

Autodesk Maya 2008

Key Features and Benefits

Autodesk Media & Entertainment

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Autodesk Maya 2008: Key Features & Benefits

Create Breathtaking 3D

The award-winning Autodesk® Maya® software is a powerful, integrated 3D modeling, animation, and rendering solution based upon an open architecture. Everything can be scripted or programmed using either of Maya software's two embedded scripting languages (MEL or Python® scripting) or its well-documented and comprehensive API (application programming interface). Maya is used by film and video artists, game developers, multimedia designers (both print and web), design visualization professionals, and 3D enthusiasts to create engaging, lifelike digital images, realistic animation, and extraordinary visual effects.

Maya 2008: The Most Efficient Maya Toolset Ever Maximizes your Productivity

Autodesk® Maya® 2008 software delivers faster, more efficient tools and workflows for creating the stunning, high-resolution characters, environments, and performances that will populate the games consoles, theater screens, and televisions of the future. These include an expanded polygon modeling toolset, a new, non-destructive editing workflow for character rigging and skinning, and improved interactive display fidelity for textures and shaders. Furthermore, with increased extensibility and support for more platforms than any other 3D package in the entertainment industry, Maya remains an ideal core application for the digital content-creation pipeline.

New Feature Highlights

Autodesk Maya 2008 delivers significant developments in the following areas:

Polygon Modeling — A range of new and enhanced tools in Maya 2008 increase polygon modeling efficiency for the highly detailed characters and environments demanded by today's games, films and video productions. The Maya Mesh Smooth workflow has been dramatically streamlined: users can now preview a smoothed mesh while editing the mesh cage. A new Slide Edge tool, and the ability to 'pick walk' edge loops will be welcome additions to the modeling toolset, while significant improvements to Booleans, Bevel, Bridge, Reduce, and other tools streamline existing workflows. Meanwhile, enhanced asset placement and scene assembly are provided through new abilities to position objects along a curve, to replace objects within a scene, and to convert instances to objects.

Performance — With Maya 2008, Autodesk continues the task of optimizing Maya toolsets, through both multi-threading and algorithmic speed-ups, helping to ensure its ability to meet the demands of today's complex projects and massive data sets. Of particular note, the integrated mental ray® 3.6 rendering core offers significantly faster rendering (including IPR (interactive photorealistic rendering)) and texture baking, while accelerated draw and selection performance, together with more efficient updating of UI elements, facilitates efficient level editing and speeds overall workflow. In addition, several other areas benefit from performance and threading enhancements, including Skinning, Poly Smooth, Poly Reduce, Wrap Deformer, Maya Fluid Effects, and Maya Python API bindings.

Tools for Creating Better Looking Games — Maya 2008 enables game developers to more effectively create and display sophisticated content destined for Nintendo® Wii, Microsoft® Xbox® 360 and Sony® PS3 game consoles. A new API for hardware shaders includes native support for OpenGL® and DirectX® shaders, making it easier to write high-performance hardware shading plug-ins that match the in-game look, while multiple enhancements to the high-quality render view, including support for layered textures and multiple UV sets, increase the fidelity of interactive previews. In addition, per-instance UV sets aid in the creation of efficient games assets that re-use the same geometry, but can support wide variations in appearance.

Character Animation — Building upon the advanced, customizable Maya animation system, Maya 2008 delivers improved, flexible skinning and rigging toolsets – allowing animators and TDs to efficiently manage iterations and to get superior results, faster. For example, new, non-destructive skin editing capabilities include the ability to insert, move, delete, connect, and disconnect joints on a bound skeleton, and support for multiple bind poses has been added. Animation curves can now be templated to prevent accidental modification, while playback speed can now be clamped to ensure accurate frame rate. Meanwhile plug-in developers will benefit from a new API to create and control animation constraints.

Two Options: Maya Complete and Maya Unlimited

Maya® Complete software is a comprehensive 3D solution for producing professional-quality graphics on desktop PCs or graphics workstations. It integrates all of the best tools for 3D modeling, animation, and rendering within a single, production-proven workflow. Maya Complete—the choice of award-winning digital artists and animators—has an intuitive design that makes it a favorite among film, broadcast, game development, multimedia (print and web), and design visualization artists of all experience levels.

