



VR-Vantage 2.4 Release Notes

This document provides the following release-specific information for VR-Vantage™ 2.4:

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Systems Supported and System Requirements

This section describes platform support and system requirements for VR-Vantage. To take full advantage of VR-Vantage's visualization capabilities and optimize performance, you must use a modern game computer with a high quality NVidia graphics card.

For the most up-to-date information about systems supported, see the Product Versions page on the MAK web site at: <https://www.mak.com/support/product-versions>.

VR-Vantage is available for the following operating systems:

Table 1: Platforms supported

Operating System	Compiler
Windows 7, Windows 8, Windows 10	Microsoft Visual C + + 15.0 (64 bit)
Red Hat Enterprise Linux 7.0. (64 bit libraries)	default compiler
CentOS - versions that are equivalent to supported versions of Red Hat Linux.	default compiler

The VC 14 build is binary compatible with all MAK VC 15 products.



YOU MUST INSTALL THE VR-VANTAGE DATA PACKAGE.

It is not optional. It contains data that is required by VR-Vantage applications.

Third Party Library Support

VR-Vantage uses the indicated versions of the following libraries:

- ♦ VR-Link 5.4
- ♦ Qt 5.10.1 (VC 12 and VC 15), Qt 5.6.3 (Red Hat 7)
- ♦ OpenSceneGraph 3.4.0
- ♦ Boost 1.46.1
- ♦ FreeGlut 2.4.0
- ♦ GL-Studio 5.0.2 (VC 12), 5.1.2 (VC 15)
- ♦ DI-Guy 13.3 (development version)
- ♦ Triton 3.73
- ♦ Silverlining 5.005
- ♦ SpeedTree 6.3.2
- ♦ Oculus Rift Development Kit 1.26
- ♦ CDB API 2.2 (Windows), 2.1 (Linux)
- ♦ osgEarth 2.9.0
- ♦ CUDA 9.2 (Windows), 9.1 (Linux).

3D Video Cards Supported

VR-Vantage 2.4 supports NVIDIA graphics cards that support OpenGL 3.3 or above. While we support NVidia Quadro cards, we strongly recommend GeForce cards. If you use a Kepler Series Quadro card, read the instructions in [“Using Kepler Series Quadro Cards,”](#) on page 4. VR-Vantage does not support AMD graphics hardware.

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VR-Vantage strives to provide the best 3D scene quality possible and cutting edge visualization effects. To provide this functionality, VR-Vantage takes advantage of OpenGL features that may not be supported on older video cards. When this is the case, you can disable these features, allowing VR-Vantage to run in 3D modes.

OpenGL 3.3 is the minimum requirement for rendering a 3D scene in VR-Vantage. For the best visual quality and highest performance you should use the most recent NVIDIA GeForce card.

Some laptops have an NVIDIA graphics card and an Intel graphics card. You must configure your computer to use the NVIDIA card. To do so:

1. Open the NVIDIA Control Panel (in the System Tray).
2. Select Manage 3D Settings.
3. Select Global Settings.
4. Select Preferred Graphics Processor.
5. Select High-performance NVIDIA Processor.



You should always try to use the latest drivers available for your video card. For video streaming on Windows, you must use driver 397.44 or later. For video streaming on Linux, you must use driver 387.26 or later.

Using Kepler Series Quadro Cards

There is a known issue with the Quadro drivers on Kepler series Quadro cards. NVIDIA says its related to the fact that the default profile optimizes for a fixed eyepoint (for applications like CAD). To run on these cards, you must change the global profile for the driver, as follows:

1. Open the NVIDIA Control Panel.
2. Select the Manage 3D Settings page.
3. Select the Global Settings tab.
4. In the list of driver profiles, select Workstation App - Dynamic Streaming.

We are working with NVIDIA to have their drivers recognize our applications and apply this profile automatically. In the meantime, Kepler series Quadro you must make this change manually.

Required Software for Toolkit Users

If you plan to build VR-Vantage applications using the VR-Vantage Toolkit, you must download and install VR-Link 5.4.

If you plan to build the VR-Vantage GUI, you must download and install QT 5.5.1. You can download it at: <https://www.mak.com/support/bonus-material>.

Qt is also available as a free download under the LGPL version 2.1 license at qt.digia.com. This version should be satisfactory for most VR-Vantage customers. If you need a Qt commercial license, you must purchase the license from Digia.

Compiler Compatibility on Windows

MAK provides versions of product releases that have been compiled with different versions of Microsoft Visual C++. When you run MAK products together on the same computer, for example, the Logger and a VR-Vantage application, we strongly recommend that you run versions compiled with the same compiler. Mixing products compiled with different versions of the compiler on the same computer can result in program instability. The exception to this is that products built with VC 14 and VC 15 are binary compatible.

