



VR-Vantage PVD

First Experience

Copyright © 2013 VT MÄK
All rights Reserved. Printed in the United States.

Under copyright laws, no part of this document may be copied or reproduced in any form without prior written consent of VT MÄK.

VR-Exchange™ and VR-Vantage™ are trademarks of VT MÄK.
MÄK Technologies®, VR-Forces®, RTIspy®, B-HAVE®, and VR-Link® are registered trademarks of VT MÄK.

DI-Guy™ is a trademark of Boston Dynamics.

GL Studio® is a registered trademark of The DiSTI® Corporation.

Portions of this software utilize SpeedTree® RT technology (©2008 Interactive Data Visualization, Inc.). SpeedTree® is a registered trademark of Interactive Data Visualization, Inc. All rights reserved.

SilverLining™ is a trademark of Sundog Software.

All other trademarks are owned by their respective companies.

VT MÄK
150 Cambridge Park Drive, 3rd Floor
Cambridge, MA 02140 USA

Voice: 617-876-8085
Fax: 617-876-9208

info@mak.com
www.mak.com

Revision VRV-1.6-7-130912

VR-Vantage PVD First Experience

Thank you for deciding to try out VR-Vantage PVD (plan view display). VR-Vantage PVD provides a 2D big-picture view of the simulated world.

This first experience with VR-Vantage PVD will be a quick guided tour of some its most important features. To get the full experience you will need:

- ♦ VR-Vantage PVD
- ♦ MAK Data Logger.

Before you begin, install and license the software. Please see [“Install VR-Vantage PVD and Supporting Applications and Data,”](#) on page 20 for instructions.

When you are ready, this guide will help you:

- ♦ [Explore the Terrain](#)
- ♦ [View a Simulation](#)
- ♦ [Attach the Observer to Entities](#)
- ♦ [Explore Streaming Terrain](#)
- ♦ [Continue to Explore VR-Vantage PVD.](#)

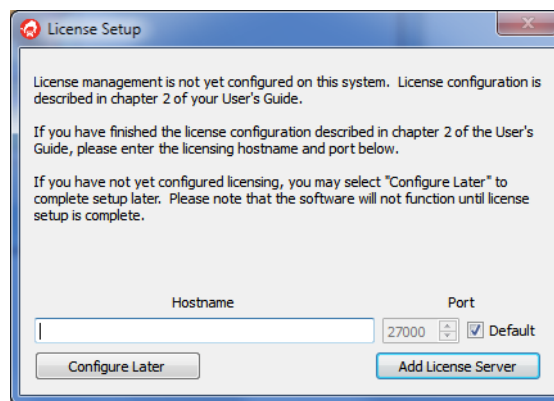
VR-Vantage PVD is part of MÄK’s VR-Vantage product line. VR-Vantage PVD is built using the VR-Vantage Toolkit. Using the toolkit, developers can extend the capabilities of our applications and can create entirely new applications. For more information, please read developer documentation, which is in `./doc/classdoc/index.html`.

1. Start VR-Vantage PVD

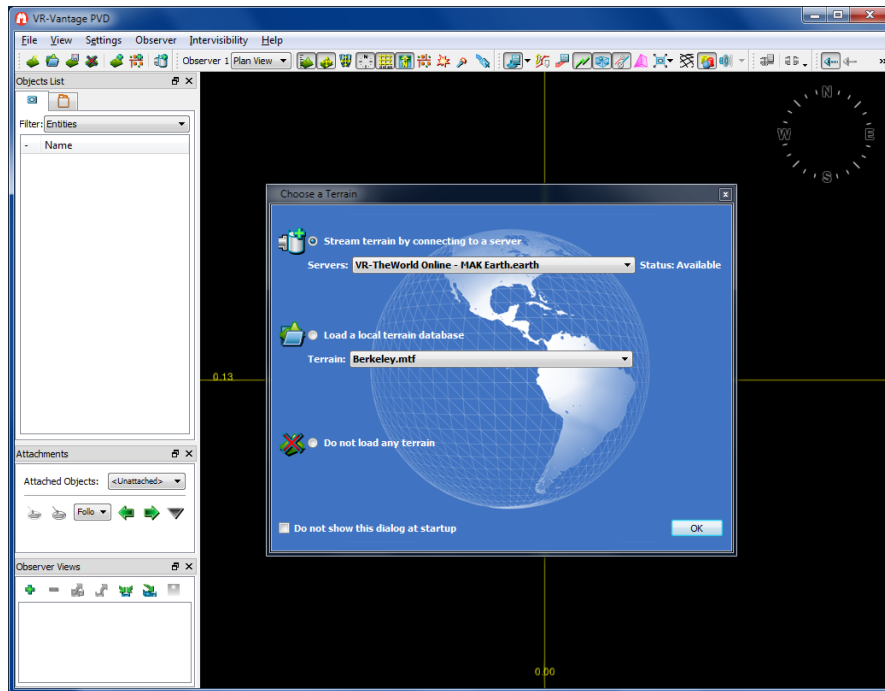
- On the Start menu, choose **Programs** → **MÄK Technologies** → **VR-Vantage 1.6** → **VR-Vantage PVD**. VR-Vantage PVD starts up. (The first time you run VR-Vantage PVD, you will have to specify the license server.)

