



VR-Vantage 2.3 Release Notes

This document provides the following release-specific information for VR-Vantage™ 2.3:

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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++ 12.0 (64 bit) 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



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 5.5.1
- 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 CV1
- Oculus Rift Development Kit 1.8
- CDB API 2.2

- ♦ osgEarth 2.9.0.

3D Video Cards Supported

VR-Vantage 2.3 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 3. VR-Vantage does not support AMD graphics hardware.



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.

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 compatible.

License Manager

VR-Vantage 2.3 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: <ftp://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- Linux: <ftp://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 2.3 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 2.3 supports DIS 4, 5, 6, and 7 and can therefore interoperate with DIS applications of any of these versions.

FOM Support

VR-Vantage 2.3 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 12).

New FED File Naming Convention

VR-Vantage 2.3 uses the FOM naming conventions introduced in VR-Link 5.2. This section describes these changes.

Historically, VR-Link has named FED files using the convention VR-Link<RPR FOM version>.fed or VR-Link<RPR FOM version>.xml. For example, the FED file for RPR FOM 2, draft 17 was *VR-Link20017-1.fed*. This naming scheme has two problems. First, it is confusing for end-users of applications that use VR-Link (but who are not themselves VR-Link customers) to be using a FOM named that way. Second, the filename was not versioned, so any updates that we would make to the existing FOMs could cause compatibility problems. In fact for this latter reason, we had refrained from fixing a few minor bugs that we found over the years until now.

Effective with this release, VR-Link introduces a new naming convention: MAK-<FOM name><FOM revision><FOM version>.fed (or .xml, or _evolved.xml, as appropriate). For example, *VR-Link20017-1.fed* has been renamed *MAK-RPR20017-1-1.fed*.

Additionally, given the power of HLA Evolved FOM Modules, starting with RPR 2.0 we are now providing the RPR standard FOM for HLA Evolved, currently named RPR_FOM_v2.0_1516-2010. MAK's extensions, are in FOM Modules that our software will automatically add to an exercise. This means that if you have another RPR-based FOM, such as NETN or NASMP, you will have a much easier time using it without needing to modify the FOM.

VR-Link continues to include FED files and XML files using the old convention, so you do not have to change any existing scripts or code.

[Table 1-1](#) lists legacy FED files and how they map to new FED files. Many of the FED files delivered in previous releases do not have updated versions, usually because they are rarely used.

Table 1-1: Old FED file to new FED file mappings

Old FOM	New FOM
HLA 1.3	
DI-Guy-13_0.fed	
DI-Guy.fed	
VR-Link.fed	MAK-RPR1-1-1.fed
VR-Link05.fed	
VR-Link07.fed	
VR-Link08.fed	
VR-Link10.fed	MAK-RPR1-1-1.fed
VR-Link16.fed	
VR-Link20006.fed	
VR-Link20014.fed	

Table 1-1: Old FED file to new FED file mappings

Old FOM	New FOM
VR-Link20017-1.fed	MAK-RPR20017-1-1.fed
VR-Link20017-6.fed	MAK-RPR20017-6-1.fed
VR-Link20017.fed	
VR-Link20020.fed	MAK-RPR2-1-1.fed
VR-LinkBOML16.fed	
VR-LinkDDM.fed	
VR-LinkMC02.fed	MAK-RPR1-MC02-1-1.fed
VR-LinkTM.fed	MAK-RPR1-TimeManagement-1-1.fed
VRL-20017-1-Link16.fed	
VRL-DIGuy20017.fed	
VRL-DIGuy20017DDM.fed	
1516-2000	
DI-Guy-13_0.xml	
DI-Guy.xml	
VR-Link.xml	MAK-RPR1-1-1.xml
VR-Link20014.xml	
VR-Link20017-1.xml	MAK-RPR20017-1-1.xml
VR-Link20017-6.xml	MAK-RPR20017-6-1.xml
VR-Link20020.xml	MAK-RPR2-1-1.xml
VR-LinkBOML16.xml	
VR-LinkDDM.xml	
VR-LinkTM.xml	MAK-RPR1-TimeManagement-1-1.xml
VRL-DIGuy20017.xml	
VRL-DIGuy20017DDM.xml	
HLA Evolved	
DIGuyModule_1300.xml	MAK-DIGuy-1_evolved.xml
DIGuyModule_1302.xml	
RPR_FOM_v2.0_draft20_1516-2010.xml	RPR_FOM_v2.0_1516-2010.xml
VR-Link20014_base_evolved.xml	
VR-Link20014_evolved.xml	
VR-Link20017-1_base_evolved.xml	MAK-RPR20017-Base-1-1_evolved.xml

