

RENDERER FEATURES

RENDER ENGINE

- **Biased** and **Unbiased** solution
- **Path Tracing**: unbiased solution
- **UHD cache**: faster biased cached solution for interiors
- Progressive and bucket modes
- Max Sample Intensity (MSI): automatically removes fireflies - accuracy/render speed tradeoff
- Bidir/VCM: experimental unbiased engine with faster/more precise caustics
- Proudly CPU based

INTERACTIVE RENDERING

- **100% the same render engine** as for the final frame
- **All final frame rendering features supported**
- Results shown in 3ds Max viewport or Corona VFB

DISTRIBUTED RENDERING

- Slaves can join or quit the render session after it has started
- Auto discovery of slaves on local network
- Requires matching Backburner version installed with 3ds Max

CAMERA

- High quality (raytraced) **depth of field** and **motion blur** effects
- Photographic controls (optional): shutter speed + ISO + f-stop
- **Bokeh shape**
 - Circular
 - N-gonal (bladed aperture)
 - Custom image
- Multi-segment (curved) motion blur
- 3ds Max 2016 Physical Camera
- Virtual Reality Camera

CORONA CAMERA MOD

- Camera object modifier
- Allows setting Corona exposure/DOF/motion blur data on any camera

CORONA VIRTUAL FRAME BUFFER

- Optional replacement of 3ds Max native VFB
- **Integrated color mapping controls**
- Statistics: render time, remaining time, performance, polycount, ...
- Displaying/saving render elements
- Pixel color probe on right mouse button
- Controls: start render/stop render, save/clone/copy image, ...
- Optional stamp with scene info at the bottom of rendered image
- VFB History and Comparison
- Interactive and Multiple Render Regions

EXPOSURE AND COLOR MAPPING

- Controlled from render settings or VFB
- All settings are **adjustable during/after rendering**
- Image **updated in real time**
- **Two exposure control modes**
 - Photographic exposure: shutter speed + ISO + f-stop
 - Simple exposure: single EV value
- **Additional settings**
 - Contrast
 - Highlight compression
 - Color tint
 - White balance

RENDER ELEMENTS

- Arbitrary number of render elements
- Optional render elements anti-aliasing
- Beauty element
- Alpha element
- **Beauty composition elements**
 - Direct, indirect, reflect, refract, translucency, emission
- **Geometry elements**
 - Geometry normals, shading normals, primitive coordinates, UVW coordinates, world position, z-depth, Velocity render element
- **Masking elements**
 - Wire color
 - Primitive/Material/Object ID
 - Custom mask
 - Object selection
 - Material G-buffer ID
 - Object G-buffer ID
- **Shading elements**
 - Albedo, individual direct/indirect BRDF components, raw components, source colors, shadows
- **Arbitrary texmap elements**
 - Ambient occlusion
 - Wire shader
 - Vertex colors

LIGHTS

- **CoronaSun**
 - Standalone object or part of 3ds Max daylight assembly
 - Uses state of the art Hošek & Wilkie model of emission
 - Allows non-physical properties (changing size, color, disabling visibility in reflections, ...)
- **CoronaLight**
 - Shapes: sphere, rectangle, disk, cylinder
 - IES profiles
 - Directionality
 - Textured emitters
 - Physical units
 - Color (RGB input, Kelvin temperature, texmap)
 - Non-physical settings: disabling shadows, includes/excludes, disabling visibility in reflections, ...

TEXMAPS

- **CoronaAO**
 - Ambient occlusion shader
 - Supports textures
 - Includes/Excludes
 - Additional controls: spread, directionality, inverted mode, ...
- **CoronaFrontBack**
 - Shows different colors/texmaps on front/back sides of a material
- **CoronaMapOutput**
 - Allows to disable color mapping for a specific texture
- **CoronaMix**
 - Advanced mix shader
 - Texture or color inputs, different blending modes
- **CoronaRaySwitch**
 - Same as RaySwitch material, but on texmap instead of material level
- **CoronaSky**
 - Implements latest Hošek & Wilkie realistic sky model
 - Allows changing ground color and turbidity
- **CoronaSolid**
 - Allows to input single constant color using a color picker
 - HDR numerical values, Kelvin temperature, web hex input
- **CoronaWire**
 - Wire shader
 - Allows to set edge/vertex size in world or screen coordinates
- **CoronaBitmap**
 - Works similarly to 3ds Max bitmap, but faster (10-20%)
- **CoronaRoundEdge**
 - Rounded corners shader
- **CoronaMultiMap**
 - Randomly assigns colors/maps to instances
 - Features advanced blending modes
- **CoronaNormal**

