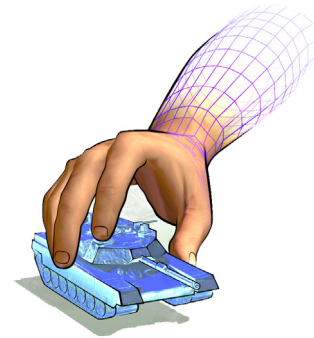




VR-Forces 3.12.0.1 Release Notes

This release note contains the following release-specific information for VR-Forces Release 3.12.0.1:

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Systems Supported

VR-Forces 3.12.0.1 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
Red Hat Enterprise Linux Workstation 4, 5	Default compiler
Windows XP	Microsoft Visual C++ 7.1
	Microsoft Visual C++ 8.0 SP1
	Microsoft Visual C++ 9.0 SP1 32 and 64 bit libraries*
Windows Vista	Microsoft Visual C++ 8.0 SP1
	Microsoft Visual C++ 9.0 SP1 32 and 64 bit libraries*

* 64 bit libraries are available only for *vrfSim* (simulation engine).

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. 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) and later, 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 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.

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>



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.

Building on Linux

The example Makefiles require gmake 3.81 or later. For operating systems with an older version of gmake (currently only Red Hat WS 4), a binary has been included for your convenience in the `./mkbin` directory. This version 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>.

Before you compile the examples, go to the top level of your installation and create a symbolic link called 'VR-Link' to your VR-Link installation, and another called 'RTI' to your RTI installation. You must use the versions listed under [MÄK Product Compatibility](#).

Disk Space Requirements

A full installation of VR-Forces, including the 3D Front End requires approximately four GB of disk space.

Compiler Compatibility on Windows

MÄK provides versions of product releases that have been compiled with Microsoft Visual C++ 7.1, 8.0, and 9.0. When you run MÄK products together on the same computer, for example, VR-Forces and MÄK 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 3.13.2. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 3.x.

VR-Forces 3.12.0.1 is a parallel release to MÄK Plan View Display 2.12.

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 Qt Software. The VR-Forces GUI was built with Qt release 4.5. Qt is available as a free download under the LGPL version 2.1 license at www.qtsoftware.com. This version should be satisfactory for most VR-Forces customers. If you need a Qt commercial license, you must purchase the license from Qt Software.



If you are using Qt 4.5 with Microsoft Visual Studio 2005 or 2008, you must download a hotfix. Details are available at:

<http://doc.trolltech.com/4.5/compiler-notes.html#visual-studio-windows>

FLEXlm Support

VR-Forces 3.12.0.1 uses FLEXlm 11.6. You must copy the files in *.flexlm11.6* to your license server directory. You do not need to change license files (unless your maintenance agreement has expired.)

Third-Party Library Requirements

VR-Forces 3.12.0.1 uses Boost 1.37.

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.

Font Support on Linux

The *fontconfig* provided with Red Hat Enterprise Linux Workstation 4 does not properly name the fonts. Newer operating systems are not affected by this issue. In order to load the fonts, you'll need to provide the following alias in *fontconfig*. The alias can either be added to the system configuration in */etc/fonts/fonts.conf* or it can be added to *~/.fonts.conf* on a per-user basis. For more information about *fontconfig*, please see <http://fontconfig.org/fontconfig-user.html>.

```
<alias>
  <family>MAK MilStd 2525b</family>
  <prefer><family>MilStd 2525b</family></prefer>
</alias>
```

Network Compatibility

HLA only

VR-Forces 3.12.0.1 was built against VR-Link 3.13.2 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 3.12.0.1 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.

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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 3.12.0.1. VR-Forces 3.12.0.1 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 3.12.0.1 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 3.12.0.1 APIs are not compatible with VR-Forces 3.11.x or earlier. Scenarios and object parameter databases created with VR-Forces 3.11.x are forward compatible.

RPR FOM Versions Supported

VR-Forces 3.12.0.1 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 3.12.0.1 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 3.12.0.1 relies on the LgrControl and ViewControl custom MÄK extensions.

New Features and Updates

VR-Forces 3.12.0.1 is a binary-compatible maintenance release. This means that all components released for VR-Forces 3.12 work with this release. It has no new features.

