



MÄK VR-Forces 3.2-ngc Release Notes

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Systems Supported

VR-Forces 3.2-ngc is available for the platforms listed in [Table 1](#). For the availability of other platforms, contact your MÄK salesperson. For toolkit users, application code must be built with the indicated compilers in order to link to VR-Forces libraries.

Table 1: Platforms supported

Platform	Compiler
SGI IRIX6.5	MipsPro7.3 C++ compiler (available from SGI)
Linux 7.2	GNU C++ (GCC) 3.0.2
PC with Windows NT 4.0 SP6 or Windows 2000 SP2	Microsoft Visual C++ 6.0, Service Pack 5

Disk Space Requirements

A full installation of VR-Forces requires approximately 275 MB of disk space. Terrain databases use approximately 62 MB and documentation (primarily the class reference) uses 102 MB.

MÄK Product Compatibility

To build VR-Forces applications, you must link with VR-Link 3.7.3-ngc. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 1.3.7-ngc or later. This release is compatible with the MÄK RTI 2.0-ngc.

MÄK VR-Forces 3.2-ngc is a parallel release to MÄK Plan View Display 2.2-ngc.

Qt Release Compatibility

If you want to do development using the VR-Forces GUI API, you need to use Qt, a cross-platform GUI toolkit. The VR-Forces GUI was built with Qt release 3.0.5. A VR-Forces developer's license includes a Qt development license. MÄK provides you with a Qt license key. However, you must download the correct version of Qt from www.trolltech.com.

Online Help

The online help is in HTML format and uses the default browser for your computer. For all online help features to work, you must enable Javascript in your browser.

Network Compatibility

HLA only

VR-Forces 3.2-ngc was built against VR-Link 3.7.3-ngc and is compliant with:

- ♦ RPR-FOM 1.0 and a subset of 2.0 (draft 6)
- ♦ MÄK RTI 1.3.7-ngc and 2.0-ngc
- ♦ DMSO RTI NG 4.0, and 6.0.

VR-Forces 3.2-ngc is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed above.

DIS only

VR-Forces 3.2-ngc supports DIS 2.0.4, IEEE 1278.1, 2.1.4, and IEEE 1278.1a, and can therefore interoperate with DIS applications of any of these versions.

Backward Compatibility

VR-Forces 3.2-ngc is highly compatible with previous 3.x-ngc releases. Programs built with the release 2.x API will need some porting to be compatible with release 3.2-ngc. Scenarios created with release 2.x or later are compatible with release 3.2-ngc.

RPR FOM Versions Supported

VR-Forces 3.2-ngc has built-in support for versions 1.0 and 2.0 (draft 6) of the RPR FOM. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper. By default, VR-Forces 3.2-ngc uses RPR FOM 1.0.

If you are building an application with the VR-Forces toolkit and you want to specify a version of the RPR FOM through code, pass the version number (2.0) to the *DtRprFomMapper* constructor and pass the resulting object to the *DtExerciseConn* constructor. Also, make sure you are using a federation execution name that corresponds to the right FED file. For example:

```
DtExerciseConn conn("VR-Link20", "MyApp", new DtRprFomMapper(2.0));
```

RTI Support

The MÄK RTI is included on all MÄK product CDs. It is link-compatible with the DMSO RTI NG. VR-Forces 3.2-ngc has been tested with DMSO RTI NG 4.0 and 6.0.

If you use the MÄK RTI, be sure that VR-Forces can find your FED file, and optional *rid.mtl* file, by putting them in the directory from which you are running, or by setting the environment variable RTI_CONFIG to the directory that contains them.

New Features and Updates

This release of MÄK VR-Forces has the following updates and new features:

- ♦ Support for line-of-sight (intervisibility) displays.
- ♦ Support for CTDB v7 databases.
- ♦ Ability to drag entities from the Echelon View to a new location on the map.
- ♦ Ability to set marking text.
- ♦ Improvements to DFAD import
- ♦ Batch mode supports the ability to view plans.

