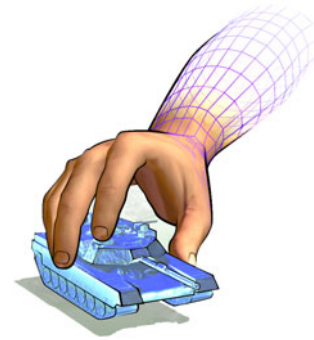




VR-Forces 3.10.1 Release Notes

This release note contains the following release-specific information for VR-Forces Release 3.10.1:

Systems Supported	2
Libraries and Binaries Built with Microsoft Visual Studio 2005	2
Building on Linux	3
Disk Space Requirements	3
Compiler Compatibility on Windows	3
MÄK Product Compatibility	3
Qt Release Compatibility	4
FLEXlm Support	4
Third-Party Library Requirements	4
Network Compatibility	4
Backwards Compatibility	5
RPR FOM Versions Supported	5
New Features and Updates	6
Documentation Updates	6
Bug Fixes	7
Known Problems	9

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Systems Supported

VR-Forces 3.10.1 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

Operating System	Compiler	glibc
Red Hat Enterprise Linux Workstation 3	GNU C++ (GCC) 3.2.3	2.3.2
Red Hat Enterprise Linux Workstation 4	GNU C++ (GCC) 3.4.4	2.3.4
Red Hat Fedora Core 3	GNU C++ (GCC) 3.4.4	2.3.6
Windows 2000 SP2, XP	Microsoft Visual C++ 7.1	
	Microsoft Visual C++ 8.0 SP1	

Applications running on newer AMD CPUs, without the latest CPU drivers from the manufacturer, may experience performance problems, regardless of whether those applications are provided by MÄK Technologies. It is highly recommended that the latest versions of the drivers be installed. The drivers are available from AMD at the following URL:

http://www.amd.com/us-en/Processors/TechnicalResources/0,,30_182_871,00.html

Libraries and Binaries Built with Microsoft Visual Studio 2005

All MÄK products built with Microsoft Visual Studio require the C Runtime Library to function. The C runtime libraries have always been available from Microsoft for download, they are also installed on a user's machine when a Microsoft compiler is installed. The C runtime libraries are not part of the normal Windows installation. For customers who plan to use MÄK products on machines that do not have a compiler installed, MÄK has historically distributed a copy of the C Runtime Libraries with MÄK products. These libraries were put in the *bin* directory used by the MÄK products. MÄK products would then use the libraries in the *bin* directory and customers would not have a problem if copies of the libraries were not already installed.

Unfortunately, with the release of the new C Runtime Libraries required by Microsoft Visual Studio 2005 (MSVC++8.0), the libraries can no longer just be copied into the *bin* directory of an application. The libraries need to be installed correctly into Windows system folders. (The process is actually a little more complicated, a manifest file needs to be created to tell Windows where to find the libraries.)

To accommodate this change, MÄK is distributing the Windows installer for the C runtime libraries with all MÄK products released for MSVC++8.0. The installer is named *vc8dist_x86.exe* and is in the base directory of any installed MÄK product.

Running the installer requires Administrator privileges for the machine the installer is run on. MÄK has chosen to not integrate the MÄK installer and the Microsoft installer so as not to require users to have Administrator privileges to install MÄK products. Therefore, if you who do not have a compiler installed, or get error messages like "Software has not been installed correctly, please re-install", you must apply the patch.

For more information see this Microsoft URL:

<http://msdn2.microsoft.com/en-us/library/ms235299.aspx>

Building on Linux

The example Makefiles require a patched version of gmake 3.80, which has been included for your convenience in the *.mkbin* directory. This version of gmake is based on version 3.80, but includes a memory fix that is needed to use our makefiles. The source code for the modified gmake is freely available from <http://ftp.mak.com/out/gmake3.80-patch1.tar.gz>. This patch will be included in future versions of gmake.

Before you compile the examples, go to the top level of your installation and create a symbolic link 'VR-Link' to your VR-Link installation and another called 'RTI' to your RTI installation.

Disk Space Requirements

A full installation of VR-Forces requires approximately 600 MB of disk space. Terrain databases use approximately 110 MB and documentation (primarily the class reference) uses 200 MB.

Compiler Compatibility on Windows

MÄK provides versions of product releases that have been compiled with Microsoft Visual C++ 7.1 and 8.0. When you run MÄK products together on the same computer, for example, VR-Forces and the Stealth, we strongly recommend that you run versions compiled with the same compiler. Mixing products compiled with different versions of the compiler can result in program instability.

