



# VR-Vantage 2.1 Release Notes

This document provides the following release-specific information for VR-Vantage™ 2.1:

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Document ID: VRV-2.1-3-160222

## 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 MÄK web site at: <http://www.mak.com/support/productversions.php>.

VR-Vantage is available for the following operating systems:

Table 1: Platforms supported

| Operating System                                                              | Compiler                                                                          |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Windows Vista, Windows 7, Windows 8                                           | Microsoft Visual C + + 10.0 SP 1 (64 bit)<br>Microsoft Visual C + + 12.0 (64 bit) |
| Red Hat Enterprise Linux 6.0.<br>(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.

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## Third Party Library Support

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

- ♦ VR-Link 5.2.1
- ♦ Qt 4.7.4 (VC 10), Qt 4.8.7 (VC 12)
- ♦ OpenSceneGraph 3.1.4
- ♦ Boost 1.46.1
- ♦ FreeGlut 2.4.0
- ♦ GL-Studio 5.0.2
- ♦ DI-Guy 13.2
- ♦ Triton 3.51
- ♦ Silverlining 4.041
- ♦ SpeedTree 6.3.2
- ♦ Oculus 0.8

- ♦ osgEarth 3.0.

## 3D Video Cards Supported

VR-Vantage 2.1 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 (formerly ATI) graphics hardware.



You must use NVidia driver 340.29 or later.

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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.

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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 board.

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### 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 5.2.1. You can download it from:

- <ftp://ftp.mak.com/out/products/vrlink5.1.3-win-vc10.exe>
- <ftp://ftp.mak.com/out/products/vrlink5.1.3-linux-rh6.tar.gz>

If you plan to build the VR-Vantage GUI, you must download and install QT 4.7.4. You can download it at: <http://www.mak.com/support/resources/bonus-material>.

Qt is also available as a free download under the LGPL version 2.1 license at [qt.digia.com](http://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

MÄK provides versions of product releases that have been compiled with Microsoft Visual C++ 8.0, 10.0, 11.0, and 12.0 (most products are not available for all of these compilers). When you run MÄK products together, 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.

## License Manager

VR-Vantage 2.1 uses FLEXlm 11.13.0.2.



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

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

- ♦ Windows:  
<ftp://ftp.mak.com/out/MAKLicenseManager-win-setup.exe> (for 32-bit systems)  
<ftp://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- ♦ Linux:  
<ftp://ftp.mak.com/out/MAKLicenseManager-linux-setup.tar.gz> (for 32-bit systems)  
<ftp://ftp.mak.com/out/MAKLicenseManager-linux64-setup.tar.gz>

A license manager FAQ is available at:

<http://www.mak.com/license-support.html>

## Using MÄK Products on Virtual Machines

In general, MÄK products run on virtual machines without any problems. The exception to this statement is that applications that use 3D graphics, such as VR-Vantage and the VR-Forces front-end, 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. 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>

## Network Compatibility

### HLA only

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VR-Vantage 2.1 is compliant with:

- ♦ RPR-FOM 0.5, 0.7, 0.8, 1.0, and 2.0 (draft 6, 14, 17, and 20)
- ♦ MÄK RTI 2.x, 3.x, 4.x
- ♦ Pitch RTI 1.3 C++ interface.

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), and 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

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VR-Vantage 2.1 supports DIS 4, 5, 6, and 7 and can therefore interoperate with DIS applications of any of these versions.

## FOM Support

VR-Vantage 2.1 has built-in support for versions 0.5, 0.7, 0.8, 1.0, and 2.0, drafts 6, 14, 17, and 20 of the RPR FOM. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper.

If you want to use VR-Vantage with VR-Forces 3.9 or later and RPR FOM version 2, draft 17, use the *VR-Link20017-1.fed* file.

