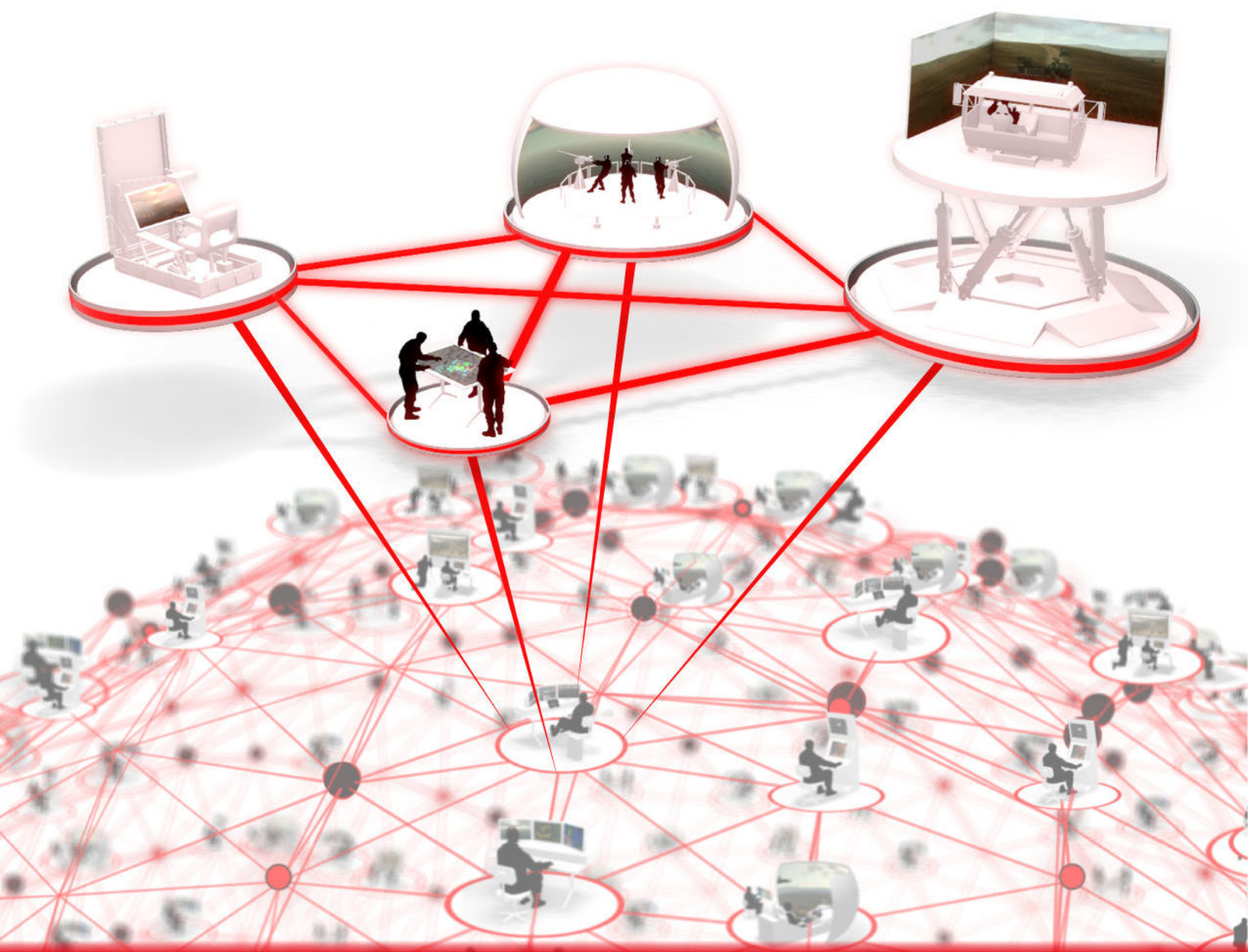




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Contents

1. Introduction to MAK ONE

1.1. The MAK ONE Suite of Products	6
1.2. Installation Dependencies	6
1.3. Common Dependencies	6

2. MAK ONE Product Installation

2.1. Installing MAK ONE Products	8
2.1.1 Installation and Data Packages	8
2.1.2 Using the MAK ONE Downloads Page	8
2.1.3 Installing on Windows	10
2.1.4 Installing on Linux Systems	11
2.1.5 Installing MAK ONE PDB Files for Debugging Purposes	11
2.1.6 Installing the Toolkit	13
2.1.7 Installing SensorFX with VR-Vantage	13
2.1.8 Uninstalling from Windows	14
2.1.9 Uninstalling from Linux	14
2.2. The MAK Data Package	14
2.2.1 MAK Data Package Versions	15
2.2.2 Installing the makData Package	17
2.2.3 Where You Can Install MAK Data	17
2.2.4 Options When Installing a Data Package	19
2.2.5 Troubleshooting the MAK Data Package	20

3. Setting Up the License Manager

3.1. The License Management Architecture	22
3.2. Installing and Configuring the License Manager	23
3.3. Install the MAK License Manager Software	23

3.3.1 Installing the License Manager on Windows	24
3.3.2 Installing the License Manager on a Linux System	24
3.3.3 Installing Dongle Drivers on Linux	25
3.4. Request a License File	25
3.4.1 Identifying the Host ID and License Server Name in Windows	26
3.4.2 Identifying the Host ID and License Server Name on Linux	26
3.5. Put the License File in the License Manager Directory	27
3.6. Specify the License Server or Node-Locked License	27
3.6.1 Setting the MAKLMGRD_LICENSE_FILE Environment Variable	28
3.7. Adding Additional License Files	30
3.8. Specifying a Port for the License Server and Daemon	30
3.9. Run the License Server	31
3.9.1 Shutting Down the License Server	31
3.10. Running FLEXlm as a Service on Windows	32
3.11. Clear the License Cache	32
3.12. Transferring Licenses	34
3.13. Moving a Dongle to a Different Computer	34
3.14. Managing Licenses for the MAK RTI	34
3.15. Troubleshooting the License Manager	34
3.15.1 License Checkout Fails	34
3.15.2 Unable to Get a License	35
3.15.3 Preventing Multiple License Manager Processes	36
3.15.4 License Manager Cannot Find MAK License Management Executable	36
3.15.5 The License Manager Reports an Unsupported Product	37
3.15.6 Troubleshooting Dongle Installations	37
3.15.7 Submitting a Licensing Support Ticket	37

4. Installing an RTI

4.1. Installing an RTI	40
4.2. Installing the MAK RTI	40
4.2.1 Configuring Your System to Use the MAK RTI	40
4.2.2 Running Applications with the MAK RTI	41

Index	43
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1. Introduction to MAK ONE

This chapter provides an overview of the MAK ONE suite of products.

1.1. The MAK ONE Suite of Products	6
1.2. Installation Dependencies	6
1.3. Common Dependencies	6

1.1. The MAK ONE Suite of Products

MAK ONE is a suite of simulation applications and infrastructure tools. Our customers use MAK ONE as a platform for modeling and simulating whole-world multi-domain synthetic environments.

The MAK ONE applications are used as core system components in simulation systems of all shapes and sizes, and the MAK ONE infrastructure tools are used to connect systems and components into simple or complex distributed-simulation networks and to provide the data needed to create synthetic environments.

MAK ONE Applications	MAK ONE Infrastructure
VR-Forces – Multi-Domain Computer-Generated Forces	VR-Link – HLA and DIS Simulation Networking
VR-Engage – Multi-Role Virtual Simulator	MAK RTI – HLA Run-Time Infrastructure
VR-Vantage – Image Generation and Battlefield Visualization	MAK Legion – Scaling and Interoperability Framework
SensorFX – EO, IR, and NVG Imaging Sensors	VR-Exchange – Protocol Translation and Bridging
RadarFX – Synthetic Aperture Radar Simulation	WebLVC – Web Connectivity
	MAK Data Logger – Simulation Recording and Replay
	VR-TheWorld – Streaming Terrain Server
	DI-Guy SDK – Realistic Human Characters SDK

1.2. Installation Dependencies

The process for installing MAK ONE products varies, depending on whether you are installing a single product to work independently or multiple products to work together as a system.

Your networking environment can impose dependencies, such as run-time infrastructure, and particular hardware can require graphics drivers or special settings. Please read all of the instructions in this guide, and also check the release notes for the specific products that you are installing, to learn about special circumstances.

1.3. Common Dependencies

This document describes how to install individual products as well as these dependencies.

- Any product that uses the HLA simulation interoperability protocol require that the MAK RTI (or another standards compliant run-time infrastructure) is also installed.
- When VR-Engage is used with VR-Forces, VR-Engage requires that you install additional components to the compatible VR-Forces installation.



2. MAK ONE Product Installation

A full product installation includes three components: the MAK ONE application, the License Manager software and, for HLA operation, an RTI (Run-Time Infrastructure).