The ultimate version of Maya—**Maya® Unlimited** software—is the choice of digital artists who are looking to make their 3D projects stand out. Maya Unlimited includes all the functionality found in Maya Complete and provides professional artists and animators with additional industry-leading innovations such as Maya Fluid Effects, Maya nCloth, Maya Hair, Maya Fur, and Maya Live, for the creation of superior digital content.

Note: Maya Unlimited and Maya Complete are available for 32-bit Microsoft® Windows®, Linux®, and Mac OS® X (for Macintosh® Power PC® and Intel®-based Macintosh computers) and 64-bit Windows and Linux operating platforms.

Modeling and Mapping

Modeling

Smooth Mesh Preview for Polygons

The Maya Mesh Smooth workflow has been dramatically streamlined as of this latest release. Modelers can now preview their smoothed mesh while making edits to the mesh cage – with superb performance, particularly on multiprocessor workstations. The smoothed mesh can be converted to a regular polygon mesh for rendering or simulation.

Variable Creasing on Vertices

Variable creasing is now supported on vertices as well as edges, for both the new Smooth Mesh Preview and Subdiv Proxy, providing greater control over the resulting surface shape.

Polygon Smooth Performance

The smoothing algorithm used in the polygon Smooth operation, Smooth Mesh Preview, and Subdiv Proxy is now significantly faster.

Slide Edge Tool

A new Slide Edge Tool allows you to move edges or edges loops along the paths of their neighboring edges, without changing the shape of the surface. This allows you to position edges where required on a mesh, without adding unnecessary detail.

Pick Walk for Edge Loops

Iterative tweaking of a series of edge loops on a surface is now made more efficient by the new ability to quickly change an existing edge selection to a full edge loop and then walk the selection to adjacent loops across the mesh.

Enhancements to Polygon Booleans

Polygon Boolean operation now produces better quality and more predictable results, thanks to new threshold tolerances which clean up very small or zero-sized edges and faces.

Enhancements to Polygon Bevel

The Bevel operation can now be used efficiently once texturing is in progress since UVs are created for the generated faces, and, in the case of meshes with CPV data, new vertices receive interpolated color from the originals.

Position Objects along a Curve

Level and environment builders will enjoy the new ability to space a selection of objects evenly along a selected curve based on the curve's parameterization. This lets them quickly position objects evenly along irregularly shaped features in their scene.

Replace Objects

Substituting one or more objects in a scene with another, without losing transformation data, is now easily achieved using the new Replace Objects command.

Convert Instances to Objects

You can now convert instanced versions of objects to real objects - useful when you need to modify one or more of the instances and don't want the other instances to be affected.

Enhancements to Color Sets

Per-vertex color values can now be applied outside the 0-1 range – useful in the creation of layered textures, or to produce special effects such as light bloom. Additionally, color sets can now be specified as RGB, RGBA or Alpha only, optimizing the size of the data to only what is required.

Polygon Reduce Performance

Poly Reduce operations now benefit from the ability to cache intermediate polygon reduction states – yielding significant performance improvements. In addition, Poly Reduce setup has been multi-threaded.

New Options on Poly Reduce

As well as the performance boost just described, Poly Reduce can now produce cleaner meshes without unwanted triangulation, and that maintain their original shape, thanks to new options to preserve quads and to lock vertex positions.

Ability to Bridge using Face Selections

The Bridge tool now can use face selections to construct a bridging mesh between border edges, simplifying the selection process.

Ability to Specify a Threshold for Collapse

You can now choose to collapse only small faces on an area of the mesh by specifying the maximum size of faces to be affected by the Collapse operation.

Make Live in Shaded Mode

Make Live now works in shaded mode - making it easier to visualize your work when creating curves or objects on the surface.

Sculpt NURBS along Arbitrary UV Direction

Using the Artisan Sculpt Geometry tool, you can now move CVs along the surface in an arbitrary UV direction.