## New FED File Naming Convention

VR-Vantage 2.1 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 file-name 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                         |
|------------------------|---------------------------------|
| <b>HLA 1.3</b>         |                                 |
| 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       |                                 |
| 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  |                                 |
| <b>1516-2000</b>       |                                 |

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

| Old FOM                                         | New FOM                           |
|-------------------------------------------------|-----------------------------------|
| 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 |
| 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_VrlExt_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          |



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

| Old FOM                       | New FOM                        |
|-------------------------------|--------------------------------|
| 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 2.1 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 2.1 application cannot control a VR-Vantage 1.6 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 MÄK Data Logger Recordings

The recordings provided with MÄK Data Logger 5.4 or later use the new FOM naming conventions. These should work seamlessly with the default HLA configurations in VR-Vantage 2.1. If you want to connect VR-Vantage 2.1 to recordings made with previous versions of the Logger, you must change the connection configuration to use the old FOM naming convention.

## New Features and Product Updates

VR-Vantage 2.1 has the following new features:

- Support for the CDB terrain database format. For details, please see Section 25.8, “[Loading CDB Databases](#),” in *VR-Vantage Users Guide*.
- Support for procedurally generated terrain, using either osgEarth or Blueberry 3D. This release includes several example terrains that demonstrate this feature. VR-Vantage also supports generation of airports runways, taxiways, signage, and markings.
- Support for Mimic Track and Tether Track attach modes on a location. For details, please see Section 15.2.5, “[Mimic Location Track Mode](#)” and Section 15.2.9, “[Tether Location Track Mode](#)” in *VR-Vantage Users Guide*.
- Support for display of tracer rounds. This is an observer-specific setting. For details, please see Section 29.64, “[Tracer Use](#),” in *VR-Vantage Users Guide*.

- ♦ The earth file format now supports inclusion of XML formatted files. For details, please see Section 25.2.1, “[Including External Files into Earth Files](#),” in *VR-Vantage Users Guide*.
- ♦ There has been a change in terminology. The term entity is now used to refer only to individual entities. The term unit is used to refer to all aggregates. The term simulation object refers to entities and units collectively. This change is reflected in documentation and various GUI menus and dialog boxes. Class names and parameter names have not been changed.
- ♦ Simulation of camera jitter. This is an observer-specific setting. For details, please see Section 14.7, “[Simulating Camera Jitter](#),” in *VR-Vantage Users Guide*.
- ♦ Support for touch screens. VR-Vantage supports touch screens to the extent that your operating system and monitor support them. There is no VR-Vantage-specific configuration required.
- ♦ Support for Fresnel lighting for scene reflections.
- ♦ Upgrade to DI-Guy 13.2. Many new characters.
- ♦ Support for a sensor view for entities with gimbaled sensors, such as the Predator UAV.
- ♦ Many improvements to performance, including faster and smoother speed tree loading and an improved ability to handle long frames.
- ♦ Vegetation can now show light cast from street lights and other light sources.
- ♦ VR-Vantage now supports the CigiWeatherCtrlV3 packet's wind direction, horizontal wind direction, and visibility range fields (WindDir, HorizWindSp, and VisibilityRng respectively). For more information, please see “[Support for CIGI Weather Control Packet](#),” on page 11.
- ♦ Support for the new FOM naming conventions introduced in VR-Link 5.2. For details about these changes, please see “[New FED File Naming Convention](#),” on page 6.
- ♦ Many new and upgraded entity models, including:
  - Upgraded F18 and Mirage.
  - KC 135 tanker, with boom.
  - Patriot battery models.
  - Coast Guard patrol boat.
  - Passenger ferry
  - MQ-8 Firescout
  - Cruise ship.
  - Gimbaled sensor on MQ-9 Reaper.
  - Tugboat.
  - V-280 Valor.

- ♦ New command-line options:
  - `--tcpSendTimeout`. Sets the timeout (in seconds) for the master to wait for a remote display engine before giving up on a send. Default: 30 seconds.

## Support for CIGI Weather Control Packet

VR-Vantage now supports the CigiWeatherCtrlV3 packet's wind direction, horizontal wind direction, and visibility range fields (WindDir, HorizWindSp, and VisibilityRng respectively).

