



VR-Vantage 2.5 Release Notes

This document provides the following release-specific information for VR-Vantage™ 2.5:

Systems Supported and System Requirements	2
Third Party Library Support	3
3D Video Cards Supported.....	3
Required Software for Toolkit Users	4
Compiler Compatibility on Windows.....	4
License Manager	5
Using MAK Products on Virtual Machines.....	5
Network Compatibility.....	6
FOM Support	6
Backwards Compatibility.....	6
Support for MAK Data Logger Recordings	7
New Features and Product Updates	7
Documentation Updates.....	9
Fixed Bugs	9
Known Problems.....	11

Copyright © 2019 VT MAK, 150 Cambridge Park Drive, Third Floor, Cambridge, MA 02140 All rights reserved. VR-Exchange™, VR-TheWorld™, VR-Vantage™, DI-Guy™, and DI-Guy Scenario™ are trademarks of VT MAK. MAK Technologies®, VR-Forces®, RTIsPy®, B-HAVE®, and VR-Link® are registered trademarks of VT MAK.
Document ID: VRV-2.5-3-190503

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 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 5.4.1
- ♦ Qt 5.10.1 (VC 15), Qt 5.6.3 (Red Hat 7)
- ♦ OpenSceneGraph 3.4.0
- ♦ Boost 1.46.1
- ♦ FreeGlut 2.4.0
- ♦ GL-Studio 5.1.2 (VC 15)
- ♦ DI-Guy 13.3 (development version)
- ♦ Triton 3.73
- ♦ Silverlining 5.40
- ♦ 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 2.5 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.

i

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 4.5 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. The minimum recommended card is the 9xx series.

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 5.4.1.

If you plan to build the VR-Vantage GUI, you must download and install QT 5.10.1 (VC 15) or 5.6.3 (RH7). 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 2.5 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

VR-Vantage 2.5 is compliant with RPR FOM 1.0 and RPR FOM 2.0 and includes FOM mappers for many draft versions of the RPR FOM. It is compliant with 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.

VR-Vantage 2.5 supports DIS 4, 5, 6, and 7, and can therefore interoperate with DIS applications of any of these versions.

FOM Support

VR-Vantage 2.5 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 11).

Backwards Compatibility

VR-Vantage 2.5 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 2.5 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 2.5 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 2.5 has the following new features:

- ♦ You can now jump directly between simulation object type mappings in the Simulation Object Type Mappings dialog box and their associated element definitions in the Visual Model Editors dialog box. You can also jump between element definitions and model definitions.
- ♦ The Schemas page and Model Definitions page in the Visual Model Editors dialog box now have a search capability that lets you filter the list using a text string.
- ♦ The Simulation Object Type Mappings dialog box now lets you filter the list using a text string.
- ♦ Added support for saving individual interaction definitions and tactical graphics definitions in the Visual Models Editor.
- ♦ A new view control, OpenTerrain, lets you send an open terrain message from a remote application.
- ♦ You can now override the default lighting settings for CameraFX to provide a more realistic view of terrain and entities when using IR or NVG. You can adjust the amount of ambient and diffuse light and the intensity of light emitted by DI-Guys and other entities. For details, please see Section 12.3, [“Configuring Sensors,”](#) in *VR-Vantage Users Guide*.
- ♦ Support for configuring cloud covers and their cloud layers using the cloud cover editor. For details, please see Section 11.5, [“Creating and Editing Cloud Covers,”](#) in *VR-Vantage Users Guide*.
- ♦ Support for localized cloud layers received over the network from VR-Forces.
- ♦ Support for additional CIGI features and API improvements for controlling zoom through CIGI (view control, LOD scale, paged LOD scale, paged High LOD angle). For details about CIGI support, please see Chapter 41, [Mapping CIGI Models and Components](#) in *VR-Vantage Users Guide*.
- ♦ New and improved models.