UV Texturing

Per-instance UV Sets

Instances could always have different materials and textures, but until now could only share the same UVs. Now a single mesh can be used to represent multiple objects - reducing scene overhead - even in cases where each instance requires unique UVs.

New UV Set Editor

A new UV Set Editor puts many of the UV set editing features into a single efficient interface for greater productivity.

Character Animation

Improved Joint Management for Bound Characters

The requirement to make changes when work is already in progress is something that all 3D artists are faced with – and the further developed your character, the more difficult it is to cope with changes. Animators seeking to manage iterations efficiently will welcome the new ability to insert, move, delete, connect, and disconnect joints on a bound skeleton, enabling changes to be made non-destructively after skinning has been set up.

Multiple Bind Poses

Trying to make a mesh that has been modeled in a particular pose fit the default bind pose for skinning has always been troublesome. Fortunately, you can now create multiple bind poses for different meshes for your skinned characters and bind your characters when their skeletons are not at their default poses.

Template Animation Curves

Maya has always allowed you to template geometry, making it viewable but not selectable. Now you can also template animation curves, which is particularly useful when dealing with overlapping curves in the Graph Editor, since it prevents accidental modification.

Clamp Playback Frame Rate

You can now clamp the playback speed of your scene's animation. This enables you to play back every frame where possible, but not exceed a specified frame rate in the case where Maya can play some frames faster, allowing animation to be more accurately evaluated.

Wrap Deformer Exclusive Bind

Significantly faster Wrap deformations are now possible using a new exclusive bind option. This method means that each point on the target surface is only affected by a single point on the Wrap deformer.

Faster Draw Performance for Animated Scenes

Some changes to the multi-threading of the caching code make it faster to prepare objects for drawing if they have changed from frame to frame. This can improve overall draw performance for animated scenes on multi-processor workstations.

Smooth Skin Weights

Unwanted spikes and other anomalies in smooth skin weighting on a bound character can now be quickly corrected using the new Smooth Skin Weights operation.

Arbitrary Polygon Object as Sculpt Deformer

Previously only available for NURBS objects, you can now use any polygon object as a Sculpt deformer.

Move Keys Past Neighbors in Timeline

Animators have long requested the new ability to drag a selection of keys past neighboring keys in the timeline, enabling them to easily reorder a section of animation in time.

Setting Keys with Ghosting Performance Improvement

Setting keys when ghosting is turned on for any node in the hierarchy is now significantly faster for hierarchies with many transforms, improving productivity when working with complex animations.

Current Frame HUD Display Value

You can now toggle the display of the current playback frame number in the Maya heads-up display. This lets you view the current frame number while playing back animation, and is particularly useful in letting you burn the number into the frame when creating Playblasts.

Rendering

Enhancements to the Hardware Renderer

Truly WYSIWYG interactive previews are now several steps closer, with the hardware rendering engine now supporting layered textures, multiple UV sets, negative lighting, and object space normal maps. As well as increasing preview fidelity when using the High Quality renderer in the interactive viewport, this allows a greater range of effects to be rendered to final output using the Maya hardware renderer.

Access to Maya Shading Code for Incorporation into CgFX Shaders

Developers can now create CgFX shaders that are based on the newly provided Maya shading code, in order to more closely match the look of their in-game assets in Maya. For example, they can reuse the blending code that Maya uses to blend a layered texture in their own shader.

mental ray Performance

This release uses the latest mental ray 3.6 rendering core, which boasts very significant performance improvements in the translation of polygon meshes and instances for rendering, and for IPR startup.

Fast Texture Baking in mental ray

There is now an option to use a mental ray lens shader for texture baking, instead of light maps. This operation is multi-threaded, and offers significantly faster performance for texture baking, especially on multi-processor machines.

Optimized Texture Conversion for mental ray

There's now an option to automatically convert textures to an optimized, uncompressed pyramid structure format, which can be used to load only the part of the texture needed at render time. This significantly increases render performance and improves memory efficiency, at the generally acceptable cost of a one-off processing hit for the conversion, and increased use of disk space.