License Manager

VR-Vantage 2.4 uses FLEXlm 11.13.0.2.



You must update your License Manager software for this release. You can continue to use old licenses if maintenance is up to date.

The License Manager files are not part of the VR-Vantage installer. You can download them at:

- Windows: <http://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- Linux: <http://ftp.mak.com/out/MAKLicenseManager-linux64-setup.tar.gz>

A license manager FAQ is available at:

<https://www.mak.com/support/license-support>

Using MAK Products on Virtual Machines

In general, MAK products run on virtual machines without any problems. The exception to this statement is applications that use 3D graphics, such as VR-Vantage and the VR-Forces front-end, that require a graphics card. Standard graphics cards typically do not work with VMs. To use a 3D enabled environment in a VM, please contact your VM vendor for options.

MAK has done some limited testing of running VR-Forces and VR-Vantage on virtual machines. For details and suggested procedures, please download <https://www.mak.com/product-user-guides/691-running-mak-products-on-virtual-machines/file>

NVidia produces the NVidia GRID card, which is designed to solve this problem. Your VM vendor may have additional information. For more information on NVidia GRID, please see <http://www.nvidia.com/object/virtual-gpus.html>



We do not test with GRID cards. They are not supported by MAK. Please work with NVidia and your virtual machine provider to solve any technical issues with their use.

Network Compatibility

HLA only

VR-Vantage 2.4 is compliant with:

- ♦ RPR-FOM 0.5, 0.7, 0.8, 1.0, RPR FOM 2.0 drafts 6, 14, 17, and 20, and RPR FOM 2.0.
- ♦ MAK RTI 2.x, 3.x, 4.x
- ♦ Other RTIs that support the HLA 1.3 specification, the SISO DLC HLA API 1516 version of the IEEE 1516 specification (SISO-STD-004.1-2004), or HLA Evolved.

To use an RTI with VR-Vantage it must use the same operating system and be built with the same compiler.

DIS only

VR-Vantage 2.4 supports DIS 4, 5, 6, and 7 and can therefore interoperate with DIS applications of any of these versions.

FOM Support

VR-Vantage 2.4 has built-in support for versions 0.5, 0.7, 0.8, 1.0, and 2.0 (drafts 6, 14, 17, 20 and the final version) of the RPR FOM. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper.



Please see a known problem regarding MAK Logger recordings that use HLA Evolved ([“Known Problems,”](#) on page 9).

Backwards Compatibility

VR-Vantage 2.4 applications and some files are not backwards compatible. Specific incompatibilities are as follows:

- ♦ Applications from a given release cannot control display engines from a different release. (In other words, a VR-Vantage 2.4 application cannot control a VR-Vantage 2.1 display engine.)
- ♦ Plug-ins built against one version cannot be used with the other.
- ♦ Model files (MEDF and MEIF) built with one version do not work with the other.

Support for MAK Data Logger Recordings

VR-Vantage 2.3.1 works seamlessly with MAK Data Logger 5.5.1 and later. Older versions of the Logger may have two problems:

- ♦ There are known issues with DIS 7 extended attribute packets. These have been fixed in VR-Forces 4.6 and later, VR-Vantage 2.3 and later, and MAK Data Logger 5.5.1 and later. When using an older Data Logger with either VR-Forces 4.6 and later or VR-Vantage 2.3 and later, DIS 7 configurations can lead to crashes.
- ♦ There have been minor updates to the FOMs that are distributed with VR-Forces 4.6 and later or VR-Vantage 2.3 and later. These FOMS are available with MAK Data Logger 5.5.1 and later, but were not available in older Loggers. Older Loggers work, but you must configure the Logger to use the correct FOM, which should be copied from the newer VR-Vantage or VR-Forces.

Users using MAK Data Logger 5.5.1 will have no problems.

