3ds max™ **4** *is the most significant release of the world's best-selling 3D modeling, animation and rendering solution for visual effects, character animation and next generation gaming.*

Winner of more then 65 industry awards since its introduction, **3ds max 4** will continue its success, building upon a new and extensible Inverse Kinematics (IK) architecture for: intuitive character animation, state of the art interactive graphics capable of matching the rendering quality of next-gen games, the industry's most extensive modeling platform with new subdivision surface and polygon geometries, and a new standard in rendering productivity with ActiveShade and Render Elements. **3ds max 4** also provides a connection to other advanced renderers like **mental ray**® and Renderman for distinct rendering capabilities like global illumination, caustics and distributed rendering.

3ds max 4 supports the largest developer community of any 3D application, with a huge selection of third-party integrated applications. Discreet's own **character studio**® is an ideal extension for advanced character animation and crowd creation. **3ds max** also has unparalleled integration with **combustion**™, Discreet's 3d compositing software, providing a comprehensive suite of visual effects, animation and 3d compositing on the desktop.
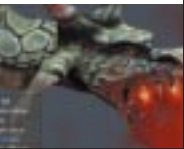
new features
- *New extensible Inverse Kinematics architecture*
- *Next Generation gaming environment with support for Direct 3D, multitextures per face, opacity mapping, true transparency, phong hilights and custom pixel and vertex shaders like reflection maps and bump maps*
- *New Volumetric Shaded Bones System for accurate skeletal setups, previews and deformations*
- *Enhanced Character Deformations including new angle deformers and soft body dynamics*
- *Extensive modeling platform with new subdivision surfaces, Enhanced bezier patches and new polyobject modeling system*
- *Rendering productivity enhancements with ActiveShade and Render Elements*
- *Integration with Discreet's desktop 3D compositing and paint software,* combustion

new feature highlights

- A WYSIWYG viewport environment providing realtime multi-textures per face, blended true transparency with opacity mapping, Phong highlights, procedurals and realtime display of Pixel and Vertex shaders like reflection maps and bump maps
- Hierarchical Sub-division surfaces providing state of the art local subdivision, local smoothing, wavelet-based surface approximation, breakthrough refinement features, trimming, and a hierarchical approach that sets the bar for entertainment modeling
- New polygon modeler complete with smoothing groups, mapping channels, vertex colors, new custom face data as well as Polygon "proof" tools and polygon optimization
- Enhanced MeshSmooth NURMS provides intuitive subdivision surface modeling with modifiable points, vertex and edge weighting, and interactive control of mesh levels for infinte control over the surface manipulation
- New advanced spline-based patch modeling with patch, extrusions, beveling, welding edges, vertices, and more, allowing complex character creation or primitives to patches conversion for direct manipulation
- Soft Selections in Patches and Splines
- Support vertex colors, Illumination and alpha within Bezier knots for Next-Gen game title production
- New for Patches: surface modifiers like Relax, UVWUnwrap, UVWMap, Material, etc and sub-object selection for greater control of surface properties
- Enhanced angle deformers including Joint, Morph and Bulge for complex bending of shapes during animation
- Enhanced Flex supports soft body dynamic features as well as Collision detection for realistic dynamics
- New extensible IK architecture with swappable solvers for easily choosing the right solver for the job
- History independent, History Dependent and Limb solvers all extendable with plug-in based alternatives for quickly creating animations with predictable results
- Open source two-Bone IK limb solver that can be modified and used in 3ds max or in a games engine
- FK/IK snapping for easy transitioning during the animation, providing complete freedom in sculpting a characters movement
- New shaded Bones provide a better definition to your characters shape and size with a unique squash and stretch ability
- New Constraint Controllers including Position, Orientation, Look-At, Path and Spring provide the flexibility and familiarity for efficient animation
- Track Bar displays context-sensitive keys for manipulation
- New Active Shade renderer allows users to interactively adjust all aspects of a materials, definition and mapping, during a rendering session
- Interactive Motion blur quickly edit and visualize the effect of motion blur without re-rendering the scene
- Single pass rendering of separate elements to be used for compositing or special effects
- New visual scripting language interface for maxscript, for quickly creating UI elements and layouts

new feature highlights (continued)