2.1. Installing MAK ONE Products	8
2.1.1 Installation and Data Packages	8
2.1.2 Using the MAK ONE Downloads Page	8
2.1.3 Installing on Windows	10
2.1.4 Installing on Linux Systems	11
2.1.5 Installing MAK ONE PDB Files for Debugging Purposes	11
2.1.6 Installing the Toolkit	13
2.1.7 Installing SensorFX with VR-Vantage	13
2.1.8 Uninstalling from Windows	14
2.1.9 Uninstalling from Linux	14
2.2. The MAK Data Package	14
2.2.1 MAK Data Package Versions	15
2.2.2 Installing the makData Package	17
2.2.3 Where You Can Install MAK Data	17
2.2.4 Options When Installing a Data Package	19
2.2.5 Troubleshooting the MAK Data Package	20

2.1. Installing MAK ONE Products

2.1.1 Installation and Data Packages

MAK ONE installations are provided in one or more files (packages) that you can download from the MAK website.

There are four types of installation products for MAK ONE:

- Product installers – Each product has a single main installer for each operating system.
- Optional installers – Some products have installers for developer options.
- Required data packages – MAK ONE applications (VR-Vantage, VR-Forces, VR-Engage, SensorFX, and RFView for MAK ONE) and the DI-Guy SDK have a collection of data packages that are required for those products' basic functions.
- Recommended data packages – Additional data packages (if available) are recommended to access the full capabilities of MAK ONE applications.

MAK ONE applications share the same data installation, therefore the same set of data packages is all you need for any or all applications (VR-Vantage, VR-Forces, VR-Engage, SensorFX, RFView for MAK ONE, and the DI-Guy SDK).

Dependencies

Licensing tools and dependent products have their own installers. For details, see "Chapter 3. Setting Up the License Manager" on page 21.

For interoperability using HLA, see "Chapter 4.1. Installing an RTI" on page 40.

Before you install a MAK ONE product, please read that product's release notes to see if there are any special instructions for installation.

Build Information

If you need to know the details about the MAK ONE application you are using, you have two options:

- While running the application, choose **Help > About** and then read the information in the About dialog.
- In the installation directory, look at a build information text file.

2.1.2 Using the MAK ONE Downloads Page

Customers with accounts on mak.com can download the installation and data packages required to install any of the supported MAK ONE products.



- Some products, such as SensorFX, do not have their own installer. SensorFX is part of the VR-Vantage and VR-Engage installers and simply requires the appropriate license information.
- Some product versions are not available on the [MAK ONE Product Downloads](https://www.mak.com/mak-one-downloads) page. Contact sales at info@mak.com to request a link.

➤ On the website, browse to the [MAK ONE Product Downloads](https://www.mak.com/mak-one-downloads) page at <https://www.mak.com/mak-one-downloads>. If you are not already logged in, you will be prompted to sign in to [mak.com](https://www.mak.com) or given the option to create an account. You must have an account to use the MAK ONE Product Downloads page.

➤ **To select and download the desired packages:**

1. **Filter the list of all possible products to download.**

By default, the latest releases of MAK ONE products display. Use the MAK ONE Release filter to see products from a specific release or select All to see all supported versions.

Use the Individual Product and Operating System/Platform filters to further narrow the list of downloads that you want to see.

2. **Select products for download links.**

Select each of the products that you would like to download. Notice that, as you do, lists of the Installer and Data Packages display on the page. These lists contain all of the files and packages you must download to install each of the selected products.

3. **Click all of the links.**

Once you have selected all of the products that you want, click each of the links to download the software, PDBs, and data packages (if appropriate) required for the selections you made in Step 2. If the MAK ONE Software Manager (MOSM) is listed, you must download and install that utility to install the data packages.

4. **Run the installers.**

After successfully downloading the product installers, run each of them to install the products.

- For Windows products, run the executable (.exe) file and follow the steps in the wizard. For details, see "2.1.3 Installing on Windows" on the next page.
- For Linux products, unzip the .tar.gz file. For details, see "2.1.4 Installing on Linux Systems" on page 11.

5. **Install the data for VR-Vantage, VR-Forces, or VR-Engage.**

- For products released after spring 2022, you install the data separately from the products using the MOSM. This applies to VR-Vantage 3.0, VR-Forces 5.0, VR-Engage 2.0, and later. See "2.2.2 Installing the makData Package" on page 17.
- For Windows products released before spring 2022, you can specify that the application installer automatically find and install the data package (it must be in the same directory as the application installer), or you can specify that

the MAK Data Setup Wizard open and allow you to select the data package to install.

- For Linux products released before spring 2022, uncompress and untar the data package files and copy them into the installation directory, or uncompress them and redirect the output:

```
tar -xzf makData<version>.MAK-targz -C /path-to-product
```

6. Licensing your MAK ONE products.

Use of MAK ONE software is managed through MAK License Management software tools, which are based on Flexera's FlexNet Publisher (FLEXlm) technology.

Customers under active maintenance with an up-to-date license key can start using new versions immediately. You do not need a new license key or version of the MAK License Management Tools. For details on installing the license management software, see "3.3. Install the MAK License Manager Software" on page 23.

If your license has expired or you do not have one, go to our [Support Portal](https://www.mak.com/mak-one/support/portal) at <https://www.mak.com/mak-one/support/portal> and request a license. See "3.4. Request a License File" on page 25 for details.

2.1.3 Installing on Windows

Windows versions of MAK ONE products are provided as downloaded files.

- To install a MAK ONE product, run the installer. Follow the instructions in the installation wizard. (For VR-Forces, VR-Vantage, VR-Engage, SensorFX, and DI-Guy, you must install the application and the shared data package. You install the data used by MAK ONE applications separately, as described in "2.2.2 Installing the makData Package" on page 17.)

Note the following:

- The installers are named to indicate the compiler used to build that version of the application.
- The MAK RTI installation wizard asks whether you want to change the PATH environment variable to load the newly installed RTI. You can add it to the PATH for the current user or all users. If you do not add it to one of these PATH variables, when you run a federate, it will not be able to find this version of the RTI unless you set the PATH using the RTI Chooser.
- If you have an external Java-based application that needs to connect to the MAK RTI, you must install the Java binding for the RTI. Please refer to Chapter 2 in the *MAK RTI Users Guide* for details.
- When you install large applications on Windows, such as VR-Forces, there may be a delay of up to several minutes from the time you try to run the setup program to the time that an installation dialog box displays. This is due to how Windows scans setup programs before it executes them. If you experience this problem, turning off User Access Control can reduce or eliminate this delay.
- If you are installing VR-Engage and VR-Forces, you must install additional VR-Engage-specific files into VR-Forces. Please see the VR-Engage documentation for details.

Default Windows Installation Directory

The default root directory for installing MAK ONE products is *C:/MAK*.

You can use an environment variable, *MAK_INSTALL_DIR*, to specify a different location where all MAK ONE products and data should be installed by default. For example, if you define it as *MAK_INSTALL_DIR = D:\MyProject*, then all MAK ONE products automatically install to that location. The data packages and products would then install in that directory by default: *D:/MyProject/SharedData*, *D:/MyProject/vrlink5.10*, and so on.

Installing the Product Documentation

Due to the limitations of Windows installers, the user and developer documentation for some products are in a separate installer. To access the documentation locally, you must run the product's **.docu.exe* installer and install the files in the product install directory.

► To install the documentation:

1. Run the product's documentation installer, for example, *vrVantage#.#.docu.exe*, *vrForces#.#.docu.exe*, or *vrEngage#.#.docu.exe*.
2. The wizard finds the location where you installed the product. Accept that location to ensure that links to the documentation work correctly.
3. Optionally, change the Start menu location for the shortcuts to the documentation. If you want, you can choose a location separate from product installation directory. For example, you might want to put MAK ONE documentation shortcuts in a central location. This change does not affect the documentation shortcuts folder that is already located in the product installation directory.
4. Complete the installation wizard. The product documentation will be available on your machine.

2.1.4 Installing on Linux Systems

Linux versions of MAK ONE products are provided as compressed TAR files.

► To install a product from a TAR file:

1. Create the directory in which you want to install the product.
2. Copy the tar file to the install directory.
3. Uncompress and untar the tar file:

```
tar -xzf applicationxx-os.tar.gz
```

where *xx-os* is the release, operating system, and other product release coding.

2.1.5 Installing MAK ONE PDB Files for Debugging Purposes

In cases where a MAK ONE application crashes, it can be difficult to determine the cause. The application generates a *.dmp* file that contains valuable information about the application's state at the time of the crash. MAK technical support can analyze this file to help diagnose the issue.

In addition, with the application's PDB (program database) files, the application generates a call stack log file (*.callstack.log*) of the application at the time of the crash. The call stack log provides information in plain text about the sequence of functions that were called leading up to the crash, which is also helpful in identifying the specific cause.

By providing the *.dmp* or *.callstack.log* files to technical support, you help support personnel to resolve the issues. They use specialized debugging tools to analyze the files and determine the cause of the crash, and that information aids in the development of a solution to prevent future crashes.

Due to security reasons or organization policies, some customers cannot send the *.dmp* file to technical support. Because the call stack log file is a plain text file, it is easier to inspect and analyze than the *.dmp* file. Users can easily attach it to an email and pass it out of secure areas with visual inspection, making it a convenient option for customers with restrictions on sharing binary files.

It is important to note that the call stack log file alone might not be sufficient for support personnel to fully diagnose the issue. They may require more information to gain a complete understanding of the issue. A detailed procedure for reproducing the crash often helps them solve the problem you encountered.