Render Hardware Particles with mental ray

Particle types previously only supported in the Maya hardware renderer can now be rendered in mental ray, minimizing the need to combine outputs from multiple renderers.

Native mental ray Light Linking

Maya now supports native mental ray light linking, allowing custom mental ray shaders – such as the Physical Sun and Sky shader – to work with Maya light linking, and to work correctly in IPR.

Transfer Maps in Object Space using mental ray

You can now transfer maps for attributes that use mental ray (i.e., ambient occlusion and custom mental ray shaders) in object space, as well as world space. Object space allows for maps to be transferred between similarly sized objects without the need for meshes to occupy the same physical space.

Create Swatches for Large Textures on Demand

Previously, swatches would be created for all textures in your scene, regardless of whether the swatch needed to be viewed. In the case of large textures, this could represent a significant drain on memory and have a negative impact on performance. You can now set a maximum size above which swatches will not be created for textures until explicitly requested.

General and Miscellaneous

X-Ray Selection

Artists using X-Ray display mode to see “through” their shaded objects can now select components revealed by this mode – an ability that dramatically streamlines modeling workflows.

Selection Performance Improvement

Selecting or clearing the selection of large numbers of components with the graph editor or component editor open is now significantly faster, boosting productivity when work with large data sets.

Easier Access to Frequently-used Commands

In-context access to commands frequently associated with channels means fewer clicks and greater productivity. For example, you can duplicate values from one object's channel to another's directly from the Channel Box.

Move Parent Object without Child

You can now move a parented object without moving the associated child objects. This allows you to edit the positional relationship between child (or children) and parent by moving the parent rather than the child.

New Hotkey Toggles for Artisan

New Artisan brush hotkeys allow you to toggle between Push/Pull/Smooth, Add/Remove, or invert the values you're painting as you're working – allowing you to keep focus on your model when sculpting or painting attribute values, and thereby increasing productivity.

User-defined Display Size for Vertices, UVs, and Edges

As monitor resolutions get higher and higher, it can be difficult to see and select components which appear relatively much smaller. To address this, you can now adjust the size of vertices and UVs, and the thickness of edges, as they are displayed within the scene view.

Improved Start-up Time on Mac OS X

Start-up times of Maya on Mac OS X, especially on Power PC machines are significantly improved.

API and Scripting

Hardware Shader API

Games developers can now more easily write high-performance hardware shading plug-ins for Maya using the new API for hardware shaders, which includes native support for OpenGL and DirectX shaders, built-in support for shader parameters, and direct access to the Maya internal rendering cache.

Animation Constraint API

Plug-in developers can now write their own animation constraint nodes and commands that are derived from the Maya underlying constraint node and command architecture, via a new API. This makes it easier to write custom constraints, and enables them to interact with the rest of Maya in a manner similar to built-in constraints.

Support for Stereo Buffers in MPx3dModelView

Responding to the rising trend for animated films to be released for 3D stereoscopic viewing, the MPx3dModelView classes have been extended to provide support for the creation of stereo buffers, and an example plug-in that demonstrates this capability is provided. This allows you to create a stereoscopic view of Maya on graphics cards that support stereo buffers.

Threading API

A new API allows plug-in developers to access Maya software's ability to create and manage threads. This allows developers to more easily create multi-threaded plug-ins, with the added advantage that the threading will automatically be cross-platform.

Support for UVs in MPxSurfaceShape

User-defined shapes can now be created with UVs, through new support for the draw and selection of UVs in MpxSurfaceShape.

Point and Vector Class Performance

Plug-ins or standalone API applications that utilize the new inline methods of the point and vector classes will be significantly faster.

Reduced Overhead for Python Bindings

The Maya Python API (OpenMaya) bindings have been updated to use SWIG 1.3.31, resulting in significantly reduced overhead and increased performance.

Maya nCloth (Maya Unlimited)

Enhanced Wind Model

More realistic cloth simulations are now easier to achieve through enhancements to the wind model for Maya nCloth. Wind shadowing simulates the effect where cloth will not be blown by wind on the opposite side of the character, or when sheltered by another object. Wind noise simulates turbulence quickly and efficiently, and

introduces a degree of non-uniformity to the simulation which increases the effect of realism.