MÄK Product Compatibility

To build VR-Forces applications, you must link with VR-Link 3.10.1. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 3.x.

VR-Forces 3.10.1 is a parallel release to MÄK Plan View Display 2.10.1.

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 from Trolltech. The VR-Forces GUI was built with Qt release 3.3.5. 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*.

FLEXlm Support

VR-Forces 3.10 uses FLEXlm 10.8. You must copy the files in *./flexlm10.8* to your license server directory. You do not need to change license files (unless your maintenance agreement has expired.)

Third-Party Library Requirements

DtTerrainProfileWidget is based, in part, on the work of the Qwt project (*http://qwt.sf.net*). To compile examples or user projects, you must download the QWT distribution at *ftp://ftp.mak.com/out/qwt-0.4.1.zip*. This distribution is known to work with VR-Forces. Set the MAK_QWTDIR environment variable to point to the location of the QWT library.

Network Compatibility

HLA only

VR-Forces 3.10.1 was built against VR-Link 3.10.1 and is compliant with:

- ♦ RPR-FOM 1.0 and a subset of 2.0 (draft 6 and 17)
- ♦ MÄK RTI 3.x.x and other RTIs that meet the HLA 1.3 or IEEE 1516 SISO DLC API specifications and are built with the same compilers as VR-Forces.

VR-Forces 3.10.1 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.



VR-Forces is no longer compatible with the DMSO RTI-NG v6, because that RTI was not built using any of the compilers supported by VR-Forces 3.10.1. VR-Forces 3.10.1 should be compatible with commercial successors to the DMSO RTI if they conform to the HLA 1.3 or 1516 (SISO DLC API) specifications and are built with a compiler supported by VR-Forces.

DIS only

VR-Forces 3.10.1 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.

Backwards Compatibility

The VR-Forces 3.10.1 APIs are not compatible with VR-Forces 3.9.x or earlier. Scenarios and object parameter databases from previous versions are forward compatible.

RPR FOM Versions Supported

VR-Forces 3.10.1 has built-in support for versions 1.0 and 2.0 (draft 6 and 17) of the RPR FOM. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper. By default, VR-Forces 3.10.1 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 (for example, 2.0006) 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-Link20006", "MyApp", new DtRprFomMapper(2.0006));
```

In order to support RPR FOM 1.0, we have added the following extensions (which are supported in later versions of the RPR FOM):

- ♦ EnvironmentProcess
- ♦ GriddedData
- ♦ EmbeddedSystem.IFF
- ♦ EmbeddedSystem.IFF.NatoIFF
- ♦ EmbeddedSystem.IFF.NatoIFF.NatoIFFTransponder
- ♦ EmbeddedSystem.IFF.NatoIFF.NatoIFFInterrogator
- ♦ EmbeddedSystem.IFF.SovietIFF
- ♦ EmbeddedSystem.IFF.SovietIFF.SovietIFFTransponder
- ♦ EmbeddedSystem.IFF.SovietIFF.SovietIFFInterrogator
- ♦ EmbeddedSystem.IFF.RRB
- ♦ BaseEntity.AggregateEntity
- ♦ ObjectRoot.BaseEntity.PhysicalEntity.Lifeform.

For both RPR FOM 1.0 and 2.0 VR-Forces 3.10.1 relies on the LgrControl and ViewControl custom MÄK extensions.

New Features and Updates

VR-Forces 3.10.1 is a maintenance release. It includes a maintenance release for MÄK Terrain Database Tool (4.0.1). It has no new application features or updates.

VR-Forces 3.10.1 includes an updated version of *vcredist_x86.exe*. This is the version distributed with Microsoft Visual C++ 8.0 SP 1. If you previously installed the version of *vcredist_x86.exe* distributed with VR-Forces 3.10, you must replace it with the new version.

Documentation Updates

Command-line options for loading plug-ins are briefly described in Chapter 4, [Starting VR-Forces](#), in *VR-Forces User's Guide*. More detailed instructions for loading plug-ins are in Chapter 11, [The VR-Forces GUI API](#), in *VR-Forces Developer's Guide*.

For details about installing TrueType fonts on Linux systems, please read *./data/symbols/ttf/Readme.txt*. This replaces the section in Chapter 2.

The following section describes the *plugins.mtl* file and will be added to Chapter 2, [VR-Forces Configuration Files](#), in future versions of *VR-Forces Configuration Guide*.

The *plugins.mtl* File

The *plugins.mtl* file specifies plug-ins that you want to load automatically. VR-Forces does not include this file in the distribution. However, *./plugins/readme.txt* explains the syntax of a *plugins.mtl* file and includes sample text. If you want to load plug-ins automatically, create a *plugins.mtl* file and put it in the *./plugins* directory.

The following section explains how to load plug-ins from the command line and will be added to Chapter 4, [Starting VR-Forces](#), in future versions of *VR-Forces User's Guide*.

Loading Plug-ins

You can load plug-ins from the command line or by specifying them in a *plugins.mtl* configuration file.

To load a plug-in from the command line, use the `--loadPlugin` command line option, for example:

