# V-Ray 5

## Build 5.20.23

*Official Release, update 2.2*

Date - May 11, 2022

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## Improvements

### General

- Added support for Revit 2023
- Asset Editor updated to version 2.3.2
- V-Ray Vision updated to version 1.10.07
- Chaos Cloud client updated to version 1.16.3
- Chaos Cosmos Browser updated to version 2022.05.10
- Swarm updated to version 1.4.7.1002

### Cosmos

- Added support for Cosmos 3D models containing color randomization

### UX/UI

- Removed the Render Progress window in favor of the VFB Log tab
- Migrated the Swarm progress bar to the Swarm tab of the V-Ray Settings panel
- Disabled Scatter Scale randomization by default
- Improved behavior of the Appearance Manager expanders
- The Dome Light Intensity is automatically set to 1 when a Cosmos HDR image is used
- Enabled drag & drop of Scatter assets over the Appearance Manager host slots

## Bug fixes

### General

- Revit filters are not properly applied to the rendering
- Error in the log when adding Cosmos asset light to the scene
- Unnecessary warning in the log for a missing Scatter plugin
- Purge does not reset edited Cosmos assets and Infinite Ground Plane
- Exception on render start after loading settings of another user

### Interactive

- Crash after moving VFB while Light Gen is generating variants
- Exception when switching Top coat Reflectance of Revit Layered material from Texture to Slider or vice versa
- Crash after clicking on generate variants in LightGen tool
- Unnecessary update when an unused V-Ray material is renamed
- Linked replacements of In-place families are rendered misplaced on linked file moving

### Cosmos

- Wall-based accessories sink to the opposite side of the wall when rendered
- 3D models from the Architecture category fail to import
- Unhandled exception when promoting a material of a deleted Cosmos 3D model

### Geometries

- Proxy replacements of families containing nested RPCs are displayed twice
- Crash on rendering start when specific Scatter hosts or guests are used
- Scatter fails to distribute assets over the entire surface of the host
- Scatter disappears when several renders are started consequently
- Scatter Scale Multiplier doesn't work
- Scatter disappears on Spiral stairs host
- Exception when scattering a Planting guest on a Curtain System host
- Scatter instances are outside the bounds of a round host

- Scatter is not properly rendered when applied to a ceiling

**Asset Editor**

- Proxy mesh material slots are not shown when loaded from a *.vrmat file
- Broken preview and missing textures when promoting a Revit material containing textures
- Revit Layered material promoted to the Asset Editor is broken

**Vision**

- Crash when disabling Proxy Mesh replacement of RPC used as Scatter Guest
- The displayed Scatter configuration is different than the one rendered with V-Ray
- Scale is not respected when a Scatter Guest is replaced with a Proxy Mesh

**UX/UI**

- Typo in Purge V-Ray Settings message dialog

# Build 5.20.22

*Official Release, update 2.1*

Date - March 17, 2022

## Improvements

**General**

- Asset Editor updated to version 2.3.1
- V-Ray Vision updated to version 1.10.05
- Chaos Cosmos Browser updated to version 2022.3.11
- License Server updated to version 5.5.5
- Hide in View setting is respected for elements from linked files

**V-Ray Interactive**

- Consider Revit's Show/Hide in View for families not listed in the Appearance Manager

**Appearance Manager**

- Added ability to promote multiple Cosmos asset materials at once

**Channels**

- Added separate Light Mix channels for Sun and Dome Light

**VFB**

- Display a single name in Light Mix if both Revit family type and name are the same

**Vision**

- Added Free Flight option for the Fly navigation mode to not be constrained horizontally
- Default shadow quality is set to Medium

## Bug fixes

**General**

- Impossible to load vrmatmigrate.dll exception
- Attempted to read or write protected memory exception when starting a render multiple times
- Revit family replaced with a missing Cosmos asset is not rendered
- Linked replacements are ignored if the main file is new and has not been saved yet
- Cosmos assets are rendered in magenta if a project is opened by another user

- Cosmos wall- and ceiling-based assets are rendered misplaced
- Scatter does not appear on floors with modified sub-elements
- Exception when rendering a Scatter with a Guest family containing nested RPC
- VFB Display correction is briefly reset while preparing for rendering with V-Ray GPU
- Error on render resuming after enabling or disabling DR
- VRMat parser sometimes truncates floating point values when parsing .vrmat files
- IES lights render incorrectly in environment fog

