



VR-Forces 4.0.3 Release Notes

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Systems Supported

VR-Forces 4.0.3 is available for the platforms listed in [Table 1](#). 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
Windows XP (32 bit only) Windows Vista Windows 7	Microsoft Visual C++ 8.0, 9.0 (32 and 64 bit), 10.0 (64 bit)
Red Hat Enterprise Linux 5 (32 bit libraries)	default compiler

Using Libraries and Binaries Built with Visual Studio 2005 and Later

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.

Unfortunately, the C Runtime Libraries required by Microsoft Visual Studio 2005 (MSVC++8.0) and later cannot 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 distributes the Windows installer for the C runtime libraries with all MÄK products released for MSVC++8.0 and later. The 32-bit installer is named *vcredist_x86.exe*; the 64-bit installer (if supported) is named *vcredist_x64.exe*. They are in the base directory of any installed MÄK product that requires them.

For more information see this Microsoft URL:

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



You must ensure that the preprocessor defines `_SECURE_SCL=0`, and `_HAS_ITERATOR_DEBUGGING=0` are set for MSVC++8.0 and MSVC++9.0 builds. If these are not set, random crashes and assertions may be encountered during runtime. The MSVC++ 10.0 version uses the default values for these flags.

3D Video Boards Supported

In general, VR-Forces 4.0.3 should support any board that claims to support OpenGL 2.0. VR-Forces has been tested with current versions of NVidia graphics cards. There are known problems with ATI graphics cards (in particular, the ATI Radeon X1950 Pro).



You should always try to use the latest drivers available for your video board.

Disk Space Requirements

A full installation of VR-Forces requires approximately eight GB of disk space.

Compiler Compatibility on Windows

MÄK provides versions of product releases that have been compiled with different versions of Microsoft Visual C++ (for example, 8.0 and 9.0). When you run MÄK products together on the same computer, for example, VR-Forces and VR-Vantage 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 4.0.3. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 3.x or later, although we recommend use of the latest release. If you are building for HLA Evolved, you must use MÄK RTI 4.0.4 or later.

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 Digia. The VR-Forces GUI was built with Qt release 4.7.4. Qt is available as a free download under the LGPL version 2.1 license at qt.digia.com. This version should be satisfactory for most VR-Forces customers. If you need a Qt commercial license, you must purchase the license from Digia.

FLEXlm Support

VR-Forces 4.0.3 uses FLEXlm 11.8. If you have a previous version of FLEXlm installed, you can install the MÄK License Manager and run FLEXlm from that directory, or you can copy the files installed by MÄK License Manager to your previous FLEXlm directory on your license server. You do not need to change license files (unless your maintenance agreement has expired.)

Third Party Library Support

VR-Forces 4.0.3 uses the indicated versions of the following libraries:

- ♦ VR-Link 4.0.3
- ♦ OpenSceneGraph 3.0.1
- ♦ Boost 1.45
- ♦ FreeGlut 2.4.0
- ♦ GL-Studio 4.2.3.

MÄK will provide modified source code for OSG and osgEarth upon request, as per the OSGPL license. Please contact support@mak.com for download links.

Patch Required for AMD Dual-processor Windows PCs

VR-Link-based products use a high resolution counter for time calculations on Windows PCs. Customers who are running Windows on PCs with multiple AMD Athlon 64-bit processors may notice clock jitter, which may cause time in MÄK products to run backwards. This occurs when the Windows scheduler changes the CPU the MÄK process is using. If the high resolution counters on each processor are not synchronized, the application may witness a decrease in the high resolution counter value stored in the processor causing an incorrect time calculation. To fix this problem customers, apply the AMD Dual-Core Optimizer patch provided by AMD. You can get the patch at:

http://www.amd.com/us-en/Processors/TechnicalResources/0,,30_182_871_9706,00.html



If you get an error when you try to access this URL, reload the page.

Network Compatibility

HLA only

VR-Forces 4.0.3 was built against VR-Link 4.0.3 and is compliant with:

- RPR-FOM 1.0 and a subset of 2.0 (draft 6 and 17)
- MÄK RTI 3.x, 4.x, and other RTIs that meet the HLA 1.3, IEEE 1516 SISO DLC API, or HLA Evolved specifications and are built with the same compilers as VR-Forces.