Maya nCloth Example Files and Presets

There's no longer a requirement to create every cloth simulation from scratch, since a collection of example files and presets for Maya nCloth have been provided. These can be used to create starting points or inspiration for different material types, such as chiffon or silk, and for different cloth setups such as a bag of marbles, or a zipper.

Maya nConstraint Membership Tool

Adjusting which vertices are affected by constraints after initial setup is now easier, thanks to a new tool which lets you edit the membership of nConstraint sets by selecting vertices with the mouse.

Maya Fluid Effects (Maya Unlimited)

Solver Threading

Further multi-threading has been implemented for the base Fluid Effects solver, improving Fluid Effects performance on multi-processor workstations.

Turbulence Threading

The Turbulence algorithm for Fluid Effects has been multi-threaded, improving performance on multi-processor workstations for this processing-intensive operation.

Maya Hair (Maya Unlimited)

Per-follicle Clump Width Scale

A new ramp attribute has been added that allows you to control the shape of individual clumps of hair. For example, you can have some clumps converge to a point while others fan out.

Start Curve Attraction Scale

You can now manipulate the degree of attraction to the start curve along the length of the hair, independently of stiffness, using a new ramp attribute.

Render Hair in mental ray Standalone

Hair can now be rendered in mental ray Standalone, through a new option to convert it to a native mental ray hair primitive on export.

Maya Fur (Maya Unlimited)

Volume Fur Supports Depth Map Shadows

You can now render Fur in mental ray using the volume shader together with depth map shadows. This makes it unnecessary to turn on Ray Tracing in order for Fur to receive and cast shadows, producing a more efficient result when rendering Fur in mental ray.

Recommended System Requirements

Software

The **32-bit** version of Maya® 2008 software is supported on any of the following operating systems:

- Microsoft® Windows Vista™ Business
- Microsoft® Windows® XP Professional (SP2 or higher)
- Red Hat® Enterprise Linux® 4.0 WS (U4)
- openSuSE Linux 10.2
- Fedora™ Core 5
- Apple® Mac OS® X 10.4.9 (PowerPC® and Intel® versions of Maya)

The **64-bit** version of Maya 2008 software is supported on any of the following operating systems:

- Microsoft Windows Vista Business
- Microsoft Windows XP x64 Edition (SP1 or higher)
- Red Hat Enterprise Linux 4.0 WS (U4)
- openSuSE Linux 10.2
- Fedora Core 5

The following web browsers are supported for Maya 2008:

- Microsoft® Internet Explorer® 6.0 or higher
- Netscape® 7 or higher
- Apple® Safari™
- Mozilla Firefox™

Hardware

At a minimum, the **32-bit** version of Maya 2008 software requires a system with the following hardware:

- Windows and Linux: Intel Pentium® 4 or higher, AMD Athlon® 64, or AMD Opteron® processor
- Macintosh®: Power Mac® G5 or Intel-based Macintosh computers
- 2 GB RAM
- 2 GB free hard drive space
- Qualified hardware-accelerated OpenGL® graphics card
- Three-button mouse with mouse driver software
- DVD-ROM drive

At a minimum, the **64-bit** version of Maya 2008 software requires a system with the following hardware:

- Windows and Linux: Intel EM64T, AMD Athlon 64, or AMD Opteron processor
- 2 GB RAM
- 2 GB free hard drive space
- Qualified hardware-accelerated OpenGL graphics card
- Three-button mouse with mouse driver software
- DVD-ROM drive

For the latest list of qualified hardware, including graphics cards, to run Maya 2008, refer to the Maya 2008 qualification chart located at www.autodesk.com/qual-charts.

Note: Maya 2008 is also capable of running on other hardware configurations such as the Power Mac G4 or boutique distributions of Linux. However, enumerating systems that are not tested and cannot be supported or that fall below the requirements for a productive user experience is beyond the scope of the online qualification charts.

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