- Add User Interface elements like Sliders, Dropdown lists, Check boxes, buttons, Color pickers, etc., to any object, modifier or material. Link to parameters using Parameter Wiring
- Parameter Wiring easily connects any animatable parameter of one object to another, making complex expression editing a thing of the past
- Customizable interfaces include interface elements, colors, custom toolbars, buttons, tooltips, macros, and scripts

architecture

- Multi-threaded throughout for superior performance and scalability
- Full scripting throughout the core level
- Interactive viewport graphics support OpenGL and Direct3D hardware acceleration, or fast Heidi® software for any Windows display
- Flexible procedural modeling stores decisions as long as required
- Individual modifiers, materials, maps, and animation controllers can be instanced for sophisticated relationships

viewport interaction

- Advanced dual plane technology for superior interactive performace
- Choice of coordinate systems in either view, screen, world, local, chosen object, grid, or parent space
- Interactive axis constraints and modeless keyboard entry supported
- Heads-up, interactive 3D snap system with more than 20 snap types
- Align system for positioning selections
- Selection methods include pick, fence, rectangular and circle with object class filters, select-by-name, named selection sets, mesh extents, backface exclusion, polygon boundary, smoothing, material, and face normal angle
- Schematic view for controlling scene, object, modeling, and material hierarchies and relationships

materials and mapping

- Combine an unlimited number of textures to give ultimate control over materials
- Material/Map Browser portrays hierarchies with thumbnails and drag-and-drop assignment
- Shaders provided include anisotropic, Blinn, Oren-Nayar-Blinn, Phong, metal, multi-layer, and Strauss with independent sampler options
- Over 30 procedural 2D and 3D maps provided
- Multiple UVW mapping with up to 100 mapping channels per vertex, and unlimited planar object or world map layering per face
- Vertex colors can be painted, tinted or derived from scene lighting and shadows
- Mapping projections include procedural, planar, cylindrical, spherical, box, face, shrink-wrap, world-XYZ, camera, screen
- Direct manipulation of texture vertices with extensive UVW Unwrap tool

creation and modeling
- Extensive set of 2D and 3D primitives that can remain parametric or convert to any other base geometry
- Complete tool sets for modeling splines, polygons, polygonal mesh, Bezier patch or relational NURBS Surfaces in direct or procedural mode
- Rapid mesh modeling in either explicit or procedural modes with extensive set of vertex, edge, face and polygon tools that include cut, chamfer, bevel, divide, slice, planarity control, interactive normal flipping, and local tessellation
- Relational NURBS modeling creates curves and surfaces which maintain design intent through manipulation and animation with choice of point or CV curves and surfaces
- NURBS surfaces include point and CV, u-loft, uv-loft, blend, n-sided blend, offset, extrude, fillet, lathe, ruled, cap, 1 rail, 2 rail, trim, and multi-curve trim
- NURBS curves include point and CV, fit, offset, chamfer, fillet, and surface-surface intersection, surface edge, iso, curve on surface, and projected with trimming control
- Integrated particle systems with behavioral control including inter-particle collision, meta-particles, snow, spray, bubbles, explosions, spawning, and trails which support dynamic reactions with forces and object collisions

animation
- Controllers can be layered, blended, scripted, referenced or instanced
- Advanced animation controllers include Reactors for event-driven animation, Blocks for reusing animation clips in nonlinear fashion, Expressions for establishing dynamic relationships between parameters
- Custom relationships and Motion Capture for puppeteering
- Track view controls every animated parameter with extensive filtering to isolate relevant data
- Audio Waveforms displayed in Trackbar
- Key management includes Bezier function curve control with layerable ease and multiplier curves, out-of-range looping, key frame reduction, sound coordination, constant velocity, text notes, time tags, time-based editing, key randomization and Key scaling and sliding for precise positioning
- Character tools include volumetric skinning with hierarchies or splines, spring-based secondary animation, weighted morphing, FFD lattices, soft selections, and cluster control of individual vertices
- IK results can be calculated or interactive using end effecter and swivel angle manipulators
- Rigid body dynamics for colliding and sliding objects
- Schematic view of complex hierarchies

rendering
- High Speed film-quality renderer provides, 16-bit color per channel scanline A-buffer, with full gamma control at up to 32K lines of resolution for frames or fields
- Superior scalability through multi-threading and free customizable network rendering
- Selective ray tracing provides fast, accurate reflections and refractions with very high recursion levels