### V-Ray GPU

- GPU Light Cache is slower to render with big resolutions
- Rendering crashes after swapping the GPU devices

### V-Ray Interactive

- Wrong replacements of linked file materials when Merge Identical is on
- Revit family changes are not reflected to the rendering on link reload
- Incorrect rendering on move/undo delete of a linked file instance containing family replacements
- NullReferenceException on undo delete of a Revit family used as a scatter guest
- Cosmos wall-based assets disappear when moving a linked file instance
- Missing Cosmos lights are not rendered after download completes

### UX/UI

- The texture associated with Extra Texture channel is incorrectly shown as missing
- V-Ray button in Families tab is offset with 2 px

### Asset Editor

- Scatter Density texture is not respected on rendering
- Preview is not working after hibernation
- Dropdown menu items occasionally offset themselves by a pixel on each mouse hover
- The 2D and 3D texture preview swatches render black with the GPU engine
- Removed max value limit of the Generic material Refraction Depth parameter
- Some Refraction Depth values are not rounded correctly

### Appearance Manager

- The Appearance Manager UI does not update after using the Revit Links Bind tool
- Family replacements with Cosmos assets are not transferred on import from Project Storage
- In-place family replacements disappear on move with Disjoin option enabled
- Global Purge does not remove Fur, Displacement and Scatter assignments

### Channels

- Linked files Cosmos lights disrespect the Light Mix grouping and appear in the Rest channel

### Vision

- Enable vsync to avoid tearing with fast camera movement
- The Fly Mode camera jumps slightly in specific situations

# Build 5.20.21

*Official Release, update 2*

Date - Feb. 2, 2022

# Improvements

### General

- Asset Editor updated to version 2.3.0.
- V-Ray Vision updated to version 1.10.04
- Chaos Cloud client updated to version 1.15.3
- Chaos Cosmos Browser updated to version 2022.1.31
- Added ability to render and override V-Ray replacements in linked files
- Added a tool for scattering objects on the surface of a selected object
- Added ability to establish a live-link connection to Chaos Vantage

- Added support for the latest RPC API available in Revit 2022
- Added support for the native Revit Undo/Redo commands

**Cosmos**

- Added ability to edit or replace the materials of a Cosmos 3D model
- Added a Materials category containing over 200 assets
- Added ability to import materials from the Materials category
- Added ability to enable tri-planar mapping on material import

**V-Ray GPU**

- Light Cache is always calculated on the GPU when the CUDA or RTX engine is selected
- Added support for the Lighting Analysis render element
- Kernel compilation times are reduced by up to 60%

**VFB**

- Added ability to apply color corrections or layer presets to a batch of images
- Added ability to apply color corrections to the Background layer
- Added ability to apply color corrections to all render channels when the image is saved manually

**Vision**

- Added ability to export videos in .webm format
- Added standalone .exe export
- Added Grass preset
- Optimized loading and performance of scenes containing large number of objects
- Rendering is stopped when there is no user interaction to decrease the GPU load
- Added support for IES and spot lights
- Added Ambient Light Mode within the built-in Settings panel
- Added Ambient Light Intensity slider
- Added Soft Shadows (available when the Shadows Quality is set to High)
- Added support for Revit's Solar Study
- Temporal anti-aliasing is automatically disabled during animation playback to prevent ghosting artifacts
- Added temporal screen space reflections
- Added support for the Coat layer of the Generic V-Ray material
- Added ability to hide the Vision toolbar
- Added navigation via the arrow keyboard keys
- Added camera up/down control via the PageUp/PageDown keyboard keys
- Reorganized the Output panel options
- Updated various tooltips and parameter labels
- Added automatic resizing and a scrollbar to all parameter panels
- Improved auto exposure behavior
- Added automatic scene reloading when High-quality Cosmos Assets is enabled
- Improved panorama image export
- Improved error message when Vision fails to initialize
- Set the default state of the Tonemapping Curve to Disabled

