Autodesk®
MotionBuilder® 2009
What Is New

Autodesk®

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Contents

What is New in this Release

Welcome to the Autodesk MotionBuilder 2009 software product release.

The following sections provide an overview of the new features and changes to the MotionBuilder 2009 software product, a list and description of resolved and unresolved issues, as well as any software limitations deemed important to document.

For last minute updates to the Autodesk MotionBuilder 2009 software product, refer to the *Autodesk MotionBuilder 2009 Release Notes* posted to the Autodesk MotionBuilder Product at: *http://www.autodesk.com/motionbuilder-support*.

For additional last minute information about the MotionBuilder software, or for any downloads, consult our Support page at: *http://www.autodesk.com/motionbuilder-support*.

For any updates to the MotionBuilder documentation, go to the Autodesk MotionBuilder Product Documentation web site at:

http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=9693656 .

NOTE The default installation directory for all the Help *.chm* files is: *MotionBuilder 2009\Help*.

You can find information about the MotionBuilder software at: *http://www.autodesk.com/motionbuilder*.

For information about the Autodesk Media & Entertainment products and solutions, please visit: *http://www.autodesk.com*.

New Features and Enhancements

The following describes the new features and enhancements in the MotionBuilder 2009 software product release.

Rigid Body Dynamics

You can now set up a real-time, rigid body simulation using the 3D objects within a scene. The MotionBuilder rigid body dynamics now supports real-time collisions, which you can use to prevent interpenetration of characters, objects and other scene elements. This can be invaluable if you want to edit 3D animations involving characters interacting with objects efficiently.

Ragdoll Physical Property

The addition of a new Ragdoll Physical Property provides results for simulating complex interactions between a character and its environment that can prove to be difficult to achieve using keyframes and motion capture techniques.

The Ragdoll physical property lets you simulate and record collisions and collapses on characters with Control rigs.

FBX® SDK

MotionBuilder now includes the latest version of the FBX SDK, enhancing file compatibility with software packages such as the Autodesk 3ds Max and Autodesk Maya products.

Python Console Redesign

An intelligent, fully integrated Python Editor now lets you develop, test, and refine scripts within MotionBuilder. The new Python Editor provides support for single and multi-line entries, tabbed workspaces, line numbering, color coding, history, keyboard shortcut support, drag & drop support, color coded error messages, searching, and auto-completion.

Updated Python Support

The MotionBuilder Python libraries have been upgraded to version 2.5.1 – the same version used in the Autodesk Maya 2009 product.

Updated CgFX Support

MotionBuilder now supports version 2.0 of the CgFX library, enabling you to take advantage of the latest CgFX shader technology.

OR SDK Customizable Plug-in Paths

A new setting in the Preferences window lets you specify additional plug-in paths so that you can access plug-ins that reside in external directories.

OR SDK Optimization

We have optimized the way the OR SDK properties are mapped to the MotionBuilder internal properties. Previously, when you created a property through the SDK, there was a noticeable delay before it was created in MotionBuilder. The creation of complex SDK objects such as the Midi device was a long process. Now, such process is almost instantaneous.

Dynamic Lighting Shader

MotionBuilder now has a new Dynamic lighting shader. MotionBuilder uses vertex per-face lighting by default, but you can use the Dynamic lighting shader to give a softer per-pixel falloff for more realistic effects.

The Dynamic lighting shader supports real-time display of normal maps (created in Autodesk Maya®, Mudbox® or 3ds Max®) which greatly enhance the look and feel of a scene. It also lets you use a fall-off on the light, enabling new levels of subtlety and realism.

NOTE This support is limited to the NVIDIA® board.

Autodesk HumanIK Integration

The HumanIK middleware library has been integrated within MotionBuilder as a plug-in built on the Open Reality SDK. This means that developers using the Autodesk HumanIK middleware library can use the same library within

MotionBuilder, creating a one-to-one relationship with the library they are using within their game engine.

The MotionBuilder HumanIK libraries have been updated to reflect the latest version of the HIK library, providing enhanced character solving. A new menu, Character Solver Selector, located in the Character Settings pane has also been added to let you select between HumanIK libraries (if applicable).

Interface for Accessing Animation Layers

You can now write plug-ins that have access to the animation layers within MotionBuilder. This means you can, within the plug-in, add and remove keys to the currently selected layer.

Character "Reset Properties" Function

Access to the character "Reset Properties" function means Open Reality plug-ins can now be created that allow you to reset a character's properties from within the plug-in.

Scaling Keys in the FCurve Window

You can now scale a group of keys using the selected keyframes as the pivot point of scaling within the FCurve window.

Foreground and Background Camera Plate Support

You can now set foreground elements to appear in front of a 3D scene, similar to the way the background plane is drawn behind the 3D scene.

Pivot Offset

You can now offset an object's pivot in the Viewer window instead of adjusting the offset values in the Properties window.