Documentation Updates

Section 12.10 in *VR-Forces Developers Guide* has errors in the HLA link lines. The link line for Linux should read:

```
-L/vrforcesdir/lib -lvrfcontrolHLA13 -lvrfobjparam  
-lgdb -lvrfExtProtocol -lvrfcoreHLA13 -lvrfmsgs  
-lvrfplan -lvrftasks -lvrfutil -lvrfMsgTransportHLA13
```

The link line for Windows should read:

```
vrfcontrolHLA13RT.lib vrfobjparamRT.lib vrfcoreHLA13RT.lib  
vrfmsgsRT.lib vrfplanRT.lib vrftasksRT.lib vrfutilRT.lib  
vrfgdbRT.lib vrfExtProtocolRT.lib  
vrfMsgTransportHLA13RT.lib
```

Bug Fixes

This release fixes the following problems that were present in prior releases:

- ♦ The DtVrfRemoteController can now be created using the new createVrfRemoteController() function, and will not try to check out a VR-Link license when it is created.
- ♦ Adding an entity or changing the aggregate heirarchy at runtime, in a scenario with large number of entities, would cause a single very long tick, potentially causing model instability.
- ♦ In rare cases, the 2D GUI would crash when fixed wing entities or cruise missiles were created.
- ♦ Excessive join session messages were displayed when using multiple simulation engines across multiple machines.
- ♦ The spot reports dialog crashed the 2D GUI in some circumstances.
- ♦ The 2D GUI occasionally crashed when panning or zooming, and using the Entity Boost module.
- ♦ Cruise missiles are now correctly removed from the simulation if they are destroyed by another munition.
- ♦ When using automatic aggregation with multi-level aggregates, the aggregate entity will now correctly disaggregate only the sub-aggregates that need to be disaggregated, instead of the entire aggregate.

- The simulation engine now correctly sets the RTI object names for entities in HLA 1516 when the federate number is greater than 9. This fixes an issue where the RTI had to be restarted in HLA1516 if more than 9 simulation engines had joined the federation since it started.
- The GUI occasionally crashed when loading scenarios that included emitter systems.
- DI-Guy appearances can now be set from a global plan.
- The Cancel button now operates correctly when using the Set DI-Guy Appearance from the Command menu when editing plans.
- Entities correctly give up their slot when disembarked from another entity using Set Disembarked.
- Using Hebrew names for entities caused a crash when editing their plans.
- Echelon hierarchy information was lost after particular manipulations of multi-level aggregates.
- There is now increased precision in the coordinates used when placing images over terrain using the TDB Tool.
- The "user data" field of environmental objects is now correctly sent to the simulation engine.
- Restoring display options to the default values no longer causes a crash.
- VR-Forces now catches the user error of creating entities with -1 as their country code, and changes that to 0 to prevent excess packets from being sent on the network.
- The GUI occasionally crashed when changing filters in the entity list box.
- Multi-point objects do not have their orientation correctly preserved when they were detached from other objects.
- The VRF Launcher passed an invalid argument to vrfSim.exe when the Host Address was set when using HLA.
- Using the Task->Send Radio Task->Move Into Formation command in the GUI no longer causes a crash.
- The GUI no longer crashes when editing a conditional statement in a plan.
- The random appearances for the DI with rifle no longer include appearances that include rocket launchers and other non-rifle appearances.
- The simpleCGF and simplePlan examples now run without an assert.
- The proximity fuse for IEDs can now be set to a value larger than 0.
- Terrain intersections failed on geocentric terrains in some circumstances. Applications which use the standard terrain intersection functions available in *DtTerrainDatabase* will get the fix as soon as they are upgraded to this release. Any applications which were performing intersections below the level of *DtTerrainDatabase*, or applications which were in any way interacting with the spatial subdivision must be recompiled to take advantage of the fix (in *spatialSubdivision.inl*).
- The GUI occasionally crashed when one entity embarked on another.

- ♦ The TDB Tool now saves a GDB file to the correct location and sets the path in the MTD file to correctly point to the new GDB file.
- ♦ The *DtProgressSymbol* class is now correctly exported from its DLL.
- ♦ The *DtOverlayListItem* class is now correctly exported from its DLL.
- ♦ The TDB tool sometimes referenced the wrong terrain file from within an MTD file when saving a terrain descriptor, causing it to appear that data had not been saved.
- ♦ Fixed wing entities could cause a crash when changing tasks.
- ♦ The Entity Editor did not save new munition types.
- ♦ The Create From Existing command in the Entity Editor now correctly copies the plan manager entry to the new entity.
- ♦ Scenarios saved with missiles in the air can now be correctly loaded and played.
- ♦ Turning on automatic aggregation no longer creates a significant performance drop.
- ♦ Capabilities set on an entity are now correctly saved with the scenario.
- ♦ Geodetic terrains created from DTED using the TDBTool now return proper intersection values in the simulation engine.
- ♦ The LittlePond terrain imagery did not line up correctly with the features.
- ♦ The LittlePond terrain detail imagery did not display correctly on top of the wide area imagery.
- ♦ Aggregates that contain both sub-aggregates and entities did not embark properly when tasked.