Intervisibility

See “[Displaying Intervisibility](#)” on page 9.

Support for CTDB v7 Databases

Previous releases of VR-Forces were able to import CTDB v4 (.c4b) databases. VR-Forces 3.2-ngc can also import CTDB v7 (.c7b) databases.

Dragging Entities from the Echelon View to the Map

In addition to moving entities by dragging them from one point on the map to another, you can now drag entities from the Echelon View to the map to set their location. Dragging an entity from the Echelon View can be convenient if you want to move an entity from a location that is currently not visible in the map to a visible portion of the map.

To move an entity by dragging it from the Echelon View.

1. In the Echelon View, select the entity that you want to move.
2. Drag it from the Echelon View to the location on the map where you want to place it.



You can move multiple entities with this method. They maintain their spatial relationship.

Setting Marking Text

By default, VR-Forces uses an entity’s designator combined with its category string as the marking text. For example, the marking text for entity 1M1A2, 1 Force is 1M1A2. You can the marking text with the Set Marking Text set data request.

To set marking text for an entity:

1. Select the entity.
2. Choose Set → Marking Text. The Set Marking Text dialog box opens.
3. Enter the new marking text.
4. Click OK.



You will not see the marking text unless you enable its display in the Display Options dialog box.

Improvements to DFAD Import

The latest version of the tdbtool makes easier to look up information in DFAD databases by providing additional attributes for DFAD specifications. The new attributes are:

- ♦ "DtFeatureName" - the string with the FID number and description in the dfad_sedris_map.
- ♦ "DtSedrisCodes" - returns the number of descriptions the specification has. This attribute is an integer. Zero (0) means no additional descriptions.
- ♦ "SEDRISCODE#" - returns the SEDRIS code for the specified description. It is a string attribute, where # is a number from 1 to DtSedrisCode answer.
- ♦ "<the sedris code>" - returns the description of the SEDRIS code. It is a string.

Example code:

```
int codes;
DtString sname;

spec.lookupStringAttribute("DtFeatureName", sname);
spec.lookupIntegerAttribute("DtSedrisCodes", codes);

DtString sedris;
DtString scode;
DtString sdesc;

for ( int i = 1; i <= codes; i++)
{
    sedris = "SEDRISCODE";
    sedris += i;
    spec.lookupStringAttribute(sedris, scode);
    spec.lookupStringAttribute(scode, sdesc);
}
```

Improved Batch Mode

If you are running a scenario in batch mode, you can now view an entity's plan.

Documentation Updates

The online help has been updated to cover the new features in the VR-Forces front-end.

Bug Fixes

This release fixes the following problems:

- ♦ This release supports the DMSO RTI.
- ♦ VR-Forces applications running on different platforms interoperate properly.
- ♦ If you try to complete a task dialog box by clicking an entity in the map, and the entity icon overlaps a control object, the selection works properly.
- ♦ The Abandon Plan command works.
- ♦ Wait tasks work properly.
- ♦ Aggregate entities were being created with the next available entity designator rather than the next available designator for the hierarchical level of the aggregate.
- ♦ The Set Formation dialog box did not support user-defined formations.
- ♦ Surface entities that were following another entity did not stop when they reached their destination point.
- ♦ Aggregate As did not work across multiple back-ends
- ♦ Aggregating an aggregate with an entity in the Echelon View caused VR-Forces to crash.

Known Problems

VR-Forces Release 3.2-ngc has the following known problems:

- ♦ On IRIX, icons may appear discolored or grainy unless color depth is set to 24-bit.
- ♦ True Type fonts are not supported in SGI IRIX. Use bitmaps for entity icons.
- ♦ If you are using VR-Forces in a DIS exercise you may experience problems with dropped packets and entities may time out. In HLA, you can avoid dropped packets by configuring the MÄK RTI to use asynchronous IO.
- ♦ Aggregates composed of fixed-wing entities do not carry out tasks as an aggregate.
- ♦ If you are using a DTED database and “Projected False” is specified in the PvDted-MetafileRecord, entities do not execute movement tasks.
- ♦ The *world.gdb* file is based on a DTED database. If you use this database, some entities may not execute tasks. Some entities will not display properly.