Table 1-1: Old FED file to new FED file mappings

Old FOM	New FOM
VR-Link20017-1_base_evolved_with-UpdateRate.xml	
VR-Link20017-1_evolved.xml	MAK-RPR20017-1-1_evolved.xml
VR-Link20017-1_evolved_withUpdateRate.xml	
VR-Link20017-6_base_evolved.xml	MAK-RPR20017-Base-6-1_evolved.xml
VR-Link20017-6_evolved.xml	MAK-RPR20017-6-1_evolved.xml
VR-LinkDDM_base_evolved.xml	
VR-LinkDDM_evolved.xml	
VR-Link_LgrControl_evolved.xml	MAK-LgrControl-1_evolved.xml
VR-Link_ViewControl_evolved.xml	
VR-Link_VrExt_evolved.xml	MAK-VRFExt-1_evolved.xml
VR-Link_base_evolved.xml	MAK-RPR1-Base-1-1_evolved.xml
VR-Link_evolved.xml	MAK-RPR1-1-1_evolved.xml
VRL-DIGuy20017DDM_evolved.xml	
VRL-DIGuy20017_evolved.xml	
updateRate.xml	MAK-updateRate-1_evolved.xml
VR-LinkBOML16_module.xml	MAK-BOML16-1_evolved.xml
	MAK-VRFAggregate-1_evolved.xml

Backwards Compatibility

VR-Vantage 2.3 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 2.3 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 will work seamlessly with MAK Data Logger 5.5.1 (which will be out very shortly). 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, VR-Vantage 2.3, and MAK Data Logger 5.5.1. When using an older Data Logger with either VR-Forces 4.6 or VR-Vantage 2.3, DIS 7 configurations can lead to crashes.
- ♦ There have been minor updates to the FOMS that are distributed with VR-Forces 4.6 or VR-Vantage 2.3. These FOMS are available with MAK Data Logger 5.5.1, 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 2.3 has the following new features:

Installation and Startup

- ♦ Data is now provided in multiple files rather than one package. You must install all of them to run VR-Vantage. On Windows, the MAK Data Setup Wizard can automatically install all data package files if they are in the same directory. You can also install them manually.

Performance

- ♦ Support for alpha to coverage rendering. This improves the quality of models and terrain patches that use transparency. For details, please see Section 5.6.1, [“Alpha to Coverage,”](#) in *VR-Vantage Users Guide*.
- ♦ Improved shadows.
- ♦ Improved thread safety.
- ♦ Many performance improvements.
- ♦ Ability to preload cloud layers. For details, please see [“Calculating Cloud Positions Before You Load a Terrain”](#) under Section 11.4.4, [“Specifying Cloud Cover,”](#) in *VR-Vantage Users Guide*.
- ♦ Support for indirect rendering.
- ♦ SpeedTrees are loaded more quickly.
- ♦ Improved statistics display.

Visual Improvements

- ♦ Support for rendering SpeedTrees in planar reflections. For details, please see Section 13.4.1, “[Configuring Ocean Planar Reflections](#),” in *VR-Vantage Users Guide*.
- ♦ Improved support for and simplified configuration of light points on models and the terrain.
- ♦ Improved lighting on water.
- ♦ Support for effects maps on procedural buildings.
- ♦ The maximum ocean LOD was increased from 20,000 feet to 100,000 feet.

Terrain

- ♦ Improved support for CDB.
- ♦ Improved MetaFlight support for large terrains.
- ♦ General improvements to terrains provided with VR-Vantage.
- ♦ Procedural road flattening.
- ♦ Procedural elevation noise.

Art

- ♦ Many new and improved models.
- ♦ Added 180 new SpeedTree types.
- ♦ Support for light point groups.

Infrastructure

- ♦ Upgrade to VR-Link 5.4.
- ♦ Support for taking screen captures of the display window.
- ♦ Options for saved observer views have been enhanced. You can now associate saved views with a terrain and specify a default view to use when the terrain is loaded. For details, please see Section 15.11.3, “[Loading Views Automatically When You Load a Terrain](#),” in *VR-Vantage Users Guide*.
- ♦ In the previous release, element definition files were loaded in reverse alphabetical order. Now they are loaded in alphabetical order.
- ♦ The `--enableOculus` command line option has been removed.
- ♦ Support for HTC Vive.
- ♦ Support for Microsoft Mixed Reality Headset.
- ♦ Support for Oculus Rift CV1.
- ♦ Configuration and setup for head mounted displays has changed. For details, please see Chapter 9, [Using Head Mounted Displays for Virtual Reality](#) in *VR-Vantage Users Guide*.
- ♦ Improvements to CIGI support.