**Asset Editor**

- Optimized deletion of large asset sets
- Added thin-walled option to the Generic material Refraction parameters
- Removed Hard (wax) and Hybrid Fog Scattering models
- Renamed Fog Scattering to Translucency
- Added SSS and Volumetric modes to the Generic material Translucency
- Renamed Fog Multiplier to Depth/Scale which change based on the selected Translucency type
- Color Space (sRGB or Linear) for bitmaps loaded in any of the Generic material layer slots is set automatically
- Improved connection with the material preview rendering process
- Added Thin Mode, Ignore Bump and Streaks Density options to the Dirt texture
- Extended the Curvature texture with new parameters

**Appearance Manager**

- Renamed Objects tab to Families
- Split Families tab into 3 sub-tabs
- Removed By Origin filter from the families filter options
- Added a filter to distinguish edited from non-edited Cosmos assets
- Replaced bottom tab Scale/Rotation spinners with numeric fields

- Moved the Pick Material button to the search bar

- Renamed Improved sky model to PRG Clear Sky
- The V-Ray Vision icon has been updated
- Improved the output of log messages on DR nodes adding
- Disabled interactive actions with Proxy Scenes
- V-Ray is disabled on Undo actions executed immediately after acquiring a license

# Bug Fixes

### General

- Issue with linked project replacements disappearing on link reloading
- Issue with the auto-save path validation
- InvalidOperationException when V-Ray fails to add DR Nodes due to bad connection
- InvalidObjectExceptionProxy when linking an existing project into brand new one
- V-Ray Core exception in case of a missing Generic material parameter
- Issue with rendering stop at 50% with custom resolution and Hybrid mode enabled
- Issue with black rendering after VRayPlugins.json is migrated from old format
- Error when exporting to Cloud with all render channels enabled
- Issue with invalid version warning after a linked file has been updated and open in a fresh Revit session
- Windows 11 issue where V-Ray fails to utilize more than 64 threads
- Issue with bump maps appearing reversed when viewed in reflections

### Settings

- Fixed the Proxy category label in the Paths & Sharing tab

### V-Ray Interactive

- Issue with Artificial Light Overrides not being updated if Artificial Lights are reenabled
- Issue with visibility of light sources when Cosmos lights are hidden
- 'An item with the same key has already been added' error
- Null exception on Cosmos replacements import from an .xml file

### Geometries

- Issue with Fur applied to a Revit family remaining on rendering if the family is replaced with a V-Ray geometry

### Cosmos

- Issue with Cosmos light sources scale disrespecting the objects scale
- Exception with Light Mix and Cosmos lighting fixtures
- Issue with disappearing objects when Cosmos replacements are imported from .xml
- Issue with Cosmos 3D models having a single material ID color
- Issue with Interactive not restarting after missing assets download is complete

### Appearance Manager

- Issue with interactive updates on Cosmos-mapped Revit family deleting
- Issue with Selection Type not updating when picking families in the list
- Issue with family replacements restoring in case of multiple selection

### Asset Editor

- Issue with Use Mtl Override setting of proxies not being applied
- Issue with labels overlapping of UV Placement Source and UVW Placement
- Issue with purging of materials assigned to the infinite plane in View-Specific mode
- Issue with Use as Replacement option not working when a material is applied to the infinite plane
- Issue with interactive updates on Can be Overridden setting disable
- Scrolling issue on systems with custom UI scaling after selecting an asset from a long list

- Issue with deleting Bump attribute leading to child textures instantiated in other material slots being also deleted
- Issue with Reflection Glossiness of Metallic materials not working when the Reflection color is not white

**V-Ray GPU**

- AccessViolationException after CUDA is out of memory
- Issue with GPU Light Cache leading to a memory leak
- Issue with Light Mix not working correctly with Camera Auto Exposure

**VFB**

- Issue with black artifacts when lights are disabled in Light Mix
- Issue with blocked render restart immediately after .vrscene export
- Issue with rendering button not working on press

