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1. VR-Vantage First Experience

Thank you for deciding to try out VR-Vantage. VR-Vantage provides traditional 2D tactical maps and 3D perspective scenes for viewing the virtual battlefield, along with an exaggerated reality (XR) common operational picture.

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

- VR-Vantage
- MAK Data Logger

Before you begin, install and license the software. See "2.1. Install VR-Vantage, Supporting Applications, and Data" on page 34 for instructions.

When you are ready, this guide will help you:

- Explore the Terrain
- View a Simulation
- Attach the Observer to Entities
- Explore Sensors
- Explore Dynamic Ocean
- Explore the Plan View Observer Mode
- Explore Model Sets and Model Scaling
- Explore Paged and Streaming Terrain
- Continue to Explore VR-Vantage

VR-Vantage is part of MAK's VR-Vantage product line. VR-Vantage 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 the developer documentation, which is in [./doc/classdoc/index.html](#).

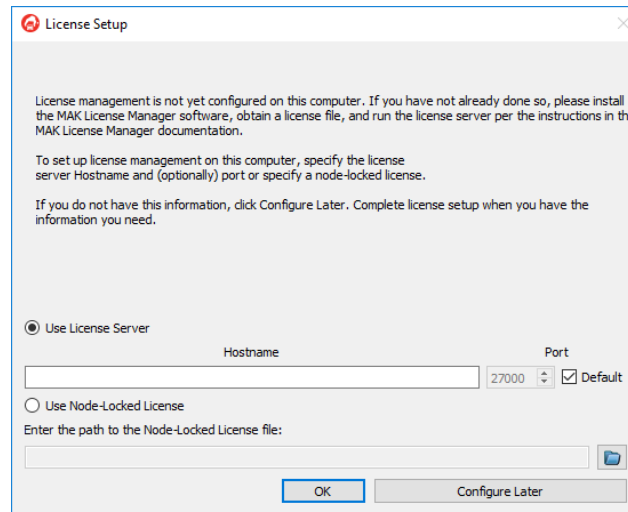
1.1. Starting VR-Vantage

- On the Start menu, choose **MAK Technologies > VR-Vantage 3.1**. VR-Vantage starts up. (The first time you run VR-Vantage, you will have to specify the license server.)

1.1.1 Specify the License Server and Start VR-Vantage

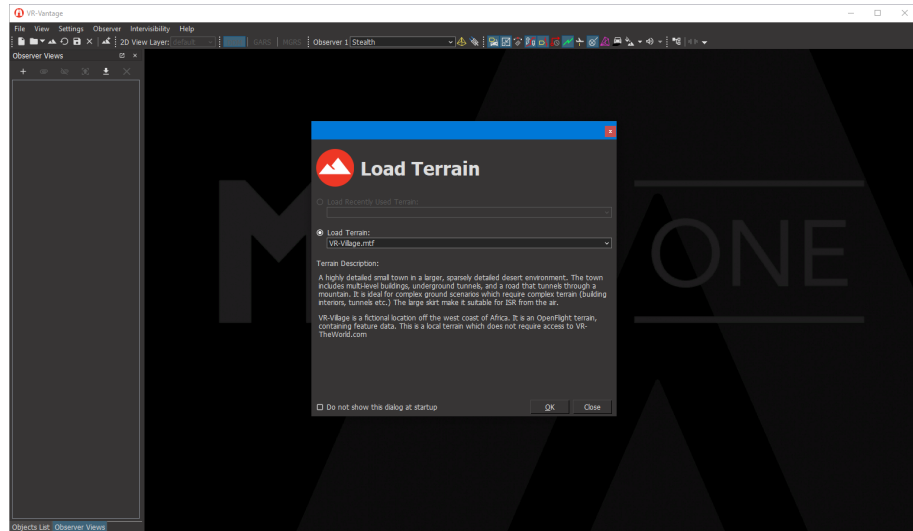
If you have not previously run any MAK applications on this computer, the License Setup dialog box opens (Figure 1). It prompts you to enter the hostname of the license server and optionally, a port number.

Figure 1. License Setup dialog box



1. Type the hostname in the Hostname box. This is the name you gave your salesperson when you requested the license file. (For details, see "2.2.1 Identify the Host ID and License Server Name" on page 36.)
2. Click Add License Server. VR-Vantage starts. The Load Terrain window opens on top of the main window (Figure 2).

Figure 2. Load Terrain window



 When you start VR-Vantage, 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/SharedData/18/latest'.

Please make sure the data package is installed.

VR-Vantage has an application installer, and the MAK Data Setup installs multiple data packages. You should install all of them.

3. Select the Load Terrain option.
4. In the list, select *VR-Village.mtf*.
5. Click OK. The VR-Village terrain loads. If the view does not look like Figure 3, press the **Spacebar**.

Figure 3. VR-Village default view



1.2. 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. Hold down the **Q** key. This raises the observer. Press **E** to drop back down.
2. Hold down the **S** key to back through the village towards the entrance road. If the observer stops moving, it may be blocked by a building or terrain. Press **Q** to raise the observer a bit.
3. Experiment with keyboard and mouse control of the observer as described in the next few sections.

Notice that as you move backward and forward in the terrain, objects are added to the terrain or removed. To help improve performance, distant objects are hidden or displayed at lower levels of detail (LODs).

1.2.1 Use the Game-like Keyboard Navigation

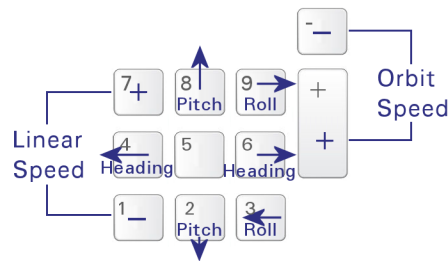
Press **W** and **S** to move forward and backward. Press **Q** and **E** to move up and down. Press **A** and **D** to move left and right.

Press multiple keys to combine movement modes. Notice that you cannot go through walls or through the ground — unless you want to. Press and hold **X** while moving the observer and you can go through walls and terrain.

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

The keypad lets you control position and orientation.





1.2.2 Use the Mouse to Move the Observer

Moving the observer with the keyboard often works best for fine movement in small areas when the observer is close to the terrain. Moving with the mouse is better for larger distances when the observer is away from the terrain.

Drag the Terrain

Dragging the terrain moves the observer forward, backward, left, and right.

1. Click a point on the terrain and hold down the left mouse button.
2. Drag the mouse left, right, forward, and backward.

Drag the View

Dragging the view moves the observer up, down, left, and right.

- Hold down the middle mouse button (or wheel) and drag the mouse.

Change the Observer's Orientation

- Hold down the right mouse button and drag the mouse.

Teleport the Observer

- **Shift**+click someplace on the terrain to jump to the location.