```
vrfGui --loadPlugin pluginA --loadPlugin pluginB
```



Do not specify the extension of the plug-in (for example, *.dll*). If the extension is included, the plug-in will not load.

For information about the *plugins.mtl* file, please see Chapter 2, [VR-Forces Configuration Files](#), in *VR-Forces Configuration Guide*.

Bug Fixes

This release fixes the following problems:

- ♦ Plug-ins built for HLA 1516 in debug mode did not load properly when they were specified in *plugins.mtl*.
- ♦ Loading *.c4b* files caused applications to hang on Linux.
- ♦ Ground vehicles and dismounted infantry sometimes became 'stuck' while executing movement tasks. This happened if their speed dropped to zero while performing collision avoidance.
- ♦ Entities were not displayed after they disembarked.
- ♦ Changes to aggregate composition were not promptly handled by aggregates when the tick rate of its formation controller was set to anything other than -1 (run as fast as possible). This led to unpredictable behavior when executing movement tasks.
- ♦ Aggregates without an explicit formation did not always update properly when dragged around on the map while the scenario was paused.
- ♦ When creating an intervisibility line between two objects, the endpoint of the intervisibility line did not immediately snap to the second object. It only did so after the second object was moved.
- ♦ The set simulation command dialog boxes sometimes caused crashes.
- ♦ Ground vehicles did not move along routes correctly on a moving carrier.
- ♦ If a global plan created an entity and the scenario was saved, the entity was not recreated when the scenario was reloaded.
- ♦ When zooming in with keyboard, the zoom level was not applied when the screen was printed.
- ♦ The VR-Forces back-end sometimes crashed when an entity was tasked to follow an extremely short route while embarked.
- ♦ VR-Forces did not show the Edit Plan dialog box for entities under certain circumstances.
- ♦ The emitter display options dialog box did not handle input correctly in units other than meters.
- ♦ When a sensor was configured with the in-frustum geometry calculator, it appeared to give some incorrect results.
- ♦ Fixed-wing entities did not perform the default circle behavior properly when positioned in the southern hemisphere.
- ♦ Plug-ins did not load for HLA 1516 Debug builds.
- ♦ Custom spot report viewpoints did not work.
- ♦ If an entity was embarked when a scenario was saved, the plan for that entity could not be edited after the scenario was re-loaded.
- ♦ Force information received after an entity was created, was not reflected in the icon.
- ♦ The back-end could crash upon loading a scenario if the scenario contained a launcher that was in a 'target-acquired' state at the time the scenario was saved.

- ♦ In the addTaskSim example, the retreat behavior could be activated as a user task with an invalid task name string.
- ♦ Articulated parts were not always set to the correct initial position and orientation when loaded from the order of battle file.
- ♦ If you created an entity on a geodetic database, opened its entity information dialog box and selected MGRS or UTM coordinates, VR-Forces crashed.
- ♦ The front-end crashed after repeatedly opening and closing an Edit Plan dialog box.
- ♦ If you translated the View menu, the addViewToolbar convenience method did not work.
- ♦ Puff were always drawn as circles, when they should be ellipses.
- ♦ The terrain profile widget did not display correct terrain height for units other than meters.
- ♦ Removing the Task or Set menu through the API caused crashes at runtime when editing a plan.
- ♦ You can now set a creator in the *DtVrfGuiFactory* to install your own version of the *DtSimulationCommandMenu* rather than subclassing *DtEditEntityPlanWidget* and *DtGlobalPlanWidget*.
- ♦ If you dropped an entity in the little space above the top most entity and the top bar of the echelon view, the aggregate became unparented, and, when the scenario was saved, it became invalid.
- ♦ Loading CTDB databases on Linux took a very long time, during which VR-Forces might become unresponsive.
- ♦ VR-Forces 3.10 was distributed with a broken symlink for the QT Library on Linux.
- ♦ An incorrect instruction in *Readme_Classdoc.txt* was fixed.
- ♦ Broken links in the class documentation were fixed.

TDB Tool

- ♦ Vector features created using the TDB Tool that have non-zero height above terrain did not work correctly with the VR-Forces path planning algorithm.
- ♦ The TDB Tool was only able to load *.dfd* files when coordinate system was UTM.
- ♦ When creating a new vector feature in the TDB Tool, you could not change any of the parameters even though the box is editable.
- ♦ In the TDB Tool, when you selected the "Hard Paved Road" feature, the feature was drawn with the wrong image.