**Vision**

- Issue with proxy meshes remaining on rendering after replacement is disabled
- Issue with various replacements not being applied correctly
- Issue with Flip Axis of Proxy Meshes not updating during live-link
- Issue with Auto Exposure not being applied when exporting standard or VR images
- Issue with sunlight artifacts when the model is viewed from specific angles
- Issue with transparent (and refractive) materials and specific mesh normals
- Issue with Cancel in the Save File browser window resetting the file type to .png
- Issue with Camera movement while dragging UI sliders
- Issue with ghosting artifacts appearing over transparent object when the camera is moved quickly
- Issue with bump and normal maps appearing flipped
- Issue with the entire model being flipped when zooming in an ortho camera
- Issue with plugins containing non-latin character being incorrectly loaded
- Issue with Proxy Scene objects being misplaced
- Issue with tri-planar textures appearing darker
- Issue with supported files not being listed correctly in the Save File browser window
- Issue with choppy camera movement in fly navigation mode with low fly speeds
- Issue with dark circles appearing on surfaces close and under the camera in specific situations
- Issue with Cosmos assets being cut when away from regular scene objects

**API**

- Issue with API servers list in config.json not being cleared after Revit is closed

**UX/UI**

- Issue with GPU device names being cut in the GPU engine drop-down

# Build 5.10.20

*Official Release, update 1.2*

Date - Sept. 17, 2021

# Big fixes

**General**

- Argument exception in Worksharing when enabling V-Ray if users have worked with different versions

**Appearance Manager**

- Fixed broken replacement of multiple selected Revit families
- Fixed performance issue and excessive logging on Fur or Displacement assignment to multiple materials

# Build 5.10.09

*Official Release, update 1.1*

Date - August 26, 2021

## Improvements

**General**

- Asset Editor updated to version 2.2.1
- V-Ray Vision updated to version 1.00.08
- Chaos Cloud client updated to version 1.13.2
- Chaos Cosmos Browser updated to version 2021.08.23
- Handled disabled state of Revit filters

**Cosmos**

- Improved toolbar button behavior

**Asset Editor**

- Promoted Revit material appears automatically selected

**Appearance Manager**

- Added filter to display only Prism materials in Materials tab

**UX/UI**

- Modified alignment of Promote material button in Appearance Manager
- Improved some tooltips behavior

## Bug fixes

**General**

- Argument exception in Worksharing if multiple users import the same Cosmos asset
- "An item with the same key has already been added" exception in Interactive
- Exception when migrating VRayPlugins.json file from an older V-Ray version
- UI dialogs fail after reloading linked files

**Asset Editor**

- Wrong materials renaming during Light Gen variants generation or vrscene export
- Unreferenced plugins left after promoting an AutoGen material
- Library does not display placeholder thumbnails of vrmat assets
- Asset preview renderer randomly fails

# Build 5.10.08

*Official Release, update 1*

Date - July 14, 2021

## Improvements

**General**

- Batch Rendering in Chaos Cloud
- Integrated Light Gen tool
- Promote AutoGen Revit Prism material to Asset Editor
- Implemented Public API based on gRPC
- Asset Editor updated to version 2.2.0
- License Server updated to version 5.5.4
- Chaos Cosmos Browser updated to version 2021.07.14
- Set scene_name for Cosmos asset Node plugins in vrscene export

**Materials/AutoGen**

- Utilize option_use_roughness in all Prism AutoGen materials
- Library does not display placeholder thumbnails of vrmat assets Textures assigned to anisotropy parameters of Revit Prism materials are not rendered
- Enable Glossy Fresnel for all AutoGen materials
- Changed default Bitmap Filter Type from Mip-map to Sharp Isotropic

**Lights/Dome**

- Use linear color space for Dome light image

**Environment**

- Extended Aerial Perspective settings

**UX/UI**

- Pick material button is greyed out while material picking is in progress
- Irrelevant sky parameters are greyed out based on the selected sky model
- Improved display names of Cosmos assets in the replacements drop-down

# Bug fixes

**General**

- Crash when closing Revit with multiple open projects
- Cosmos assets disrespect Revit mirror tools when rendered
- NullReferenceException raised during export of a scene including Cosmos assets
- InvalidOperationException when stopping the render from VFB
- Wrong positioning of V-Ray Proxy Scenes when replacing in-place family instances
- Rendering is noticeably slowed down in case of specific proxy mesh references
- Batch Rendering fails if V-Ray scene Export As Archive option has been enabled

**Appearance Manager**

- Wrong replacement restored after disabling V-Ray Proxy Mesh/Scene and Cosmos asset replacements
- RPCs not rendered when being replaced with Cosmos asset in a linked project
- Linked project Proxy Mesh replacements are rendered instead of those defined in the main document
- Linked project Global Overrides are rendered instead of those defined in the main document