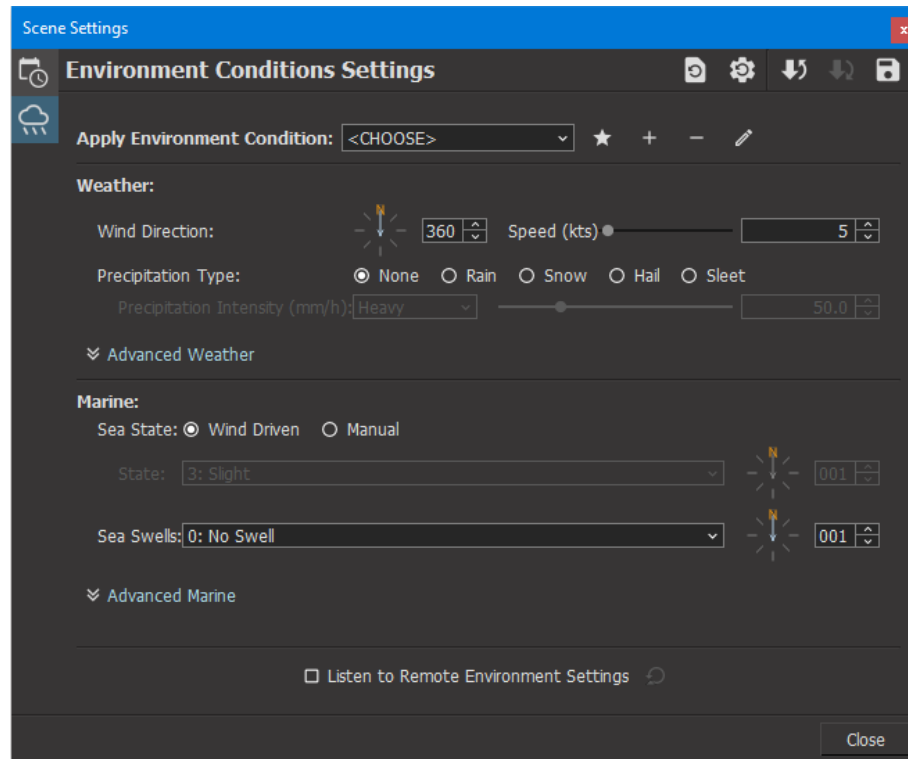
1.2.3 Change the Environment

VR-Vantage lets you manipulate the environment. You can apply preconfigured environment conditions and can change the specific environment conditions. This just affects how the scene looks. It does not affect the simulation you are viewing.

Apply an Environment Condition

1. Choose **Settings > Scene**. The Scene Settings dialog box opens.
2. Select the Environment Conditions Settings page (Figure 4).

Figure 4. Scene Settings dialog box, Environment Conditions Settings page



3. In the Apply Environment Condition list, select a condition, such as Mostly Cloudy. The cloud cover changes (Figure 5).

Figure 5. Cloud cover

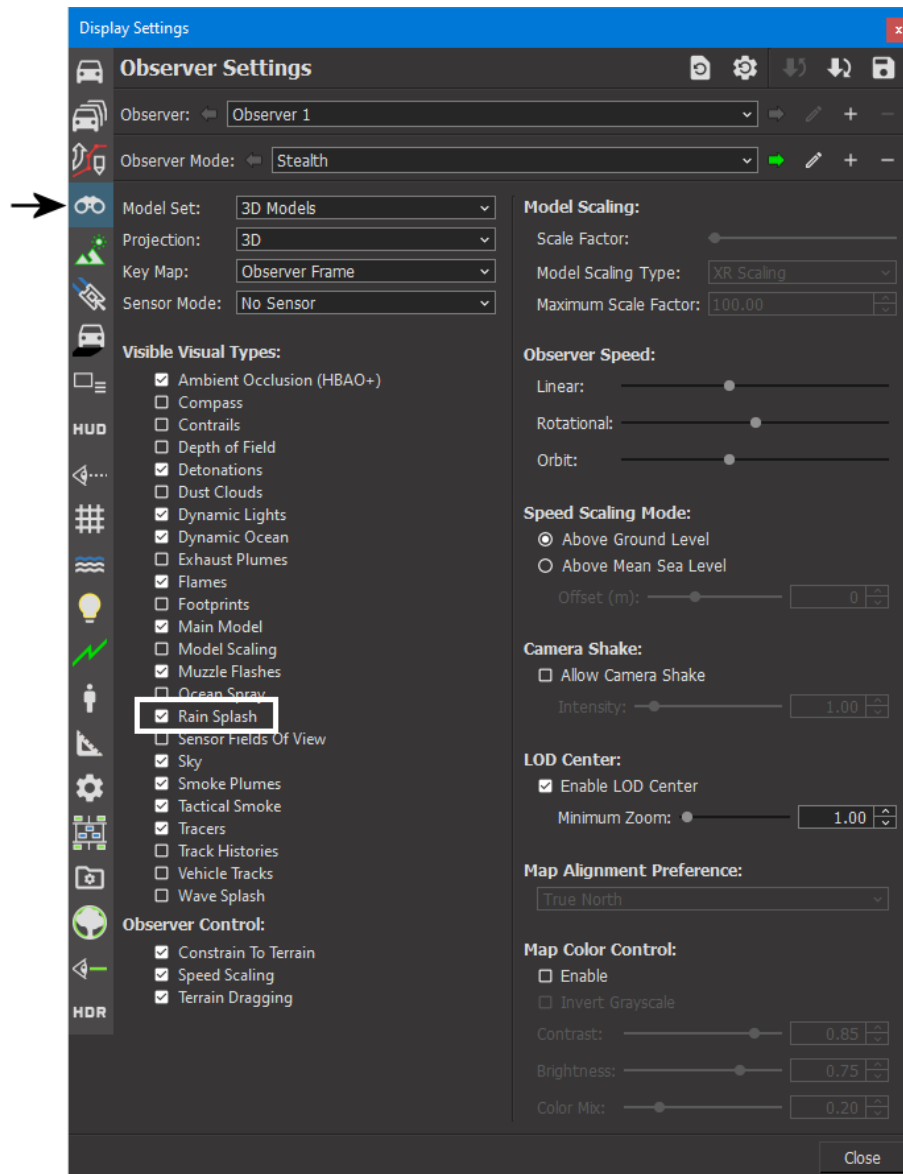


Make it Rain and Snow

1. For Precipitation Type, select Rain. It starts to rain.
2. Drag the Precipitation Intensity slider to the right to make it rain harder.

3. Choose **Settings > Display**. The Display Settings dialog box opens.
4. Select the Observer Settings page (Figure 6).

Figure 6. Observer Settings page



5. In the list of attributes, select the Rain Splash check box. Rain drops start to gather on the observer's camera lens (Figure 7). If this does not seem to work, increase the precipitation intensity in the Scene Settings dialog box.

Figure 7. Rain splash



6. Clear the Rain Splash check box and close the Display Settings dialog box.
7. On the Scene Settings dialog box, change the Precipitation Type to Snow (Figure 8).

Figure 8. Snow



8. Adjust the Precipitation Intensity slider.
9. Change the wind direction and wind speed and see how it affects precipitation.
10. Set the Precipitation Type to None.

Change the Time of Day

1. In the Scene Settings dialog box, select the Date and Time page.
2. Slide the Hour slider back and forth. See how the lighting changes as you change the time (Figure 9).

Figure 9. Time of Day affects lighting



3. Click Close.

1.3. 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 MAK 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.