- ♦ Greatly improved caching for streaming and CDB terrains - allows for much faster terrain loads.
- ♦ Reduced stalls for loading terrains.
- ♦ Improved preloading of entities and eliminated stalls associated with new entity creation.
- ♦ Added the ability to specify effects textures in .osg files (so we can use effect textures with particle systems).
- ♦ Updated to Silverlining 5.40.
- ♦ Adding useCorrectedBeamScale to the Dt2DEntityEmitterVolumeVisualizer.
- ♦ Added ImGui controls for overriding the sun/moon position. This position is basically just a small vector in ENU which specifies the relative location of the sun/moon to any point in the scene. The direction of the light is just the negative of all three components of the vector. Used for debugging what a model would look like if the light is in a different direction. For details, about ImGui please see Section 5.11, [“Using the Developer Debug Overlay,”](#) in *VR-Vantage Users Guide*.
- ♦ Added ImGui sliders for controlling the observer location.
- ♦ Added support for cloud smoothing. This smooths the cloud along the intersections of clouds with any other object. The cloud drawable is now copying the depth buffer to a texture before it starts rendering the clouds. The new effect is controllable using an ImGui checkbox and slider. Also fixed a minor issue with how the fog height was calculated so that it does not take into account cloud layers that are not currently enabled.
- ♦ Upgrade to VR-Link 5.4.1.
- ♦ Support for animations of DI-Guys entering and exiting vehicles.
- ♦ Support for LOD scaling.
- ♦ Added a new Near/Far Clipping Policy, "Clamp Near Clip When Magnified". It is the same as Reduce Z Fighting, but adds an intersector to clamp the near clipping plane to prevent the near clip from going past objects or terrain in the scene when using view magnification. The intersector is only used when view magnification is 2x or more (this value can be changed through the API by extending the channel and overriding the call that calculates the clamp). This is an expensive operation, so only enable it if you really need it. For details, about Near/Far clipping policies, please see Section 6.4.1, [“Setting the Clipping Planes,”](#) in *VR-Vantage Users Guide*. 64974
- ♦ Added creators for all ribbon classes (DtOsgMultiRibbon, DtOsgParticleRibbon, DtOsgDecalRibbon, and DtOsgTrackHistoryRibbon.cxx). Made all methods virtual and all members protected. 62644

Terrain

- ♦ The new cdbtool lets you cache CDB models and textures offline. For details, please see Section 28.4, [“Caching CDB Data \(cdbtool\),”](#) in *VR-Vantage Users Guide*.
- ♦ Improvements to the California (online) terrain.

- ♦ Added Edwards Air Force Base runways to the California terrain
- ♦ VR-Vantage now supports loading elevation data that references an earth gravitational model. For details, please see Section 26.11, “[Referencing an Earth Gravitational Model \(EGM\)](#),” in *VR-Vantage Users Guide*

Documentation Updates

VR-Vantage documentation has been updated for this release.

Fixed Bugs

VR-Vantage 2.5 fixes the following problems that were present in previous releases:

- ♦ Model definition could not be changed on instanced entities. 64281, 64430
- ♦ Different model definitions with the same geometry and metafiles were not treated as referring to instances of the same model. 65262
- ♦ Multiple issues with linear and XR scaling. 64508, 64480, 64585
- ♦ DtGStudioObjectAttributeUpdater did not know which entity it was attached to. 57665
- ♦ In Linux, users could not move an added point to a new location for any line except routes. 59572
- ♦ Preloading was not as fast as it could be. 61920
- ♦ Fixed a memory leak when opening and closing terrains. 62254, 64728, 65436
- ♦ VR-Vantage on Linux crashed when the video memory limit was reached. 62973
- ♦ Embarked entities did not know when their parents were deleted, which could result in a crash. 62749
- ♦ Shadows and indirect rendering were running out of shader resources. 62752
- ♦ Force-colored icons were not always rendered if called before the first preTick after the first render tick. 62765
- ♦ Lighting on trees in CDB databases was incorrect. 62762
- ♦ SpeedTrees did not scale or rotate in CDB databases. 62881
- ♦ If an earth file started with a one line comment, it was not listed in the servers list in the Add Terrain Server dialog box. 63092
- ♦ Variables in earth files were forced to be lowercase, which caused issues with Linux’s case-sensitive file path names. 65289
- ♦ Some nodes did not display when loading flight files as terrain patches. 65399
- ♦ VR-Vantage erroneously allowed a 0.0 value for clipping plane distance. 65432
- ♦ If SensorFX was installed, lighting did not work during the thunderstorm environment settings. 62947