- Support for the generation of the call stack log file was introduced in MAK ONE 2024. It is supported only in MAK ONE products part of that release and later versions.
- The PDB files are part of the Linux installation. You do not need to install them separately.

Installing PDB Files on Windows

Before installing the PDB files on Windows, you must install the MAK ONE application. Next, make sure that the PDB files you are installing are from the same build as the application. When you download the installer from the [MAK ONE Product Downloads](#) page, the appropriate PDB installer is also available for download.

► To install the PDB files:

1. After installing the MAK ONE application, run the PDB installer for that product.
2. The installer looks for the matching product directory by searching the registry and then it automatically sets the install directory to the appropriate path. If that is not correct for your product, see the note below.
3. Complete the installation wizard. The necessary PDB files are installed in the product's *./bin64* directory.

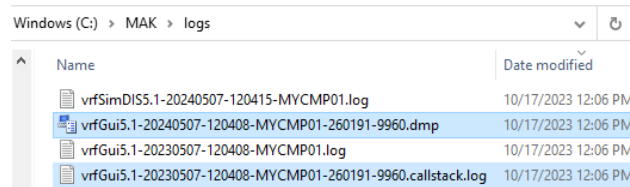


- The default installation directory is `C:\MAK`. See "Default Windows Installation Directory" on page 11 to learn about setting the default to other locations.
- Be sure that the folder in the Select Destination Location page of the installation wizard is correct. It should be the top-level folder for the product installation.
- If the PDB installer displays a warning that the SVN revisions do not match, make sure that you have the correct PDB installer for the version of the MAK ONE application that you installed.

Reporting an Issue Using the `.callstack.log` and `.dmp` Files

Send the `.callstack.log` and `.dmp` files (or only the `.callstack.log` if you are unable to provide the `.dmp` file) to MAK support through the Support Portal (<https://www.mak.com/mak-one/support/portal>) or support@mak.com. The files will have similar names and are located in the central directory for MAK ONE log files (Figure 1). Please also provide information on anything you experienced when the issue occurred.

Figure 1. Example of `.callstack.log` and `.dmp` files for VR-Forces



Specifying the Location for `.log` and `.dmp` Files

The default directory for MAK ONE log files is `C:/MAK/logs`. You can customize the location by specifying a different path in the `MAK_LOG_DIR` environment variable.

2.1.6 Installing the Toolkit

The SDK toolkit is an API that allows developers to create and add functionality to MAK ONE, and it also includes examples about how to use the SDK.

Most MAK ONE products have a toolkit, and those installers include an option to install it. This requires that you purchase a separate license, which comes with its own installation code.

If you skipped the toolkit installation when you installed the application but you now have a toolkit installation code, you must rerun the application installer and enter the code when prompted. Be sure to install it in the correct directory. In the Select Components page of the installation wizard, simply clear the runtime application check box and select the toolkit check box.

2.1.7 Installing SensorFX with VR-Vantage

The SensorFX plug-in installation is included with the VR-Vantage installer. If you have the necessary SDK license, you can enter it when you install VR-Vantage. This gives you access to VR-Vantage with SensorFX.

If you use the settings covered in "2.2.2 Installing the makData Package" on page 17 for the shared data, SensorFX should work correctly. If you launch the application with SensorFX and see an error about data, however, you can resolve it by setting the JRM_DATA_DIR environment variable to indicate the location where you installed the data. Enter the path to the SensorFX data directory in the format *mydata\location\ModelData\sensorFX* where *mydata\location* is the full path to the *./SharedData/#/latest* directory. An example of the full value is:
E:\SharedData\18\latest\ModelData\sensorFX.

2.1.8 Uninstalling from Windows

MAK ONE product installations include an uninstaller application (*unins000.exe*), which you can find in the installation directory. Run that program to uninstall the product.

When you run other installers for the product, such as the PDBs and documentation, there are additional uninstallers. If you run the uninstallers from the highest number down (for example, *unins002.exe* and then *unins001.exe*), running *unins000.exe* uninstalls everything else and removes the install folder.

When you uninstall VR-Vantage, VR-Forces, or VR-Engage, files that reside in the product directory are also deleted. Before uninstalling, copy any of your custom files from the product directory to another folder.

The uninstaller does not remove the data package. That is in a separate directory (for example, *./SharedData/19/latest*).

 If you run only the product uninstaller, you can then simply delete the rest of the product's install folder. Note that if you do not run all of the uninstallers, running only the product uninstaller may not remove all of the shortcuts from the Windows Start menu.

2.1.9 Uninstalling from Linux

To remove MAK ONE product installations from Linux machines, simply delete the installation directory. This catches all of the files associated with the product.

When you uninstall VR-Vantage, VR-Forces, or VR-Engage, files that reside in the product directory are also deleted. Before uninstalling, copy any of your custom files from the product directory to another folder.

Deleting the installation directory does not remove the data package. That is in a separate directory (for example, *./SharedData/19/latest*).

2.2. The MAK Data Package

To function correctly, VR-Vantage, VR-Forces, VR-Engage, and DI-Guy require files distributed with the MAK Data Package. Those files contain 3D moving models; terrains and terrain components; art assets used for visualizing weather, water, and other environmental effects; and more. MAK is always expanding its model content, which means that a large amount of disc space is required to install all of the data packages (over 70 GB). You can install the data in a central location where MAK ONE applications will share it.

i If you are using MAK ONE applications released earlier than spring 2022, you must follow different instructions for installing the data. Consult the user guide for that version of your MAK ONE product for instructions. This applies to VR-Vantage 2.8, VR-Forces 4.10, VR-Engage 1.7, and earlier releases of those products.

The default location for the shared data files is `C:/MAK/SharedData` on Windows or `~/MAK/SharedData` on Linux. Advanced users may choose to place the files in another location using environment variables. For details, see "2.2.3 Where You Can Install MAK Data" on page 17.

2.2.1 MAK Data Package Versions

Because MAK is always updating the data we provide with MAK ONE applications, MAK versions the data packages to make it easier for you to understand what data goes with which versions of a specific MAK ONE application. Also, because data for products released after spring 2022 is now stored in a shared location, MAK ONE applications use the data versions to know which is the compatible data installation.

The MAK Data Package version consists of two parts: the compatibility version and the date, for example, 19 and YYYY-MM-DD.

MAK ONE applications use the compatibility version to determine whether the data is compatible with the specific application version. A MAK ONE application can use any dated release of the data with the appropriate compatibility version. The release notes, the user guide, and the help identify the compatibility version for that release. You can also check the Product Specifications & Dependencies page on the MAK website, <https://www.mak.com/mak-one-specs>. For example, VR-Vantage 3.0.x, VR-Forces 5.0.x, and VR-Engage 2.0.x can use any data package with the 16 compatibility version.

The date is also part of the data package. A data package with a more recent date than that of a previous data release with the same compatibility version has improvements—such as fixes and possibly more and better content—than a previous release.

i Data compatibility versions always increment, but each new data compatibility version may not be sequential with previous releases. For example, one set of releases of the MAK ONE applications might use compatibility version 17 and the next set of releases might use 21.

Finding the Data Compatibility Version

When reporting version information to MAK, you should mention both the compatibility version and the date. There are a few ways to find this information: the product's About box, the data version information text file, or the data package installer file.

Installed Data Version

- To find the data compatibility version that the application is using, choose **Help > About** and then look at the Core Data line (Figure 2).

Figure 2. About box data compatibility version information

```

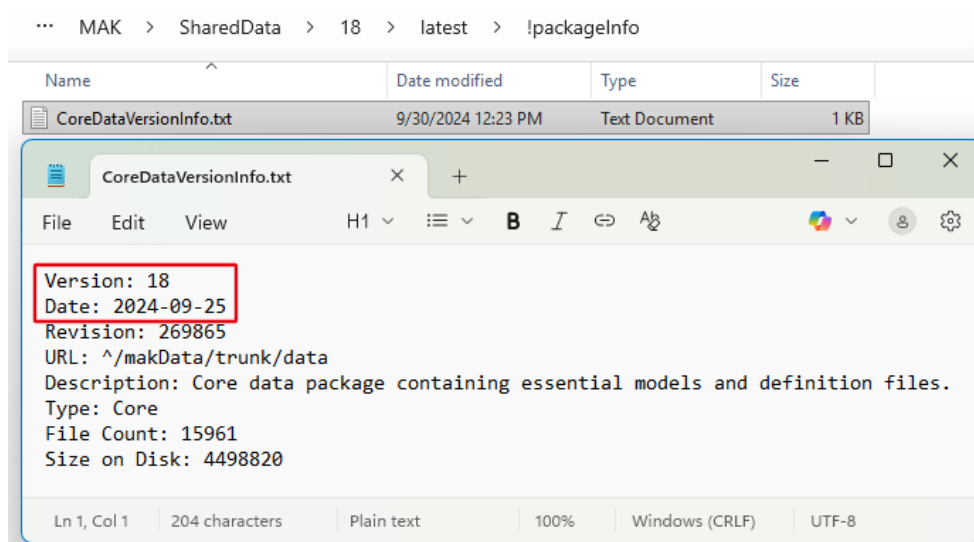
Platform:      Microsoft Windows
Compiler:     Microsoft Visual C++ version 15.0 64-bit
Version:      VR-Vantage 3.1.1
Built With:   VR-Link 5.9.1, Qt 5.15.2,
              makOsg 3.6.4_rev267710,
              makOsgEarth 3.5.0_rev267713,
              NVIDIA GameWorks GFSDK 3.1
Build Date:   Sep 24 2024
SVN Rev:      269750
SVN Branch:   ^/vrvantage/branches/vrv3-1-branch
Core Data:    18-2024.09.25 (SVN revision 269865)
GPU Vendor:   NVIDIA Corporation
GPU Renderer: NVIDIA GeForce RTX 2070 Super/PCIe/SSE2
GPU Version:  4.6.0 NVIDIA 566.41
GPU Ram:      8192 (MB)
CPU Cores:    20
CPU Ram:      32519 (MB)

```

i In older data releases, the compatibility version and date might not be adjacent.

