



VR-Exchange 2.0 Release Notes

This release note provides release-specific information for VR-Exchange Release 2.0.

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System Requirements

This section lists supported platforms and software requirements.

Platforms Supported

VR-Exchange 2.0 supports the operating systems listed in [Table 1](#).

Table 1: Platforms supported

Broker	Platform	Compiler
HLA, DIS	Red Hat Enterprise Linux Workstation 4.0, 5.0	Default compiler
HLA, DIS, TENA	PC with Windows XP/-Vista/Windows 7	Microsoft Visual C++ 7.1, 8.0
HLA, DIS	PC with Windows XP/-Vista/Windows 7	Microsoft Visual C++ 9.0 (32-bit)



You must have administrator privileges to install MÄK products on Windows Vista.

External Library Requirements

VR-Exchange 2.0 is built with VR-Link 4.0.1, pThreads 2.70, and Qt 4.5. The TENA broker is built with TENA 5.2.2.

TENA users must install TENA middleware and any libraries required by their LROM. HLA users must install an RTI.

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.

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.

License Manager

To run the licensed version of VR-Exchange, you must install license management software. VR-Exchange 2.0 uses FLEXlm 11.8 for all versions except the Windows VC++ 7.1 version, which continues to use FLEXlm 11.6. If you are upgrading from a version of VR-Exchange that used an older version of FLEXlm, you must upgrade your license management files. You do not need a new license. Licenses are forward compatible.

The License Manager files are not part of the VR-Exchange installer. You can download them at:

- ♦ Windows: <ftp://ftp.mak.com/out/MAKLicenseManager-win-setup.exe>
- ♦ Linux: <ftp://ftp.mak.com/out/MAKLicenseManager-linux-setup.tar.gz>

A license manager FAQ is available at:

<http://www.mak.com/support/faq.php#license>

Network Compatibility

HLA only

VR-Exchange 2.0 is compliant with:

- ♦ RPR-FOM 0.5, 0.7, 0.8, 1.0, and a subset of 2.0 (draft 6, 14, and 17)
- ♦ MÄK RTI 2.x, 3.x, 4.x
- ♦ Pitch RTI 1.3 C++ interface.

Other RTIs that support the HLA 1.3 specification, the SISO DLC HLA API 1516 version of the IEEE 1516 specification (SISO-STD-004.1-2004), and HLA Evolved.) To use an RTI with VR-Exchange it must use the same operating system and be built with the same compiler.

DIS only

VR-Exchange 2.0 supports DIS 4, 5, and 6, and can therefore interoperate with DIS applications of any of these versions.

Brokers Provided

VR-Exchange 2.0 includes brokers for:

- ♦ HLA 1.3
- ♦ HLA 1516 (SISO Standard DLC C++ API for IEEE 1516)
- ♦ HLA Evolved
- ♦ TENA 5.2.2
- ♦ DIS.

[Table 2](#) lists the translators for each broker.

Table 2: Broker translators

Translator	HLA	DIS	TENA
Acknowledge	X	X	X
Action Request	X	X	
Action Response	X	X	
Aggregate	X	X	X
Collision	X	X	X
Comment	X	X	X
Create Entity	X	X	
Data	X	X	X
Data Query	X	X	
Designator	X	X	X
Detonation	X	X	X
Emitter System	X	X	X
Entity State	X	X	X
Environment Process	X	X	X
Event Report	X	X	
Fire	X	X	X
Gridded Data	X	X	
IFF	X	X	X
Logger Control	X	X	
Radio Receiver	X	X	X
Radio Signal	X	X	X
Radio Transmitter	X	X	X
Remove Entity	X	X	

Table 2: Broker translators

Translator	HLA	DIS	TENA
Repair Complete	X	X	
Repair Response	X	X	
Resupply Cancel	X	X	
Resupply Offer	X	X	
Resupply Received	X	X	
Service Request	X	X	
Set Data	X	X	X
Start	X	X	X
Stop	X	X	X
Transfer Control	X	X	
View Control	X	X	



VR-Exchange can translate environmental processes. However, it cannot convert custom data inside these PDUs. Therefore, it is recommended that you disable environmental process translation if you are using VR-Forces and translating between DIS and HLA.

New Features and Updates

VR-Exchange 2.0 adds support for HLA Evolved through a new HLA Evolved broker.

Documentation Updates

VR-Exchange Users Guide and the online help have been updated.

Bug Fixes

VR-Exchange fixes the following problems that were present in previous releases:

- VR-Exchange brokers sometimes failed to translate some emitter beams. 43907

Known Problems

VR-Exchange has the following known problems:

- On Linux you might encounter the following message:

```
VR-Exchange caught exception: DtSharedMemoryPoolManager()
  create has error with shmget: Invalid argument().
```

This error may occur:

- When the queue manager cannot reserve enough shared memory for the internal message queues. To correct the error do one of the following:

- Increase the maximum shared memory allocations on your platform. On Linux the root user can do this by modifying the *shmmax* file:

```
echo "33554432" > /proc/sys/kernel/shmmax
```



This number is typically the maximum number of bytes allocatable in shared memory. Please consult your operating system documentation first.

- Reduce the number of buckets in the message queues.
- Because of write permissions in the */tmp* directory. When VR-Exchange creates shared memory queues, it creates temporary files in */tmp*. The files are called: */tmp/OQ.shared*, */tmp/IQ.shared*, and */tmp/CQ.shared*. If those files exist and the person running VR-Exchange does not have permission to open them for writing, VR-Exchange will print out the error. To correct the problem, delete the files.
- Under Linux, the TCP connection sometimes fails to start. If this happens, you will be unable to successfully start any brokers. Shutting down the portal and starting it again usually fixes the problem.
- If you are using the MÄK RTI in lightweight mode, misconfiguring the HLA connections can cause a feedback loop to occur. A symptom of this is seeing the number of entities rapidly increase, with the same Entity ID. Although this is not a bug, it is mentioned here to help you diagnose this problem should it occur.

To avoid such situations, when using the RTI in lightweight mode, make sure the first three characters of each connection's HLA Execution Name are unique.