See Creating pivot offsets.

Starting MotionBuilder from the Command Line

If you start MotionBuilder from the command line (*motionbuilder.exe* on Windows), there are various startup options you can specify. Running MotionBuilder by command line can be a very effective way to assist you in optimizing your pipeline and helping you automate certain tasks.

For example, you can open a file at startup by adding the filename to the end of the MotionBuilder executable like this: `motionbuilder.exe [filename]`.

Additional MotionBuilder Startup Flags

The following table lists the MotionBuilder startup flags. The generic syntax would look like this: `motionbuilder.exe [flags] [Python script or filename]`.

NOTE A command line cannot consist of a user specifying a python script and a filename for startup because for efficiency your Python script can open the file you want on startup using FBApplication if you need both.

Command line argument	Description
`-console`	Opens an output window used by FBTrace in the OR SDK, where the appropriate stdout/err stream goes. If you choose to use this console output window for Python output, you also need to specify the `-verbosePython` flag.
`-g [width] [heigh]`	Sets the window size of MotionBuilder to the values you specified. The default value is as large as the screen size.
`-S`	Starts MotionBuilder in Full Screen Mode. This is the same as choosing Display > Full Screen inside the Viewer. To exit out of Full Screen Mode, press *Alt+Enter*.
`-suspendMessages`	Disables all the warnings and dialogs. This flag is useful for automation purposes when you do not want the script to be interrupted by dialogs. By default, all warnings and dialogs are shown.

Command line argument	Description
`-T[UI Name]`	Finds a tool with the matching name among the tools that MotionBuilder has registered, and if it is found, it activates it. This flag parameter is case sensitive. **NOTE** Unlike the other flags, there is no space between the flag name and the UI Name parameters.
`-verbosePython`	Outputs all python messages to the appropriate stdout/err stream.This puts the Python print messages to the window that you activate as well as to the Python Editor using the console flag. This is the same location that FBTrace outputs to when using the OR SDK. By default, we do not output python output to stdout/err, only to the Python Editor.

If you know every single time you run MotionBuilder you always want a flag to be executed, instead of using the command line which can be inefficient, you can edit your Windows shortcut for the MotionBuilder application to include the flag parameter you want so that when you double click the application icon the flag is executed. A good use of this is for the `-console` flag.

Following are some examples.

Command line argument	Description
`motionbuilder.exe mia_blue.fbx`	Opens the file *mia_blue.fbx* on MotionBuilder startup.
`motionbuilder.exe -S mia_blue.fbx`	Starts MotionBuilder in Full Screen opening the *scene mia_blue.fbx*.
`motionbuilder.exe -suspendMessages testScript.py`	Launches the script *testScript.py* on startup and suppresses all messages boxes that the script might generate.
`motionbuilder.exe -console -verbosePython Script.py`	Launches the script *Script.py* and sends the output to the console output window.

Command line argument	Description
`motionbuilder.exe -g 500 500 -S mia_blue.fbx`	Specifies the full screen mode to be 500 by 500 with the *scene mia_blue.fbx* open.
`motionbuilder.exe -TAudio`	Launches the tool Audio from the *toolaudio* folder in the *Samples\tools* directory on start up. (You need to compile it first.)
`motionbuilder.exe -console "-TPython Editor" mia_blue.fbx`	Launches the tool Python Editor and console opening the scene *mia_blue.fbx*.

64-Bit Windows Operating System Support

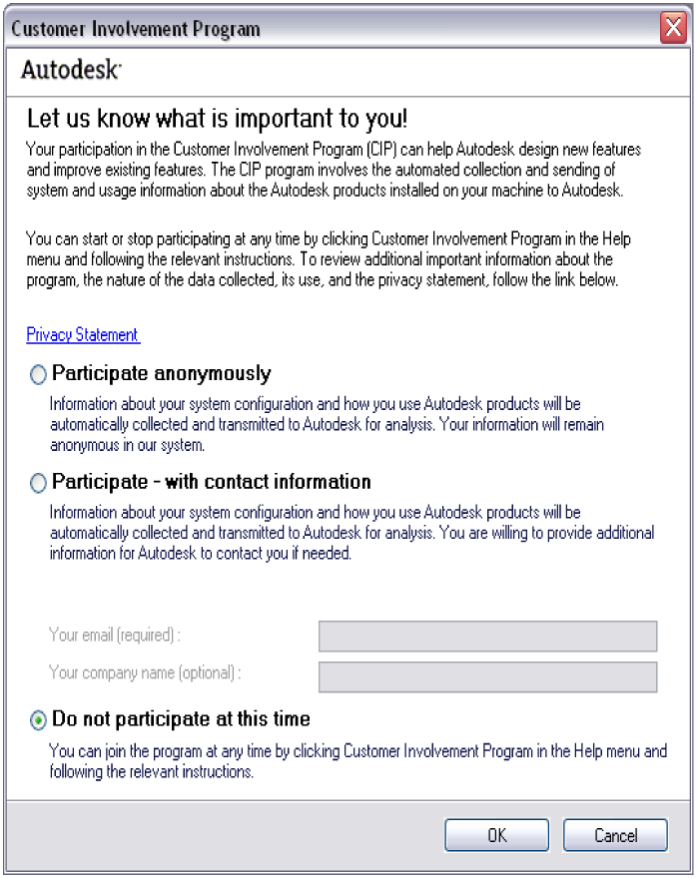
MotionBuilder 2009 supports the Microsoft® Windows® XP Professional x64 Edition as well as the Windows Vista® Business x64 Edition.

