Vortex Studio 2019b
Release Notes

WHAT'S NEW

Welcome to the second Vortex Studio release of 2019! Every new version of the world's best real-time simulation software makes it more powerful and ever easier to use. Features and improvements have been added, as well as general performance increases.

The Vortex Studio line of products includes the Vortex Studio Create, Activate and Engage products, along with some additional, optional tools. Vortex Studio Create provides utilities to create, test and study simulations. Vortex Studio Activate-Engage supports the deployment of simulations inside Vortex-compatible simulators.

Vortex Studio is available with academic pricing as Vortex Academic Edition, and on the Altair Partner alliance.

Vortex Studio

There have been improvements to the general performance and usability of the base platform:

- **Vortex Setup** utility now fully manages all the Vortex components on your computer(s). You can remove previous versions and download new ones automatically in one operation. This means that you do not need to download the required installers manually, nor worry about the compatibility between components.

    An internet connection is required only on the computer running Vortex Setup download capability. Packages are also available from your CM Labs Account page, Download section.

- **Vortex License Manager** now supports more efficiently the activation, upgrade and management of the licenses required to run the various applications and tools. Offline activation (no Internet connection required) is now easier to do, even on multiple computers.

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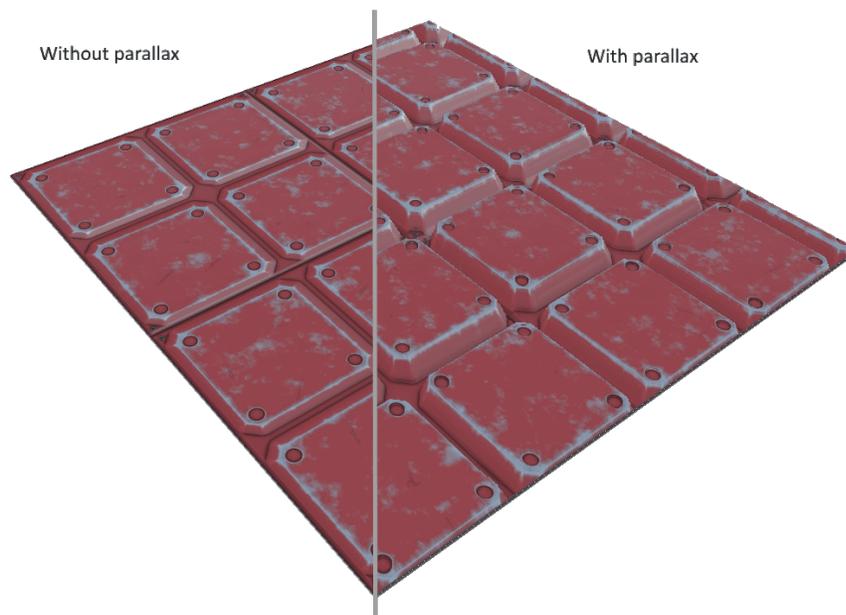
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Vortex Studio Create

Vortex Studio Editor

There have been several changes and improvements made to the Vortex Studio Editor.

- Assemblies can now contain additional logic extensions: Scripts, Connection and VHL interfaces. This allows mechanisms to be designed with a more modular structure, with a single containing dynamics objects along the logic to control them.
- An **Assembly** can now contain sub-assemblies, thus allowing for more flexibility in designing mechanisms and splitting tasks between teams of simulation engineers. This is especially powerful when used with the new logic extensions in the assemblies to manage complex machines (vehicles, cranes, excavators) with complex sub-systems and interchangeable components.
- The position and orientation of the default camera (also known as 'Perspective') can be saved in any scene, mechanism, assembly or part document. Please refer to the *Initial view* topic of the Vortex Studio Editor documentation.
- The **drag-and-drop** functionalities have been extended in the VHL interface.
- A **VHL** extension can now generate constant values for output fields of common Vortex types during simulation: Boolean, integer, vectors, and even Windows file name without the need to establish a connection. This feature can easily replace an equivalent Python script and is therefore more efficient in terms of performance.
- Replacing an existing assembly now keeps the existing connections (based on connection's name), thus saving the tedious work of recreating them.