Documentation Updates

VR-Vantage documentation has been updated for this release.

Fixed Bugs

VR-Vantage 2.3 fixes the following problems that were present in previous releases:

- ♦ osgEarth textures were not freed until the terrain was closed. 62099
- ♦ CameraFX set the alpha to 0.0 which caused video streams to be black. 61979
- ♦ Clouds were different between runs. 61937
- ♦ The rotor wash updated was slow and could not be configured. 61852
- ♦ Props with the SignTaxiwaySign model definition did not work with instancing. 61810
- ♦ On Linux, slow frame rates caused problems with dragging. 61747
- ♦ Toggling buoyancy while an entity was embarked on a buoyant entity caused the embarked entity to be in the wrong place. 61367
- ♦ The `--dataDir` command line argument did not redirect all references. 61331
- ♦ If a subject observer was deleted before the de was activated, VR-Vantage chashed. 61275
- ♦ Attach follow had an issue when using a position offset. 61266
- ♦ DI-Guys through CIGI can have performance spikes. 61213
- ♦ If you have entity buoyancy disabled (or if you have disabled it on a particular vehicle through a model definition) and then request, through CIGI, to start sinking the ship it will crash. 61212
- ♦ Max paged LODs are not always set correctly when removing/adding channels or remote display engines. 61141
- ♦ Flames and smoke showed for hidden entities when they are destroyed. 60754
- ♦ The airport terminal was missing from MCO mtf files. 60595
- ♦ SpeedTrees were not displayed in planar reflections. 60423
- ♦ The cumulus-congestus-voxel-dimension setting in the silverlining configuration file was not respected. 60395
- ♦ Clouds did not cast shadows. 60384
- ♦ HDR caused sparkling. 60370
- ♦ The test for being over water sometimes failed. 60275
- ♦ When listening for VR-Forces environment settings, VR-Vantage did not prevent users from changing the date and time. 60236
- ♦ Entity element leaf files loaded in reverse alphabetical order. 60236
- ♦ Embarked humans were not hidden. 60211
- ♦ Dynamic switches did not all show up in terrain list. 60196
- ♦ If laser designation is toggled while a laser designator is visible then it became perpendicular to the terrain instead of clamped to the terrain. 60142

- Putting a transform step after a compress step and then running the video stream causes a crash. Also putting the transform step first causes the video to be a solid color instead of doing what the transform step is configured to do. Lastly the scale in the transform step is an integer but it should probably be able to be a float so it can down scale. 60134
- Going straight up through an overcast sky causes it to bloom out. 60126
- Reverse-z did not work with multiple observers. 60101
- If there is a custom color set and the force coloring option is also set it still used the custom color instead of using the force coloring. 60100
- With reverse z turned on the procedural airports have a bunch of z-fighting and never look quite right. 60099
- Rhone Valley sometimes missing runway lights. 60098
- On Linux if the effect quality for HDR is changed and not all the optional effects are turned on then it causes full screen artifacts of a bunch of random colors. 60097
- Display Unit Settings are not saved after a restore factory settings. 60096
- The model definition in watercraftTest.py CIGI test was wrong. 60093
- New Connections (connection dialog) can't be edited until you leave them and then come back. 60087
- Cockpit Display Settings is not auto saved. 60072
- Connect To Display engine dialog box has some text cut off. 60060
- On the drivers panel there is a configure button that is enabled when a single driver is connected. It doesn't seem to do anything when clicked. The button was removed. 60059
- Frame Buffer not cleared when changed to full screen on CameraFX. 60057
- SpeedTree randomization GUI defaults to all off when switched to. 60055
- Miscellaneous GUI issues were fixed. 60047
- Problem with how the shader collection for SpeedTrees works. 60019
- The Scalable SDK flooded the console. 59995
- osg::Camera objects are being kept alive by the DtCloudDrawable. 59915
- Removing dynamic ocean in Makland doesn't bring back ocean polygons. 59829
- Thunderstorms did not look good on Makland. 59828
- Intervisibility line's altitude changes too fast in edit mode. 59800
- Effects textures may not be entirely threadsafe. 57965
- Normal Maps showing heavy pixelated areas. 57179
- Some of the particle systems if not all do not have valid normals for their billboards. 56871

Known Problems

- VR-Vantage 2.3 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 2.3 to remotely draw objects to VR-Vantage 2.3 applications.