



# MAK Legion 1.1 Release Notes

This document provides the following release-specific information:

|                                         |   |
|-----------------------------------------|---|
| Systems Supported.....                  | 2 |
| Compiler Compatibility on Windows ..... | 2 |
| License Manager .....                   | 2 |
| Network Compatibility.....              | 2 |
| New Features and Updates .....          | 3 |
| Documentation Updates.....              | 4 |
| Fixed Bugs .....                        | 4 |
| Known Problems.....                     | 4 |

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## ***Systems Supported***

MAK Legion 1.1 is supported on PCs running Windows 10, 64 bit. It has been tested in cloud and mixed environments.

If you need a Linux version of MAK Legion, please contact your MAK salesperson for details.

## **Compiler Compatibility on Windows**

Current and prior releases of MAK products have been compiled using different versions of the Visual C++ compiler. When you run MAK products together, for example, the MAK Legion and VR-Vantage, we strongly recommend that you run versions created with the same compiler. Mixing products compiled with different compilers can result in program instability.



VC 14 and VC 15 are binary compatible.

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## **License Manager**

To run the licensed version of MAK Legion, you must install license management software. MAK Legion 1.1 uses FLEXlm 11.13.0.2. If you are upgrading from a version of the MAK Legion 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 MAK Legion installer. You can download them at:

- ♦ Windows:  
<http://ftp.mak.com/out/MAKLicenseManager-win-setup.exe> (for 32-bit systems)  
<http://ftp.mak.com/out/MAKLicenseManager-win64-setup.exe>
- ♦ Linux: <http://ftp.mak.com/out/MAKLicenseManager-linux-setup.tar.gz> (for 32-bit systems)  
<http://ftp.mak.com/out/MAKLicenseManager-linux64-setup.tar.gz>

License manager support is available at:

<http://www.mak.com/support/licenses>

## ***Network Compatibility***

MAK Legion 1.1 is not compatible with any of the early adopter releases.

## ***New Features and Updates***

MAK Legion 1.1 has the following new features and updates.

- ♦ Fine Interest filtering allows a simulation client to receive entities that are only in its interest region, which can result in significantly less data being transferred to the client at the expense of additional server processing load. This is the default interest mode for simulation clients.
- ♦ User definable thresholds for movement and rotation used with dead reckoning. The default is 1.0m for movement and 3 degrees for rotation.
- ♦ Added ability to dead-reckon locally simulated entities so they are not updated every frame. If the simulation is designed to do variable rate updates for entities or not update every entity every frame, this feature allows the entities to be dead-reckoned between updates so they can be perceived at correct locations every frame even though they may not have been updated that frame.
- ♦ Updated Legion Monitor display of attribute tables, events, and controls.
- ♦ Added infrastructure to support Absolute Time Stamps. This feature requires you to ensure that clocks are synchronized and the correct time is set in the applications.
- ♦ Updated examples to use new API features.
- ♦ Added multicast fast path for events. This is intended for low-latency event communication between clients for fault tolerant data. For example, voice communications and video streams would benefit from this feature. To enable this feature, you must modify the object model event descriptors to use `Best_Effort` instead of `Reliable` for the `TransportType` in the provided object model source code or model definition.
- ♦ Added support for Absolute Time Stamps. If the system clocks are synchronized between senders and receivers of messages and `absoluteTimestamps = true` is set in the configuration file (or through the API) then the message timestamps are used instead of the receivers clock time. If absolute time stamps are used, the server is required to set `absoluteTimestamps = true` in its config file and have a synchronized clock since it will sit between clients processing messages.

API changes:

- ♦ All C API function calls return LEG\_ReturnCode codes.
- ♦ Updated Legion Object Model to include helper functions for embarkation and disembarkation.
- ♦ Updated Legion Object Model to add lastSetLocation (and similar attributes) for dead-reckoned fields.
- ♦ Added bit interpreter “helper” classes to Legion Object Model.
- ♦ Updated Legion Object Model to include Aggregates.
- ♦ Updated VRF Object Model to add state properties.
- ♦ Updated VRF Object Model to include NavAids.
- ♦ Updated VRF Object Model to expand DI-Guy attributes.
- ♦ Updated VRF Object Model to rework weather, environmental, and simulation time objects.
- ♦ Updated Legion Object model for ArtPartParams to use an enum versus UInt32.

## ***Documentation Updates***

User documentation is provided as PDF files in the `./doc` directory. You can also find the most current PDFs at <https://www.mak.com/support/product-user-guides>.

## ***Fixed Bugs***

- ♦ Fixed a number of bugs related to data contention.
- ♦ Added deferred updates to prevent exceptionally large messages.

## ***Known Problems***

- ♦ MAK Data Logger playback cannot function with simulation engines that created the recorded clients connected.
- ♦ Java examples may hang on shutdown due to a Legion thread not finishing.