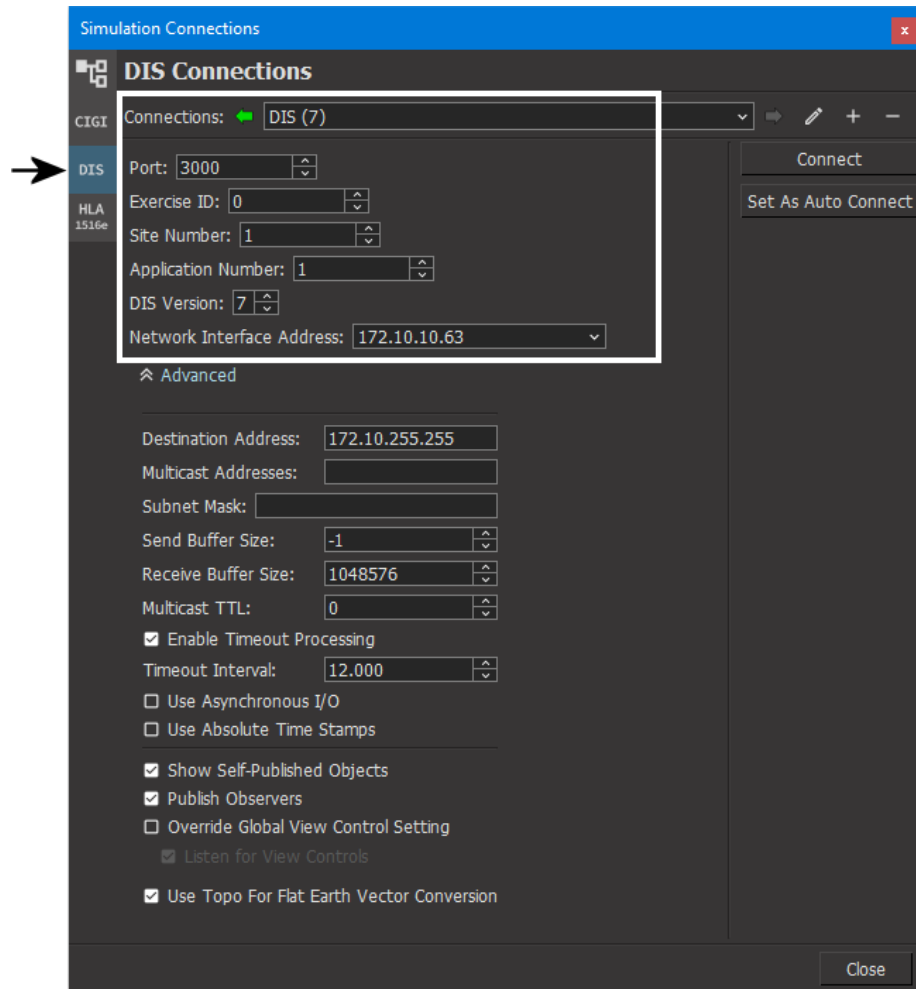
1.3.1 Start the Logger and Check the Connection Information

1. On the Start menu, choose **MAK Technologies > Logger 3.1 DIS**. The Logger starts.
2. Choose **File > Connection**. The Connection dialog box opens.
3. Make a note of the Port, Exercise ID, Site ID, Application Number, and Network Interface Address. You need this information when you connect VR-Vantage to the simulation network.

1.3.2 Connect to a Simulation Network

1. In VR-Vantage, choose **Settings > Connection**. The Simulation Connections dialog box opens.
2. Select the DIS Connections page (Figure 10).

Figure 10. DIS Connection



3. In the Connections drop-down list, select DIS (7).
4. Enter the Port, Exercise ID, Site Number, Application Number, and Network Interface Address to match the settings in the Logger.
5. Click Connect.
6. Click Close.

1.3.3 Load the Terrain

The simulation you are going to view takes place on a small high-resolution terrain set in Honolulu, Hawaii, USA.

1. Choose **File > Open Terrain**. The Open Terrain dialog box opens.
2. Select *Ala Moana.mtf*.
3. Click Open. In a few seconds, the terrain displays.

1.3.4 Play a Simulation in the Logger

1. In the Logger, choose **File > Open**. The Open File dialog box opens.
2. Select *Raid-SFX-ViewControl-DIS.lgr*.
3. Click Open.
4. Choose **Play > Toggle Loop at End**. When this is enabled, the recording continuously loops back to the beginning when it reaches the end.
5. Choose **Play > Play/Pause**, or click the Play button.

1.3.5 View the Simulation

VR-Vantage takes a few seconds to load model files. Then it starts to display the action in this simulation. The Logger file sends view control messages to VR-Vantage to control the observer. If the view does not change every few seconds, enable view controls as described below. Then watch the simulation for a while. When you are ready to explore the simulation on your own, disable view controls. Use the navigation controls you learned earlier to navigate through the terrain and watch the simulation from the viewpoints that interest you.

Enable or Disable View Controls

- Choose **Settings > View Controls**.

View Entity Information

Entity labels mark an entity's location and provide detailed information about it.

1. Look at an entity. If it does not have a small circle on it (an entity label), choose **Settings > Entity Labels**. Entity labels appear for each entity.
2. Move the mouse cursor over an entity label. Entity details display, as shown in (Figure 11).

Figure 11. Entity label



3. Zoom out from the terrain so that you can no longer easily see individual entities. You can still tell where they by looking at the entity labels.

1.4. Attach the Observer to Entities

So far, you have moved the observer through the scene to observe entities and you have seen the view change as the result of view control messages. Those view control messages were moving the observer to static locations or attaching the observer to entities so that it moved with them.

1. If View Controls are still enabled, choose **Settings > View Controls** to disable them.
2. In the Objects List Panel, right-click UtilRW 2. A pop-up menu appears.
3. Choose **Observer Attach > Attach Follow**.
4. Press **Spacebar**. This puts the observer in the default position relative to the entity. It is now attached to the helicopter and is located to its rear. As the helicopter moves, the observer moves with it. You can change the position and orientation of the observer with the keyboard and mouse controls you learned earlier, but it maintains its relationship with the helicopter and moves through the scene as the helicopter moves.

i The helicopter does not start moving until about 30 seconds into the recording. If it is not moving, click some place in the Logger timeline after the 0:30 mark.

5. Press **.** (period). The attachment moves to the next object in the Objects List Panel.

6. Continuing attaching to additional entities.
7. Press **Z** to detach the observer.

1.4.1 Attach to an Entity That Has a Cockpit Display

VR-Vantage is based on OpenSceneGraph (OSG), so developers can integrate third-party modules that are built on OSG. GL Studio, from DiSTI, is an application for building cockpit displays (also called heads-up displays, or HUDs). VR-Vantage includes a set of these displays for different vehicle types.

1. In the Objects List Panel, right-click UtilRW 2. A popup menu appears.

Choose **Observer Attach > Attach Mimic**. The observer attaches to the helicopter and its cockpit is displayed (Figure 12).

Figure 12. Cockpit display



2. Press **Z** to detach the observer.
3. Pause the Logger.

1.5. Explore Sensors

VR-Vantage can simulate the way that the 3D scene would look if an observer were using visual sensor devices such as night vision goggles or viewing the infrared spectrum. This is an observer-specific setting. You can adjust the contrast, blur, and noise of the view.

VR-Vantage includes one sensor module, CameraFX, which uses the SenSim libraries from JRM Technologies. The sensors do not take into account the materials of the objects that you are viewing. They simply filter the view to produce the desired effect. (If you want physics-based sensor effects, you may want to try the SensorFX plug-in to VR-Vantage, originally developed by JRM. For details, please contact your MAK salesperson.)