New Features and Product Updates

VR-Vantage 2.4 has the following new features:

- ♦ Support for H.265 video streams.
- ♦ The audio system has been completely revised. This includes both the underlying code and how sound effects are configured. For details, please see Chapter 23, *Sound Effects*, in *VR-Vantage Users Guide*.
- ♦ Support for DI-Guy drivers in vehicles. These entities are just for visualization. They do not represent simulated entities unless a simulation application publishes an embarked entity in the driver's position. For details, please see Section 19.10, *“Displaying DI-Guys in Vehicles,”* in *VR-Vantage Users Guide*.
- ♦ The CIGI connection now has built-in support for mapping CIGI articulated part IDs sent for DI-Guy-based entities to a pre-defined set of DIS articulated part numbers that DI-Guy can use to control individual DI-Guy links. For details, please see Chapter 41, *Controlling DI-Guy Links Using CIGI Articulated Part IDs*, in *VR-Vantage Users Guide*.
- ♦ You can now turn off the prompt that is displayed when you exit VR-Vantage. For details, please see *Disabling the Quit Prompt*, under Section 3.1.4, *“Shutting Down VR-Vantage,”* in *VR-Vantage Users Guide*.
- ♦ Microsoft VC 12 is no longer supported.

Terrain

- The earth file configuration has changed for Aerodrome layers. They are no longer a model layer and are now an aerodromes layer. See `./user-Data/servers/airports.worldwide.xml` for an example of the new aerodromes layer configuration.
- Support for changing layer properties at runtime using the osgEarth Profile tool. For details, please see Chapter 29, *Debugging Earth Files*, in *VR-Vantage Users Guide*.
- LOD Blending. Models that use indirect rendering can blend LODs as they transition between different states.
- Procedural Terrain Blending. Procedural terrain now supports `min_range`, `max_range`, and `attenuation_distance` in splatting layers. You can now configure terrain to show pure imagery in the distance, pure procedural imagery close in, and a blend in-between.

Performance

- Support for making occlusion queries. For details, please see Section 29.9, *“Enabling Occlusion Queries,”* in *VR-Vantage Users Guide*.
- Significant improvements in performance through use of indirect rendering:
 - You specify the use of indirect rendering when you load a terrain patch or terrain server. Please see Section 29.7, *“Indirect Rendering,”* in *VR-Vantage Users Guide* for an introduction to indirect rendering.
 - Using SensorFX disables indirect rendering.
 - If use of indirect rendering produces visual artifacts that were not present in previous releases, you can disable indirect rendering for specific nodes in an OpenFlight file. For details, please see Section 35.11, *“Disabling Indirect Rendering for an OpenFlight Model,”* in *VR-Vantage Users Guide*.
 - Indirect rendering now works with extruded and point-feature-replaced features using `feature_geom` and for extruded and point feature replaced features using the Buildings driver. Use of `feature_custom` is deprecated. For details, please see Section 26.6, *“Processing Streamed Data,”* in *VR-Vantage Users Guide*.

Documentation Updates

VR-Vantage documentation has been updated for this release. The video tutorials are no longer shipped with the installer. You can find links to them at <https://www.mak.com/support/tutorials>.

Fixed Bugs

VR-Vantage 2.4 fixes the following problems that were present in previous releases:

- ♦ Aerodrome layers did not work. 63617
- ♦ DtReadFramebufferProcessData used friend classes. 63791
- ♦ Extruding linear features, such as fences and walls, did not work. 63724
- ♦ Camera maps were leaking. 63670
- ♦ Using the incremental compile option caused a crash if a viewer did not exist. 63612
- ♦ Attach Tether Track and Attach Tether Location Track did not display a plus sign next to mouse cursor. 63813
- ♦ VR-Vantage crashed if you double-clicked to resize a gimbaled sensor window. 63573
- ♦ Changing the ocean quality with shadows on caused Triton ocean to disappear. 63565
- ♦ The Playback and Capture device drop downs in Audio settings were blank until you manually set them. 63564
- ♦ Disabling then re-enabling sound caused sound to cut in and out. 63563
- ♦ If you had your eyepoint under the ocean surface and the observer used any cameraFX mode, the ocean would sparkle. 63540
- ♦ On Linux, dialog box tabs did not have tooltips. 63535
- ♦ Fixed a heap corruption problem that caused intermittent, unexplained crashes.
- ♦ Fixed a periodic crash when loading terrains with SpeedTrees. 63699
- ♦ Loading a streaming terrain without an internet connection caused a crash. 64009

Known Problems

- ♦ The first time you stream video using GStreamer, it generates a message indicating a critical error. This is a bug in GStreamer. There is no critical error. Subsequent uses of GStreamer do not generate this error.
- ♦ VR-Vantage 2.4 will not display remote objects generated by applications using the vrvControlToolkit that were built with VR-Vantage 2.1. Customers will have to rebuild their application on top of VR-Vantage 2.4 to remotely draw objects to VR-Vantage 2.4 applications.
- ♦ There is an occasional issue with some earth files that causes the wrong LOD to show up on the terrain. If this occurs, delete the cache in `./appData/cache` and add the following to the terrain section of your earth file: `progressive="true"`.