► To find the version in an installed shared data directory:

1. Navigate to `./SharedData/##/stem/!packageInfo`, where `##` is the compatibility version and `stem` is the folder name, such as `latest` or `2024-03-14`.
2. Open the `CoreDataVersionInfo.txt` file and read the Version number, which is the compatibility version and the date (Figure 3).

Figure 3. CoreDataVersionInfo text file

Data Package Installer File Version

► To find the data compatibility version for an installer file, look for the compatibility version and date (Figure 4).

Figure 4. Installer file version information

`makData18-data-Core-20240925Core.MAK-targz`

2.2.2 Installing the makData Package

► To install the data:

1. Install the MAK ONE Software Manager for your operating system.
2. Run the MakOneSoftwareManager executable in the `.\bin64` folder.
On Windows, you can also open the Start menu and then choose **MAK Technologies > MAK ONE Software Manager**.
3. Click Select and Install Data Packages in the welcome page.
4. Specify the directory where you saved the data files. The default is your Downloads folder, but you can click the folder icon to navigate to another folder.
5. Select the data files that you want to install.

 MAK Technologies recommends that you install all of the data files if you have the space and are not absolutely sure which files you require.

You must install the Core data for MAK ONE applications to function. To have access to other terrains and to see anything other than notional models, install the other data packages provided by MAK. If you do not install any other data, it is assumed that you are providing your own models and terrains.

6. Optionally, choose the location where you want to install the data.
MAK recommends that you install the files in the default location. While MAK ONE products allow for diverse installations, the typical use is the standard installation. If you require a more complex installation, see "Customizing the MAK ONE Installation on Windows" on the next page.
7. If you have a previous installation of data for the same compatibility version, you are prompted to choose whether to back up the previously installed data, delete it, or overwrite it. See "2.2.4 Options When Installing a Data Package" on page 19.
8. Click Install. The MAK ONE Software Manager shows the progress of the data installation.
9. When the installation is complete, click Exit.

2.2.3 Where You Can Install MAK Data

The MAK Data Packages are used by multiple MAK ONE applications. The applications need to be able to find the data, wherever you install it. Each MAK ONE application looks for data in a default location or uses a collection of environment variables to find the data in the location where you installed it. You have several options for installing the data and telling the MAK ONE applications where to look for it.

MAK Data Installation Directory

The shared data files are stored in a directory file hierarchy. This structure allows for multiple versions of data to be installed for use with different versions of each product.

The directory looks like *shared-data-root/data-compatibility-version/stem/data-folders*, where:

- *shared-data-root* is the location of the shared data directory. The default is *C:/MAK/SharedData* on Windows and *~/MAK/SharedData* on Linux.
- *data-compatibility-version* is a number, such as 18 or 19.
- *stem* is the directory holding the data files, for example, *latest* for the most recent installation of that compatibility version or the date of a previous installation, such as *2024-03-14*.
- *data-folders* hold the various files that make up the MAK data files (models, audio files, fonts, and so on).

Customizing the MAK ONE Installation on Windows

The sections below apply only to Windows users who want to install MAK Data Packages in a very specific way. For example, you can install the data on a shared drive and configure any machines with MAK ONE applications to look there for the data. You can also have different versions of data and easily switch between them as needed.

If you do not need to save the data in a location other than the default, you can disregard the following instructions.

Installing all MAK ONE Products and Data in a Different Root

The default root directory for installing MAK ONE products is *C:/MAK*. You can use an environment variable, *MAK_INSTALL_DIR*, to specify a different location where all MAK ONE products and data should be installed by default. See "Default Windows Installation Directory" on page 11.

Installing Only Shared Data in a Different Location

The default root directory for the MAK Data Package is *\$MAK_INSTALL_DIR/SharedData*, for example, *C:/MAK/SharedData*.

You can choose to install the MAK Data Package in a different location, such as a network share, but still install MAK ONE applications in the default *C:/MAK* directory or the directory specified by *MAK_INSTALL_DIR*. In that case, you would set the environment variable *MAK_SHARED_DATA_ROOT* to that shared location on any machine that will reference the data. For example, if you define it as *MAK_SHARED_DATA_ROOT = G:\DataForMAK*, then the data installs in that directory and MAK ONE products look there for the shared data packages. The application looks in the folder for the appropriate data compatibility version.

Using Data Other than Latest

By default, each MAK ONE application uses the data in the *latest* directory for the appropriate data compatibility version, for example, *.shared-data-root/19/latest*. You can use the *MAK_SHARED_DATA_STEM* environment variable to specify another directory, such as a previous date or a special build. For example, you can set *MAK_SHARED_DATA_STEM = DataForTheBigTradeShow*.

i The MAK_SHARED_DATA_STEM only affects where MAK ONE applications look for the data, not where it is installed. This variable allows you to quickly switch between different versions of data with the same compatibility version without changing how the application or data was installed.

When you install a MAK Data Package, the MAK ONE Software Manager always installs the files in the *./latest* directory for the appropriate compatibility version because that is where MAK ONE applications look by default.

How MAK ONE Products Look for Data

If MAK_SHARED_DATA_ROOT is not specified but MAK_INSTALL_DIR is, then \$MAK_INSTALL_DIR\SharedData\ is used. If neither MAK_SHARED_DATA_ROOT nor MAK_INSTALL_DIR is specified, then the default location is used (*C:/MAK/SharedData* on Windows and *~/MAK/SharedData* on Linux).

In the *shared-data-root* directory, the file hierarchy shows the data compatibility versions that you have installed. In the *stem* directory, there is a named string. MAK ONE applications look in the *latest* folder for the appropriate data compatibility version.

When the MAK ONE application finds the root folder and the correct data compatibility version directory, it then selects the latest directory or the one specified by the MAK_SHARED_DATA_STEM environment variable.

i VR-Vantage, VR-Forces, and VR-Engage also allow you to specify the shared data root directory using the `--sharedDataRoot` command line option. See the command-line options in the appropriate user guide for details.

2.2.4 Options When Installing a Data Package

When installing a data package using the MAK ONE Software Manager, if you have no preexisting installations of that compatibility version, it simply installs the data files in the *./SharedData/##/latest* folder (where *##* is the compatibility version).

If there is already a previous release of the same compatibility version installed, however, you are prompted to choose whether to back up, delete, or overwrite the data from the previous release.

- **Backup.** If you install a newer release and choose to create a backup of the previous release, the files in the *latest* directory are moved to a new directory named for the data version's date in the same compatibility folder and the new files are then installed in the latest folder. For example, the old files move to *./SharedData/18/2024-03-14* and the new files are installed in *./SharedData/18/latest*.

Creating a backup is the recommended option in most circumstances. It allows all MAK ONE applications to use the newest data, while also giving you the option to revert to a previous release using command-line options or setting a Windows environment variable. See "Using Data Other than Latest" on the previous page.

- **Delete.** The installer deletes the old data from the *latest* directory and then installs the new data.

- Overwrite. The installer overwrites the previous data files in the *latest* directory with the newer ones you chose to install. It also adds files that are new and ignores files that were previously installed if the package you are installing does not include that file.

2.2.5 Troubleshooting the MAK Data Package

If you do not install the package and you open a MAK ONE application, you will see error messages.

- A message displays in the Logs dialog box:
"Data package not found in specified data directory: '*directory path*'. Please make sure the data package is installed."
The *directory path* is the either the default location or the one that you specified.
- You may also see a message dialog that reads:
"A data package has not been installed. Please install a compatible data package of version *##* to run the application. See documentation for data installation instructions."
is the data compatibility version that works with the application version you are trying to run.

See "2.2.2 Installing the makData Package" on page 17 for instructions on installing the data.

If you encounter other errors, please do not hesitate to contact support at <https://www.mak.com/mak-one/support/portal> and allow us to help you.



3. Setting Up the License Manager

MAK ONE products use the FLEXlm license manager. Before you can use a MAK ONE product, you must obtain a valid license file and configure the license server and client machines. Contact the MAK sales department for information about special licensing agreements (info@mak.com).

