads `"C:\maya2013\bin\plug-ins\FBX\Presets\2013.0\export\Autodesk MotionBuilder.fbxexportpreset"` (The path may be different on your machine.)

FBXPopSettings

FBXPopSettings;

This setting loads all settings that were saved by the Pop script; it preserves the current state of the settings when you perform a One-Click operation.

FBXPushSettings

FBXPushSettings;

This setting saves all I/OSettings. Use FBXPushSettings to preserve the current state of the settings when you perform a One-Click operation.

FBXRead

FBXRead -f [filename];

Reads the specified FBX file without importing anything into Maya. The file is instead stored in a buffer. This command is used for take querying.

Once read or imported, use the commands **FBXGetTakeCount**, **FBXGetTakeName**, **FBXGetTakeIndex** for take querying.

NOTE

The file you are reading must match an existing file name, otherwise the file in the buffer is destroyed if you attempt to read or import a non-existent file.

FBXResetImport

FBXResetImport;

This command restores the default values of the **FBX Importer** and loads settings specified in the Autodesk Media & Entertainment **import** preset , as in UI. See import Presets (page 64) for more information.

FBXResetExport

FBXResetExport;

This command restores the default values of the **FBX Exporter** and loads settings specified in the Autodesk Media & Entertainment **export** preset. See Preset options (page 35) for more information.

FBXResamplingRate

FBXResamplingRate -v [float];

FBXResamplingRate -q;

Sets the rate at which the exporter produces keyframes when it needs to resample data.

Resampling is needed when the interpolation of the Maya animation curve cannot be perfectly represented by curves in MotionBuilder.

Troubleshooting and Limitations

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Because the Maya FBX plug-in supports so many software packages, it is inevitable that occasional problems will occur or some details will not yet have attained perfect support.

Occasionally, the default settings of 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 Maya 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 Maya FBX plug-in, as well as an e-mail address where you can contact support.

Where did the FBX UI go?

If you import or export FBX files and the **FBX Importer** or **Exporter** window does not appear, it could be because the Maya FBX plug-in cannot find MEL scripts that are included by the FBX installer. The scripts are automatically installed to the following path:

```
<Maya version>/scripts/FBX
```

If they are deleted, the FBX user interface no longer appears. You can restore these files which will bring back the interface if you reinstall the plug-in.

Maya Default UI

If you are using the Maya **Default UI** setting, the FBX options to the right of the file browser area may be collapsed. Drag the splitter bar at the right side to the center of the dialog box to expand the FBX options.

Where are my textures?

Textures disappear from files when if you move or delete any texture 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 your directory on the your computer drive.

Use the **Embed Media** option to make the FBX plug-in includes (embeds) the 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.

Why should I embed media?

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.

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

If you export your file in ASCII format in FBX versions 2010 and earlier, no textures are embedded.

Embed Media is active, but I still do not see my textures

In previous versions of the Maya 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 Maya FBX plug-in, if you do not have write permission for the folder creation, the media files are sent to a temp folder instead.

NOTE

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

Where are my MotionBuilder layers?

The Maya FBX plug-in lets you import animation layers without baking them. Otherwise, the animation is baked into the base animation layer.

To retain animation layers as separate layers in Maya:

When you import an FBX file, disable the **Bake Animation Layers** option in the Maya FBX importer. See Bake animation layers (page 70).

If the option is active, the plug-in automatically bakes the animation layers during the import process.

Why are my cameras inconsistent?

If you import a Maya camera into 3ds Max using a **Fit Resolution Gate** setting of **Vertical** or **Fill**, the results will differ.

For better support between Maya cameras in 3ds Max, set the **Fit Resolution Gate** setting to **Horizontal**, rather than **Vertical** or the default, **Fill**.

NOTE

You can import 3ds Max cameras into Maya with no difficulty; Maya renders the same result.

Why are my normals locked on import?

If you import non-deformed geometry, the normals are locked on import to Maya. These locked normals can create problems when you deform the geometry in Maya.

For example, if you import blend shape targets that were created in 3ds Max and then export them to FBX, they import into Maya with their normals locked.

You can address this problem if you unlock the deformed object's normals in Maya. To unlock the normals, import the geometry into Maya and then select **Normals** > **Unlock normals**.

What causes this?

If you import non-deformed geometry the normals are locked when you import it to Maya.

When normals are locked by Maya, they will not move with the geometry when you deform the imported objects. If you do not unlock these normals, you may experience shading issues when you apply modifiers such as skin or blendshapes.

Why does the plug-in not match the help documentation?

