



VR-Exchange 2.5 Release Notes

This release note provides release-specific information for VR-Exchange Release 2.5.

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System Requirements

This section lists supported platforms and software requirements.

Platforms Supported

VR-Exchange 2.5 supports the operating systems listed in [Table 1](#).

Table 1: Platforms supported

Broker	Platform	Compiler
HLA, DIS	Red Hat Enterprise Linux 5.0	Default compiler (32-bit and 64-bit)
	Red Hat Enterprise Linux 6.0	Default compiler (32-bit and 64-bit)
	Red Hat Enterprise Linux 7.0	Default compiler (64-bit)
	PC with Windows Vista/Windows 7/Windows 8, Windows 10	Microsoft Visual C++ 10.0 (32-bit and 64-bit)
	PC with Windows Vista/Windows 7/Windows 8, Windows 10	Microsoft Visual C++ 11.0 (32-bit and 64-bit)
	PC with Windows Vista/Windows 7/Windows 8, Windows 10	Microsoft Visual C++ 12.0 (64-bit)
DDS	Red Hat Enterprise Linux 5.0	Default compiler (32-bit and 64-bit)
	Red Hat Enterprise Linux 6.0	Default compiler (32-bit and 64-bit)
	PC with Windows Vista/Windows 7/Windows 8	Microsoft Visual C++ 8.0 (32-bit)
	PC with Windows Vista/Windows 7/Windows 8	Microsoft Visual C++ 10.0 (32-bit and 64-bit)
		Microsoft Visual C++ 12.0 (64-bit)

If you require TENA support, contact support@mak.com.



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

External Library Requirements

VR-Exchange 2.5 is built with VR-Link 5.3.

VR-Exchange 2.5 uses Qt 4.7.4 for all platforms except VC 11 and 12, which use Qt 4.8.5.

The DDS broker requires installation of version 6.3 of the Opensplice DDS Community Edition. Please contact www.prismtech.com/opensplice/opensplice-dds-community for availability of this version.

Compiler Compatibility on Windows

MÄK provides versions of product releases that have been compiled with Microsoft Visual C++ 8.0, 10.0, 11.0, and 12.0 (most products are not available for all of these compilers). When you run MÄK products together, for example, the Logger and a VR-Vantage application, we strongly recommend that you run versions compiled with the same compiler. Mixing products compiled with different versions of the compiler on the same computer can result in program instability.

License Manager

To run the licensed version of VR-Exchange, you must install license management software. VR-Exchange 2.5 uses FLEXlm 11.13.0.2. 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> (for 32-bit systems)
<ftp://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- ♦ Linux: <ftp://ftp.mak.com/out/MAKLicenseManager-linux-setup.tar.gz> (for 32-bit systems)
<ftp://ftp.mak.com/out/MAKLicenseManager-linux64-setup.tar.gz>

A license manager support is available at:

<http://www.mak.com/support/license-support.html>

Network Compatibility

HLA only

The VR-Exchange 2.5 HLA brokers are compliant with:

- ♦ RPR-FOM 0.5, 0.7, 0.8, 1.0, and RPR FOM 2.0 (draft 6, 14, 17, 20)
- ♦ MÄK RTI 2.x, 3.x, 4.x (HLA Evolved support is only with MÄK RTI 4.0.4 or later)
- ♦ Pitch RTI 1.3 C++ interface.
- ♦ Pitch RTI HLA Evolved 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), or 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

The VR-Exchange 2.5 DIS broker supports DIS 4, 5, 6, and 7, and can therefore interoperate with DIS applications of any of these versions.

RTI Support

We recommend using the latest version of the MÄK RTI. However, VR-Exchange should work with other RTIs that conform to the HLA 1.3 specification, the IEEE 1516 SISO DLC API, or HLA Evolved and are built using the same compiler as your version of the VR-Exchange.

When using the MÄK RTI, remember to make sure that the VR-Exchange can find your FED file, and optional *rid.mtl*, file by either putting them in the directory from which you are running, or by setting the environment variable the directory that contains them.