3.1. The License Management Architecture	22
3.2. Installing and Configuring the License Manager	23
3.3. Install the MAK License Manager Software	23
3.3.1 Installing the License Manager on Windows	24
3.3.2 Installing the License Manager on a Linux System	24
3.3.3 Installing Dongle Drivers on Linux	25
3.4. Request a License File	25
3.4.1 Identifying the Host ID and License Server Name in Windows	26
3.4.2 Identifying the Host ID and License Server Name on Linux	26
3.5. Put the License File in the License Manager Directory	27
3.6. Specify the License Server or Node-Locked License	27
3.6.1 Setting the MAKLMGRD_LICENSE_FILE Environment Variable	28
3.7. Adding Additional License Files	30
3.8. Specifying a Port for the License Server and Daemon	30
3.9. Run the License Server	31
3.9.1 Shutting Down the License Server	31
3.10. Running FLEXlm as a Service on Windows	32
3.11. Clear the License Cache	32
3.12. Transferring Licenses	34
3.13. Moving a Dongle to a Different Computer	34
3.14. Managing Licenses for the MAK RTI	34
3.15. Troubleshooting the License Manager	34
3.15.1 License Checkout Fails	34
3.15.2 Unable to Get a License	35
3.15.3 Preventing Multiple License Manager Processes	36

3.15.4 License Manager Cannot Find MAK License Management Executable	36
3.15.5 The License Manager Reports an Unsupported Product	37
3.15.6 Troubleshooting Dongle Installations	37
3.15.7 Submitting a Licensing Support Ticket	37

3.1. The License Management Architecture

FLEXlm uses a client-server architecture. The FLEXlm server daemon, *lmgrd*, runs on one computer, known as the license server. This machine services every machine (including possibly itself) on which you run a MAK ONE product. The machines on which MAK ONE products are running are called clients. On each client, you must specify the server to use.

The license server executes vendor daemons (for MAK, *maklmgrd*) and uses one or more license files, provided by individual vendors. The license file identifies the products for which you have licenses.

Licenses "float", which allows you to install product software on as many computers as you want. At any given time, however, you can run only as many instances of a product as you have licensed.

MAK supports two types of floating license files: server-based and dongle-based. A server-based license is keyed to the Host ID (ethernet address or MAC address) of the license server computer. A dongle-based license is keyed to the ID of a USB dongle.

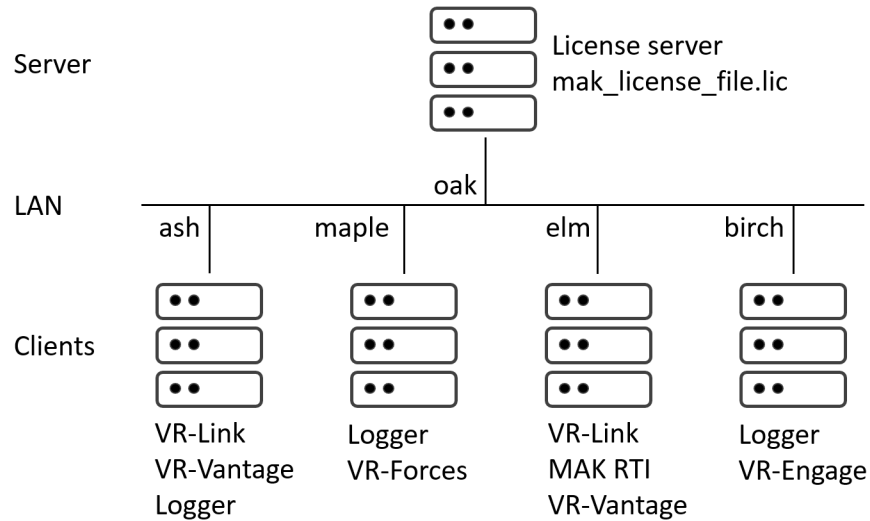
i Under some circumstances, MAK provides node-locked licenses, which do not require installation of a license server. These licenses are used primarily for demonstration purposes. Node-locked licenses also require the Host ID.

While you can transfer dongle licenses from one machine to another, you cannot use two dongle licenses simultaneously on one machine.

You cannot use a server-based license on any computer except the one for which it was created. If you need to change your license server to a different computer, you must transfer the license. You can use a dongle-based license on any computer on which the dongle is installed. This makes it easy to switch license servers (you must install additional drivers on the license server, so it is not an entirely seamless process).

In either case, if you change the license server, you must reconfigure all client computers to point to the new server. Therefore, changing servers may not be a trivial process and you should think carefully about which computer to use as a server before you configure your system.

Figure 5 illustrates the client-server architecture for FLEXlm and MAK ONE products.

Figure 5. License management example architecture

3.2. Installing and Configuring the License Manager

You can manage your license installation with the MAK License Manager utility. The overall procedure for installing and configuring license management is:

1. Install the MAK License Manager software. If you are using a dongle, install dongle drivers. For details, see "3.3. Install the MAK License Manager Software" below.
2. Request a license file. For details, see "3.4. Request a License File" on page 25.
3. Put the license file in the *MAKLicenseManager* directory on the license server. For details, see "3.5. Put the License File in the License Manager Directory" on page 27.
4. Run the MAK License Manager. For details, see "3.9. Run the License Server" on page 31.
5. Specify the license server on all client machines. For details, see "3.6. Specify the License Server or Node-Locked License" on page 27. If you are using a dongle, you must set the `MAKLMGRD_LICENSE_FILE` environment variable. For details, see "3.6.1 Setting the `MAKLMGRD_LICENSE_FILE` Environment Variable" on page 28.

If you have MAK ONE products installed and you purchase additional licenses or products, you must acquire a license file for the new products or licenses. For this procedure, see "3.7. Adding Additional License Files" on page 30.

3.3. Install the MAK License Manager Software

The MAK License Manager files are not part of MAK ONE product installers. You can download them from the MAK ONE Product Downloads page (<https://www.mak.com/mak-one-downloads>).

If you are upgrading from a version of MAK ONE 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.

Some customers are unable to connect to a central license server or require the ability to quickly move licenses from one computer to another without going through the standard license transfer process. These customers may purchase licenses that are keyed to a dongle ID instead of a computer's Host ID. To use a dongle license, you install dongle drivers and a dongle on the license server. All other aspects of license management are the same. You still must run the license server and you must configure all clients to point to the license server.

3.3.1 Installing the License Manager on Windows

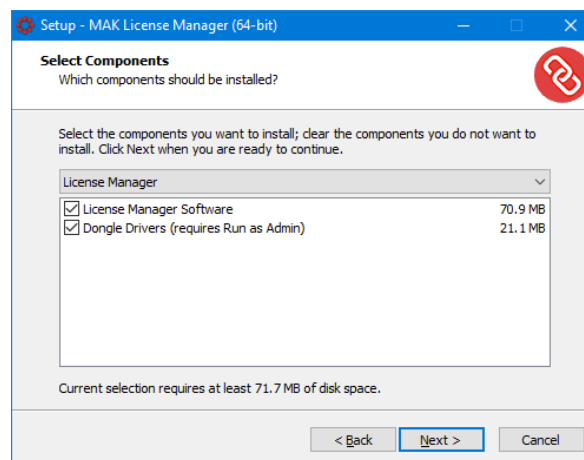
The License Manager installer for Windows is a typical installation wizard.

► **To install the License Manager on Windows:**

1. If you are installing a dongle on a computer that has previously used a license keyed to the license server's ethernet address, clear the cache, as described in "3.11. Clear the License Cache" on page 32
2. Run the installer.
3. Follow the instructions of the installation program. On the Select Components page, the default is to install the License Manager, but not dongle drivers. If you plan to use a dongle, select License Manager and Dongle Drivers (Figure 6). Otherwise, accept the default.

By default, the installer installs files to *C:\MAK\MAKLicenseManager*.

Figure 6. Select Components page



4. If you are using a dongle license, insert the dongle into a USB port.

3.3.2 Installing the License Manager on a Linux System

For Linux, the License Manager is provided as a compressed tar file.

► **To install the License Manager on Linux:**

1. Create a directory called *MAKLicenseManager* in which to install the License Manager.
2. Copy the tar file to the *MAKLicenseManager* directory.

3. Uncompress and untar the tar file:

```
tar -xvzf licenseManager#.#-linux64-rhe#.tar.gz
```

3.3.3 Installing Dongle Drivers on Linux

► To install a dongle driver on Linux:

1. Install the License Manager software.
2. Change directory to the directory in which you installed the License Manager.
3. Change directory to `dongle_drivers`:

```
cd dongle_drivers
```

4. Extract *aksusbd-redhat-suse-10.11.tar.gz*:

```
tar -xzf aksusbd-redhat-suse-10.11.tar.gz
```

This creates a directory called *Sentinel_LDK_RedHat_and_SuSE_RPM_Run-time_Installer*.