1.1. Specify the License Server

The first time you run a MÄK application on a computer, the License Setup dialog box opens. It prompts you to enter the hostname of the license server and optionally, a port number.



1. Type the hostname in the Hostname box. This is the name you gave your salesperson when you requested the license file. (For details, please see (Section B.1, [“Identify the Host ID and License Server Name”](#).)
2. Click Add License Server. VR-Vantage PVD starts. The Choose a Terrain window open son top of the main window. It lets you immediately connect to a terrain server, load a local terrain, or decide not to load a terrain.

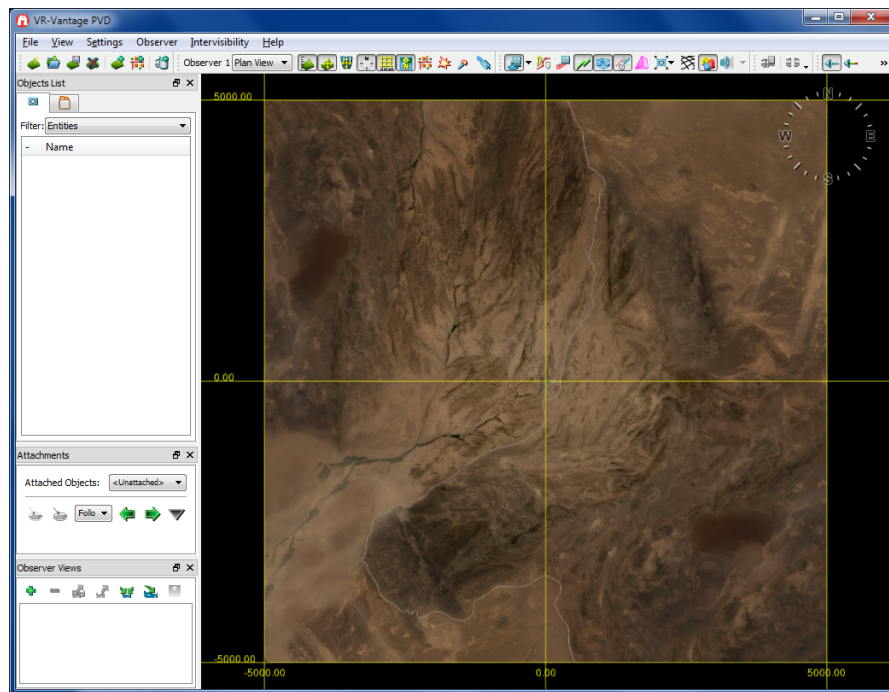


When you start VR-Vantage PVD, if you receive the following message, it means that you did not install the data package:

Data package not found in specified data directory:
'c:\MAK\vrvantage1.6\data'.
Please make sure the data package is installed.

VR-Vantage PVD has an application installer and a data installer. You must install both of them.

3. Select Load a Local Terrain.
4. In the list, select *VR-Village.mtf*.
5. Click OK. The VR-Village terrain loads.



2. Explore the Terrain

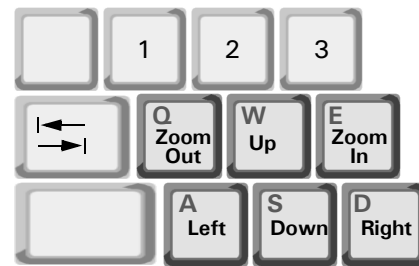
The observer is your viewpoint into the terrain. You can navigate through the terrain using the keyboard and mouse. This section introduces the basic keyboard and mouse actions. For a complete list, please see online help or the Quick Reference Card in *VR-Vantage Users Guide*.

1. Press and hold **e** to zoom into VR-Village.
2. Press and hold **q** to zoom out.
3. Continue to explore the terrain using the keyboard options described in the next few paragraphs.

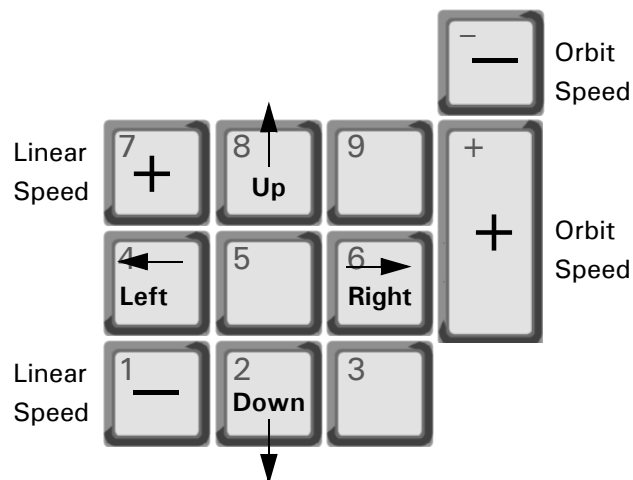
Press **w** and **s** to move up and down. Press **e** and **q** to zoom in and out. Press **a** and **d** to move left and right.