MATERIALS

- **CoronaMtl**
 - Diffuse, translucency, reflection, refraction, glossiness, opacity
 - Adaptive displacement
 - Vector displacement
 - Bump mapping
 - Volumetric scattering and absorption, SSS
 - Self-illumination
 - Fresnel reflections, anisotropic reflections
- **CoronaLayeredMtl**
 - Similar to 3ds Max Blend material
 - Combines **multiple materials** instead of just two
- **CoronaPortalMtl**
 - Optional
 - Accelerates lighting in interiors with small windows
- **CoronaLightMtl**
 - Identical performance to CoronaLight
 - Various non-physical settings
 - Textured emission (useful for backplates)
- **CoronaRaySwitchMtl**
 - Uses different material for different ray types: direct, GI, reflections, refractions
- **CoronaShadowCatcherMtl**
 - Custom backplate textures
 - Screen, spherical, or no projection
 - Supports glossy surfaces
 - Bump mapping
 - Lights work additively (illuminators) or subtractively
- **CoronaVolumeMtl**
 - Simplified material for volumetric scattering and absorption
- **3ds Max materials**
 - Standard
 - Blend (including nested blend materials)
 - Multi/Sub-Object
 - XRef
 - Shell
 - Double Sided
 - Top/Bottom
 - DirectX Shader

ENVIRONMENT

- All environment textures automatically light the scene
- Direct/Reflect/Refract overrides
- Global material (for volumetric effects - fog)

GEOMETRY

- **CoronaProxy**
 - Cross-platform proxy format - .cgeo
 - Faster save/load/display of large scenes
 - Compressed format to save disk space
 - Supports animated meshes
- **CoronaScatter**
 - Fast and simple scattering tool
 - Supports multiple distribution and scattered objects
 - Random translation/rotation/scaling of instances
 - Supports aligning instances to local normal
 - Supports millions of instances
 - Textured density, scale
 - Vertex paint support
 - Optionally avoids object intersections, with tweakable inter-object spacing
 - Fast generation and viewport preview using multiple threads

SUPPORTED 3DS MAX FEATURES

- **Most texmaps**
 - Including Bitmap, Camera Map Per Pixel, Cellular, Checker, ColorCorrection, Composite, Dent, Falloff, Gradient, Gradient Ramp, Marble, Mix, Noise, Output, Particle Age, Particle MBlur, Perlin Marble, RGB Multiply, RGB Tint, Smoke, Speckle, Splat, Stucco, Vertex Color, Waves, Wood
- **3ds Max standard/photometric lights**
 - Including soft shadows via CoronaShadows
- **3ds Max render switches**
 - Disabling Displacement, Render Hidden Geometry, Renderable, Object Visibility, ...
- **XRef geometry/scenes**
- **Texture Baking**

MISC

- **Denoising**
 - Reduces the number of passes needed to get a noise-free image, with render time reductions of 50 to 70%
 - Interactive amount adjustment
- **Adaptive Image Sampling**
 - Balances out the rendering calculations over the image to focus more processing power on tricky areas
- **Corona Displacement Modifier**
 - All displacement features and settings available in **CoronaDisplacementMod**
- **Advanced "Render Selected"**
 - Render mask by an include list, object ID, or viewport selection
- **Error reporting with online help**
 - Error messages linked to a support page with more info
 - Automatic selection of the offending object
 - Automatic correction of certain errors
 - Error message forwarding from render slaves in DR
- **Corona Converter**
 - One-click solution to convert materials, lights, and maps from other renderers
- **Improved material editor scene**
 - More representative previews
- **Override material option** (with excludes/includes)
- **Save and resume**
 - Ability to save VFB and resume rendering later (even on a different computer)
- **Render only elements**
 - Computes render elements in seconds without doing shading
- **Autosave**
 - Optionally saving the VFB every few minutes and after rendering. Rendering can be resumed from these backups