Since this packet was used for just precipitation previously, to provide backward compatibility, the RegionID field (which we normally do not support) is used as a flag set to indicate which weather control items are supported and which are ignored.

The flags are

```
enum WeatherControlState
{
    WindDirSet = 0           // bit 0
    , WindSpeedSet = 1       // bit 1
    , VisibilitySet = 2      // bit 2
    , PrecipitationIgnore = 3 // bit 3
};
```

As before, WeatherEn will enable or disable precipitation, with LayerID indicating precipitation type (4 == rain, 5 == snow). Therefore, existing CIGI Weather Control packets used with VR-Vantage work as they did before.

If you want to specify wind direction, horizontal wind speed, visibility, or some combination of them, the appropriate flags must be set into the RegionID field. Precipitation values can be ignored by setting bit 3 of the RegionID field.

## Documentation Updates

VR-Vantage documentation has been updated for this release. *VR-Vantage Users Guide* and *VR-Vantage Configuration Guide* have been combined into one manual – *VR-Vantage Users Guide*. This change consolidates information in one place and should make it easier to search for the information you need.

Section 25.2.1, Including External Files into Earth Files, in *VR-Vantage Users Guide* should have the following text at the end of the section:

The included XML files are located in the same directory.



In an earth file, if you comment out an include line that uses the `{% include filename %}` syntax, the included file must not have any comments or it will not be processed properly. This can result in terrain errors that are not easily diagnosed. Files included with the `xi:include` syntax do not have this restriction.

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## **Fixed Bugs**

VR-Vantage 2.1 fixes the following problems that were present in previous releases:

- ♦ Numerous art issues.
- ♦ It was not possible to change the location of plug-ins to be loaded. 5570
- ♦ It was not possible to turn on the OSG frame rate on remote display engines. 55281
- ♦ Display setting configurations did not restore the configured display size. 54946
- ♦ The Terrain Settings dialog box was missing some pages in VR-Vantage IG. 55699
- ♦ *DtExtrudedModelInstance* did not call *setRootNode()* or reimplement the *rootNode()* accessors. 55698
- ♦ VR-Vantage crashed when switching to a full screen window with entities present in the scene. 55649
- ♦ Auto connection to a second CIGI connection sometimes failed. 55560
- ♦ When a remote display engine crashed and displayed a message, the master display engine froze until the remote display engine was fully closed. 55990
- ♦ Tactical graphic vertices were not clamped properly for some terrains. 56007
- ♦ *DtOsgSimpleModel* optimized the instanced models with *optimizationLevel01()* instead of *optimizationLevel01Instanced()*, which caused an infinite loop. 56075
- ♦ CameraFX did not respect viewport offsets. 55750
- ♦ *Dt3DTextObject* was incorrectly positioned in PVD mode. 56100
- ♦ Calling the function *setViewMagnification* on the *DtObserverAgent* class had no effect. 56020
- ♦ DIS timeout parameters were not set for emitters, laser designators, radio transmitters, or the sensor FOVs. 56345
- ♦ When switching the window from embedded to windowed and back, the text overlay was broken. 56185
- ♦ HAT intersections caused performance to degrade. 55771
- ♦ Smoke created in CIGI did not correctly initialize to the current wind speed and direction. 56758
- ♦ Fixed a variety of errors in documentation.
- ♦ Setting the DIS version in the Connections dialog box did not work. 56926
- ♦ Amphibious entities in DIS/HLA did not turn off wakes over land. 56923
- ♦ Tidal wakes were off by 180 degrees. 55787
- ♦ The userStealth project had bad paths. 56891
- ♦ When you were attached to an art part of an entity in mimic mode, and the model was rendered using instancing, and the PDU for the entity had art part velocity data, it caused the art part to be incorrect. 56570
- ♦ Setting the DI-Guy character model did not work correctly. 56543, 56223
- ♦ Channel position offsets were applied before orientation offsets. 56433