Press multiple keys to combine movement modes.

Press the Spacebar to move the observer to the default starting point.



The keypad lets you control position. Arrow keys let you control orientation.



2.1. Moving the Observer Using the Mouse

You can change the observer's position and heading with the mouse. You can change the observer's position by dragging the terrain.

1. Hold down the left mouse button and move the mouse to drag the terrain.
2. Rotate the mouse wheel to zoom in and out.

You can change heading by orbiting.

To orbit the terrain with the mouse:

1. Choose **Observer** → **Orient North**. When Orient North is enabled, the orientation is forced to North, so to orbit, you have to disable it.
2. Hold down the right mouse button and drag the mouse.
3. Choose **Observer** → **Orient North**. The observer snaps back to be oriented North.

3. View a Simulation

To view a simulation, you must load an appropriate terrain and connect to the simulation network. In this guide we assume that you have the MÄK Data Logger and the recorded simulations that it includes. However, if you want to view your own simulation data, feel free to use it instead of the suggested files.

3.1. Connect to a Simulation Network

1. Choose **Settings** → **Connection**. The Simulation Connections dialog box opens.
2. Select the DIS Connections page.
3. Click Connect.

3.2. Load the Terrain

If you have not already loaded the VR-Village terrain, as explained in [“Start VR-Vantage PVD,”](#) on page 2, load it now.

1. Choose **File** → **Open Terrain**. The Open Terrain dialog box opens.
2. Select *VR-Village.mtf*.
3. Click Open. In a few seconds, the terrain is displayed.

3.3. Start the Logger and Play a Simulation

1. On the Start Menu, choose **Programs** → **MÄK Technologies** → **Logger X.X** → **Logger DIS**. The Logger starts.
2. Choose **File** → **Open**. The Open File dialog box opens.
3. Select *VR-Village-CarBombDemo-v3-DIS.lgr*.
4. Click Open.
5. Choose **Play** → **Toggle Loop at End**. This will cause the recording to continuously loop back to the beginning when it reaches the end.
6. Choose **Play** → **Play/Pause**, or click the Play button.

3.4. View the Simulation

VR-Vantage PVD will take a few seconds to load model files. Then it will start to display the simulation. Zoom in to get a better view of the action. (Use the **e** key or the mouse wheel.) Watch the simulation for a while.

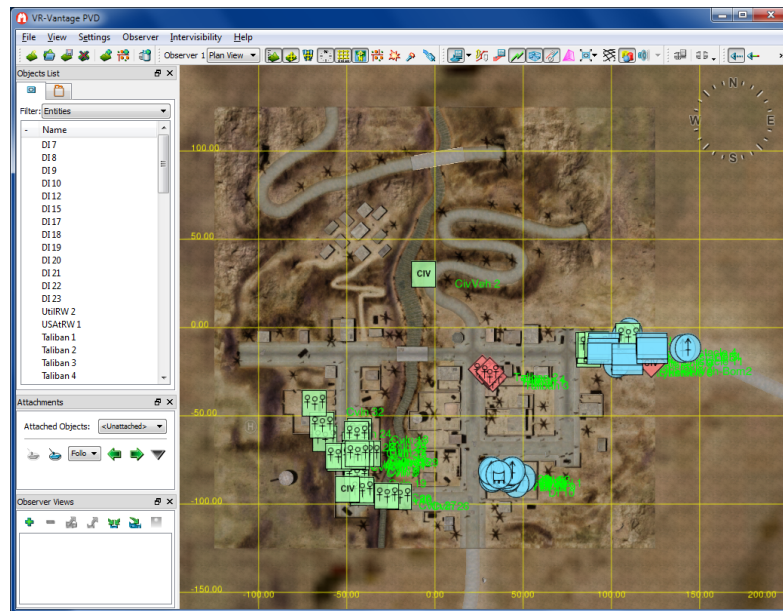


Figure 1. Simulation loaded

View Intervisibility Lines

When you view a simulation in 2D, it can be difficult to tell the effect of terrain on entity interaction. There is no obvious way to tell if entities can see portions of the terrain or other entities. To remedy this limitation, VR-Vantage PVD supports intervisibility lines.