- ♦ When you aggregate a set of aggregates into a higher-echelon aggregate using the “Aggregate As” menu item, make sure that the aggregates being combined have been collapsed to their highest level. Failure to do so will aggregate the entities at the level they are currently displayed. For example, suppose that you want to aggregate two teams of two tanks each into a platoon. If at the time of the “Aggregate As” operation, one of the teams is expanded, displaying its constituent tanks, while the other team is collapsed, displaying a single team icon, the resulting platoon will be composed of two individual tanks and a team, instead of two teams.
- ♦ Surface entities are not configured to fire weapons or be fired upon. You can customize the object parameters database entries to enable this.
- ♦ Joysticks do not work correctly with DirectInput.
- ♦ The pseudo-aggregate formation controller ignores entities in a formation that are independently tasked when determining if the promotion order needs to be updated. Currently it has no way to determine if remote entities are independently tasked.
- ♦ Uninstalling VR-Forces in Windows via InstallShield uninstalls the entity fonts. If you have another application that uses these fonts, such as the MÄK Plan View Display, the correct entity icons would not be displayed. You must manually install the fonts from their location in the other application that needs them.
- ♦ A DtdMetafileRecord that does not have a valid File entry hangs vrfGui.
- ♦ The Skip Task command does not support multiple entity selection. If you select skip task when multiple entities are selected, only one of them will actually skip their task.
- ♦ Sometimes when you load a scenario some of the entities are not displayed. When you start the simulation, the missing entities get displayed.
- ♦ The Qt translation files (in *./translations*) for built-in Qt-level GUI items do not work properly. The translation files for VR-Forces work correctly.
- ♦ If an entity is executing a movement task and you assign any of the Wait tasks to the entity, it does not stop moving. Wait tasks in plans work correctly.
- ♦ If you are using TrueType fonts, the symbols for air aggregates are incorrect.
- ♦ Subsurface entities use incorrect icons.
- ♦ It is possible to delete members of an aggregate and have the aggregate entity itself remain in the scenario.
- ♦ If the View Plan window is open and you rewind a scenario, it does not track task completion. If you close the View Plan window and re-open it, it works correctly.
- ♦ Closing the VR-Forces GUI does not always close child windows. If you are running in combined mode, the back-end may remain open. You can close the windows individually.
- ♦ If all members of an aggregate entity are destroyed, the aggregate icon does not show the destroyed symbol.
- ♦ If you open new VR-Forces windows, the Entity List dialog box created from one of these windows only shows newly created entities.

- ♦ When you load a scenario that contains aggregates, the formation-following order reflects the order that aggregate members appear in the order of battle file, rather than the expected numerical order. As a workaround, you can manually edit the order in which subordinates appear in the order of battle file, putting them in the order you want them to follow one another in formation.
- ♦ If you run VR-Forces with the DMSO RTI on Windows in combined mode, if you exit VR-Forces (the GUI), the back-end does not resign from the federation execution. The GUI and back-end console go away, but the vrfGui process does not shut down. You have to go into Task Manager to kill it. If you do not restart the rtiexec after shutting down VR-Forces, restarting VR-Forces after exiting takes much longer than with a fresh rtiexec, and the behavior of VR-Forces may be erratic.
- ♦ The Set Formation request does not work properly on aggregate entities that are subordinate members of larger aggregate units.
- ♦ If you are running VR-Forces on Linux with the DMSO RTI, you cannot run in combined mode. Start the GUI and back-end separately.

Displaying Intervisibility

You can display intervisibility (line-of-sight) between points, within areas, and between a point and all entities in a defined area. Intervisibility displays can be transient or permanent. Permanent intervisibility displays are objects. You can resize them and move them around the map. Intervisibility objects can be tied to a particular entity.