Customer Involvement Program

MotionBuilder now supports the Autodesk Customer Involvement Program (CIP).

The CIP involves the automated collection and sending of system and usage information about the Autodesk products installed on your machine to Autodesk. It dramatically improves the way Autodesk designs software and measures product performance and quality. It also provides a way for customers to become involved in helping make Autodesk products meet their needs better.

The first time you launch the software, the Customer Involvement Program window appears, inviting you to join the CIP. By joining the CIP, information about your system configuration and how you use the MotionBuilder product is automatically collected and transmitted to Autodesk for analysis.



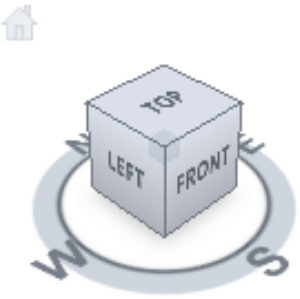
Customer Involvement Program

CIP lets you participate either anonymously or non-anonymously. It does not collect information such as your name, address, phone number, or product serial number without your consent. If you participate anonymously, you will not be contacted through CIP.

For additional information on CIP, refer to the Autodesk Customer Involvement Program Privacy Policy at: *http://www.autodesk.com/acip/CIP_Privacy_eng.html* .

Autodesk® ViewCube®

The Autodesk ViewCube, available in the MotionBuilder product as well as in a number of other Autodesk 3D products, is an on-screen, cube-shaped widget that gives you feedback about the current viewing angle in relation to the model world. You can also click a face or rotate the ViewCube to change the view.



Autodesk® SteeringWheels™

The Autodesk SteeringWheels, available in the MotionBuilder product as well as in a number of other Autodesk 3D products, are tracking menus that allow you to access 2D and 3D navigation tools from a single tool. It supports zooming, panning and traversing.

Additional Changes

The following describes additional changes to the MotionBuilder 2009 software product release.

Dongle Support

The Autodesk MotionBuilder 2009 release does not support hardware dongles.

Legacy Devices

MotionBuilder no longer ships with drivers for the following legacy devices: Gloves, UtlraTrack, and MotionStar.

For the latest drivers, contact the hardware vendors.

FBX Converter

MotionBuilder no longer includes the FBX Converter.

You can download the FBX Converter from the Autodesk FBX Downloads page at:

http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=6839916.

Resolved Issues

The following describes the issues addressed by the MotionBuilder 2009 software product release.

Auto Key Undo

You can now perform undo operations on keys set with the with Auto Key function.

Position Offset

When you merge and append a Parent/Child constraint to elements with Namespace in the scene, the constrained object now retains its position offset.

Script Device Instability

Scenes are no longer corrupted when you add script devices to scenes already containing scripts. Previously, deleting scripts or performing File > Open/New operations would cause a crash because of multiple deletions.

SpaceBall Device

There are no longer problems with the speed of translating with the SpaceBall device.

Combined Mesh Import

MotionBuilder no longer corrupts imported textured UV mapped meshes that have been “combined” to form a single mesh.

Dopesheet Window

Problems with copying and pasting keys in the Dopesheet window are now resolved.

Animating Particle Quantity Attribute

You can now key and animate the number of particles generated by the Particle shader to create dynamic environmental effects.

Default Save to ASCII Option

You can now set the default Save function to save files as FBX ASCII, as opposed to FBX binary. When you save an FBX file as ASCII or Binary, using the File > Save or Save As options, MotionBuilder now remembers what format you last selected.

ASCII files give you a "plain language" version of the file format, which lets you search the file for information retrieval.

NOTE We do not recommend that you use the Save as ASCII option to edit FBX files with a text editor. Doing so risks making your file unstable or corrupt.

Filter Preview

Clicking the Preview button in the Filters window now deactivates the selected region in the FCurves window.

Camera Flips After Deleting Camera Interest

Cameras with their camera interest deleted no longer flip when you try to dolly in the Viewer window. However, some problems remain:

- If you delete the camera interest, the camera changes direction.
- The camera dolly speed depends on the distance between the lookat and camera position; you cannot change this distance if there is no camera interest.