VR-Vantage PVD supports the following types of intervisibility:

- ♦ Point-to-point (intervisibility line). Shows intervisibility between two points.
 - ♦ Intervisibility fan. Shows intervisibility around a point along multiple rays.
 - ♦ Entity intervisibility. Shows intervisibility between an entity and all other entities.
1. If the *VR-Village-CarBombDemo-v1-DIS.lgr* file is running, pause it. Click in the time line at about 1:45. The scene should look like this:

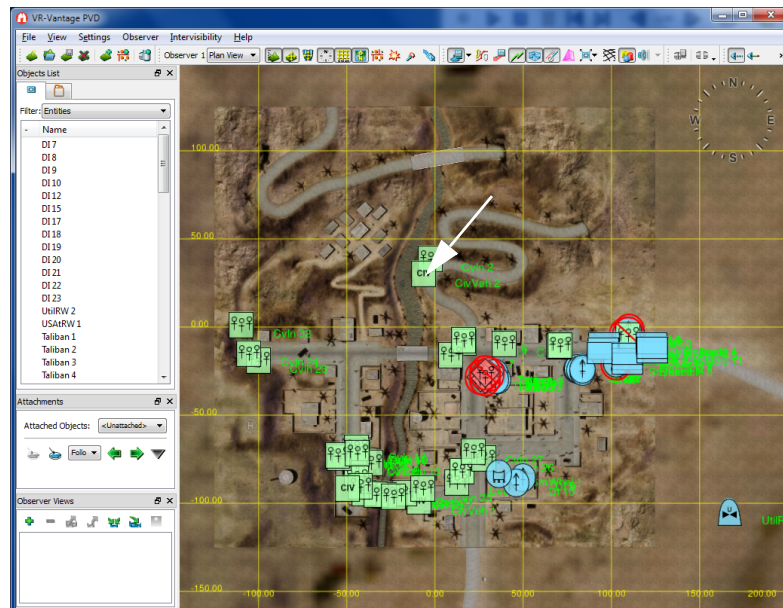
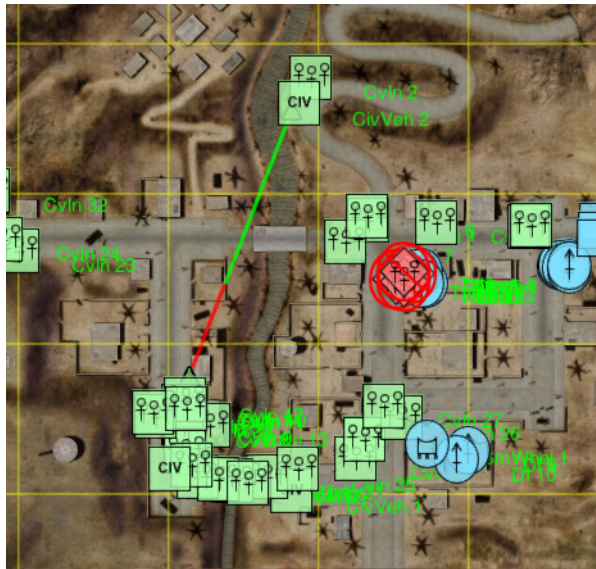
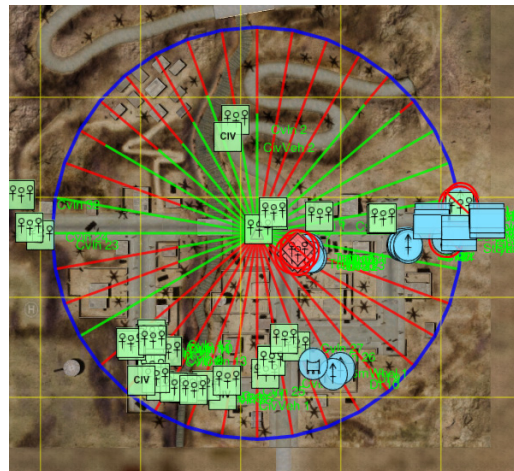


Figure 2. VR-Village for intervisibility

2. Enable the display of intervisibility lines:
 - a. Choose **Settings** → **Display**. The Display Settings dialog box opens.
 - b. Select the Intervisibility Settings page.
 - c. If it is not already selected, select the Enable Intervisibility Objects check box.
3. Choose **Intervisibility** → **Create Intervisibility Line**.
4. Click on the entity that the arrow points to in (Figure 2).
5. Move the cursor to extend a line and rotate it around the entity. Wherever the line is green, the entity has line-of-sight. Wherever it is red, the line-of-sight is obstructed.



6. Press **Esc** to exit intervisibility mode.
7. Choose **Intervisibility** → **Create Intervisibility Fan**.
8. Click the the entity in the center of the village and move the cursor to extend the fan. The rays show line-of-sight all around the entity.



9. Left-click to place the fan.

Manage Grid Lines

VR-Vantage PVD can display grid lines on the terrain. You can show and hide them. You can configure the coordinate system used and the spacing.



