VR-Forces 4.1.1 Release Notes

This release note contains the following release-specific information for VR-Forces Release 4.1.1:

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Systems Supported

VR-Forces 4.1.1 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, 10.0 (32 bit and 64 bit)
Red Hat Enterprise Linux 5 (32 bit libraries)	default compiler

Future Platform Support Plans

VR-Forces will drop support for VC++ 8 in late 2013.

3D Video Cards Supported

VR-Forces 4.1.1 supports NVIDIA graphics cards that support OpenGL 2.0. VR-Forces does not support AMD (formerly ATI) graphics hardware.

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 10.0). 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 4.0.5. 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 4.1.1 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.)

Third Party Library Support

VR-Forces 4.1.1 uses the indicated versions of the following libraries:

- VR-Link 4.0.5.
- OpenSceneGraph 3.0.1.
- Boost 1.45.
- FreeGlut 2.4.0.
- DI-Guy 11.0.3 (animations file is from 10.0).
- 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.

VR-Forces 32-bit Does Not Support Some Large Terrain Databases

The 32-bit versions of VR-Forces cannot support large terrain databases whose use results in exceeding the memory capabilities of 32-bit applications and operating systems. For example, the 32-bit versions of VR-Forces cannot run scenarios that use the *VR-TheWorld Online - MAK Earth.mtf* terrain, which has a highly detailed terrain of Honolulu, Hawaii.

Using MÄK Products on Virtual Machines

In general, MÄK products run on virtual machines without any problems. The exception to this statement is that applications that use 3D graphics, such as VR-Vantage and the VR-Forces front-end, may not work properly. This is due to lack of support for NVIDIA drivers by virtual machines. We continue to investigate ways to resolve this problem.

Network Compatibility

HLA only

VR-Forces 4.1.1 was built against VR-Link 4.0.5 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 4.1.1 is compatible with applications that use earlier versions of VR-Link if they support versions of the RPR FOM listed.

The VR-Forces 4.1.1 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 4.1.1 supports DIS 4, 5, and 6, and can therefore interoperate with DIS applications of any of these versions.

Backwards Compatibility

The VR-Forces 4.1.1 APIs are not compatible with VR-Forces 3.x or earlier. It is largely compatible with the 4.0.x API. Small changes may be necessary to migrate from 4.0.4.

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

RPR FOM Versions Supported

VR-Forces 4.1.1 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 4.1.1 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 4.1.1 relies on the LgrControl and ViewControl custom MÄK extensions.

New Features and Updates

VR-Forces 4.1.1 has the following new features and updates.

- Saved observer views. Observer views are automatically saved with a scenario. You can specify that a particular view be used when a scenario opens. For details, please see Section 11.10, "Saving and Recalling Views", in *VR-Forces Users Guide*.
- Selection groups. You can now create selection groups of arbitrary entities and objects. This is a re-implementation of a VR-Forces 3.12 feature. For details, please see Section 6.3, "Using Selection Groups", in *VR-Forces Users Guide*.
- Ballistic missiles. You can launch ballistic missiles. Missile movement is scripted using CSV files. For details, please see Section 10.2, "Ballistic Missiles", in *VR-Forces Scenario Management Guide* and Section 4.8, "Editing Ballistic Missiles", in *VR-Forces Configuration Guide*.
- Zoom to extents. You can now zoom to the extents of a terrain, an entity, or a group of entities. This is a re-implementation of a VR-Forces 3.12 feature. For details, please see Section 11.6.3, "Zooming to Extents", in *VR-Forces Users Guide*.
- Keyboard shortcuts. Keyboard shortcuts for common actions are now supported. If a menu command has a shortcut, it is listed on the menu next to the command. Keyboard shortcuts are managed in the Key Map Editor, just like observer movement keyboard mappings. This is a re-implementation of a VR-Forces 3.12 feature.
- Rotate icon to heading. You can specify that 2D icons rotate to point in the direction of the entity's heading. This is a setting on the Display Settings dialog box, Entity Display Settings page. This is a re-implementation of a VR-Forces 3.12 feature.
- Absolute time stamps. The `--useAbsoluteTimeStamps` command-line option lets you use absolute time stamps instead of relative time stamps.
- TerraPage terrain. The front-end and back-end support Terrapage terrains. (Back-end support for TerraPage is new in this release.)
- exectool library. This is a library for scripted tasks. It is a package of functions that supports the use of a single Lua function to describe the control flow of a scripted task.
- ECW format. ECW image files are now supported on Windows. For details about ECW, see http://geospatial.intergraph.com/products/other/ecw/ecw/details.aspx
- Support for 32 bit VC10.