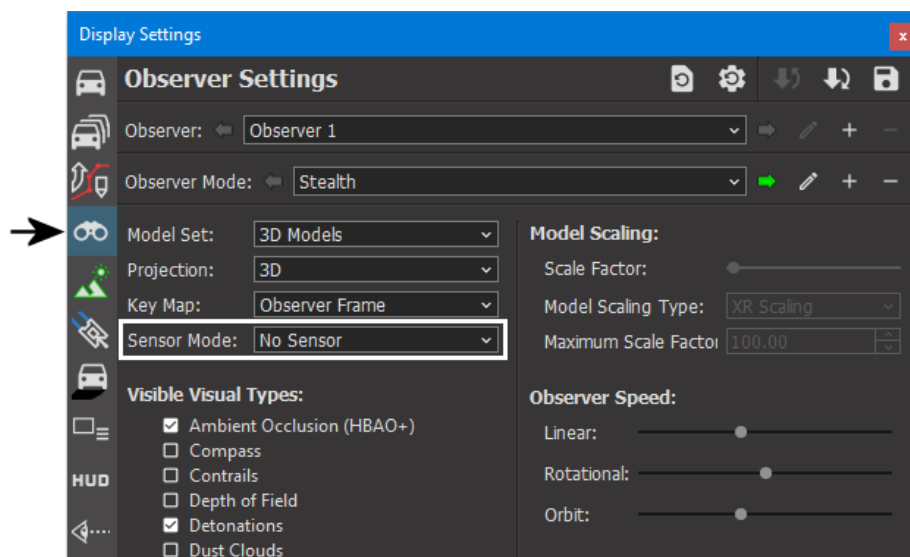
1. Resume playing the raid recording in the Logger.
2. Navigate to the area around the warehouse. The scene looks similar to Figure 13:

Figure 13. No sensor



3. Choose **Settings > Display**. The Display Settings dialog box opens.
4. Select the Observer Settings page. Notice that the Sensor Mode is No Sensor (Figure 14).

Figure 14. Sensor mode



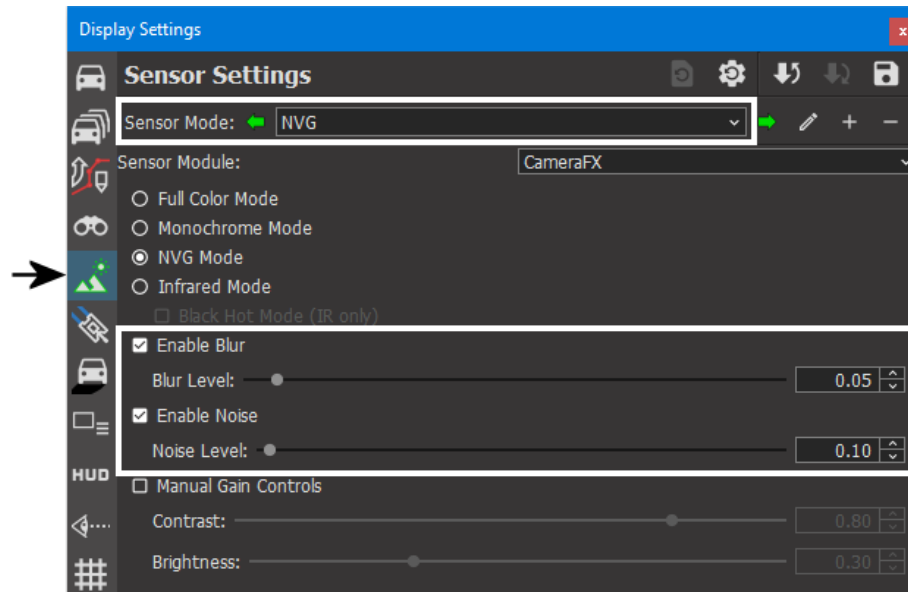
5. Change the Sensor Mode to IR. See how the view of the scene changes.

Figure 15. IR sensor



6. Choose **Settings > Scene**. The Scene Settings dialog box opens.
7. Select the Date and Time page.
8. Change the time to 9 PM.
9. In the Observer Settings page, change the Sensor Mode to NVG (night vision goggles). See how the scene changes. For comparison, change the sensor to No Sensor and see what the scene looks like to the naked eye.
10. In the Display Settings dialog box, select the Sensor Settings page (Figure 16).

Figure 16. Sensor Settings



11. In the Sensors list, select the current sensor (NVG).
12. Experiment with changing the settings for blur and noise.

1.6. Explore Dynamic Ocean

VR-Vantage can simulate ocean waves and swell states and has additional lighting effects that show reflections on the water.

1. In VR-Vantage, load *MAK Earth (online).mtf*. (This terrain requires internet access. If you do not have internet access, load *Ala Moana.mtf*.)
2. In the Logger, open *Raid-SFX-ViewControl-DIS.lgr* and run it as described in "1.3.4 Play a Simulation in the Logger" on page 15.
3. Attach the observer to the entity Carrier 1 and rotate so the view is similar to Figure 17.

Figure 17. Dynamic ocean - clear weather condition



4. Choose **Settings > Scene**. The Scene Settings dialog box opens.
5. Select the Environment Conditions Settings page.
6. Select some of the different environment conditions, such as Rainy, and see how the ocean changes.

Figure 18. Dynamic ocean - rainy weather condition



7. Apply the Clear environment condition.
8. In the Marine section of the Environment Conditions Settings page, set the Sea State to Manual.
9. Select different options from the State list and see how the sea state changes.

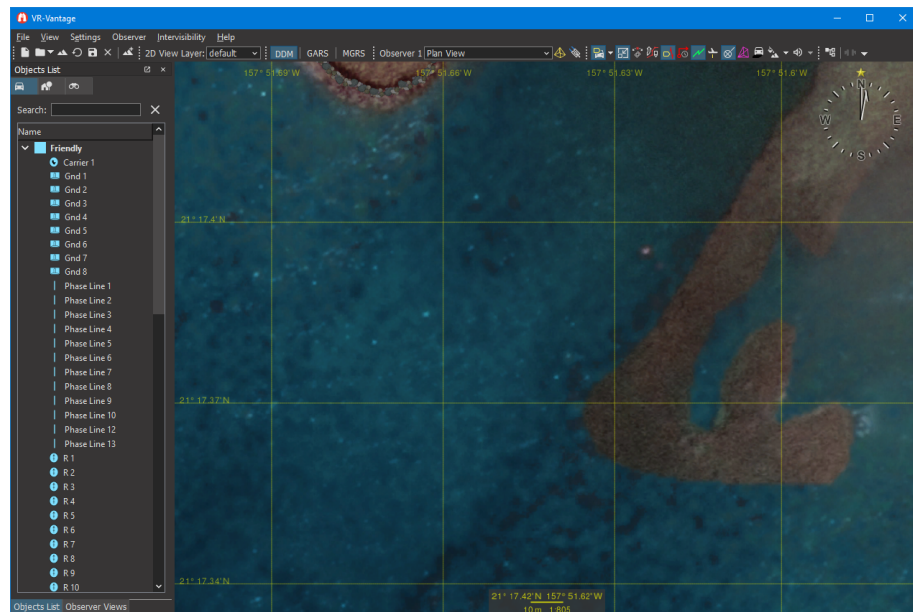
1.7. Explore the Plan View Observer Mode

So far, we have been exploring VR-Vantage in its 3D projection. Now we will explore the 2D plan view mode.

1.7.1 Change the Observer Mode

1. Press **Z** to remove any attachments.
2. Press the **Spacebar** to return to the default view of the terrain.
3. Choose **Observer > Set Observer Mode (Observer 1) > Plan View**. The projection changes to a plan view (2D) (Figure 19).

Figure 19. Plan View observer mode



4. Press **.** (period) to attach to an entity.
5. Zoom in to see the Hawaii terrain, similar to Figure 20.

Figure 20. Ala Moana dock yard



6. Press **Z** to remove the attachments.

1.7.2 Navigate the Plan View

The Plan View mode uses the same keyboard and mouse navigation as Stealth mode, except that you are restricted to 2D movement. 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.

i In Plan View observer mode, the altitude of the observer is fixed. When you zoom in and out, the altitude is not changing; the extents of the visible database and the resolution change.

The Left Arrow and Right Arrow keys rotate around the center point. Press the **Spacebar** to move the observer to the default starting point.

Drag the terrain with the left mouse button. Zoom in and out with the scroll wheel. Rotate with the right mouse button. (To rotate the view, disable Orient North on the Observer menu or Observer Settings Toolbar.)