- ♦ The TDB Tool could not load GeoTIFF files.
- ♦ The TDB Tool could not load project files containing a filename with spaces.

OPD Editor

- ♦ In the OPD Editor, the order in which connections were displayed was counterintuitive. They were displayed in alphabetical order, instead of connection order.
- ♦ The OPD Editor did not allow entity priorities to be deleted in the target selection controller.
- ♦ The OPD Editor sometimes crashed after adding a new detection type.
- ♦ The OPD Editor sometimes ended up in an inconsistent state after editing multiple parameters.

Known Problems

VR-Forces Release 3.10.1 has the following known problems:

- ♦ The intervisibility display does not always reflect what simulated entities perceive in the back-end. For example, the intervisibility does not ignore water surface polygons while entity models do.
- ♦ Occasionally, VR-Forces is unable to load a scenario. When this happens, delete the contents of the *./data/temp* directory and try loading again.
- ♦ The Subordinate Manager allows duplicate entries to exist.
- ♦ Subsurface entities sink to unreasonable depths when destroyed.
- ♦ DIs may unexpectedly change posture when climbing steep terrain.
- ♦ Determining when a scenario is completely loaded (all entities have been created and the aggregate hierarchy is completely constructed) is up to the user. Deciding when a scenario is completely loaded and ready to run can be difficult with large, distributed scenarios.
- ♦ Avoidance of linear vector features often fails at segment intersections.
- ♦ Auto-generated aggregate formation routes may contain spurious points if the original route contains sharp turns and short line segments.
- ♦ Intersection lines in intervisibility fans sometime change colors as you change the zoom level.
- ♦ Torpedoes can fly above water in certain circumstances.
- ♦ Fixed-wing entities crash when tasked to move into formation.
- ♦ Surface entities cannot move on the *California_High.gdb* terrain database.
- ♦ A disembark statement followed by a set formation statement in a plan does not work.
- ♦ You cannot use the lifeform acquire controller with a missile launcher.
- ♦ Ground entities' speed does not affect turning radius.
- ♦ Entity intervisibility with point features does not work correctly.
- ♦ Vector feature orientation is not displayed correctly in the GUI. Features are always displayed with an orientation of 0.

- Fixed-wing entities generate too many PDUs when moving to a waypoint in a straight line.
- Rotary-wing terrain avoidance sometimes fails.
- Putting the *vrSim* console in select mode freezes the back-end.
- Rotary-wing entities do not maintain correct altitude in geocentric terrain when moving very large distances.
- You cannot create a new scenario with a Linux GUI and a Windows back-end.
- Aggregate subordinates cannot execute their own individual plans.
- In-frustum sensor geometry does not work for angles greater than 90 degrees.
- The GUI does not allow you to enter IFF modes in octal.
- Geometry files referenced by a MetaFlight file must be in OpenFlight format, and not in Vega Prime's binary format (*.vsb*). MÄK's terrain libraries do not support *.vsb* files.
- File paths that are used within a MetaFlight file to designate the OpenFlight data files must be fully qualified absolute paths. Relative paths, and paths that include environment variable expansions are not supported.
- Terrain databases processed with the balance option may display incorrectly.
- Surface entities are not configured with weapons.
- Playing a MÄK Data Logger recording that has the same site:app IDs as a VR-Forces application may cause VR-Forces to crash.
- Component descriptions in Appendix B, *Component Model Descriptions*, in *VR-Forces Developer's Guide* are out of date.
- You cannot load vector data on geocentric terrain.
- Loading *.c4b* files may cause application to hang on Linux.
- CDRG files cannot be configured through the TDB Tool GUI. You must manually edit MTD files to include them.
- When you record a scenario with MÄK Logger 4.0, at the beginning of the recording session, VR-Forces may freeze for a while due to the large number of messages required for subscription and publication.
- VR-Forces may become unstable, leak memory, or both when running with the MÄK RTI LRC GUI enabled (observed while running with MÄK RTI 3.1.) We recommend you use the web-based RTIspy GUI instead.
- Do not play the *maklanddemoHLA1516_vrlink_xml.lgr* file (included with MÄK Logger 4.0 release) while running VR-Forces using draft 17 of the RPR FOM. Running this file in this particular configuration produces memory leaks. Run VR-Forces using RPR FOM 1.0 when working with this Logger recording.
- Using IFF in HLA 1516 exercises can result in packet flooding.
- Gamepad devices do not work with the joystick feature.