**Asset Editor**

- Materials referred by material extensions are not listed as sub-assets in the outliner

**Materials/AutoGen**

- Prism Opaque translucency and cutout render incorrectly with V-Ray

**Materials/V-Ray**

- Inner edges are not visible when opacity is added to V-Ray Toon material

**Interactive**

- Crash when moving Revit family instance replaced with V-Ray Scene asset
- NullReferenceException on V-Ray Global Purge
- Linked projects lights are not affected by the Global Light override updates and the Artificial Lights On/Off switch
- Missing updates if Revit family instances are replaced with Cosmos asset after rendering start
- RPCs disappear when replaced with Proxy Mesh and a global proxy override is applied

**UX/UI**

- Appearance Manager does not update when a material is renamed in the Asset Editor after Interactive is stopped

- Unable to select Revit family replacement in Appearance Manager Objects tab after disabling V-Ray Proxy Mesh/Scene and Cosmos asset replacements
- Wrong button state after disabling Cosmos asset replacement in Appearance Manager
- Objects replacement drop-down menu blinks when restoring a V-Ray Proxy Mesh/Scene assignment
- Incorrect Selection Type indicated on replacement with V-Ray Proxy Mesh asset without mesh file specified
- VFB window is duplicated when showing it with the toolbar button before rendering
- Appearance Manager does not refresh when renaming a family type in Revit Project Browser

**Installer**

- Typo in Host app version screen
- V-Ray installs for all supported Revit versions no matter which one is present

# Build 5.10.07

*Official Release, hotfix 4*

Date - May 25, 2021

## Improvements

### General

- Asset Editor updated to version 2.1.3
- V-Ray Vision updated to version 1.00.06
- Chaos Cloud Client updated to version 1.12.0
- Chaos Cosmos Browser updated to version 2021.04.22
- V-Ray Swarm updated to version 1.4.6

### Asset Editor

- Decreased material library size to ensure faster downloads

### Cosmos

- Decreased browser window width

## Bug fixes

### Interactive

- Crash after renaming and updating a V-Ray material used to override multiple Revit materials

### Cosmos

- Cosmos asset materials are lost when imported into a linked document in several cases

### UX/UI

- VASSERT message shown by the installer when V-Ray Materials Library Download Path registry key is missing on the system

### Asset Editor

- Issue with material library download message appearing incorrectly
- Issue with materials duplicating when using square bracket symbols on renaming
- Incorrect results when Refraction Glossiness of Generic material is set below 0.78

### Displacement

- Incorrect results when UVW Placement source is combined with Normal displacement mode

# Build 5.10.06

*Official Release, hotfix 3*

Date - April 22, 2021

# Improvements

### General

- Support for Revit 2022
- Added Post-effects Update parameter to Settings Renderer tab
- Asset Editor updated to version 2.1.2
- Chaos Cloud Client updated to version 1.11.0
- Chaos Cosmos Browser updated to version 2021.04.12
- SevenZipSharp library replaced with System.IO.Compression.ZipFile

### Materials

- Improved automatic conversion of Revit PrismMetal material

### Artificial Lights

- Added support for Cosmos lights switching in Revit Artificial Lights dialog

### Channels

- Added Intel Open Image Denoise to Denoiser engines

### Camera

- Stereo mode is ignored when exporting to Chaos Cloud

### UX/UI

- Cut Cosmos assets names in Objects tab and adjusted alignment
- Removed the automatic selection of render channels when Denoiser is enabled
- Improved the Denoiser/Lighting Analysis Update button style and behavior
- Removed Denoiser Use GPU parameter from the UI

# Bug fixes

### General

- Null exception when exporting a vrscene containing Cosmos lights
- Issue with RPCs not rendering after a silent installation of Revit 2020
- InvalidOperationException when disabling V-Ray while Interactive is running

### Cosmos

- Scale, Rotation and Randomize of assets are not saved to project storage
- Exception on attempt to render linked file assets which IDs duplicate with those of the host project
- Family geometries replaced with Cosmos assets remain visible on rendering when in linked file

### Interactive

- Missing updates when deleting a global texture from Displacement
- Rendering does not update correctly on material renaming
- Global Override is not properly applied on Revit family replacement with Cosmos asset

