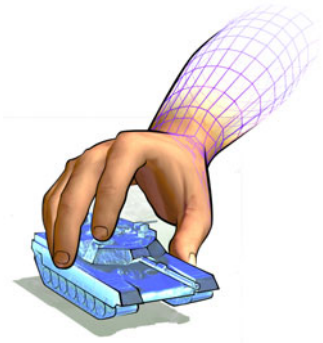

VR-Forces 3.9.1 Release Notes

This release note contains the following release-specific information for VR-Forces Release 3.9.1:

Document ID: VRF-3.9.1-3-060404

Systems Supported

VR-Forces 3.9.1 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++ 6.0, Service Pack 5 Microsoft Visual C++ 7.1	

Windows 2000 Requirements

Windows 2000 has the following requirements for running VR-Forces:

- To run VR-Forces, you must install the latest version of DirectX, available from the Microsoft web site.
- If you are building VR-Forces with MSVC++ 7.1, you must install the latest version of the directX SDK (obtainable from Microsoft).

Patching the Microsoft Visual C++ 6.0 Compiler

VR-Forces is transitioning to use of the Standard Template Library, particularly for lists and map objects. Microsoft Visual C++ version 6.0 has a bug with the STL that is fixed with the supplied *xtree-msvc++patch* file. If you use MS Visual C++ version 6.0, you must install a patch to a standard header file. The patch comes from Dinkumware, Ltd (the company that developed the Standard C++ Library header files for Microsoft), but for convenience, we are distributing it with VR-Forces releases.

The patch fixes a bug that would cause applications to crash if they pass std::sets or std::maps from an application to a DLL or vice-versa, something that IEEE 1516 federates must do. For details about the patch go to http://www.dinkumware.com/vc_fixes.html.

To install the patch:

1. In the top level VR-Forces directory, is a file called *XTREE-msvc++patch*. Rename this file *XTREE*.
2. Make a back-up version of the original *XTREE*.

3. In the Visual Studio *include* directory (for example, *C:\Program Files\Microsoft Visual Studio\VC98\Include*), replace the original version of *XTREE* with the patched version.

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 540 MB of disk space. Terrain databases use approximately 106 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++ 6.0 and 7.1. 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 3.9.6. If you are building for HLA and want to link with the MÄK RTI, use MÄK RTI 2.x.

VR-Forces 3.9.1 is a parallel release to VR-Forces 3.9.1. It is not compatible with previous releases of VR-Forces.

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*.

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 3.9.1 was built against VR-Link 3.9.6 and is compliant with:

- RPR-FOM 1.0 and a subset of 2.0 (draft 6 and 17)
- MÄK RTI 2.4.2
- DMSO RTI NG 6.

If you need to run the Linux version of VR-Forces with the DMSO RTI, contact MÄK technical support.

VR-Forces 3.9.1 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 3.9.1 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

VR-Forces 3.9.1 is fully compatible with VR-Forces 3.9.

RPR FOM Versions Supported

VR-Forces 3.9.1 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 3.9.1 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 3.9.1 relies on the LgrControl and ViewControl custom MÄK extensions.

New Features and Updates

VR-Forces 3.9.1 is a maintenance release. It has no new features. Please see *VR-Forces 3.9 Release Notes* for features introduced in VR-Forces 3.9.

Bug Fixes

This release fixes the following problems:

- A problem that occasionally caused the GUI to hang was diagnosed and corrected.
- The OPD Editor no longer crashes when you click "new" on embarkation-slots.
- The global minimap now displays the window bounding boxes as described in *VR-Forces User's Guide*.
- Problems caused by the Qt Assistant registry key following repeated installations and uninstallations have been diagnosed and a workaround is provided in the support FAQ (http://www.mak.com/product_support_faq.php#olh).
- The line orientation is now set correctly when attached to an object with non-zero orientation.
- The height of surface entities is now calculated correctly in geocentric terrains.
- The system now respects MTL transparency values applied to color.
- The OPD Editor no longer crashes when creating a new entry from an existing entry that has an occupancy director controller.
- The path planner now sets the altitude of the points in a generated route to the height of the terrain, rather than altitude 0.
- Reflected entities with the ID 0:0:0 no longer hangs vrfGui.
- Having two open 'Create Selection Group' dialog boxes no longer crashes the VR-Forces GUI.
- The OPD Editor no longer changes the wrong values when editing multiple entries.
- The back-end no longer crashes when trying to load OPE file created using the OPD editor.
- The remote control example no longer checks out a VR-Link license.
- Non-GUI example projects no longer link with *qtassistantclient.lib*.
- The `-c` (load create menu) command line option is now implemented.
- The receive buffer size no longer gets overridden in both front and back-end with hardcoded values.
- When you delete a point on an unpublished overlay object the correct point gets deleted. Previously the second point always got deleted.
- The Delete key now deletes selected line points for local overlay objects. Previously it deleted the entire object.
- The OPD Editor no longer crashes if you do not create a user extension state repository for new entity types.

