VR-Forces 4.0.1 Release Notes

This release note contains the following release-specific information for VR-Forces Release 4.0.1:

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Systems Supported

VR-Forces 4.0.1 is available for the platforms listed in Table 1. A Linux release is expected later. 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
Windows XP/Windows Vista/Windows 7	Microsoft Visual C++ 8.0, 9.0 32 and 64 bit

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 4.0.1 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 four 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 3.13.2. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 3.x 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 Qt Software. The VR-Forces GUI was built with Qt release 4.6.3. 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.

FLEXlm Support

VR-Forces 4.0.1 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.)

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 4.0.1 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, 4.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 4.0.1 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.

The VR-Forces 4.0.1 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 4.0.1 supports DIS 4, 5, and 6, and can therefore interoperate with DIS applications of any of these versions.

Backwards Compatibility

The VR-Forces 4.0.1 APIs are not compatible with VR-Forces 3.x or earlier. It is largely compatible with the 4.0 API. Small changes may be necessary to migrate to 4.0.1.

Scenarios created with VR-Forces 3.12 and 4.0 are forward compatible.

RPR FOM Versions Supported

VR-Forces 4.0.1 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 4.0.1 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 4.0.1 relies on the LgrControl and ViewControl custom MÄK extensions.

New Features and Updates

VR-Forces 4.0.1 has the following new features and updates.

- The organization of VR-Forces installers on Windows has changed.
- Loading of metaflight terrains has improved. As a result, the Loader Settings page of the Display Settings dialog box has been changed. For details about changes to MetaFlight support, please see Section 11.6, "Loading MetaFlight Terrains" and Appendix G, *Processing MetaFlight Files*, in *VR-Forces Configuration Guide*.
- Support for preprocessing paged terrains. For details, please see Section 11.7, "Preprocessing Paged Terrains", in *VR-Forces Configuration Guide*.
- Support for changing measurement units in the display. For details, please see Section A.6, "Specifying Display Units", in *VR-Forces Users Guide*.
- Support for aircraft counter measures (chaff and flare effects). For details, please see Section 9.4, "Launching Counter Measures (Chaff and Flare)", Section 6.6.13, "Launch Counter Measures", and Section 7.9, "Set Counter Measures Auto Launch", in *VR-Forces Scenario Management Guide*.
- The order of pages on the Display Settings dialog box has changed.
- You can now create new observers on the Observer Settings page. For details, please see Section 10.3, "Adding an Observer", in *VR-Forces Users Guide*.
- The Intervisibility Properties dialog box has been removed. You can still set properties for all intervisibility objects on the Display Settings Dialog Box, Intervisibility Settings page.

Changes to VR-Forces Installers on Windows

In VR-Forces 4.0, VR-Forces had two installers. One installed the VR-Forces application and data. The other installed the VR-Forces SDK. In VR-Forces 4.0.1, the contents of the installers has changed. The application installer now includes the SDK, but does not include data. The second installer contains application data. Therefore the installation process has changed, as follows:

- You must install the application installer first.
- You must install the data installer. Without the data, the application will not run.
- The application installer asks you to enter an installation code for the SDK. If you do not have an installation code (either because you did not purchase the SDK or you do not have the installation code with you at installation time), click Skip Toolkit Installation to continue the installation process without installing the SDK.

Documentation Updates

Manuals and online help have been updated for this release. Note the following changes and updates to VR-Forces documentation:

- The list of props that you can create from the Prop Palette is based on the model definitions defined on the Model Definitions tab of the Visual Model Editors dialog box. Therefore, you can add new props to the Prop Palette by adding new model definitions. For details, please see Section 13.2, "Creating and Editing Model Definitions", in *VR-Forces Configuration Guide*.
- By default, the road following algorithms cause vehicles to drive on the right side of roads. You can configure vehicles to drive on the left side of the road by selecting the Drive on the Left Side of the Road check box on the Application Settings Dialog Box, Entity Behavior Options page.

Bug Fixes

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

- Adding new DI-Guy characters without appearances caused a crash. 41356
- Entities did not follow roads correctly when B-Have was installed. 44125
- VR-Forces did not correctly handle Patrol Route and Patrol Between Waypoint tasks. 44256
- The Route Edit panel only showed database coordinates for routes. 44395
- Orbit tasks as the end of a plan for fixed wing entities caused the simulation engine to crash. 45591
- Driving on the left side of roads did not work. 45724
- Dismounted infantry sometimes did not embark on helicopters correctly. 44742
- Fixed-wing aircraft performed poorly on large geocentric terrains. 44774
- The unit status example did not save/restore its widget position with the rest of the GUI. 44796
- The simulation engine did not load geometry in pagable .ive files in the correct place. 44906
- Joystick throttle control did not work for fixed-wing entities. 45552
- The class documentation for examples had bad links. 45730
- The Send Radio Task in the Global Plan dialog box caused multiple dialogs to pop up, one of which did nothing. 43952
- The Common Scene Settings page incorrectly allowed you to disable reading environment settings from the network. 44029
- The Entity Type Mapping dialog crashed when doing a search. 44388
- Entity locations did not get refreshed after moving multiple objects. 44225
- Dragging a selection box on the terrain selected hidden objects. 44226

- Entity Icons disappeared when moving multiple entities in 2D. 44172
- Creating a new scenario when an existing unsaved scenario was open sometimes caused a crash. 44191
- Force type patterns in conditional statements did not work properly in some cases. 44419
- Performance on paged terrain was poor. 44427
- Uninstalling the SDK removed files required by the runtime application. 43909
- Ballistic gun turrets continued to move after the entity had experienced firepower kill. 44985
- The Aggregate Move Into Formation dialog box had heading values in exponential notation instead of degrees. 43100

Known Problems

VR-Forces Release 4.0.1 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-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
- In HLA, VR-Forces allows you to use embarkation features even when the selected FOM does not support embarkation, such as RPR FOM 1.0. In these cases, visual representations of embarkation will often look poor. 43755
- When using multiple simulation engines and "Aggregate As", the scenario can get into a state where it cannot be played if you reload or rewind the scenario. This can be worked around by closing the scenario and then opening it again, instead of reloading it when it is already open. 43565
- Changing an overlay's name removes all the objects on it and moves them to the default overlay. 43162
- 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

- The Set DI-Guy Appearance dialog box lists all appearances supported by DI-Guy 10.0. This included skinned characters. However, VR-Forces does not support skinned characters. If you set a lifeform to an appearance that starts with “sk_”, it will not change its appearance.
- 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
- Fixed-wing entities crash when tasked to move into formation. 10255
- A disembark statement followed by a set formation statement in a plan does not work. 10683
- Entity intervisibility with point features does not work correctly. 10698
- Putting the *vrfSim* console in select mode freezes the back-end. 10781
- Aggregate subordinates cannot execute their own individual plans. 11120
- 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
- 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.
- 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
- Routes created by aggregates when they are moving sometimes create incorrect points in tight turns. 43568

- 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 did 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