5. Change directory to *Sentinel_LDK_RedHat_and_SuSE_RPM_Run-time_Installer*.

6. Install *aksusbd-10.11-1.x86_64.rpm*:

```
sudo rpm -i aksusbd-10.11-1.x86_64.rpm
```

7. After completing the Sentinel installation, back out of the directory and return to the main License Manager directory:

```
cd ..
```

8. In the License Manager directory, set the `FLEXID_LIBRARY_PATH` environment variable:

```
export FLEXID_LIBRARY_PATH=$FLEXID_LIBRARY_PATH:$pwd
```

9. Insert the license dongle into a USB port. (If you have already inserted the dongle, remove it and reinsert it.)

Uninstalling the Dongle Drivers on Linux

To uninstall the dongle drivers on Linux, run:

```
sudo rpm -e aksusbd
```

3.4. Request a License File

When you request a license file, you need to know the:

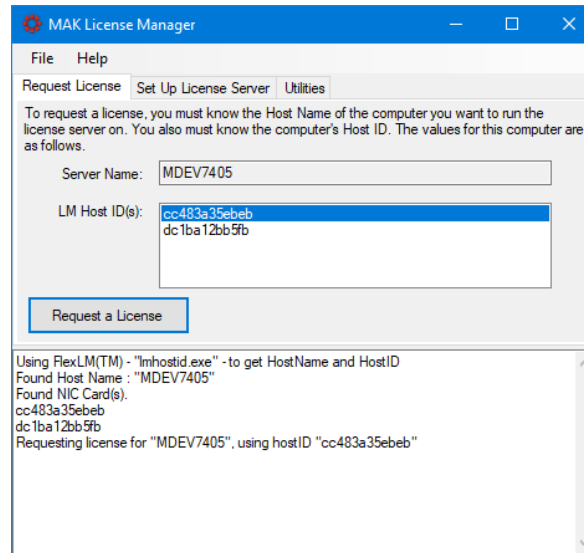
- Host ID of the license server (or the dongle ID)
- Name of the license server
- MAK invoice number of your purchase
- Basic contact information for you and your company
- Platforms for which you have purchased MAK ONE products
- Number of licenses for each platform and product

3.4.1 Identifying the Host ID and License Server Name in Windows

► To find out the host ID and license server name in Windows:

1. On the Start menu, choose **MAK Technologies > MAK License Manager**. The MAK License Manager utility opens (Figure 7).

Figure 7. License Manager



2. Select the Request License tab. It displays the server name and the IDs for your network cards.
3. If you have more than one network card, select the one that you want to use as Host ID.
4. Click Request a License. The License Manager opens the [Get Licenses](https://www.mak.com/mak-one/support/portal) page at [mak.com](https://www.mak.com) and inserts the server name and host ID.
5. Complete the license request page and submit it. MAK will email you a license file.

i If you do not want to request a license at this time, or you do not have internet access from the server, write down the server name and host ID. Visit the Support Portal at <https://www.mak.com/mak-one/support/portal> or email keys@mak.com and complete the license key request form. MAK will email you a license file.

3.4.2 Identifying the Host ID and License Server Name on Linux

► To find out your host ID and server name:

1. On the license server, in a command window, change to the *MAKLicenseManager* directory.
2. Execute *lmhostid*. This program reports a unique number that MAK uses to generate your license activation codes. Write down the number.

 The host ID is keyed to the MAC address of your ethernet card, so if you change your network card, you must request a new license file.

3. To find out the name of the server machine, at a command prompt, type **hostname**.
4. Visit the Support Portal at <https://www.mak.com/mak-one/support/portal> or email keys@mak.com and complete the license key request form. MAK will email you a license file.

3.5. Put the License File in the License Manager Directory

When you receive your license file, put it in the *MAKLicenseManager* directory on the license server. The file should have the extension *.lic*. If it does not, please contact keys@mak.com to clarify why it did not follow this convention.



- MAK recommends that you not rename the license file. If you do, the renamed file must end in *.lic* and it is your responsibility to make sure that you do not overwrite another license file.
- Do not combine a new license file with an old one.
- If you already have a license file in the *MAKLicenseManager* directory, do not overwrite the file. For details, see the instructions in "3.7. Adding Additional License Files" on page 30.

3.6. Specify the License Server or Node-Locked License

You can specify the license server or location of a node-locked license interactively or by setting an environment variable.

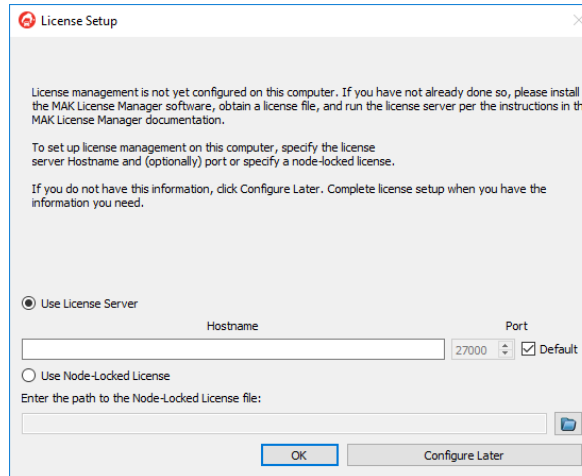
If you are using a dongle license, you must set the `MAKLMGRD_LICENSE_FILE` environment variable. Skip the following procedure and instead follow the appropriate procedure in "3.6.1 Setting the `MAKLMGRD_LICENSE_FILE` Environment Variable" on the next page.



- If you are running MAK ONE products on the license server machine, it is also a client, so you must specify the license server on that machine, too.
- If you change the license server, the saved configuration will no longer be valid and the License Setup dialog box will open the next time you start a MAK ONE product.
- If you have changed the license server, you may want to clear the license cache. For details, see "3.11. Clear the License Cache" on page 32.

➤ **To specify the license server or license interactively:**

1. On a computer on which you have not configured license management, start a MAK ONE product. The License Setup dialog box opens (Figure 8).

Figure 8. License Setup dialog box

i The License Setup dialog box varies somewhat depending on when an application was released. Older versions do not have an option for specifying a node-locked license. Some versions may have layout differences. To specify a node-locked license if your License Setup dialog box does not have this option, use the MAKLMGRD_LICENSE_FILE environment variable as described in "3.6.1 Setting the MAKLMGRD_LICENSE_FILE Environment Variable" below.

2. If you are running a license server:
 - a. Type the host name in the Hostname box.
 - b. Optionally, specify a port. (For information about why you might want to specify a port, see "3.8. Specifying a Port for the License Server and Daemon" on page 30.)

! If you do not know the hostname of the license server, click Configure Later. When you have the hostname, repeat this procedure. You will not be able to run any MAK ONE products until you set up license management.

3. If you have a node-locked license, enter the location and filename.
4. Click OK. The application will start.

3.6.1 Setting the MAKLMGRD_LICENSE_FILE Environment Variable

As an alternative to using the license setup procedure described in the previous section, you can configure the license server or node-locked license in an environment variable. The MAKLMGRD_LICENSE_FILE environment variable identifies the server machine or license file. If you set this environment variable, it overrides the settings stored by the license setup procedure.

For license servers, the syntax for the environment variable is: `@server_name` (or optionally, `port@server_name`). For example, if the server machine is oak, set the

environment variable to `@oak`. For information about specifying a port, see "3.8. Specifying a Port for the License Server and Daemon" on the next page. For node-locked licenses, specify the full path of the license file.

The following sections explain how to set environment variables on the different platforms that MAK ONE products run on.

Windows

► To set `MAKLMGRD_LICENSE_FILE` in Windows:

1. On the Start menu, click the Settings button (⚙️). The Settings window opens.
2. In the Search box, enter `environment`. A list of choices displays.
3. Select `Edit the System Environment Variables`. The System Properties dialog box opens to the Advanced tab.
4. Click the Environment Variables button. The Environment Variables dialog box opens.
5. Below the System Variables list, click `New`. The New System Variable dialog box opens.
6. In the Variable Name field, enter `MAKLMGRD_LICENSE_FILE`.
7. Specify one or more license servers:
 - To specify a license server, in the Variable Value field, enter `@server_name`, where `server_name` is the name of the license server.
 - To specify multiple license servers, use a semicolon-delimited string, for example:
`@server1;@server2;@server3`
 - To specify a node-locked license, enter the full path of the license, for example:
`C:\MAK\MAKLicenseManager\DEMO-DISK-MAY-2021_27-apr-2021.lic`
 - To specify multiple node-locked license files, use a semicolon-delimited string.
8. Click `OK` to save out of each dialog box and set the variable.

Linux

On Linux, you set environment variables in your `.cshrc` (or equivalent startup file).

► To specify a license server, set the variable similarly to:

```
setenv MAKLMGRD_LICENSE_FILE @oak
```

► To specify multiple license servers, use a colon-delimited string, for example:

```
@server1:@server2:@server3
```

► To specify a node-locked license, set the variable similar to:

```
setenv MAKLMGRD_LICENSE_FILE /opt/MAK/LicenseManager/DEMO-DISK-MAY-2021_27-apr-2021.lic
```

► To specify multiple node-locked license files, use a colon-delimited string.

If you are using the `sh` or `bash` shells, you set environment variables in your `.profile` file (or `.bashrc`). Set the variable similarly to:

```
MAKLMGRD_LICENSE_FILE=@oak
export MAKLMGRD_LICENSE_FILE
```

Do not put spaces around the equal (=) sign.

You are ready to run the license server and use your new licenses or MAK ONE products. For details, see "3.9. Run the License Server" on the facing page.

3.7. Adding Additional License Files

If you buy additional MAK ONE products, or additional licenses for products you already have, you must acquire an additional license file.