1.7.3 View 3D and 2D Together

VR-Vantage applications can display multiple windows. Each window has its own observer. The projection used in a window is a property of the observer, so you can set the observer mode individually for each window you have open.

1. Choose **Observer > Set Observer Mode (Observer 1) > Stealth**. (This returns the main window to Stealth observer mode.)
2. Attach to the carrier.
3. Choose **File > New Plan View Window**. A new window opens. It is titled Plan View Inset 1 (Figure 21). Notice that it uses the Plan View observer mode.

Figure 21. Inset view

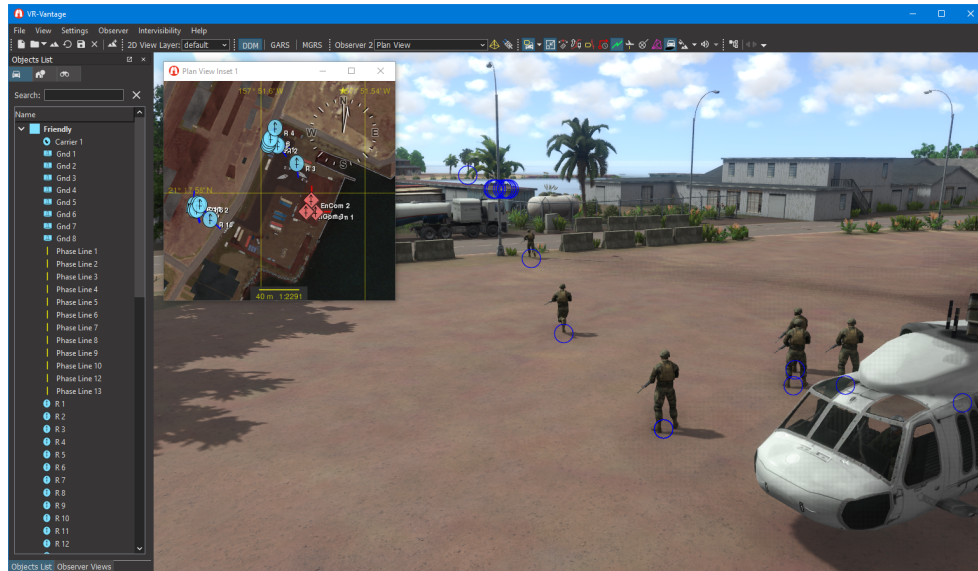


4. Click in the Plan View window to make it active. Notice that the observer on the Observer Settings Toolbar changes from Observer 1 to Observer 2.
5. Press . to attach to an entity.
6. Choose **Observer > Set Observer Mode (Observer 2) > Stealth**. The window now uses a 3D projection.
7. Practice switching between the two windows and changing the observer modes.

1.7.4 View the Simulation in Stealth and Plan View Observer Modes

Set the main window to Stealth observer mode and the inset window to Plan View observer mode. In the Logger, start playing the simulation again. If you disabled view controls, enable them again. View the scenario in the 2D and 3D views. The view controls change the main window.

Figure 22. Raid demo



Navigate the simulation as desired. The different projections have different visual effects.

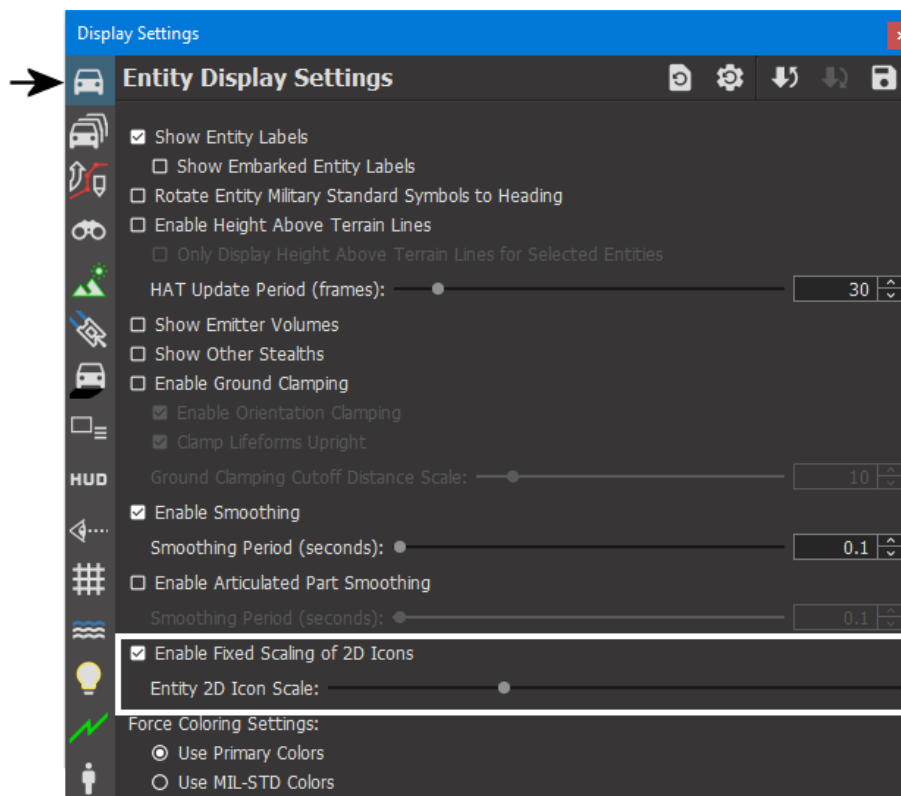
1. Click in the window that is using Stealth observer mode.
2. Look at the Observer menu and see the list of visual effects that you can turn on and off. Notice that 2D effects such as grid lines and orient North are disabled.
3. Click in the window that is using Plan View observer mode.
4. Look at the Observer menu. The 3D visual effects are not available. Only effects that make sense for a 2D view are available.

Change the Icon Size

You can change the size of 2D entity icons. When there are many entities in a scene, reducing icon size reduces overlap of the icons and gives a better sense of their locations.

1. Choose **Settings > Display**. The Display Settings dialog box opens.
2. Select the Entity Display Settings page (Figure 23).

Figure 23. Entity Display Settings page



3. Select Enable Fixed Scaling of 2D icons.
4. Adjust the Entity 2D Icon Scale slider to increase or decrease the size of the icons.

1.8. Explore Model Sets and Model Scaling

By default, the Stealth observer mode uses realistic, textured, 3D models. These models are collectively known as the 3D Models model set. However, VR-Vantage has other model sets (you used the 2D Icon model set when you switched to Plan View observer mode in the previous section) and it also lets you scale the models so that you can see them when the observer is too far away to see realistically scaled models.

i A model set is just a set of models of a particular type or style.

► To set up VR-Vantage for this section:

1. If it is not already loaded, open the *AlaMoana.mtf* terrain (as explained in "1.2. Explore the Terrain" on page 8).
2. If VR-Vantage is not connected to the network, connect to the DIS network (as explained in "1.3.2 Connect to a Simulation Network" on page 13).
3. Turn off view controls (as explained in "Enable or Disable View Controls" on page 15).

4. In the Logger, load *bombMission2022-DIS.lgr* and play the recording (as explained in "1.3.4 Play a Simulation in the Logger" on page 15). This recording includes a video stream view that you do not need for this exercise.
5. Pause the recording and return it to the beginning.
6. In VR-Vantage, if entity labels are enabled, disable them. (Choose **Settings > Entity Labels**.)
7. If you are not using Stealth observer mode, choose **Observer > Set Observer Mode (Observer 1) > Stealth**.
8. In the Objects List panel, select ASW RW 1.
9. Right-click and choose **Observer Attach > Attach Follow**.
10. Press **Spacebar**. The view should be similar to Figure 24.