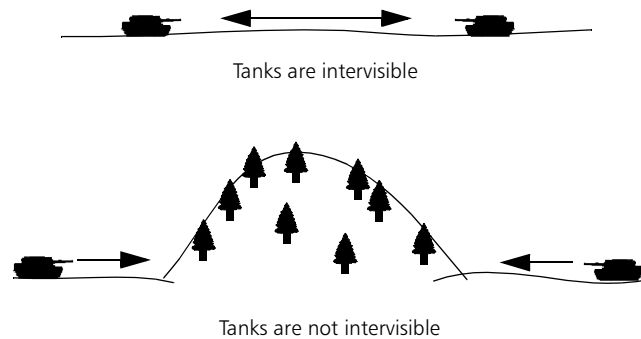


Figure 1. Intervisibility

You can configure parameters for intervisibility objects, such as the height above the terrain from which intervisibility is calculated. You can also change the colors used to display intervisibility.

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By default, intervisibility between entities is calculated from the center of their bounding volumes. The target detection sensor uses an offset which is often above the center of the entity. Unless you change the Origin LOS Elevation value in the Intervisibility Options dialog box to use the same offset as the target detection sensor, you might notice entities shooting at targets with which they do not appear to have LOS.

Types of Intervisibility

VR-Forces supports the following types of intervisibility:

- ♦ Point-to-point
- ♦ Intervisibility fan
- ♦ Intervisibility grid
- ♦ Entity intervisibility.

The intervisibility fan and grid, and entity intervisibility, are all displayed as a circular area. However, intervisibility calculations are made within a cylindrical area extending above and below the terrain, so that intervisibility calculations can be made for air platform entities and subsurface entities.

Point-to-Point Intervisibility

Point-to-point intervisibility (Figure 2) shows the line-of-sight between any two points. The portion of the line that is visible from the starting point is green. The portion that is not visible is red.

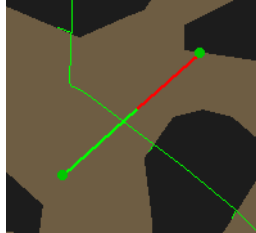


Figure 2. Point-to-point intervisibility

Intervisibility Fan

An intervisibility fan (Figure 3) shows a series of lines radiating from the center of a circle to its outer edge. Each ray shows intervisibility along its path from the origin to the circumference. You can configure the distance between rays. See “[Configuring Intervisibility](#)” on page 13.

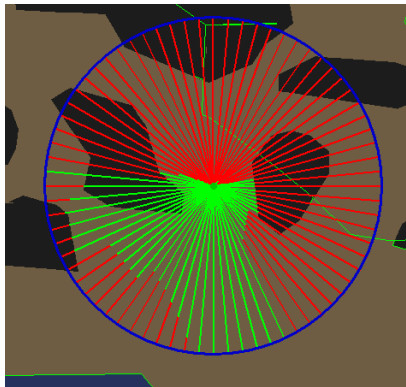


Figure 3. Intervisibility fan

Intervisibility Grid

The intervisibility grid (Figure 4) shows visible areas as unobstructed terrain and areas that are not visible are overlaid with a grid. The information provided by the intervisibility grid differs from the information provided by the intervisibility fan in that the rays of the fan only show visibility up to the first point at which they are blocked, while the grid shows all areas that are visible. For example, if a portion of terrain is visible past an initial blocking point, say due to changes in terrain, a fan does not show this, but a grid does. You can configure the resolution of the grid. See “[Configuring Intervisibility](#)” on page 13.