If you find something in your version of the Maya 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 the Maya FBX plug-in may not be the most recent version. It is a good practice to check for updates, as each subsequent Maya FBX Plug-in version has enhanced functionality, and is available free. See Web updates (page 27) for instructions on how to verify that your plug-in version is the latest.

NOTE

You can also use the comment link at the bottom of the online help to send a comment to the FBX team.

The plug-in does not run

Plug-ins run only on the version of Maya for which they are created; verify that the version of the Maya FBX plug-in that you are installing is appropriate for the version of Maya you are running.

Why do my MotionBuilder edges look different?

Older versions of MotionBuilder (versions 2010 and earlier) do not support hard/soft edge normals and can result in shading issues in MotionBuilder.

If you are using an earlier version of MotionBuilder and this problem occurs, activate the **Split per-vertex normals** 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 Maya renders the polygons in smooth shaded mode.

Why would I use this?

This option lets you keep the same hard/soft edge look that you get from Maya in MotionBuilder.

Do not use this option if you do not require hard edges in MotionBuilder, since this operation duplicates vertex information and converts the geometry itself. You can use the **Combine per-vertex Normals** option in the **FBX Importer** to perform the inverse operation, but this may result in incorrect UV texture maps, see the note that follows this entry.

If you are not using a merge-back workflow (merging FBX into existing scene) using this option may result in incorrect UV mapping when reimporting the FBX file into Maya. Import your FBX file into to your original Maya scene, to avoid geometry UV issues with split geometry.

Exporting with the **Split per-vertex Normals** option disabled produces the following result in MotionBuilder:

Exporting with the **Split per-vertex Normals** option activated produces the following result in MotionBuilder:
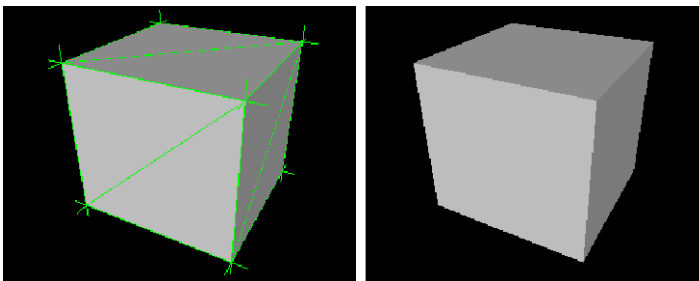
NOTE

Using this option alters UV maps applied to geometry permanently. The UVs are then properly reassigned to the newly split geometry. When you import this geometry into an empty Maya scene, there is a UV limitation where using **Combine per-vertex Normals** in the **FBX Importer** might result in incorrect UV assignments.

Why are my sets empty?

This is due to a limitation. See Selection sets (page 128) for more information.

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.

Limitations

The following section contains a list of known limitations for this version of the Maya FBX plug-in. If you have problems with the plug-in that are not listed here, refer to the Troubleshooting (page 119) 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.

Preset Bake Animation settings

You cannot save **Bake Animation** 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 is 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.

Cannot cancel file overwrite

In previous versions of the Maya UI (before version 2011), as well as the "Classic" **OS Native** UI that is still available in Maya 2013, if you want to overwrite an existing file, the Overwrite dialog box appears. If you select Yes, and then cancel the export in the FBX exporter window that appears, the FBX file that was to be overwritten is instead deleted.

This is not a problem if you use the Maya 2013 default UI while exporting to FBX because the file browser and exporter options now appear in the same window. If you use the Maya **Default UI** to export to FBX, you can cancel the export operation without deleting the original FBX file. See Switching the FBX UI (page 20).

Cluster import

To import clusters correctly into Maya, deactivate the Deforming elements to joints (page 73) option. Otherwise their cluster pivots do not import correctly.

Scale compensation

There is no limitation for the scale compensate setting in the Maya FBX plug-in itself.

However, there is a limitation in 3ds Max. If you modify the scale of joints that are parents of other joints in Maya, a conversion is performed that compensates for the scaling behavior that is not found in 3ds Max. This is done by animating the scale of the child joint. This conversion maintains the visual fidelity of Maya animation in 3ds Max.

What does Scale Compensate do?

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

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

Selection sets

A known limitation exists where sets that contain NURBS Sub-components, such as **Isoparm**, **Control Vertex**, or **Surface Patch**, are not retained in sets and will not be exported.

Instanced geometry

A limitation exists where FBX does not support instanced geometries that have materials that differ from the original geometry object.

NOTE While instanced geometries are supported, materials differences are not. For example, if two instances of a geometry have colors A (original object color) and B, once exported to FBX, both will share color A

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