Figure 24. Stealth observer mode

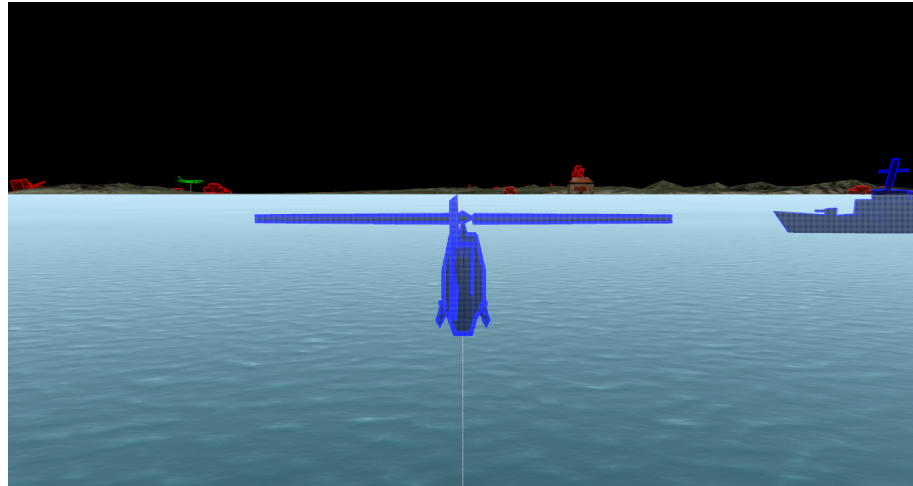


1.8.1 StealthXR and Scaling Models

Figure 25 shows a rotary-wing aircraft in the air and destroyer on the right. There are a number of other entities and models within this view, including SAMs, tanks, and civilian aircraft. However, you cannot see any of them because they are scaled to the terrain and the observer is too far away to make out details. VR-Vantage has two ways to help you see distant entities without giving up the situational awareness of the 3D view: model scaling and XR mode.

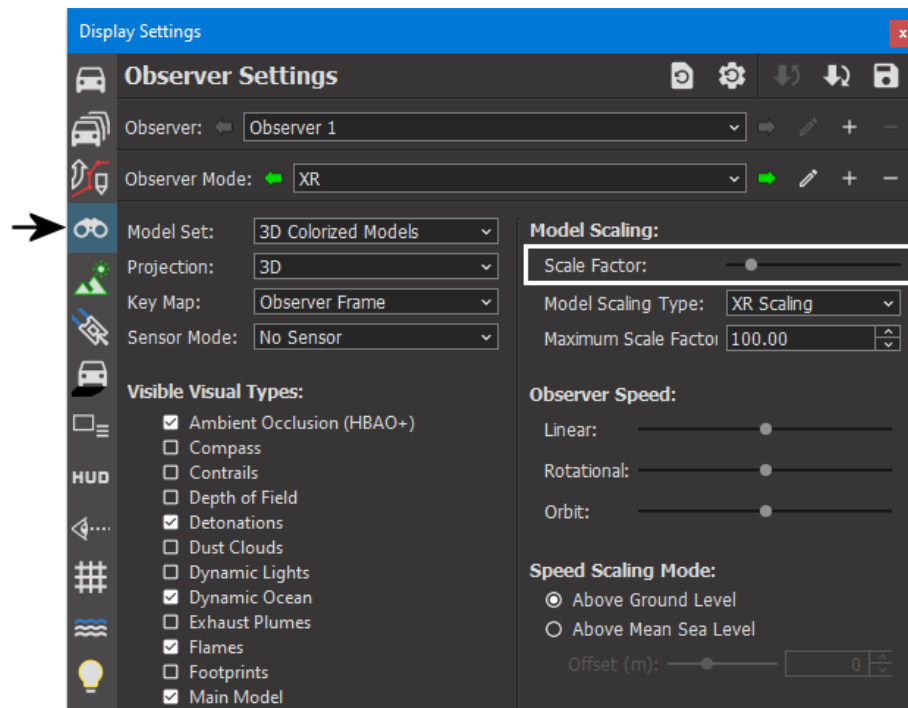
1. Choose **Observer > Set Observer Mode > XR**, or select XR on the Observer drop-down list on the Observer Settings toolbar. Notice that you can now see models for the other entities mentioned in the previous paragraph. By default, XR observer mode uses 3D colorized models and enables model scaling. Colorized models are not realistic, but they stand out from the background. Combined with model scaling, they become highly visible.

Figure 25. 3D Colorized Models



2. Choose **Settings > Display**.
3. Select the Observer Settings page. Notice that the Observer Mode is set to XR.
4. Under Model Scaling, adjust the Scale Factor slider (Figure 26)

Figure 26. Model scale slider



5. Slide the control to the right. The size of the models increases. You might now be able to see some dismounted soldiers. Note that while the distant entities are quite a bit larger, the rotary-wing aircraft to which you are attached has not changed its size very much. Scaling of entity models is influenced by their

distance from the observer. Models that are close to the observer might not be scaled at all.

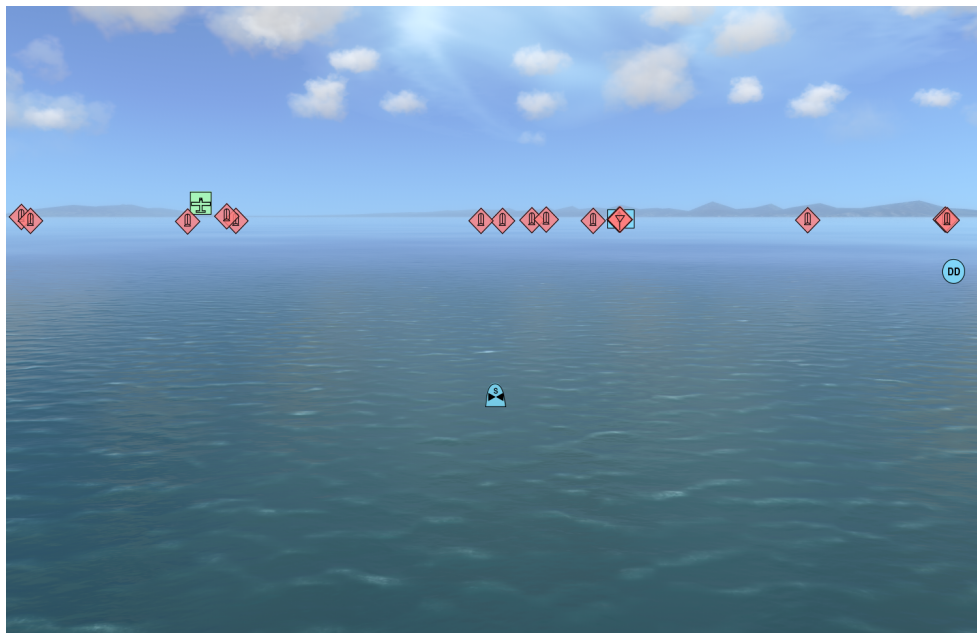
6. Change to Stealth observer mode.
7. Under Visible Visual Types, select the Model Scaling check box.
8. Use the Model Scale Factor slider to change the size of the models. As you can see, you can scale the realistic models as well as the colored models.
9. Experiment with adjusting the scale factor. Move the observer and see how that affects model scaling.