### Materials

- Issue with migration of layered materials from V-Ray 3.x
- Warnings during migration of Texture material from V-Ray 3.x
- Broken global material overrides migration from V-Ray 3.x in case a specific environment variable is present

### Geometries

- Displacement is not applied after project reopen

### Channels

- Denoiser presets appear incorrectly in VFB

### UX/UI

- Drop-down UI of Appearance Manager filter does not refresh on filter reset

- Wrong Selection Type when only unmapped Revit families are selected in the Objects tab of the Appearance Manager

# Build 5.10.05

*Official Release, hotfix 2*

Date - April 9, 2021

## Bug fixes

### General

- TypeInitializationException on V-Ray enabling due to failed loading of System.Runtime.CompilerServices.dll assembly

### Cosmos

- An error is shown and V-Ray cannot be enabled if Cosmos asset version number in the imported Revit Family is missing or invalid
- UI is blocked when many Cosmos assets have been added to the project and some of them are missing and must be downloaded.

### UX/UI

- Missing Cosmos assets indicator in toolbar is visible after all assets have been downloaded

# Build 5.10.04

*Official Release, hotfix 1*

Date - March 29, 2021

## Improvements

### General

- Asset Editor updated to version 2.1.1
- License Server updated to version 5.5.3
- Chaos Cloud Client updated to version 1.10.0
- Chaos Cosmos Browser updated to version 2021.03.22
- Cleaned up environment variables set for V-Ray
- Differentiate Revit LT vs. Revit from installed version
- Configure download location for V-Ray Materials Library during installation
- Set soft_shadows of IES lights to 2

### Cosmos

- Manage Cosmos assets lights through Light Mix
- Trigger download of missing Cosmos assets referenced by a project detected on V-Ray enabling

### Appearance Manager

- Keep Width/Height ratio when Lock functionality in Materials tab is used.

### Vision

- Implemented model loading progress bar
- Optimized loading of textures with built-in mip-maps
- Optimized texture loading in scenes with many large textures
- Optimized geometry data loading. Heavy models are faster to load and view
- Improvements to navigation in Orbit mode as well as when resizing the Vision dialog

## Bug fixes

**General**

- Improper default V-Ray Materials Library download location
- Crash on migration of V-Ray 3.6 project materials
- Crash on render of IES Revit lights after specific Windows update

**Cosmos**

- Intensity of Cosmos assets lights is about 30 times lower than Revit lights
- Crash and extensive logging when a connection to Chaos Cosmos Browser cannot be established.

**Appearance Manager**

- Material mapping of a renamed material is lost after save and project reopen
- Creating missing Proxy Mesh does not fix broken Object mapping

**Vision**

- Cosmos assets are rendered flat in Vision when scale/rotation is applied
- Navigation issues when running Vision through remote desktop
- Proxy Meshes appear flat if scale falls at 0.003 or below
- Changed node user attributes
- Various issues causing incorrect spherical panorama output
- Issue with .tx texture loading causing vertically flipped textures or black band at the bottom
- Issue with Proxy Mesh LOD when a layered material is used
- Hang when an object is deleted from a big model

**Interactive Rendering**

- Unnecessary update on "Use trace depth in Production" option change

**UX/UI**

- Error message includes Chinese symbols when license cannot be obtained
- Batch Render button is unlocked after Vision is stopped
- By Origin filter is visible in Materials tab filter control

# Build 5.00.03

*Official Release*

Date - Feb. 23, 2021

# Improvements

**General**

- Integrated Chaos Cosmos 3D content browser
- Asset Editor updated to version 2.1.0
- License Server updated to version 5.5.2
- Chaos Cloud Client updated to version 1.8.1
- V-Ray Swarm updated to version 1.4.5
- Added new version notifications
- Redesigned V-Ray settings storage mechanism
- Improved Worksharing (multiple users can work in the Asset Editor)
- Make Chaos Cloud client app installation mandatory and add check for version downgrade before triggering installation
- Changed the default value of GPU Resize Textures parameter in VRayPlugins.json to 0

**Asset Editor**

- Added drag-n-drop of assets from Asset Editor to Appearance Manager
- Added config.json option for material library download path
- Added config.json option for disabling material library updates check