- To request an additional license file, follow the license request procedure in "3.4. Request a License File" on page 25.
- **To add a new license file to your license server:**
 1. Put the new file in the *MAKLicenseManager* directory on the license server, with the other license files. If you already have a license file of the same name, please contact keys@mak.com to find out whether you should overwrite the old file or rename the new file.
 2. On Windows, if you are running FLEXlm as a service, make sure that the Path To The License File value specifies the *MAKLicenseManager* directory and not a specific file. (For details, see "3.10. Running FLEXlm as a Service on Windows" on page 32.)
 3. Stop the license server daemon (as explained in "3.9.1 Shutting Down the License Server" on the facing page) and restart it.

You can now use the new products or additional product licenses.

3.8. Specifying a Port for the License Server and Daemon

On some systems, specifying a port for the license server, the *maklmgrd* daemon, or both, can resolve connection problems. If you want to run MAK software through a firewall, you must specify both ports. When used through a firewall, users typically open specific ports for simulation traffic and license verification messages. By specifying both ports, FLEXlm knows which ports have been opened up for use.

You specify a port for the license server by editing the license file and specifying the port during license setup or adding the license server port to the `MAKLMGRD_LICENSE_FILE` environment variable. To specify a port for the *maklmgrd* daemon, edit the license file as instructed below. Do not make any other changes to the file.

- **To specify a port for the license server:**
 1. Open the license file in a text editor.
 2. Add the port number to the SERVER line in the format `SERVER host_name host_ID port`. For example:

```
SERVER oak 12345ABCD957 9237
```

3. Add the port number to the MAKLMGRD_LICENSE_FILE environment variable on all computers that use this license server in the format: *port@host_name*. For example:

9237@oak

► **To specify a port for the maklmgrd daemon:**

1. Open the license file in a text editor.
2. Add the port number to the VENDOR line in the format `VENDOR maklmgrd ./maklmgrd PORT=port`. For example:

VENDOR maklmgrd ./maklmgrd PORT=2568

3.9. Run the License Server

The License Manager daemon must be running on the server machine before you can run your MAK ONE products.

When you restart the server, the license server turns off. You must start the license server again after booting up the server.



- On Windows, we recommend that you run the license server as a service. The procedure for setting this up is in "3.10. Running FLEXlm as a Service on Windows" on the next page.
- If you have a node-locked license, you do not have to run a license server. You simply specify the location of the license file. For details, see "3.6. Specify the License Server or Node-Locked License" on page 27.

- To start the license server, in a console window, change to the *MAKLicenseManager* directory and then run *runLm*. (On Windows, you can double-click *runLM.bat* in the Windows Explorer.)



Do not execute more than one instance of *runLm* at a time. If you are not sure whether or not the license server is running, execute *lmstat*.

- To obtain the current status of the server, run *lmstat*.

3.9.1 Shutting Down the License Server

- To stop the license server, in a console window, change to the *MAKLicenseManager* directory and then run *lmdown*.



Do not shut down the license server by killing its process. Always use *lmdown*. If you kill the license server directly, licenses might not be released properly. If licenses are not released, reboot the computer.

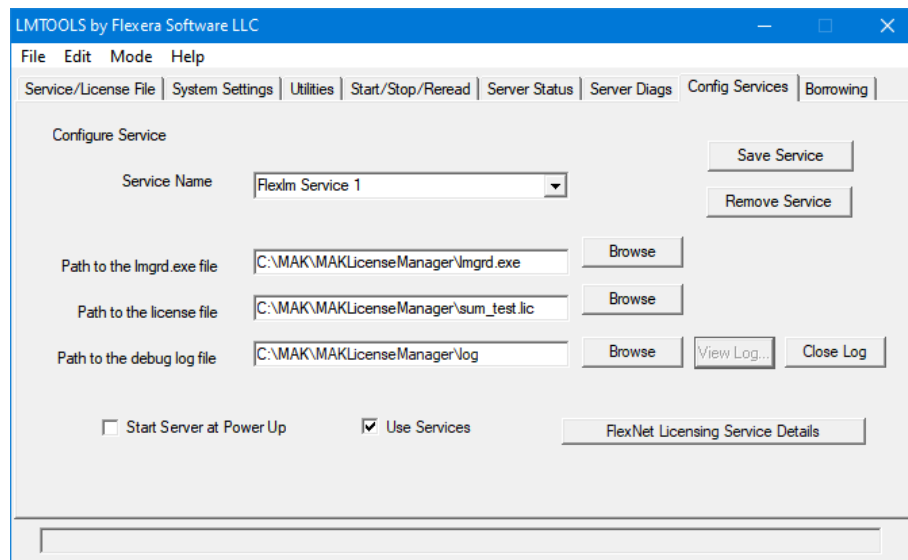
3.10. Running FLEXlm as a Service on Windows

On Windows, you can configure the license server to run as a service. When an application runs as a service, you can configure it to start automatically when you start the computer. By running the license manager as a service, you do not have to remember to start it before you start a MAK ONE product. It will always be there when you need it.

► **To configure FLEXlm as a service:**

1. Install the license management software and obtain a license as described earlier in this chapter.
2. On the Start menu, choose **MAK Technologies > LMTOOLS**. The LMTOOLS utility opens.
3. Select the Config Services tab.
4. The fields are automatically populated with the default locations for the License Manager daemon (*lmgrd.exe*) and the path for license files (Figure 9).

Figure 9. Config Services tab



5. If you did not install to the default location, change the path for *lmgrd.exe* to point to the *MAKLicenseManager* directory.
6. If you are not installing the license files in the *MAKLicenseManager* directory, change the Path to License Files value.
7. Enter a Service Name and then click Save Service.
8. Select the Start/Stop/Reread tab and then click Start Server.

3.11. Clear the License Cache

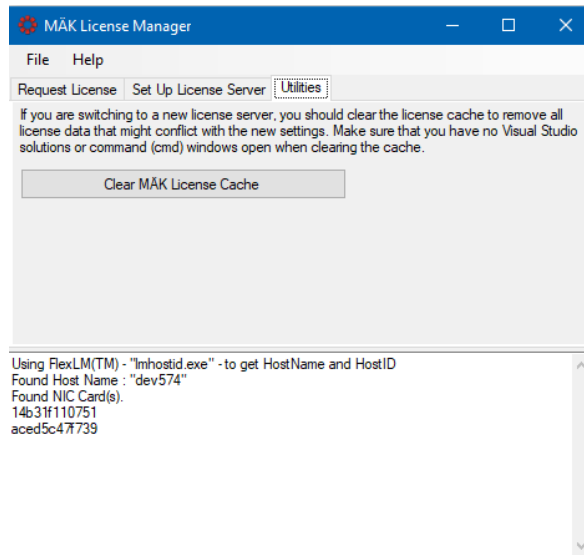
If you install a dongle on a computer that has previously functioned as a license server or client, you should clear the license cache to remove all license data that might conflict with the new settings. To clear the license cache, you can:

- Delete the cache file.
- Use the License Manager.
- Use the RTI Assistant.

► **To clear the license cache using the License Manager:**

1. On the Start menu, choose **MAK Technologies > MAK License Manager**. The License Manager utility opens (Figure 7 on page 26).
2. Select the Utilities tab (Figure 10).

Figure 10. Utilities tab



3. Click Clear MAK License Cache.

► **To delete the cache file, delete the appropriate files on your computer:**

- Windows – `C:\Users\user_name\AppData\Roaming\MAK\licensesn.txt`
- Linux – `.mak/licensesn.txt`

where *n* (in licenses*n*) is an increment applied to different cache files.

► **To clear the cache using the RTI Assistant:**

1. Right-click the RTI Assistant. A menu displays.
2. Choose **Preferences**. The RTI Preferences dialog box opens.
3. Select the Default License page.
4. Click Clear Now.

3.12. Transferring Licenses

► To change the computer that you are using as a license server:

1. Clear the license cache on the current server, as described in "3.11. Clear the License Cache" on page 32.
2. Install the License Manager on the new server.
3. Note the server name and host ID for the new server.
4. Send this information and a copy of the license files to keys@mak.com.

3.13. Moving a Dongle to a Different Computer

If you want to move the dongle to a different computer, you must install the software and set up the computer as described in the previous sections.

3.14. Managing Licenses for the MAK RTI

The MAK RTI `rtiexec` can check out licenses for federates. When this feature is enabled, the federates do not need to have access to a license server or otherwise configure license management. This can be quite helpful when a federation has federates located on multiple LANs whose security configuration makes it difficult for a federate to connect to a license server.

To enable `rtiexec` license checkout, in *rid.mtl*, set the **RTI_rtiExecPerformsLicensing** parameter to 1. The RID file for the `rtiexec` and any federates using this feature must all have the **RTI_rtiExecPerformsLicensing** parameter enabled.

When `rtiexec` license checkout is enabled, the `rtiexec` must have access to a license server. You must have an RTI license for each federate that needs to join. If a federate tries to join the federation and there are no licenses available, the join fails.

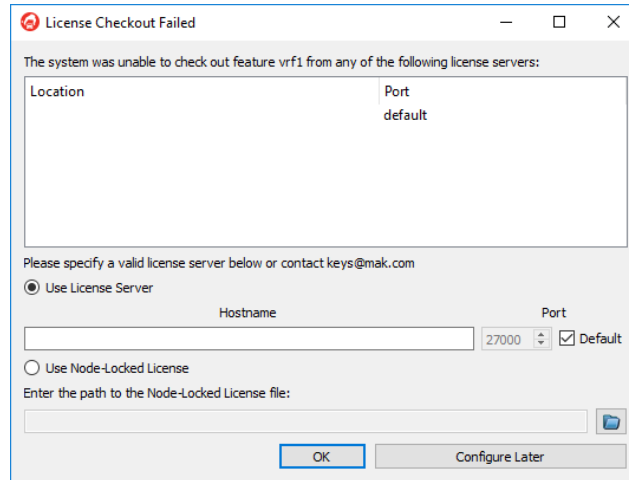
The `rtiexec` license checkout feature does not support dongle licenses.