1.8.2 Change the Model Set

Each observer mode has a default model set that meets the visualization goals of that mode: realism for Stealth observer mode; visibility for XR observer mode; two-dimensionality for Plan View observer mode. However, in any observer mode, you can switch to any of the other model sets. You have seen the current view of the scenario using 3D models and 3D colored models. Now try 2D icons.

- Choose **Observer > Set Model Set > 2D Icons**. The entity models change to MIL-STD 2525B icons (Figure 27). The 2D icons are not affected by model scaling (but you can change their size, as described in "Change the Icon Size" on page 25). They sit on top of the scene, so they are not blocked by terrain or buildings as the 3D models are.

Figure 27. 2D Icon model set



Now that you have seen the different model sets and model scaling, explore these features on your own. When you are done, stop the Logger.

1.9. Explore Paged and Streaming Terrain

VR-Vantage can display databases for which all of the data is loaded into memory, called static databases, and databases for which data is loaded as it is needed, called paged terrains. Paged terrain is used when the amount of data available is too great to load into memory. Paged databases can have their data stored locally on a computer or can be streamed over a network or the internet. The VR-Village and Ala Moana terrains are local static terrains. If you have an internet connection, you can use terrains that stream over the internet.

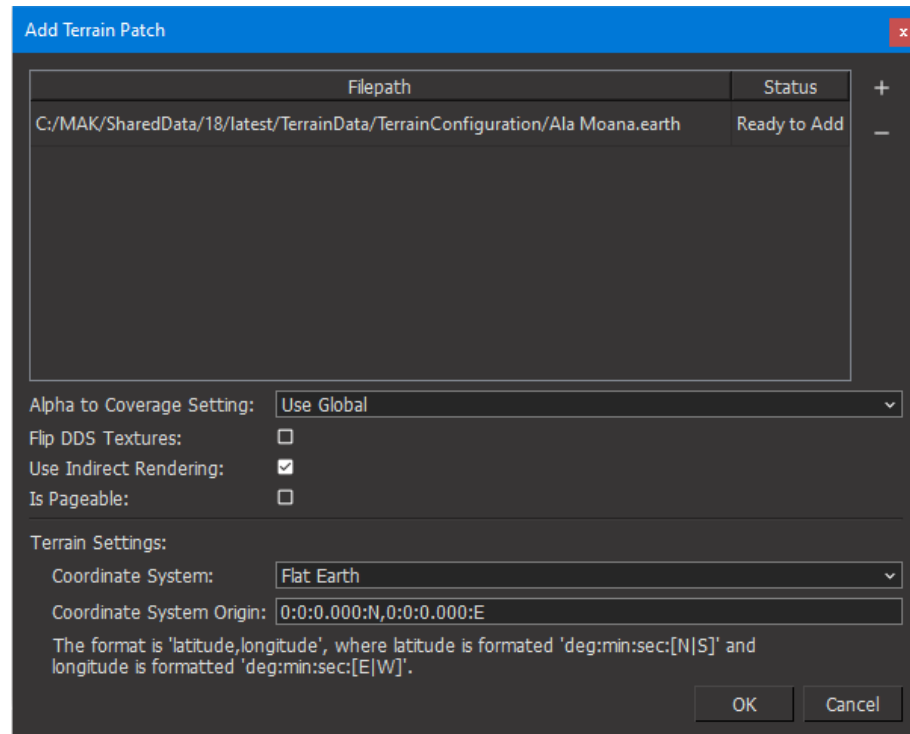
MAK applications support the osgEarth libraries for loading terrains from remote or local data sources. Terrain servers are configured in earth (.*earth*) files. They support streaming of terrain data and are, therefore, ideal for displaying terrains that have large amounts of data.

1.9.1 Connect to a Terrain Server

1. Choose **File > New Terrain**. The loaded terrain is cleared.
2. Choose **File > Add Terrain Patch**. The file selection dialog opens.
3. Navigate to the *./SharedData/18/latest/TerrainData/TerrainConfiguration* folder.
4. Select *Ala Moana.earth*¹ and then click Open.
5. The Add Terrain Patch dialog box opens (Figure 28).

¹MAK Earth gets its data from VR-TheWorld Server, a terrain server hosted by MAK Technologies. 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.

Figure 28. Add Terrain Patch



- Click OK. VR-Vantage connects to the terrain server and displays a default terrain view.

What is the Difference Between an Earth File and an MTF File?

In a previous section of this guide, you loaded *Ala Moana.mtf*. In this section, you loaded *Ala Moana.earth*. What is the difference between these files? An earth file tells VR-Vantage to load terrain data, which can be local or remote, using the osgEarth libraries. Every time you load terrain this way, VR-Vantage starts from scratch loading the data. This can be time consuming. If, after loading a terrain server, you save the terrain as an MTF file, VR-Vantage caches data in a format it can load quickly. Additionally, after loading an earth file, you could load additional types of terrain data that are not referenced in the earth file. When you save to MTF, that additional data is also saved as part of the terrain.

In summary, create an earth file to configure all the terrain data you want to load. Save loaded data to an MTF file for future use. If you examine the `./SharedData/18/latest/TerrainData/TerrainConfiguration`` folder, you will see that it has a set of earth files that match the MTF files.

Navigate the Earth

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

1.10. Continue to Explore VR-Vantage

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

- To open the *VR-Vantage Users Guide*, on the Start menu, choose **MAK Technologies > VR-Vantage 3.1 Documentation** and then double-click the shortcut to the document. You can also access it from the **Help** menu in VR-Vantage.
- To open the HTML5 help, in the VR-Vantage window, choose **Help > Help** or press F1. You can also choose **MAK Technologies > VR-Vantage 3.1 Documentation** and then double-click the link to the VR-Vantage Help.

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



2. Installation and Licensing

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

- When you install VR-Vantage on Windows, 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.

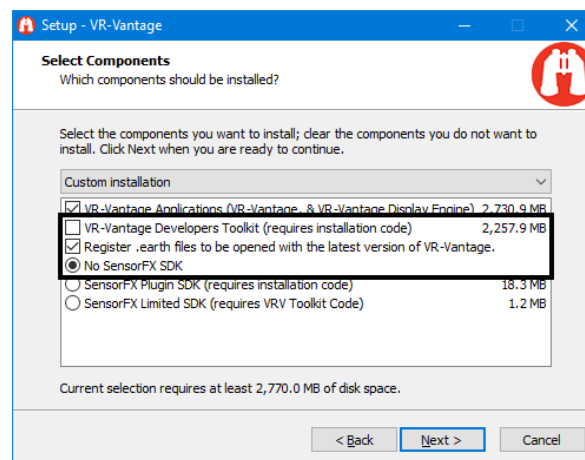
2.1. Install VR-Vantage, Supporting Applications, and Data

VR-Vantage has an applications installer and a data package, which consists of a number of compressed files.

► **To install VR-Vantage:**

1. Download or copy the application installer and data files to a directory on the hard drive where you will install them.
2. Run the application installer. On the Select Components page (Figure 29), clear the VR-Vantage Developers Toolkit check box and leave No SensorFX SDK selected.

Figure 29. Installation wizard



3. Continue with the installation wizard. The installer installs the VR-Vantage application.
4. When the installation completes, click Finish.

⚠ You must install the data package. It is not optional. VR-Vantage will not run properly without it. The MAK Data Setup installs the data files in `C:\MAK\SharedData\18\latest`. You should install it in this default location.