**VFB**

- Added Stamp layer
- Added Shortcuts editor to VFB Settings panel

**UX/UI**

- Modified changelog format and added link to it in the Windows Start menu
- Added ability to lock Background to use the image assigned to the Dome Light

**Vision**

- Improved automatic exposure handling
- Added screen space reflections for transparent materials
- Added temporal image anti-aliasing
- Added support for V-Ray Material's Clip opacity mode
- Added support for V-Ray Tri-Planar textures in One Texture mode
- Added support for Stochastic texture tiling of the UVW Placement map
- Removed Super Sampling option from the Image Export panel
- Added Frame Delay option to the Image Export panel
- Added High Quality Cosmos Assets option to Vision Settings panel
- Added Shadows Quality preset to Vision Settings panel
- Added support for V-Ray Sun Size parameter

# Bug fixes

**General**

- Failed to get RenderingAssetManager exception on project initialization
- Wrong transfer of materials during Worksharing

**Appearance Manager**

- Null exception when assigning a proxy mesh to a furniture family
- Mapping is lost after a proxy mesh is deleted and another one is renamed to match it

**Asset Editor**

- Blend, Bump and Toon Override do not handle correctly slotted materials starting with underscore
- Temperature texture's Kelvin slider has incorrect min. value
- Adding Translucency attribute to a material breaks Raytrace Properties settings on GPU

**Swarm**

- Warnings received while starting Interactive rendering with Swarm
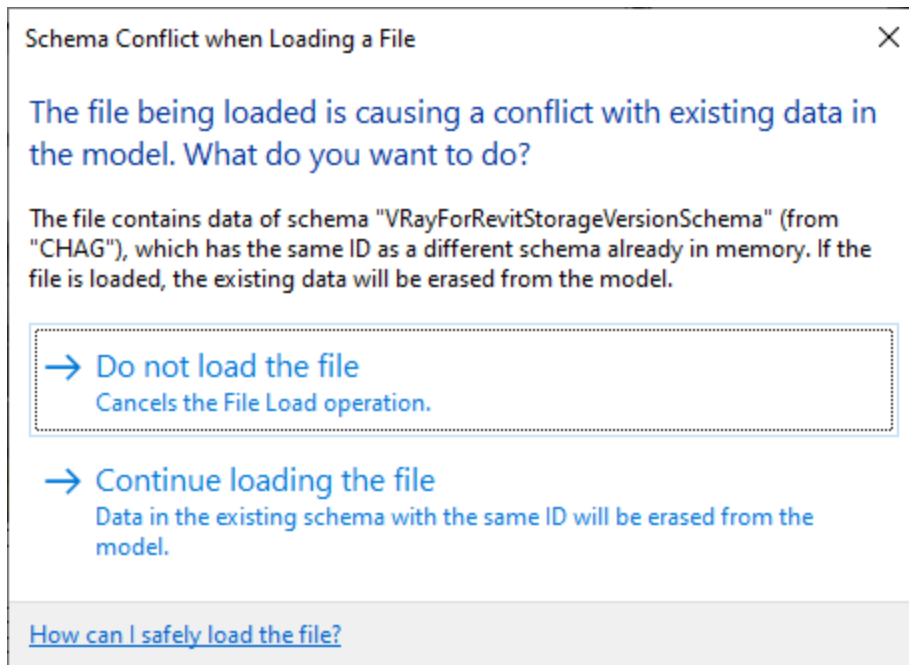
**UX/UI**

- Grey out Fur/Displacement indicator when the geometry is disabled in Asset Editor
- VFB Settings panel fails to show
- Show VFB button does nothing after Vision was stopped

**Vision**

- Attempted to read or write protected memory exception while applying camera updates during Live Link
- Issues with Multi Material assignments
- Responsivity issue when picking an output image file location twice in a row

# Known Issues

There is a known issue that is caused by Revit application when using V-Ray for Revit and reproducible only in Revit 2021. When opening a project that has never been saved with V-Ray for Revit, or when starting a project from scratch, enabling V-Ray and then opening another project with an existing V-Ray storage (i.e. V-Ray settings) leads to the following error message:

Schema Conflict when Loading a File     ✕

The file being loaded is causing a conflict with existing data in the model. What do you want to do?

The file contains data of schema "VRayForRevitStorageVersionSchema" (from "CHAG"), which has the same ID as a different schema already in memory. If the file is loaded, the existing data will be erased from the model.