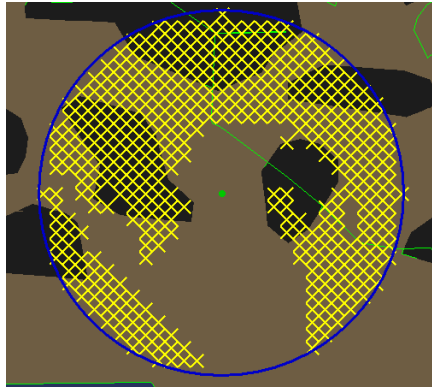


Figure 4. Intervisibility grid

Entity Intervisibility

Entity intervisibility (Figure 5) shows which entities are visible from the center of a defined area and whether or not the entities can see the center point. If you center the intervisibility circle on a point on the terrain, you can see which entities can see that point. If you lock the circle to an entity, you can see which entities can see that entity and which it can see. You can configure the display of intervisibility from the origin (Who can I see?) and to the origin (Who can see me?). See [“Configuring Intervisibility”](#) on page 13.

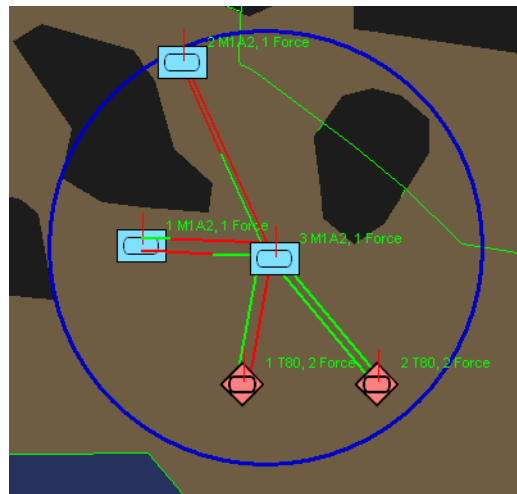


Figure 5. Entity intervisibility

Intervisibility Objects can be Transient or Permanent

You can configure intervisibility objects to be transient or permanent. See “[Configuring Intervisibility](#)” on page 13. A transient intervisibility object displays intervisibility from the origin point (defined by a mouse click) to wherever you move the cursor. If you click the mouse again, you reset the origin. You cannot use the mouse for other actions until you exit intervisibility mode (by right-clicking.) This mode is convenient when you want to quickly check intervisibility but do not want to keep intervisibility objects in the display.

A permanent intervisibility object stays in the display after you create it. You can resize the object, edit drawing options, and move it around the display.

Displaying Transient Intervisibility

To display transient intervisibility:

1. Choose Intervisibility → *intervisibility_type*. The cursor changes to select mode.
2. Click on the map to set the origin of the intervisibility display.
3. Move the cursor around the map to expand and contract the display. For point-to-point intervisibility, moving the cursor also changes the direction of the line.
4. To change the origin of the intervisibility display, click another location on the map.
5. Right-click to cancel intervisibility mode.

Displaying an Intervisibility Object (Permanent Intervisibility)

To display an intervisibility object:

1. Choose Intervisibility → *intervisibility_type*. The cursor changes to select mode.
2. Click on an entity or on a location on the map where you want the origin of the object to be located. An intervisibility object is displayed. As you move the cursor closer to the origin, or farther away from it, the circle or line contracts and expands. If you are displaying point-to-point, you can rotate the line around the origin before you specify the end point.
3. Click on the map where you want to fix the end point of a line or outer edge of a circle.

Editing An Intervisibility Object

You can change the length of an intervisibility object. You can change the direction of an intervisibility line. You can also change an object’s display mode.

- To change the length of an intervisibility object, select it, then drag the endpoint towards or away from the origin.

- To change the direction of an intervisibility line, select the line, then drag an endpoint in a circular motion around the other endpoint.

Changing An Intervisibility Object's Display Mode

You can change an intervisibility object's display mode, for example, from intervisibility fan to entity intervisibility. If you change a fan, grid, or entity intervisibility display to point-to-point, the line is displayed to the point you clicked when you specified the outer boundary of the object's circle.

To change an intervisibility object's display mode:

1. Select the objects that you want to change.
2. Choose Options → Intervisibility. The Intervisibility Options dialog box opens.
3. Choose a display mode from the list.
4. Click Apply to Selected.
5. Click Close.