VR-Forces 4.0.3 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.

The VR-Forces 4.0.3 front-end is not compatible with RTI-NG Pro because it uses a non-standard version of *xerces_c_2_7.dll*.

DIS only

VR-Forces 4.0.3 supports DIS 4, 5, and 6, and can therefore interoperate with DIS applications of any of these versions.

Backwards Compatibility

The VR-Forces 4.0.3 APIs are not compatible with VR-Forces 3.x or earlier. It is largely compatible with the 4.x API. Small changes may be necessary to migrate to 4.0.3.

Scenarios created with VR-Forces 3.12 and 4.x are forward compatible.

RPR FOM Versions Supported

VR-Forces 4.0.3 has built-in support for versions 1.0 and 2.0 (draft 6 and 17) of the RPR FOM and RPR FOM 2.0, draft 17 with DI-Guy extensions. It also supports VR-Link's ability to support alternative FOMs through the FOM Mapper. By default, VR-Forces 4.0.3 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 4.0.3 relies on the LgrControl and View-Control custom MÄK extensions.

New Features and Updates

VR-Forces 4.0.3 has the following new features and updates.

- ♦ Support for Microsoft Visual C++ 10.0 (64 bit).
- ♦ The XML files for plug-ins are now in *.appData/plugins*.
- ♦ Space Follow attach mode. This attach mode is designed to provide reasonable views when the observer is attached to satellites. For details, please see [Section 12.2.5, "Space Follow Mode"](#), in *VR-Forces Users Guide*.
- ♦ Linear model scaling (XR mode). This new scaling method scales all entities by a scale factor. For details, please see [Section 7.4, "Exaggerating the Scale of 3D Entity Models"](#), in *VR-Forces Users Guide*.
- ♦ The VR-Forces Launcher has been updated to support HLA Evolved. It also has new connection parameters and has been slightly redesigned. For details, please see [Section 5.8, "Configuring Simulation Connections"](#), in *VR-Forces Users Guide*.
- ♦ Support for HLA Evolved (IEEE 1516-2010).
- ♦ Support for using bitmaps for 2D icons.
- ♦ The Objects Count Panel has been added. It lists the number of entities and control objects that are in the simulation. For details, please see [Section 6.5, "Viewing Object Counts"](#), in *VR-Forces Users Guide*.
- ♦ Vsync is now enabled by default. The `--vsync` command-line option has been removed. The `--noVsync` option allows you to disable vsync.
- ♦ The Server Settings page has moved from the Display Settings dialog box to the Terrain Settings dialog box.
- ♦ The File Caching Settings page has moved from the Display Settings dialog box to the Application Settings dialog box.
- ♦ Support for loading DTED terrains using an Earth Graviational Model (EGM). For details, please see the subsection [Loading DTED](#), in [Section 11.1.1, "Considerations and Limitations for Building Terrains"](#), in *VR-Forces Configuration Guide*.

Documentation Updates

Documentation has been updated for this release.

Bug Fixes

This release fixes the following problems that were present in prior releases (with bug-tracking numbers):

- Vehicles skipped between road segments that had small gaps between them. 46564
- The interfaceManipulation example crashed the front-end in simple scenario player mode and simple scenario viewer mode. 47121
- The interfaceManipulation example was not in the class documentation. 47298
- Convoys crashed the Linux back-end. 46863
- Obstacle avoidance for vehicles driving on roads led to excessive avoidance. 46860
- Simulation model sets did not load correctly in Linux. 46845
- The OPD Editor crashed with some simulation model sets. 46809
- Trying to edit a Move Along Route task in a plan caused VR-Forces to crash. 46801
- The path planner created bad plans. 46764
- The ordered speed value displayed in plans did not use the correct units. 46643
- Chaff did not work correctly. 46638
- The DtCgf example in Chapter 2 of *VR-Forces Developers Guide* was incorrect. 46468
- The Intervisibility menu was always disabled. 45687
- The command-line options for application number and site ID did not work for vrfGui when using HLA. 47137
- Dragging an overlay group onto another group caused the front-end to crash. 47096
- The graceful exit of the minidump captuer prevented the debugger from working. 46971
- Changing hostility in a scenario that had user-defined forces crashed the back-end. 46756
- You could not edit the Launch Counter Measures task in a plan. 46676
- In *VR-Forces Scenario Management Guide*, the location of scenarios was incorrect. 46618
- Some links for examples in the class documentation did not work. 43900
- The front-end did not display entities created for user-defined forces. 46684
- The DI entity in the embarkexample did not embark. 45923
- Command-line options that were not supported, such as for remote display engines, were removed. 45938
- When switching DIS connections in the VR-Forces Launcher, the device address was not reset. 46590
- The rwSensorContactInfo copy const/=operator was missing the detection error parameter. 46616