Support for HLA Evolved

The VR-Exchange 2.5 HLA Evolved broker is compatible with MÄK RTI 4.0.4 or later, VR-Link 4.0.4 or later, and the HLA Evolved specification. A full discussion of this issue is as follows:

The HLA Evolved libraries included with the MÄK RTI 4.0 through 4.0.3 were unintentionally built against one of the last draft versions of the HLA 1516-2010 specification header files. Between the version of the header files used by the MÄK RTI and the final version of the specification there was one change. The HLA Evolved API has three functions for createFederationExecution. In the version originally used by the MÄK RTI there was an ambiguity. Due to optional parameters, two of these functions could be invoked in such a way that it was not clear which one was being used. Here are the functions as they used to be:

```
// variation 1
virtual void createFederationExecution (
    std::wstring const & federationExecutionName,
    std::wstring const & fomModule,
    std::wstring const & logicalTimeImplementationName = L"");

// variation 2
virtual void createFederationExecution (
    std::wstring const & federationExecutionName,
    std::vector<std::wstring> const & fomModules,
    std::wstring const & logicalTimeImplementationName = L"");

// variation 3
virtual void createFederationExecution (
    std::wstring const & federationExecutionName,
    std::vector<std::wstring> const & fomModules,
    std::wstring const & mimModule,
    std::wstring const & logicalTimeImplementationName = L"");
```

Variation one is unambiguous. However, consider the following code:

```
createFederationExecution( L"FedExName", vectorOfFomModules, L" ");
```

It is not clear whether you are using variation two or three, and the compiler would throw an error.

To fix this ambiguity, the final version of the HLA Evolved API renamed the third version of the function to `createFederationExecutionWithMIM`. However this revision did not make it into the header files used by the MÄK RTI. MÄK RTI 4.0.4 corrects this and uses the final version of the HLA Evolved header files. As a result, we recommend that anyone using the MÄK RTI with HLA Evolved upgrade to this version. Because the API has changed between RTI 4.0.3 and 4.0.4, any HLA Evolved federates built against previous MÄK RTI versions will need to be recompiled against the new version.

Because VR-Link's HLA libraries are built against the MÄK RTI, this issue also exists in previous versions of VR-Link that supported HLA Evolved. We recommend that anyone using VR-Link with HLA Evolved upgrade to version 4.0.3, which is built against the latest RTI and uses the renamed function.

This problem affects MÄK products built against the MÄK RTI and VR-Link that support HLA Evolved, such as VR-Exchange 2.0. VR-Exchange 2.0.1 has been built against VR-Link 4.0.4 and is now compliant with the final version of the standard.

As a general rule, any version of VR-Exchange is compatible with any version of the RTI that supports the same platform. However, due to this header file change, previous versions of VR-Exchange and the MÄK RTI will not be compatible when using HLA Evolved. This change does not affect compatibility between VR-Exchange and the MÄK RTI when using HLA 1.3 or 1516-2000.

When using HLA Evolved:

- VR-Exchange 2.0 is only compatible with MÄK RTI 4.0, 4.0.1, 4.0.2, and 4.0.3.
- VR-Exchange 2.0.1 and later releases are only compatible with MÄK RTI 4.0.4 and later releases.

Brokers Provided

VR-Exchange 2.5 includes brokers for:

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

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

Table 2: Broker translators

Translator	HLA	DIS	DDS
Acknowledge	X	X	
Action Request	X	X	
Action Response	X	X	
Active Sonar	X	X	
Additional Passive Activities	X	X	
Aggregate	X	X	
Areal Object	X	X	
Collision	X	X	
Comment	X	X	
Create Entity	X	X	
Data	X	X	
Data Query	X	X	
Designator	X	X	
Detonation	X	X	X
Emitter System	X	X	
Entity State	X	X	X
Environment Process	X	X	
Event Report	X	X	
Fire	X	X	X
Gridded Data	X	X	
IFF	X	X	
Linear Object	X	X	
Logger Control	X	X	