- When changing views or environment conditions, lighting on thunderstorm clouds was too bright. 64766
- Snow was displayed only in the first channel rendered. 63907
- If the number of panels on the side of the window exceeded the height of the window, display problems occurred. 63577
- The OpenFlight optimizer was broken. 63784
- Destructible buildings in the Range 220 area of the California terrain did not render correctly. 64099
- Flipbook animation did not work with the backward flag. 64616
- Loading an online terrain that does not have a cache while disconnected from the network caused a crash. 65026
- If you loaded a terrain and removed all the windows in the display engine configuration panel and then added a new window, shaders did not work correctly. 64186
- After closing a remote display engine without closing the master display, the license for the remote display engine did not get checked in. 64177
- Trees in the Rhone Valley terrain did not look good when swaying in the wind. 64237
- On Linux, adjusting the Max Voices slider in the Audio Settings page could cause a crash. 64239
- If you changed a Window's window type to FullScreenView via the drop-down in the Display Engine Configuration Editor panel the trees disappeared and the terrain had dark patches on it. 64291
- Runway tire marks were bright blue with indirect enabled on the California (online) terrain. 64104
- Clicking on an observer view then immediately zooming in or out using the mouse wheel caused a different observer view to be displayed. 64105
- Adding a new observer to a channel using the Display Engine Configuration panel caused VR-Vantage to crash. 65505
- You could delete an entity whether the entity was referenced in the entity type maps or not, which might leave things in an inconsistent state. 63210
- There were some translation issues. 63953
- Environment cube map did not update quickly when users made a significant change to the time of day. 64282
- Sensor gimbal views could display poorly due to Z fighting. 64369
- Altitude calculation issues. 64386
- Temporary adjustments to environment conditions were being saved without the user exporting the settings. 64827
- Object count panel did not include circular objects. 64833
- Wireframe and Performance Overlays were misclassified as view components instead of system components. 64853
- View component controls supported only individual views, not view groups. 64854
- CIGI did not support view magnification for individual and group views, and it also did not include a scale factor controls for LOD. 64855, 64857
- Remote displays did not include PagedLODScaleFactor. 64856

- ♦ For paged tiles, users could not control an angle for LOD scaling due to magnification. 64858
- ♦ For views with small FOVs, the views lacked appropriate detail. 64859
- ♦ Pressing ESC was not specific to editing an intervisibility object. 64926, 64928
- ♦ Text boxes in Sensor Overlays were not large enough. 64929
- ♦ Features that did not support 3D attempted to start drivers for 3D. 64987
- ♦ Paging terrains should now work after a window is destroyed when the incremental compiler operation is enabled. 65089
- ♦ Default view was loading for observer even though `--bindObserver` was set to a different view. 65109
- ♦ Users could not extend channels due to SensorFX header dependencies. 65261
- ♦ There was a small inconsistency in the way aspect ratio was calculated which could in turn cause the projection resizing results to be a little off. 65270
- ♦ `DtOsgWindowLine` constructor was taking a `DtUniqueID&` instead of `DtUniqueID`. 65279
- ♦ `setPrimaryAttachment` could not take a single element ID; it required a list. 65280
- ♦ The API did not support both const and non-const versions of the reference for the Observer Views Manager. 65288
- ♦ Developers Guide was missing instructions for gimbal plug-in. 65269

Known Problems

- ♦ When using Reverse Z Buffering in conjunction with Reduce Z Fighting Near Far Clip Policy (the default) and Triton dynamic ocean, significant performance slowdowns sometimes occur. Changing the Near Far Clip Policy to Fixed will resolve the issue; when Reverse Z Buffering enabled, the Reduce Z Fighting policy is unneeded.
- ♦ 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.
- ♦ GStreamer as delivered does not work on some builds of Linux. Please see Section 8.1, “[Streaming Video](#),” in *VR-Vantage Users Guide* for more information.
- ♦ 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"`.