► **To install the data:**

1. Install the MAK ONE Software Manager.
2. Run the MakOneSoftwareManager executable in the `.\bin64` folder.

On Windows 10 and 11, you can also open the Start menu and then choose **MAK Technologies > MAK ONE Software Manager**. (To launch MAK ONE products more easily than the Windows 10 Start menu, please see the *MAK ONE Installation Guide* or this blog entry: [Tech Tip: Starting MAK ONE Applications on Windows 10.](#))

3. Click Select and Install Data Packages in the welcome page.

4. Specify the directory where you saved the data files. The default is your Downloads folder, but you can click the folder icon to navigate to another folder.
5. Select the data files that you want to install.

 MAK Technologies recommends that you install all of the data files if you have the space and are not absolutely sure which files you require.

You must install the Core data for VR-Vantage to function. To have access to other terrains and to see anything other than notional models, install the other data packages provided by MAK. If you do not install any other data, it is assumed that you are providing your own models and terrains.

6. Optionally, choose the location where you want to install the data.
MAK recommends that you install the files in the default location. While MAK ONE products allow for diverse installations, the typical use is the standard installation. If you require a more complex installation, refer to the *MAK ONE Installation Guide*.
7. If you have a previous installation of data for the same compatibility version, you are prompted to choose whether to back up the previously installed data, delete it, or overwrite it. See "2.1.1 Options When Installing a Data Package" below.
8. Click Install. The MAK ONE Software Manager shows the progress of the data installation.
9. When the installation is complete, click Exit.

If you do not already have the MAK Data Logger installed:

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

2.1.1 Options When Installing a Data Package

When installing a data package using the MAK ONE Software Manager, if you have no preexisting installations of that compatibility version, it simply installs the data files in the `./SharedData/##/latest` folder (where `##` is the compatibility version).

If there is already a previous release of the same compatibility version installed, however, you are prompted to choose whether to back up, delete, or overwrite the data from the previous release.

- Backup. If you install a newer release and choose to create a backup the previous release, the files in the *latest* directory are moved to a new directory named for the data version's date in the same compatibility folder and the new files are then installed in the latest folder. For example, the old files move to `./SharedData/16/2022-11-13` and the new files are installed in `./SharedData/16/latest`.

Creating a backup is the recommended option in most circumstances. It allows all MAK ONE applications to use the newest data, while also giving you the option to revert to a previous release using command-line options or setting a Windows environment variable. See the *MAK ONE Installation Guide* for details.

- **Delete.** The installer deletes the old data from the *latest* directory and then installs the new data.
- **Overwrite.** The installer overwrites the previous data files in the *latest* directory with the newer ones you chose to install. It also adds files that are new and ignores files that were previously installed if the package you are installing does not include that file.

2.2. Setting Up the License Manager

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

- To install the MAK 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.

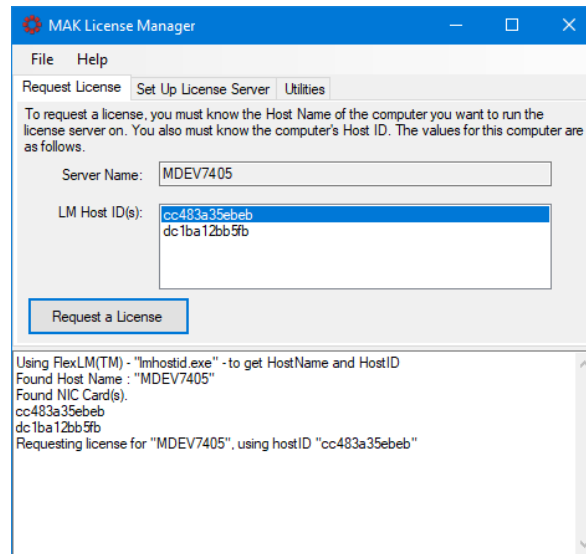
2.2.1 Identify the Host ID and License Server Name

For simplicity, use the computer on which you installed VR-Vantage as the license server.

- **To find out the host ID and license server name in Windows:**

1. On the Start menu, choose **MAK Technologies > MAK License Manager**. The MAK License Manager utility opens (Figure 30).

Figure 30. 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 MAK salesperson. MAK will e-mail you a license file.

2.2.2 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.

2.2.3 Run the License Server

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

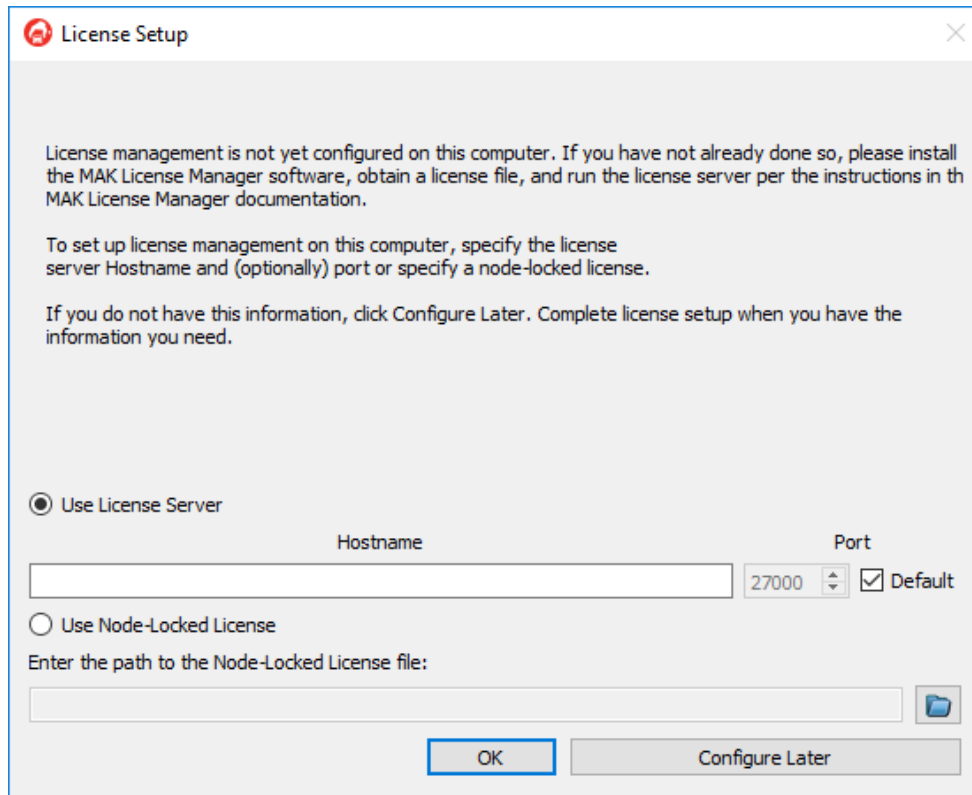
Shutting Down the License Server

- To force all applications to check in their licenses and shut down the license server daemon, **runlmdown**.

2.2.4 Specify the License Server

The first time you run a MAK application on a computer, the License Setup dialog box opens (Figure 31). It prompts you to enter the hostname of the license server and optionally, a port number.

Figure 31. License Setup dialog box



The dialog box is titled "License Setup" and contains the following text:

License management is not yet configured on this computer. If you have not already done so, please install the MAK License Manager software, obtain a license file, and run the license server per the instructions in the MAK License Manager documentation.

To set up license management on this computer, specify the license server Hostname and (optionally) port or specify a node-locked license.

If you do not have this information, click Configure Later. Complete license setup when you have the information you need.

There are two radio buttons for selection:

- ☒ Use License Server
- ☐ Use Node-Locked License

Under "Use License Server", there is a "Hostname" text box and a "Port" section with a spinner box set to "27000" and a checked "Default" checkbox.

Under "Use Node-Locked License", there is a text box labeled "Enter the path to the Node-Locked License file:" and a folder icon button.

At the bottom, there are two buttons: "OK" and "Configure Later".

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



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