Known Problems

VR-Forces Release 3.12.0.1 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. 2370
- ♦ Occasionally, VR-Forces is unable to load a scenario. When this happens, delete the contents of the *./data/temp* directory and try loading again. 11784
- ♦ The Subordinate Manager allows duplicate entries to exist. 10116
- ♦ Subsurface entities sink to unreasonable depths when destroyed. 10040
- ♦ DIs may unexpectedly change posture when climbing steep terrain. 10163
- ♦ 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. 10206
- ♦ Avoidance of linear vector features often fails at segment intersections. 10220
- ♦ Auto-generated aggregate formation routes may contain spurious points if the original route contains sharp turns and short line segments. 10233

- ♦ Intersection lines in intervisibility fans sometime change colors as you change the zoom level. 10240
- ♦ Torpedoes can fly above water in certain circumstances. 10254
- ♦ Fixed-wing entities crash when tasked to move into formation. 10255
- ♦ Surface entities cannot move on the *California_High.gdb* terrain database. 10256
- ♦ A disembark statement followed by a set formation statement in a plan does not work. 10683
- ♦ You cannot use the lifeform acquire controller with a missile launcher. 10685
- ♦ Ground entities' speed does not affect turning radius. 10692
- ♦ Entity intervisibility with point features does not work correctly. 10698
- ♦ Rotary-wing terrain avoidance sometimes fails. 10732
- ♦ Putting the *vrfSim* console in select mode freezes the back-end. 10781
- ♦ Rotary-wing entities do not maintain correct altitude in geocentric terrain when moving very large distances. 10931
- ♦ Aggregate subordinates cannot execute their own individual plans. 11120
- ♦ In-frustum sensor geometry does not work for angles greater than 90 degrees. 11557
- ♦ 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. 11772
- ♦ Terrain databases processed with the balance option may display incorrectly. 11778
- ♦ Surface entities are not configured with weapons. 11779
- ♦ You cannot load vector data on geocentric terrain. 11783
- ♦ 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
- ♦ Reorganizing an aggregate while it is executing a task may produce unexpected results. The aggregate may be unable to complete its task.
- ♦ When control objects are placed on moving objects (such as a route on a moving aircraft carrier), they produce a flood of network packets. 12047
- ♦ Open File dialog boxes may be slow to display file lists. This is due to underlying problems with the Qt toolkit.
- ♦ Ground vehicles can climb up unrealistically steep slopes (greater than 70 degrees in some cases). 10672
- ♦ Features cannot be selected on geodetic terrain databases in the TDB Tool. 11556
- ♦ Dead lifeform entities may unexpectedly block line of sight. Their bounding volumes are always upright, regardless of whether or not they are dead. 36648
- ♦ Rotary-wing entities do not avoid other entities. They will fly through one another. 36658

- ♦ The target acquisition and selection model can sometimes get 'stuck' trying to acquire a target. If a target has been selected but is unable to be acquired for some reason, it will continue in a futile attempt to acquire that target, even if there are other more viable targets available. 36828
- ♦ If you set the pan increment to 100% for small terrains, the map does not pan by 100%. This is due to the algorithm used to calculate the distance that the map is offset. 12296
- ♦ Transmitter lines are not drawn if the sender is off screen. 36873
- ♦ 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
- ♦ Certain GeoTIFF images may fail to load on linux. If you encounter such an image, please contact MÄK support. 37229
- ♦ Importation of polygonal terrain elevation data from shapefiles does not work. This does not affect importation of shape feature data.
- ♦ The default radar signature for ground vehicles is 500 meters. This is too short a distance for most fixed-wing aircraft to detect and fire on a ground vehicle. To make ground vehicles vulnerable to aircraft, increase the radar signature to a distance that is appropriate for the aircraft in your simulation. 40513
- ♦ Lifeform entities cannot be configured with multiple weapon systems. 40408
- ♦ Fixed-wing entities do not respond to 'Turn to Heading' tasks. 12935
- ♦ Surface entities are not able to come to a stop as quickly as expected. The model does not take into account reverse thrust from engines. 12166