- **New Modular Vehicle Systems** is a technical preview of a new system to create vehicles in Vortex Studio Editor. Building a complete functional vehicle is easier than ever. The **Templates** consist of prebuilt vehicle types, with the important components exposed in **VHL** interfaces. The vehicles are easier to understand and use, and allow users to create or modify the templates and components using standard Vortex Studio tools.

  Modular Vehicle Systems templates and objects are part of Vortex Studio Content. Please refer to the Demo Scenes and Samples Starting Guide to fully exploit the benefits of this new system.

- A new **Deformable Terrain** can now be used on terrains and is an important element in achieving simulation's realism. It allows the deformation of the surface using digging tools (bucket, blade). Vehicles' wheels also interact with this terrain to deform it on every pass, creating ruts and graphical marks modeled on a specific texture. Simulation performance has been optimized and is generally better than the Earthwork Zone tool.

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- **Vortex Remote Debugger** is a new application that allows the dynamic monitoring and tuning of mechanisms in a Vortex simulation running anywhere on a network, without interfering with it. The remote debugger supports the dynamics display of collision geometries, inertia, center of mass, part origin and contacts between objects.

- There have been several improvements made to the **Graphics Module**:
  - An advanced **parallax mapping** feature can now be used to add realism. Materials can have a pronounced depth 'look' while still being a 2D element.
  - A **Self Shadowing** option is also available for materials with a height map.

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Vortex Studio Activate and Engage

Support of CM Labs CANopen controllers

You can now incorporate a broad range of CM Labs controller devices in your Vortex simulator. These controllers use the CANopen protocol and are close replica of manufacturer control devices. They can be configured using control presets and used on any node of a Vortex simulator. Please consult your CM Labs account manager for the complete catalogue of available devices.

Distributed simulator installation

Simultaneous installation on multiple computers using **Vortex Setup** has also been greatly improved by providing better feedback on what was completed during the installation and better error reporting. With Vortex Service running on the remote computers, it has never been as easy to update Vortex on multi-machine simulators with a few clicks.

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SYSTEM REQUIREMENTS

Supported Platforms

Vortex Studio 2019b runs on the following platforms:

- Microsoft Windows 10 (x64)
- Linux (Ubuntu 14 LTS, CentOS 7)

Note: not all features are available under Linux. See documentation for more details.

Hardware Requirements

Minimum for Vortex Studio Create:

- CPU   Intel i7-4700 or equivalent – must support AVX2 instructions set
- RAM   8GB for Vortex Studio Player

    16GB for Vortex Studio Editor
- GPU   NVIDIA graphics card compatible with supported drivers (see further)

Recommended for Vortex Studio Create:

- CPU   Intel i7-4700 or better
- RAM   16GB for Vortex Studio Player

    32GB for Vortex Studio Editor
- GPU   NVIDIA GeForce GTX 970 (or better) with supported driver

Recommended for Vortex Studio Activate and Engage:

- CPU   Intel i7-7700 or better
- RAM   16GB for Vortex Studio Player
- GPU   NVIDIA GeForce GTX 1070 (or better) with supported driver

Supported Compiler

Vortex Studio 2019b supports the following C++ compiler:

- Microsoft Visual Studio 2015 (VC14) and above

Note: support for Microsoft Visual Studio Version 2010 (VC10) is deprecated since 2018b.

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Supported Graphics

Vortex Studio 2019b has been extensively tested with **NVIDIA GeForce** graphics cards.

- NVIDIA GTX 970 and 1070 are tested with driver 388.59.
- NVIDIA GTX 1070 and RTX 2070 are tested with driver 417.22.

The GTX 1070 and RTX 2070 cards have been explicitly tested for high performance rendering with NVIDIA's 417.22 WHQL driver.

All other GTX and RTX graphic cards listed in the release notes of the 417.22 driver should work with Vortex Studio, but some performance or rendering degradation might occur.