- Click the Display Grid Lines icon () on the Observer Settings toolbar. This toggles the grid lines off. Then, turn them back on again.
- 1. Choose **Settings** → **Display**. The Display Settings dialog box opens.
- 2. Select the Grid Lines Settings page ([Figure 3](#)).



Figure 3. Grid Lines Settings page

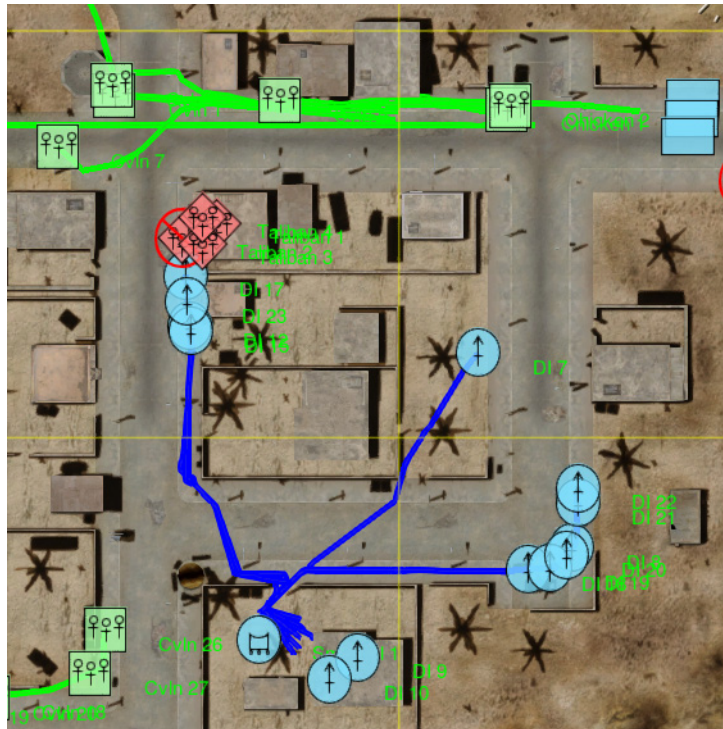
3. In the Grid Line Type list, select Lat/Lon (DMS). See how the text on the grid line display changes.



4. Zoom in and out and see how the grid lines recalculate and redisplay.

View Track Histories

1. Press the **q** key to zoom out a bit from the village.
2. If the Logger is paused, start playing the recording again.
3. Choose **Observer** → **Track Histories**.
4. As entities move notice that they leave a track showing their path.



5. Choose **Settings** → **Wireframe Rendering**. The VR-Village terrain has underground passages. If entities are currently moving through the passages, you can see their track history.



6. Turn off Track Histories and Wireframe Rendering.

4. Attach the Observer to Entities

So far, you have moved the observer through the scene to observe entities. You can also attach the observer to entities and have it move as they move.

1. In the Objects List Panel, right-click UtilRW 2. A popup menu is displayed.
2. Choose **Attach Follow**.
3. Press **Spacebar**. This puts the observer in the default position relative to the entity. It is now attached to the helicopter. As the helicopter moves, the observer will move with it. You can change the position and orientation of the observer with the keyboard and mouse controls you learned earlier, but it will maintain its relationship with the helicopter and move through the scene as the helicopter moves.



The helicopter does not start moving until about 1:30 minutes into the recording. If it is not moving, click some place in the Logger timeline after the 1:30 mark.

4. Press **.** (period). The attachment moves to the next object in the Objects List Panel. The Attachments Panel show the name of the currently attached entity.z
5. Continuing attaching to additional entities.
6. Press **z** to detach the observer.
7. When you are done, stop the Logger.

5. Explore Streaming Terrain

In addition to displaying terrain data stored on your computer or a local disk, VR-Vantage PVD can display streaming data from a terrain service.

5.1. Connect to a Terrain Server

1. Choose **File** → **New Terrain**.
2. Choose **Settings** → **Terrain**. The Terrain Settings dialog box opens.
3. Select the Terrain Contents page ([Figure 4](#)).

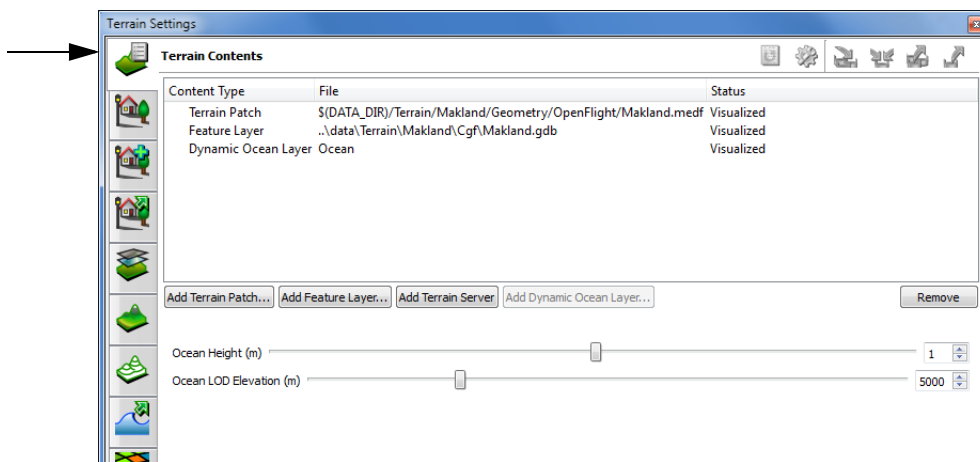


Figure 4. Terrain Contents

4. Click Add Terrain Server. The Add Terrain Server dialog box opens ([Figure 5](#)). The dialog box contains information about the selected terrain server. It is not editable.