Documentation Updates

Documentation has been updated for this release. Screen captures of the Terrain Settings dialog box may show a different tab order than the final version. The individual pages should match screen captures.

Bug Fixes

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

- Using the mouse wheel to set an entity's altitude did not always work. 48501
- Emitter systems sometimes displayed as all white. 48894
- The indirect fire munition list contained invalid munitions. 49226
- The customControlObject example did not show custom parameters. 49335
- When editing spawn points, the Edit Pattern button did not work. 49422
- Lua scripts that were being edited would sometimes revert to the default script, losing all new code. 49426
- When a task required selection of an entity, selecting an entity on the map did not actually select it, even though it appeared to be selected in the selection list. 49453
- When using the Each Click Generates a Task option for Move to Location (Direct), the last location got duplicated. 49455
- When editing a text object, selecting Detach Object from Mouse set the location to 0,0. 49457
- The --disVersion command-line option did not work. 49462
- Loading shapefiles in the front-end was very slow and could cause the front-end to hang. 49464, 49478
- The state of the check box for system script availability did not get saved when a scenario was rewound or reloaded. 49481
- The VC10 build did not set up the solution file properly. 49482
- Inset views sometimes froze. 49489

Known Problems

VR-Forces Release 4.1.1 has the following known problems (with bug-tracking numbers):

- The following examples do not come pre-built in the Linux installer:
  - addConditionalGui
  - addSetGui
  - addSimCommandGui
  - interfaceContentGui.

  In order to do build them to be used with VR-Forces, you must use the make command as follows:

  ```
  make install
  ```

  This should generate the files needed to use the plugins in Linux. 49336

- 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 10.10, "Configuring File Caching in VR-Vantage", in *VR-Forces Configuration Guide*.
- Use of radio communications lines can affect performance. The front-end and back-end can become unsynchronized due to a slowdown in the networking thread.
- Changing the GUI icon or model mapping in the Entity Editor changes the icon or model for all Simulation Model Sets, not just the one being edited. 48443
- 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
- The Getting Started scenario does not work as expected if B-HAVE is installed. This is due to problems with the PathData for VR-Village. To improve behavior, open *./vrforces4.0.4/appData/settings/B-HAVE/bhaveOptions.mtl* in a text editor and change the value for **unify-movement-tasks** to False.
- 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
- 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

The following known problems apply to the front-end:

- VR-Forces may crash on exit on Linux if your Linux installation is not at the latest version of *libselinux* (as of the date of this release).
- Some strings in the graphical user interface are not included in the translation files. Some strings, such as those on the Create menu, are in configuration files, such as *entity.mst*. Others are in settings files. You can translate these strings by identifying the appropriate configuration file and translating the strings. 47806
- The TerraSimSampleUrbanMetaFlight terrain is not initially visible when loaded in PVD. To see the terrain, press **e** to zoom in. This problem potentially exists for all paged terrains whose page-in distance is less than the default observer distance in PVD mode.
- Changing the hierarchy of raster map layers may cause a crash. 44498

- If a graphics card does not support shaders, you may receive the following error message when you load a terrain that uses them:

  ```
  Shader [Branches] validation failed
  ```

  To work around this problem, set the SpeedTree Performance Profile to Disabled, as follows:

  a. Choose **Settings** → **Display**. The Display Settings dialog box opens.

  b. Select the SpeedTree Settings page.

  c. In the Performance Profile drop-down list, select Disabled.