→ Do not load the file
    Cancels the File Load operation.

→ Continue loading the file
    Data in the existing schema with the same ID will be erased from the model.

How can I safely load the file?

There are two workarounds to counter the problem.

Workaround 1: Save the first project with V-Ray and then open the other one.

Workaround 2: Change the order of opening the projects and open the one that has V-Ray settings first.

# Build 5.00.02

*Beta Release*

Date - Dec. 3, 2020

## Improvements

**General**

- Asset Editor updated to version 2.0.1
- License Server updated to version 5.5.1
- Chaos Cloud client app updated to version 1.7.8
- Redesigned installer
- Implemented V-Ray Vision real-time viewer
- New V-Ray Frame Buffer (VFB2) with layer compositor
- Integrated Light Mix channel
- New toon workflow via global & per material Contour settings
- New and improved Quality presets
- Optimized transactions handling in Extensible Storage

**Lights/Sun**

- Exposed Sky settings
- New V-Ray 5 Improved sky model

**Asset Editor**

- New Displacement workflow
- New Proxy Mesh & Proxy Scene workflow
- Added GPU asset preview mode
- Changed how the visibility of Asset Editor windows is determined

**Appearance Manager**

- Redesigned to accommodate the new workflows
- Added search bar ability to filter materials by Revit identity Class
- Added search bar ability to filter family items by Category
- Added support for Site and Specialty Equipment categories
- Displayed Revit families hierarchically
- Disabled material assignments are persisted on project reopen
- Added navigation history for randomized objects' seed

**UX/UI**

- Camera Auto checkboxes are unselected and disabled during Interactive

**Materials/V-Ray**

- Added Coat layer to Generic material properties
- Added Sheen layer to Generic material properties
- Added built-in Bump layer to Generic material properties
- Removed Glossy Fresnel from the UI. It is enabled by default for all materials
- Removed Normal opacity mode
- Removed PBR material as well as PBR layer from the Add Layer menu
- Exposed Metalness and Roughness options as part of Generic material properties
- Removed Highlight Glossiness parameter from Generic material properties
- Added blue highlight to UI rollouts indicating whether corresponding parameters contribute to the look of the material
- Deprecated Displacement material attribute (will be removed in the future)

**Textures**

- Added UVW Placement texture for UV randomization and stochastic texture tiling
- Added randomization options to multi-sub texture
- Added external Mapping Source to texture placement Type
- Added Streaks to Dirt texture
- Added support for .tx file format as part of Bitmap textures
- Added random colors for the slots of the Multi-Sub texture

**V-Ray GPU**

- Added support for 2D Displacement
- Added support for Cellular textures

# Bug fixes

**General**

- NullReferenceException when rendering a family
- Exceptions in projects referring to invalid file paths when acquiring a license
- Switching Current View hangs in case of inaccessible network path to textures
- Grpc.Core exception when opening existing projects one after another
- Issue with invalid floating point numbers
- Issue with vrscene export using temp paths for .ies files
- Revit hangs when opening Settings panel in Interactive
- Issue with global purge not affecting mapping

**Interactive Rendering**

- Unnecessary update when opening Appearance Manager

**Settings**

- Scrollbar disappears from Renderer tab on sub-sections expanding

**Textures**

- Various textures exported to .vrscene don't render in Lavina or Standalone

**Channels**

- Lighting Analysis horizontal and vertical grid spacing are swapped

**Materials/V-Ray**

- Material changes are not respected when restoring the assignment in Appearance Manager

**Appearance Manager**

- Objects list does not refresh on family category change
- Material Transforms Rotation box & spinner accept values but 1
- Proxy scale spinners are causing min scale to be larger than max scale

- Hide Decals causes the global bump to partially disappear in Interactive

**Proxy Mesh**

- Wrong positioning of proxies when replacing in-place families

**Asset Editor**

- Fixed an issue with marble textures
- Materials using UVW Placement instance for several textures produce incorrect results when duplicated
- Swapped slots in TexFresnel UI
- Redundant command in the Geometry assets context menu
- Inverted Roughness/Glossiness value when disabling a texture plugged in the same slot
- Simple Mix textures fail to load when opening a previously saved .vrmat
- The UVWGenRandomizer mode values are incorrectly set