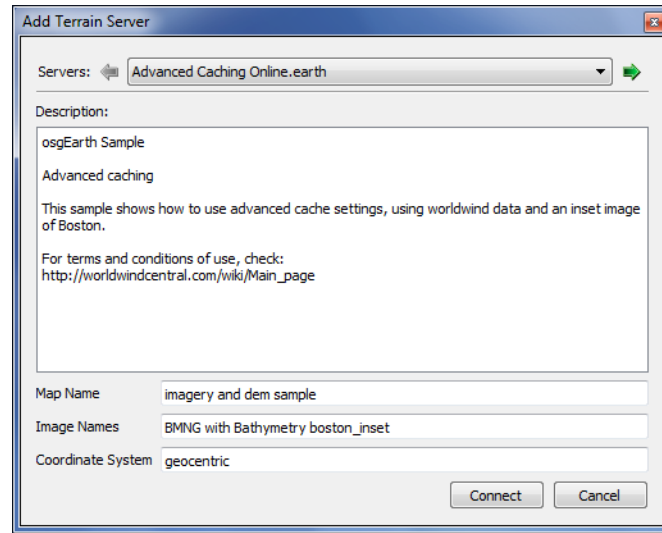


Figure 5. Add Terrain Server dialog box

5. Select VR-TheWorldOnline.earth¹ from the Servers drop-down list.
6. Click Connect. VR-Vantage PVD connects to the terrain server and displays a view of the world.

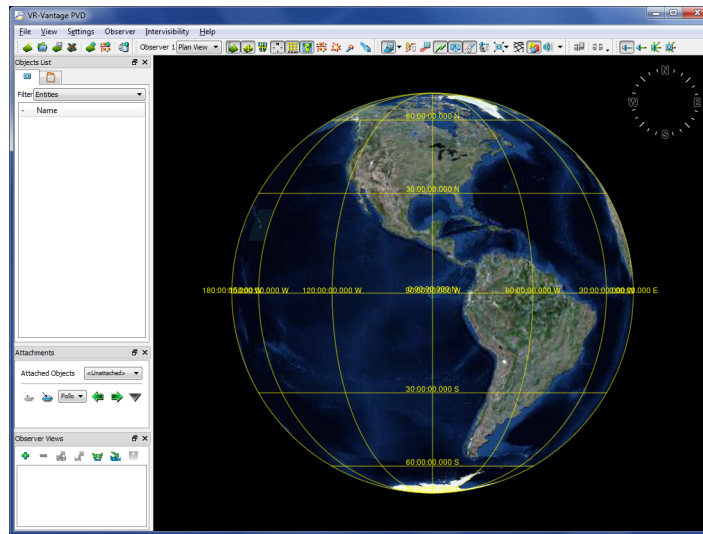


Figure 6. VR-TheWorldOnline

1. VR-TheWorld is a terrain server hosted by VT MÄK. If you access a different server, please note its terms of service. Many commercial sites like Google, Yahoo, and ESRI have specific restrictions on commercial use. It is your responsibility to abide by these terms.

Navigate the World

Use the keyboard and mouse to navigate the display. Zoom in and out. As you zoom in, more detailed terrain is displayed.

5.2. View a Combat Scenario

The scenario for this part of the evaluation was made with high fidelity air combat models plugged into VR-Forces, MÄK's computer generated forces product.

Run the Demonstration File

1. If the Logger is not still running from a previous exercise, start it.
2. Load *IISEC_VPMM_Demo_Final.lgr*.
3. Play the file.
4. If VR-Vantage is not connected to the DIS network, connect it as described in [“Connect to a Simulation Network,”](#) on page 6. (This recording is a DIS recording.)