Table 2: Broker translators

Translator	HLA	DIS	DDS
Point Object	X	X	
Propulsion Noise	X	X	
Radio Receiver	X	X	
Radio Signal	X	X	
Radio Transmitter	X	X	
Remove Entity	X	X	
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	
Start	X	X	
Stop	X	X	
Transfer 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 2.5 has the following new features:

- ♦ Geospatial filters can now be specified by clicking on a map to set the location and radius. For details, please see Section 4.4, “[Specifying Filters in the Connection Information Dialog Box](#),” in *VR-Exchange Users Guide*.
- ♦ Improved GUI performance when Object/Interaction views are hidden.
- ♦ VR-Exchange prompts you before you shut down a broker. You can disable the prompt in the Basic Settings portion of the VR-Exchange Preferences dialog box. For details, please see Section 3.2, “[Configuring VR-Exchange](#),” in *VR-Exchange Users Guide*.
- ♦ VR-Exchange now sends translation monitoring updates to the portal as soon as it opens.
- ♦ Added configuration options to all brokers for enabling timestamps and setting the log rolling interval. For details, please see Section 3.2, “[Configuring VR-Exchange](#),” in *VR-Exchange Users Guide*.
- ♦ Upgraded to VR-Link 5.3.
- ♦ Added functionality to set the StreamTags attribute automatically if missing. Also added the ability to disable this if needed.
- ♦ Added translation support for DIS SEES PDU attributes.
- ♦ Updated the Edit Collection dialog box for specifying FOM Modules (on the HLA1516e page of the Connection Information dialog box).
- ♦ The translators' 'isDisPublishable' (and equivalents: isHlaPublishable, and so on) method signature has changed. The DtBrokerObject argument is no longer const. Any translators overriding this method will need to update the method signature.
- ♦ Ability to filter relative location PDUs when sending entities and aggregates.
- ♦ Added the ability to disable the publishing of relative location PDUs for embarked entities.
- ♦ Added a method for broker plug-ins to allow for additional customization after the exercise connection is instantiated. The brokerPlugin example has been updated to demonstrate using the new method.

Documentation Updates

VR-Exchange Users Guide and online help have been updated for this release.

Bug Fixes

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

- ♦ Logger Control interactions now show in the Portal GUI. 58788
- ♦ Updated broker connection defaults for the DIS and RPR Brokers to use the latest versions. 58362
- ♦ Outgoing DIS IFF objects were missing Host IDs. 57972
- ♦ Added missing activity code logic to the DIS Additional Passive Activities translator. 57910
- ♦ Changed default FOM for RPR Brokers to RPR 2.0. 57897
- ♦ Changed FED File browse dialog to always open in bin directory. 57891
- ♦ Fixed bug where RPR FOM Version wasn't correctly set to 2.0 by default when selecting 2.0 FED File. 57889
- ♦ Attempting to publish underwater acoustics objects when using a FOM that doesn't include underwater acoustics caused a crash. 57703
- ♦ Expanded usage of translator base classes for common translation logic. 56622
- ♦ Geospatial filter was being treated as if it were specified in meters, even though it is specified in km. 56193
- ♦ Source files for brokers' translators were renamed to match the contained class. Some class names were changed slightly as well. 54659
- ♦ The DtDialogPage class no longer exists. Use a QWidget instead. 49551
- ♦ VRX Gui would display 'setting change requires restart' dialog even if changes didn't require restart. 58685
- ♦ Added a way to set Dead Reckoning thresholds through the GUI. 58670
- ♦ Environmental status on environment process objects was translated incorrectly. 58886
- ♦ Updated the shared memory queue to improve performance and reliability. 52591
- ♦ The portal would report that a broker had errored out. 55861

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.
- On Linux, if you filter entities by geospatial location and you set the degrees, minutes, and seconds to their maximum values, the down arrows in the spin boxes look like they are unavailable. However, they still work.
- 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.