- RTX 2080
- GTX 1050, 1060, 1080
- GTX 950, 960, 970, 980
- GTX 750, 760, 770, 780
- Equivalent Notebook GPUs

Vortex Studio 2019b has been extensively tested with **NVIDIA Quadro** graphics cards.

- NVIDIA Quadro P4000 is tested with driver 419.67.

All other Quadro graphic cards listed in the release notes of the 419.67 driver should work with Vortex Studio, but some performance or rendering degradation might occur.

Vortex Studio 2019b does not officially support the **AMD** and **Intel** graphics cards, but may run (with visual artifacts) on some of them.

*Important Note: on computers that have multiple graphics cards (e.g., laptops with both integrated Intel card and dedicated NVIDIA graphics card), the default configuration of these systems is to auto-select the card to run the application, which might prevent Vortex Studio from running (or show a blank viewport). Using the NVIDIA Control Panel, select **Manage 3D Settings** and change the **Preferred** graphics processor to **High-performance NVIDIA processor**.*

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Supported VR Hardware

Vortex Studio 2019b supports the following VR hardware via the OpenVR protocol:

- HTC Vive
- HTC Vive Pro

Python

Python 2.7.13 is supported. The corresponding Anaconda distribution 4.3.0.1 allows for an easy integration of Vortex on various platforms.

Simulink/MATLAB

Simulink/MATLAB 2015 and above, with real-time UDP protocol, are supported.

Licensing

Vortex uses RLM by Reprise Software™ for licensing.

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COMPATIBILITY NOTICE

We recommend that you back up your assets before migrating to the latest version. If saved, it will not be possible to open them again in their original version.

From any version of Vortex Studio
Files from these versions should open with no issue in the newest release. We recommend that you use the new "Save All Child Documents" feature to ensure your files are kept up to date.

From Vortex 6.8 and earlier
Files from these versions will not open in the newest release. Please convert them with a supported version first (see further).

Between any Vortex version
Record-and-Playback as well as Keyframe files created with previous versions may not work with Vortex Studio 2019b.

From any version of Vortex Studio Academic (formerly Essentials)
Note that content saved in Vortex Studio Academic cannot be opened with commercial Vortex Studio licenses such as Create, Activate or Engage. Academic can open and run content created with other licenses, however.

DEPRECATIONS

The followings were deprecated in release 2019b:

- The functions of the Halo Manager extension are now handled automatically; the extension is no longer required and has been deprecated.

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FIXED ISSUES

Summary	Description
Editing field ignores field changes	Starting simulation no longer ignores changes while editing field.
Switching friction mode has no effect	In a constraint, switching the friction mode during simulation now works correctly.
Solver Analytics Link Buttons	The Link Buttons in the Solver Analytics panel are now easier to use.
No hourglass after selection in Home page	You can now see the hourglass after selection in the Home page.
Crash when application name does not match node name	Vortex Studio no longer crashes when the application name in vxsimulator does not match node name in vxc file.
Player with Essentials license	Launching the free Player via the shortcut no longer display an error message.
Nearly all plugins are classified as utility	All plugins are classified correctly now in the Editor Plugins option tab.
Doesn't warn that it cannot find MSI files	Vortex Setup now informs the user that it did not find the required MSI files.
Unlocking property field results in reduced clicking options	While selecting an object for a field, unlocking the property field no longer results in the user only being able to click on objects of the field's type.
HierarchyView error when loading two assets	There was a HierarchyView error when loading two assets; it could be fixed by loading them in the Editor and then saving them. This is no longer necessary.
Material Preview disappear when Properties is detached	The Material Preview panel no longer disappear when the Properties panel Is detached and moved.
Error when editing vector field in multi-select	Editing vector field in multi-select now works correctly.
Shifting texture coordinates on a cable	Texture coordinates are no longer shifting when winching or point spooling a cable.
"Apply" button only applies for the current options tab	The Apply button in the Options panel now works for everything.
Car Wheel steering position doesn't work second time simulation is run	The Car Wheel constraint's steering position now works correctly whenever a simulation is run.
Light intensity affects a halo's color.	A halo's color is now controlled only by the color of its light; the intensity of the light will not affect the halo's color anymore.