View the Scenario

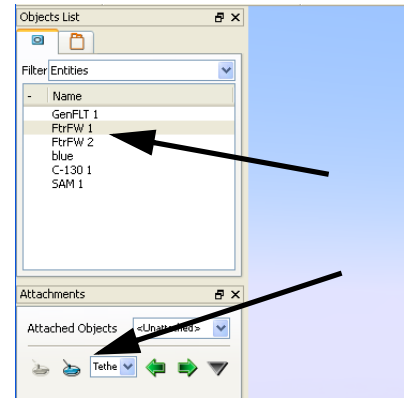
In this scenario, a friendly fighter (GenFLT 1) is escorting a cargo plane (C-130 1). Two opposing force fighters (FtrFW 1 and FTRFW 2) threaten the convoy. The fighters engage and GenFLT 1 shoots down the opposing fighters. Several minutes later, GenFLT 1 launches flairs in response to an attack from a surface-to-air missile battery (SAM 1). In this figure, we have zoomed in from the entire earth, as in the previous figure, to an area above California, USA. Entity labels identify the entities.



Attach the Observer to an Entity

1. Select an entity in the Objects List Panel, for example, FtrFW1.
2. On the Attachments Panel, click the Attach icon. (If you zoom in, it will be more obvious that the observer is attached to the entity.)

Enable track history to chart its movement.

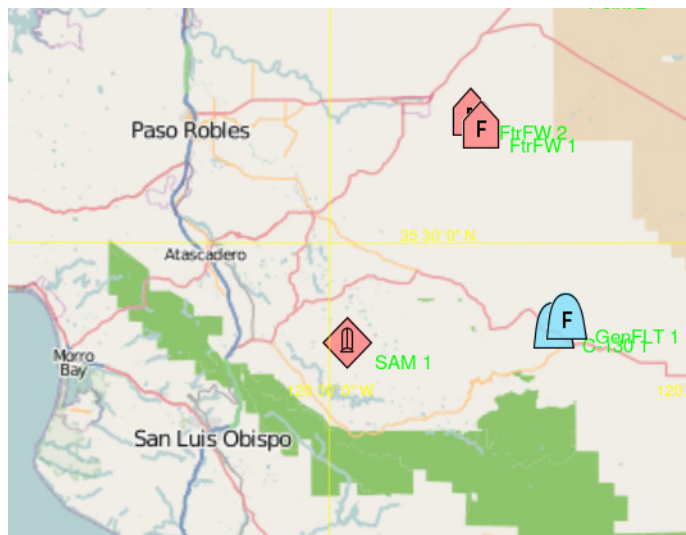


5.3. Change the Data Stream

You can change the data stream you are using without disconnecting from the simulation.

1. Choose **Settings** → **Terrain**. The Terrain Settings dialog box opens.
2. Select the Terrain Contents page.
3. In the window, select VR-TheWorldOnline.earth.
4. Click Remove.
5. Click Add Terrain Server.
6. Select OpenStreetMap Example Online.earth.
7. Click Connect.

The earth will now be covered in map data as it streams in, as shown in the following figure.



When you are finished exploring streaming terrain, stop the Logger.

6. Continue to Explore VR-Vantage PVD

Continue to explore VR-Vantage PVD. Look at the various settings options on the Settings menu. For more information, please read *VR-Vantage Users Guide* or online help. They provide detailed descriptions of all VR-Vantage PVD features.

- To open *VR-Vantage Users Guide*, choose **Programs** → **MÄK Technologies** → **VR-Vantage 1.6** → **Documentation** → **VR-Vantage Users Guide**.
- To open online help, choose **Help** → **Help**.

Please contact sales@mak.com for additional assistance or to provide feedback.

Installation and Licensing

Your MÄK salesperson has given you a link to the VR-Vantage PVD installer as well as links to other MÄK applications and data to support your first user experience. Download the files. Before you install the applications, note the following possible issues:

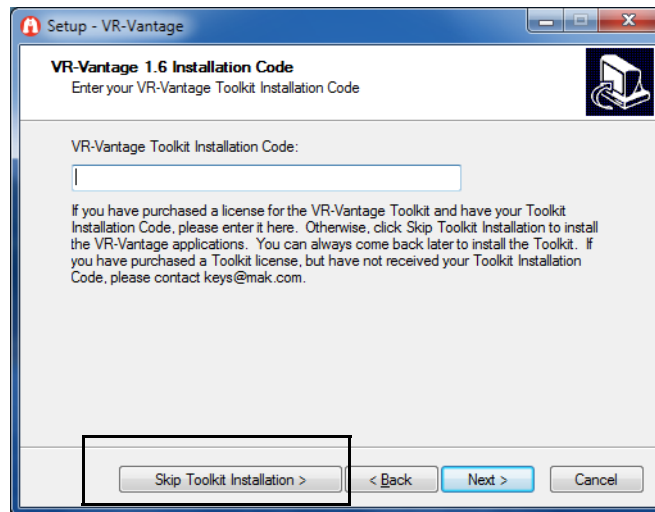
- You must have administrator privileges to install VR-Vantage on Windows Vista.
- When you install VR-Vantage on Windows Vista or Windows 7, there may be a delay of up to several minutes from the time you try to run the setup program to the time that an installation dialog box is displayed. If you experience this problem, turning off User Access Control can reduce or eliminate this delay.
- These instructions assume you are familiar with installing Windows applications that use a wizard-style installer. They also assume that you have an unzipping application and know how to use it.