rendering (continued)
- Advanced rendering options include photorealistic depth of field, adaptive displacement of all geometries, 2D/3D motion blur, 3D volumetric lighting, fire, explosions, smoke and fog
- Live action coordination with extensive background plate tools, camera projection mapping, precise camera matching, and 3D motion tracking
- Render effects delivers real-time photorealistic results for special effects including blur, depth of field, glow, film grain, lens flare highlights and color correction
- Exclude objects from environments but still affect the environment
- Connection to **mental ray** rendering achieves unsurpassed image quality and physically correct ray tracing, global illumination, and caustics
- Over a dozen anti-aliasing filters to choose from, providing different looks for rendered images including Area, Blackman, Catmull-Rom, Soften, and more
- Direct plug-in control of key rendering stages including anti-aliasing, shaders, sampling, and shadows

lights
- Light types include omni, free and target spot, free and target directional with support plug-in shadows, shadow color and density, projected images, contrast, edge softness, attenuation and decay
- ambient/diffuse/specular isolation, solar location, volumetric lighting
- Interactive glows, flares, streaks and highlights

cameras
- Unlimited number of cameras using industry-standard camera types with optional custom relationships
- Interactive clipping plane, dolly, FOV, grid overlay, orbit, roll, vertigo zoom, zoom and safe frame display
- Precise alignment with either horizontal, vertical, or diagonal field-of-view measure, and support for orthogonal projection

extensibility
- Plug-in architecture provides extensibility for nearly any system component
- Plug-ins behave like core features to support any new functionality introduced
- Free bundled Software Developer's Kit (SDK) enables developers to build any imaginable application, with over 50% of total core source code provided

plug-in classes
- Object types: 3D and 2D base geometry classes, parametric objects, particle systems, animation systems, space warps, helpers
- Modeling operations: modifiers may be parametric or explicit and may behave in object or world space
- Animation functions: controllers (for parameters, matrices, or systems), motion capture devices, utilities, sound, key/time manipulation
- Image effects: layer, compositing, transition, one pass, image I/O, and interactive rendering effects
- Scene interaction: object snaps, color pickers, utilities, user interfaces, DCOM application control

plug-in classes (continued)
- Rendering: complete renderers, anti-aliasing, shaders, samplers, environments, shadows, lights, cameras, materials, 2D or 3D procedural, composite, or explicit textures
- File I/O: geometry, scene, bitmap, image device, fonts, viewer

scripting
- MAXScript object-oriented scripting language mirrors SDK to provide access to plug-in parameters
- Scripting generates seamless interfaces you can load, launch at startup, or embed in files
- Dynamic macro recording creates concise scripts in MAXScript syntax in relative or explicit mode
- Plug-in scripts can append to plug-ins, abstract plug-ins into alternative interfaces, or combine several plug-ins in one interface

workflow
- Scenes are self-contained definitions of objects animation, and rendering choices
- External references allow scenes or objects to be referenced, leveraging 3D assets
- Layered nesting with local edits and alternative proxies supported for collaborative workflow and ease of animating immense data
- Undo and Redo definable in-depth with separate scene and viewport lists
- Context-sensitive menus deliver fast and efficient workflow

system requirements
- Windows 2000 (recommended), NT or Windows® 98
- Intel®-compatible processor at 300 MHz minimum (dual Pentium® III system recommended)
- 128 MB RAM and 300 MB swap space minimum
- Graphics card supporting 1024x768x16-bit color. (OpenGL and Direct3D hardware acceleration supported; 24-bit color, 3D graphics accelerator preferred)
- Windows-compliant pointing device. (specific optimization for Microsoft Intellimouse™)
- CD-ROM drive
- Optional: sound card and speakers, cabling for TCP/IP-compliant network, 3D hardware graphics acceleration, video input and output devices, joystick, midi-instruments, 3-button mouse.
- Network rendering not supported under Windows 98

file format support
- Image file support for AVI, BMP, CIN, EPS, FLC, GIF* , JPG, PNG, RGB, RLA, RPF, TGA, TIF, YUV*, Photoshop PSD*, and QuickTime MOV
- Geometry file support for IGES*, PRJ, SHP, STL, VRML, 3DS, 3D ASCII Scene, Adobe Illustrator AI, AutoCAD DWG and DXF, Adobe Type1* and TrueType* fonts (*= import only)

additional information
To obtain more information about Discreet systems and software visit the Discreet web site at www.discreet.com
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