Rendering to a .MOV File Format

You can now continue working in MotionBuilder when rendering a file to a *.mov* file format if you have the latest QuickTime® player installed on your computer.

Mandelbrot.cg Sample File

The example file provided in the Open Reality SDK can now be loaded.

FBFilter

You can now continue working in MotionBuilder after using Start and Stop in FBFilter.

FBAudioClip

You can now continue working in MotionBuilder after executing *FBAudioClipTest.py*.

Sending Debugging Messages to the Console

The FILMBOX_CONSOLE environment variable is no longer used by pyfbsdk::FBTrace to launch a console. Instead, the console is now launched by passing the argument `-console` when launching MotionBuilder.

Functions Requiring Arguments

Documentation previously wrongly implied that some functions did not need arguments. This has now been fixed for FBModelMarker, FBObjectPose, FBImage, FBFCurveKey, and FBFCurve.

LoadIsCompleted() Deprecated

The function LoadIsCompleted() should not be used as it may not return a correct value. Use the Load() and LoadEnd() functions instead.

Getting / Setting Node Labels

A new property, Label, and a new function FindByLabel() have been added to the class FBAnimationNode.

The Label property can be used to write or read the node label. The FindByLabel() function takes the UI name of animation node to find and returns a handle to the animation node.

Animation Node Type Vector

In previous versions of MotionBuilder, creating an animation node of type ANIMATIONNODE_TYPE_VECTOR in a custom constraint caused an unhandled exception. This is now fixed.

FBDelete()

In previous versions of MotionBuilder, when you deleted a relations constraint box using the UI or FBDelete(), the contents of FBConstraintRelation's Boxes list still showed the box that you just deleted. The FBDelete() now updates boxes list.

FBClass_TypeInfo()

This global function is now documented. It returns the TypeInfo which can then be used in a ::Is() call.

Set a Constant Input Value for a Constraint Relation Box

In the SDK, you can now use WriteData to set a constant input value for a constraint relation box. In Python, use *SetCandidate.py*.

UseGlobalTransforms in SDK and Python

In previous versions of MotionBuilder, using the SDK or Python to set the UseGlobalTransforms property of FBModelPlaceHolder broke the relations constraint. This is now fixed.

Resetting Character Controls with SDK and Python

You can now reset character properties with the function ResetProperties in the SDK and Python.

Importing and Exporting Multiple .amc and .asf Files

When using FBApplication.Import and FBApplication.Export to import or export two files at the same time, separate the file paths with a comma, e.g. “Path1.amc,Path2.asf”.

Adding New Takes to the Scene with Python

In previous versions of MotionBuilder, when you created a take with the Python FBTake constructor, there was no way to add it to the scene. The way to append a new take to the scene is now FBSystem().Scene.Components.append(FBTake(“My new take”)).

Unresolved Issues and Limitations

The following describes the unresolved issues as well as any limitations in the MotionBuilder 2009 software product release.

Rigid Body and Ragdoll Custom Property View

When trying to create the local property views for the rigid bodies and ragdolls, the customized view doesn't allow for the use of the same name in a folder as one of the assigned properties.

HIK 3.6 Creates Additive Offsets

HIK 3.6 may create additive offsets during user manipulation in certain situations. This problem occurs if a character uses the HIK 3.6 solver.

SteeringWheels

When you orbit using the SteeringWheels, you do not get the same result as when you orbit using the MotionBuilder keyboard shortcuts because the SteeringWheels orbit center differs from the MotionBuilder orbit center.

Offset Normals on Import

MotionBuilder does not support ByPolygonVertex Normals.

The workaround for this issue is to split any vertices that have multiple normals.

Normals Support for Shapes

The MotionBuilder software supports Normals for shapes however, this support is off by default. To activate this support, you must modify the application configuration *.txt* file by setting ShapeBlendNormals under the [Display] heading to Yes.

The *<computername>.Application.txt* file is located by default in the following directory: *C:\Program Files\Autodesk\MotionBuilder 2009\bin\config*.

SpaceBall Device

The SpaceBall device is not supported on the MotionBuilder 64-bit version of the software.

Loading Older Versions of FBX Files

This release of MotionBuilder does not support MotionBuilder files from releases previous to version 6.

Converting Spherical Angles to Euler Angles

Converting spherical angles to euler angles can lead to unpredictable results.

Unconventional Story Window Character Setup

If you use a skeleton connected to another skeleton to drive a mesh in the Story window, offsets occur with the mesh's position. MotionBuilder does not support this workflow.

Frame Rate

When doing real time playback, the SteeringWheels and the ViewCube may cause slow down in the frame rate.

The workaround for this issue is to disable Show SteeringWheels and Show ViewCube in the MotionBuilder SteeringWheels and ViewCube preferences.