Known Problems

VR-Forces Release 4.0.3 has the following known problems (with bug-tracking numbers):

- ♦ The first time you load a terrain (including the terrains supplied with VR-Forces), VR-Forces caches textures in its fast load format. This is a slow process. However thereafter, the terrain will load quickly. If you want to avoid runtime caching, you can preprocess the terrain with the medfTool before you load it. If you want to disable runtime caching, you can do so as described in [Section 11.10, "Configuring File Caching in VR-Vantage"](#), in *VR-Forces Configuration Guide*.
- ♦ Ground vehicles and lifeforms will not avoid feature obstructions on geocentric terrains. 43868
- ♦ Some metaflight terrains, such as HarrisAfghanVillageFlatEarthMetaflight and HarrisAfghanVillageGeocentricMetaFlight will not display in the 2D view when first loaded. To see the terrain, change to a 3D view mode, and press the spacebar (center view on terrain) to move the eyepoint to the terrain location. After this, the terrain can be viewed in the 2D view. 43797
- ♦ The imagery for the makland terrain database is much larger than the actual terrain data, which is confined to the square inset in the middle of the image. This means that if you try to simulated entities on the outer areas of the image, simulation will fail because there is no terrain data there. 43867
- ♦ Fixed-wing entities crash when tasked to move into formation. 10255
- ♦ Geometry files referenced by a MetaFlight file must be in OpenFlight format, and not in Vega Prime's binary format (.vsb). MÅK's terrain libraries do not support .vsb files. 11772
- ♦ Rotary-wing entities are not able to reach moving waypoints or land on moving ships. A rotary-wing entity will approach a given waypoint or landing point, but will never completely reach the goal. 12801
- ♦ Dead lifeform entities may unexpectedly block line of sight. Their bounding volumes are always upright, regardless of whether or not they are dead. 36648
- ♦ Embarked entities controlled by joystick cannot disembark. For example, if you use a joystick to control a fixed-wing taking off from a carrier, the aircraft will take off, but it will remain in an embarked state. 37175
- ♦ Lifeform entities cannot be configured with multiple weapon systems. 40408
- ♦ Not all languages can be used to name entity types in the entity editor. 42241
- ♦ Although the indirect fire controller will wait until the target location is paged in before executing a fire for effect task, it does not take into account the dispersion radius. This means that depending on the size of the page and the radius, some detonations might happen underground. 42682
- ♦ When DtBallisticGun::createDetonationInteraction has its "assureMiss" parameter set to true, it may not have terrain paged in for the area in which it needs to create the detonation (on the ground nearby). 42730

- ♦ Sometimes when you try to create a Friendly entity from the Create menu, the list of entities is not displayed. Selecting the Opposing or Neutral option and then going back to the Friendly option causes the list to be displayed. 42930
- ♦ In some cases, VR-Forces will fail to load a scenario if the main window of the GUI application does not have focus. 43547
- ♦ The road driving feature in VR-Forces requires that the road vectors making the network be connected at their edges. Some data does not have accurate positions for road ends, which will cause them to be disconnected, and the road driving unable to plan a path along those roads. 42895
- ♦ If you have a large size obstacle, it is possible that entities might get confused and travel through it. If this happens to you, it is recommended that you make smaller obstacles. 45549
- ♦ Entity intervisibility fans do not draw correctly on geocentric terrains. 44190
- ♦ When creating some lifeform entities, the 3D model attached to the mouse pointer when placing is inconsistent with the entity type that is being created. The entity that is created, however, is the correct type and does show the correct 3D model after it is created. 43728