- If a circle overlay object is selected and you select another object from the echelon view, the circle no longer stays highlighted.
- Object spatial subdivisions now correctly resize based on the number of entities in the simulation.
- The entity embarked condition now issues a correct warning.
- The fixed-wing following catch-up factor is now configurable when flying.
- The `-l` command line option now works.
- CADRG files can now be loaded even if a full set does not exist.
- Setting positions in DMS coordinates no longer ignores signs.
- When nautical miles was selected, geodetic and MGRS display options now display feet for altitude.
- The Location label is now correctly positioned.
- The default scenario now has a "CreateMenu" entry.
- Plan manager no longer breaks plans.
- DI's no longer get deleted after embarking on a OH-58 Kiowa.
- The Enter key no longer acts like an Esc key in the OPD Editor.
- The front-end now warns you when a plan is too long to send over the network.
- The `tdbtool -m` option now works.
- The networking options now work.
- The front-end correctly loads large terrains on Linux.

Known Problems

VR-Forces Release 3.9.1 has the following known problems:

- Aggregates composed of fixed-wing entities can only perform limited behaviors as an aggregate.
- 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.
- Fixed-wing take-off, landing, and taxiing behaviors may be difficult to configure through the front-end when simulating on geocentric terrain databases. This is due to the fact that it uses a different projected terrain database in the front-end when simulating on a geocentric terrain database in the back-end. Correlation errors in terrain elevation between the two databases must be small (on the order of meters) when placing waypoints or routes on the ground to support fixed-wing ground behaviors. Either use high resolution terrain databases (minimizing the elevation error between the front-end and back-end databases) when configuring these behaviors, or restrict your scenarios to fixed-wing flying behaviors.
- Using the *tdbtool* 's balancing option (`-b br,lf`) to balance certain terrains may cause the generated *.gdb* file to display incorrectly. This has to do with a draw ordering bug that is not currently corrected for all terrains. The resulting GDB file will still give correct intersection information, so it will still be suitable for simulation purposes.
- Vector clipping does not work properly with areal features.
- Surface entities are not configured to fire weapons. You can customize the object parameters database entries to enable this.
- 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 you are running VR-Forces on Linux with the DMSO RTI, you cannot run in combined mode. Start the GUI and back-end separately.
- The order in which you create plans for aggregate units and individual members of aggregate units affects how the plans are implemented. If you create a plan for an aggregate member and then create a plan for the aggregate, the aggregate plan overrides the individual plan. If you create a plan for an aggregate and then create a plan for a member of the aggregate, the member plan is executed.
- If you run a MÄK Logger recording of a VR-Forces simulation and the site:application number for the back-end is the same as the site:application number of the back-end used to create the recording, VR-Forces may crash. To avoid this problem make sure that you run VR-Forces with different site:application numbers, or just run the front-end and use it as a plan view display to view the recording.

- The component descriptions in Appendix C of *VR-Forces Developer's Guide* have not been updated to reflect changes made in recent releases of VR-Forces. In particular references to port interfaces are obsolete and the component descriptions do not reflect the use of process state repositories. Fixed-wing and rotary-wing components may be significantly incorrect.
- Using large filled polygons, such as minefields, in overlays can degrade performance.
- You cannot load vector data with geocentric databases. Vector data works only with geodetic or UTM databases.
- You cannot give a helicopter a Set Altitude request that places it at less than the starting height value.
- Plans stop executing if they encounter a task that they cannot execute. For example, if the plan for a rotary-wing entity include Turn To Heading, which is not a valid task for rotary-wing entities, the plan stops executing.
- If you delete an entity that has a plan and create a new entity with the same name as the deleted entity, the old plan is displayed in the new entity's Edit Plan window. However, the new entity cannot execute that plan.
- Missiles get initialized at their maximum velocity. They do not accelerate to maximum velocity.
- Torpedoes ignore a polygon with soil type water, but the intervisibility fan does not. So it does not show an accurate representation of who can see who.
- When a subsurface entity gets destroyed it jumps to altitude 0.
- It you task a rotary-wing entity to fly to a waypoint on the ground, it will land when it gets to the waypoint. If opposing force trucks get within range of the rotary wing it will fire. Since the rotary-wing entity is at a slight incline, it will fire directly into the ground and explode.
- Intervisibility works with linear and areal features, but not with point features.
- Occasionally, VR-Forces is unable to load a scenario. When this happens, delete the contents of the *./data/temp* directory and try loading again.
- Setting the heading of a rotary wing entity whose altitude is less than the **starting-height** parameter causes it to rise up to the **starting-height** value. The workaround is to set a very small (non-zero) **starting-height**.
- You cannot use translation files to translate entity labels.
- You cannot use translation files to translate labels in the Create Entity menu (vrf.ent).
- The Terrain Tool (imagesplitter) does not convert images to Lambert Conformal Conic correctly.
- If you drag a toolbar onto the Utility Toolbar, you will not be able to dock that toolbar anyplace else in the VR-Forces window.

- When starting the Windows version of VR-Forces in DIS on a computer that is not connected to a network, the front-end will not detect the back-end. This makes it impossible to create or load scenarios. To prevent this problem, put `-A 127.0.0.1` on your command line. This problem affects combined mode and separate mode.