A. Install VR-Vantage PVD and Other Applications and Data

Installing VR-Vantage PVD is a two-step process.

To install VR-Vantage PVD:

1. Run the application installer. On the VR-Vantage Installation Code page, click Skip Toolkit Installation.



2. Run the data installer.



You must install the data package. It is not optional. VR-Vantage PVD will not run properly without it.

If you do not already have the MÄK Data Logger installed, install it as follows:

- Run the MÄK Data Logger installer. Accept all of the default settings.

If you installed MÄK Data Logger 5.0 or later, you do not have to extract the *IISEC_VPMM_Demo_Final.lgr* recording. It is included in the Logger installer. If you have a previous version of the Logger, extract *IISEC_VPMM_Demo_Final.lgr* as follows:

- Extract *IISEC_VPMM_Demo_Final.lgr* from *IISEC_VPMM_Demo_Final.zip* to *C:/MAK/Loggerx.x/logger_tapes*.

B. Setting Up the License Manager

To use a MÄK product, you must install the MÄK License Manager and get a license for your product. Before you can use a MÄK product, you must obtain a valid license file and specify the license server.

- To install the MÄK License Manager, run the installer.

The general procedure for configuring license management is as follows:

1. Identify the name and ID of the license server and request a license file.
2. Put the license file in the *MAK/MAKLicenseManager* directory on the license server.
3. Run the license server.
4. Specify the license server location.

B.1. Identify the Host ID and License Server Name

For simplicity, use the computer on which you installed VR-Vantage PVD as the license server. To find out the host ID and license server name:

1. On the Start menu, choose **Programs** → **MAK Technologies** → **MAK License Manager** → **MAK License Manager**. The MÄK License Manager utility opens (Figure 1).

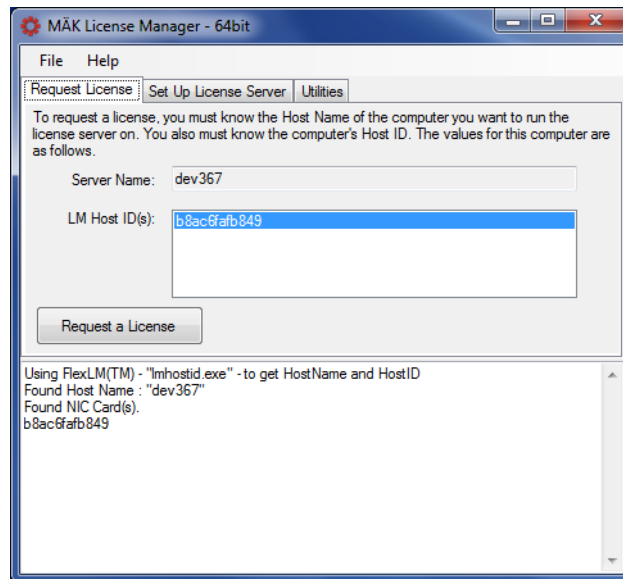


Figure 1. License Manager

2. Select the Request License tab. It displays the server name and the IDs for your network cards.

3. If you have more than one network card, select the one that you want to use as Host ID.
4. Send the host ID and hostname to your MÄK salesperson. MÄK will e-mail you a license file.

B.2. Put the License File in the *MAKLicenseManager* Directory

When you receive your license file, put it in the *MAKLicenseManager* directory on the license server. The file should have the extension *.lic*. If it does not, please contact keys@mak.com to clarify why it did not follow this convention.

B.3. Run the License Server

- To start the license server daemon, on the server machine only, execute `runLm` from the *MAKLicenseManager* directory.

Shutting Down the License Server

- To force all applications to check in their licenses and shut down the license server daemon, run `lmdown`.

B.4. Specify the License Server

The first time you run a MÄK application on a computer, the License Setup dialog box opens (Figure 2). It prompts you to enter the hostname of the license server and optionally, a port number.

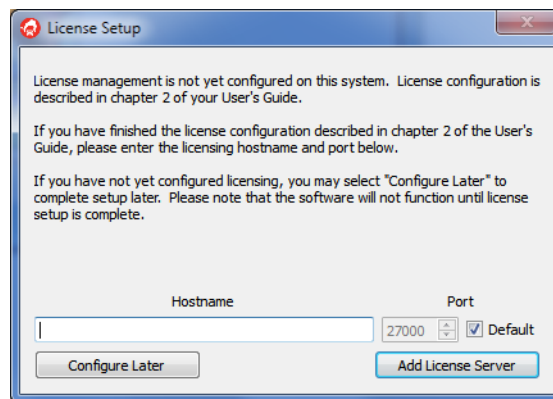


Figure 2. License Setup dialog box

1. Type the hostname in the Hostname box.
2. Click Add License Server. The application will start.