Configuring Intervisibility

You can configure the elevation used to calculate line-of-sight, the resolution of fan and grid modes, and the colors used to display intervisibility. You can apply changes to all current intervisibility objects and those to be created, or you can apply changes to selected intervisibility objects. [Table 2](#) describes the configuration options.

Table 2: Intervisibility drawing options

Option	Description
Origin LOS Elevation	The height above the terrain at the origin point from which to calculate intervisibility.
End Point LOS Elevation	The height above the terrain at the end point to use to calculate intervisibility.
Fan Mode Sampling Rate	This distance, in degrees, between each ray in the fan.
Patchwork Mode Sampling Rate	The distance, in pixels, between each line in the patchwork grid.
Display Modes	Specifies the type of display mode for an object. "Keep Mode" (the default) keeps current objects in their existing display modes.
Who Can I See	If checked, display intervisibility from origin to entities within the fan.

Table 2: Intervisibility drawing options

Option	Description
Who Can See Me	If checked, display intervisibility between entities within the fan and the origin.
Left Click Makes Objects Permanent	If checked, you can create intervisibility objects that persist in the display. If clear, each left click creates a transient intervisibility display with its origin at the location of the left click.

To change intervisibility options:

1. Choose Options → Intervisibility. The Intervisibility Options dialog box opens (Figure 6).

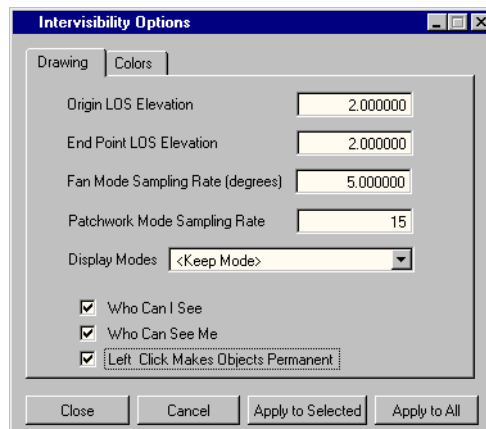


Figure 6. Intervisibility Option dialog box

2. Change the drawing options as desired. The options are described in Table 2.
3. Change the colors used for the intervisibility display, as follows:
 - a. Select the Colors tab.
 - b. Click the color button for the feature whose color you want to change. A color picker dialog box for your windowing system opens.
 - c. Select the color you want to use or create a custom color.
 - d. Click OK.
4. To apply the changes to specific intervisibility objects, click Apply to Selected.



Be careful not to inadvertently apply changes to all intervisibility objects that you only want to apply to specific objects.

To apply the changes to all intervisibility objects and to objects that you create in the future, click Apply to All.

5. Click Close to exit the dialog box.

Pinning An Intervisibility Object to An Entity

When you pin an intervisibility object to an entity, the intervisibility object moves with the entity and you know that its origin is centered on the entity. Y

To pin an intervisibility object to an entity:

1. Select the entity to which you want to pin the intervisibility object.
2. Choose Intervisibility → *intervisibility_type*.
3. Specify the end point for the intervisibility object.



Alternatively, you can choose an intervisibility command, then click an entity and an end point.

Moving Intervisibility Objects

- To move an intervisibility object, select it, then drag it to another location on the map.

Deleting Intervisibility Objects

To delete an intervisibility object:

1. Select the intervisibility object.
2. Choose Intervisibility → Delete.

Notes

- ♦ Like all objects, you can also delete intervisibility objects by pressing the Delete key.
- ♦ If you delete an entity that has an intervisibility object pinned to it, the intervisibility object also gets deleted.
- ♦ If an intervisibility object is pinned to an entity, you can delete the intervisibility object without affecting the entity by selecting the outer circle or end point and choosing Delete from the Intervisibility menu.

- ♦ The Delete command on the Intervisibility menu applies only to intervisibility objects. The Delete command on the main popup menu and the Delete key delete intervisibility objects and any other objects currently selected.