3.15. Troubleshooting the License Manager

This section describes some common problems that FLEXlm users face.

3.15.1 License Checkout Fails

If a MAK ONE product cannot check out a license, it displays the License Checkout Failed dialog box (Figure 11).

Figure 11. License Checkout Failed

This dialog box lists the configurations that it has checked. There are several reasons why license checkout could fail, including:

- The server is not running.
- You do not have a license for this product or this version of the product.
- Connectivity problems on the network.
- The license server has changed since the configuration was created.

If you know that you can solve the problem by specifying a different license server or a node-locked license, use this dialog box to do so. Otherwise, check the other troubleshooting possibilities described in this section.

If you want to remove the previously saved license server configurations, you can clear the license cache as described in "3.11. Clear the License Cache" on page 32, or right-click a license server you want to remove and choose **Delete** from the popup menu.

3.15.2 Unable to Get a License

If you are unable to get a license for a MAK ONE product and the FLEXlm log file (*LOG*) indicates that the port is in use, it is possible that you have multiple *lmgrd* or *maklmgrd* processes running. It is also possible that an application that was using a license is thought to have terminated but is actually still alive.

► **To verify and resolve these possibilities:**

1. See if more than one *lmgrd* or *maklmgrd* process is running.
 - On Windows, check the Task Manager. (To open the Task Manager, press **Ctrl+Alt+Delete** and then click Task Manager.)
 - On Linux, enter:


```
ps -aux | grep lmgrd
ps -aux | grep maklmgrd
```

If more than one instance of either process is running, write down the process IDs (PID).

 Some Linux systems use `ps -aux`, others `ps -ef` to check processes. Use the command appropriate for your operating system.

2. If there are old processes present that may be using a license, kill them.
 - On Windows, select a process in the Task Manager, Processes tab, and then click End Process.
 - On Linux, kill a process with the kill command, for example:

```
kill -9 1385 878
```

where 1385 and 878 are process IDs.

It is important that you kill all the processes to ensure a clean restart for the license server.

3. On Windows, see if more than one `lmgrd` or `maklmgrd` process is running. Check the Task Manager.
4. If in step 2 you killed the license server, start it with the `runLm` command.

3.15.3 Preventing Multiple License Manager Processes

We recommend that you keep the license server running and that you not start and stop it as you run applications. If you prefer to stop the license server when you are not using it, always use `lmdown` to stop it.

Whenever you start the license manager, first run `lmstat` to be sure that there is not already a license server process running. Following this practice ensures that you do not start multiple license servers.

3.15.4 License Manager Cannot Find MAK License Management Executable

If your license manager gives you an error message indicating that it cannot find the license management executable, try inserting the pathname in the license file:

1. Open the license file in a text editor.
2. Edit the license file to specify the location of the *maklmgrd* executable on the server machine. The file supplied by MAK represents this location with a dot:

```
VENDOR maklmgrd .
```

Replace the dot with your absolute path to *maklmgrd*, for example:

```
VENDOR maklmgrd "C:\MAK\MAKLicenseManager\maklmgrd"
```

 On Windows, you must enclose the path in quotes. The drive letter must be uppercase.

3.15.5 The License Manager Reports an Unsupported Product

If you receive an error message indicating an unsupported product, you are trying to use a MAK ONE product for which you do not have a license or you are trying to run a version of a product that is more recent than the product maintenance expiration date in the license file. Please contact info@mak.com to purchase a license or update maintenance.

If you try to run your application with an RTI other than the MAK RTI and you see the unsupported product message, it is possible that your application is finding the DLLs for an unlicensed version of the MAK RTI before it finds the other RTI.

► **To fix this problem:**

- Make sure that the other RTI path precedes the MAK RTI path in your path environment variable.
- Check the directory in which the application is located to be sure that there are no DLLs from the MAK RTI in that directory.

3.15.6 Troubleshooting Dongle Installations

If your MAK ONE product does not run and reports it cannot find a license or some other license-related error:

- Verify that you have only one dongle plugged into the machine.
- Verify that the dongle is fully plugged in.
- Verify that the system can see the dongle:
 1. In a console window, change directory to the *MAKLicenseManager* directory.
 2. Run the command:

```
lmhostid.exe -flexid
```

If the dongle driver is not installed or no dongle is plugged in, the output is:

```
./lmhostid -flexid
lmhostid - Copyright (c) 1989-2017 Flexera Software LLC.
All Rights Reserved.
The FlexNet host ID of this machine is ""
```

On Linux, if LSB (Linux Standard Base) libraries are not installed, the output is:

```
./lmhostid -flexid
bash: ./lmhostid: /lib64/ld-lsb-x86-64.so.3: bad ELF
interpreter: No such file or directory
```

For more on Linux dongle licenses, see "3.3.3 Installing Dongle Drivers on Linux" on page 25.

3.15.7 Submitting a Licensing Support Ticket

If you continue to have problems and require support, please include the value for the `MAKLMGRD_LICENSE_FILE` environment variable as well as your log.

- The value for the MAKLMGRD_LICENSE_FILE environment variable was set according to the instructions in "3.6.1 Setting the MAKLMGRD_LICENSE_FILE Environment Variable" on page 28.
- The path for log files is defined in the Config Services tab of the LMTOOLS dialog box. See "3.10. Running FLEXlm as a Service on Windows" on page 32.

To submit a support ticket, go to the Support Portal at <https://www.mak.com/mak-one/support/portal> or send an email to support@mak.com.



4. Installing an RTI

To use a MAK ONE product with HLA, you must install an RTI.

4.1. Installing an RTI	40
4.2. Installing the MAK RTI	40
4.2.1 Configuring Your System to Use the MAK RTI	40
4.2.2 Running Applications with the MAK RTI	41

4.1. Installing an RTI

An RTI is a software library (and perhaps supporting executables) that implements an HLA Interface Specification. In HLA, applications exchange FOM data through RTI calls, which means that all HLA applications need to use an RTI. MAK Technologies has the MAK RTI, but MAK ONE products do not require that you use the MAK RTI.

i Because of differences in the low-level network mechanisms used by different RTI implementations (which include, but are not limited to, packet layout), applications that want to interoperate in the same federation execution must use the same RTI implementation.

Because RTIs are usually provided as dynamic libraries that implement a fixed API, a federation can often switch from one RTI implementation to another between runs (without even recompiling the applications), but during each run, all participants must agree on which RTI to use, much as they must also agree on which FOM to use.

For the most recent information about the RTI versions supported by MAK ONE products, please visit the Product Specifications & Dependencies page (<https://www.mak.com/mak-one-specs>).

The following instructions explain how to install the MAK RTI. If you are using an RTI provided by another vendor, please refer to that RTI's documentation for installation and setup instructions.

4.2. Installing the MAK RTI

To install the MAK RTI, follow the instructions in Chapter 2 of *MAK RTI Users Guide*. To install another RTI, see the vendor's documentation.

4.2.1 Configuring Your System to Use the MAK RTI

The RTI dynamic libraries must be located somewhere on your dynamic library search path. The path is specified in the PATH environment variable. The path is indicated by an environment variable:

- Linux — LD_LIBRARY_PATH.
- Windows — PATH.
- The MAK RTI needs to know where to find these configuration files:
 - The federation configuration file (*.fed*, *.fdd*, or *.xml*) for your federation execution (required).
 - The RID file (*rid.mtl*) (optional).

Put the configuration files in the directory from which you are running, or set the environment variable RTI_CONFIG to the directory that contains them.

4.2.2 Running Applications with the MAK RTI

► **To run a MAK ONE product with the MAK RTI:**

1. Ensure that the license server is running.
2. Start the application. The RTI Assistant prompts you to choose an RTI configuration.
3. Choose a configuration. If necessary start the rtiexec.
4. Click Connect. The application should run.

In many cases, you do not need to run the rtiexec to use the MAK RTI, however you can run the rtiexec if you want to. (It is required to use certain features of the MAK RTI.) For more information, please see your RTI documentation.



Index

A

- additional license file, 30
- API, See SDK toolkit
- application, MAK ONE
 - build information, 8
 - downloading, 8

B

- build information, 8

C

- cache, license
 - clear, 32
- callstack.log file, 11
- configuration
 - MAK data, 17
 - MAK RTI file, 40
- crash, application, 13

D

- daemon, maklmgrd, 30
- data
 - compatibility, 15, 19
 - install, 8, 14, 17
 - advanced, 18
 - directory, 17
 - options, 19

- troubleshooting, 20
- version, 15

debugging

- callstack.log file, 11
- dmp file, 11
- file location, 13

dependencies, 6

developer documentation, 11

Developer's Guide, installing, 11

directory

- data install, 17
- Windows default install, 11

dmp file

- debugging, 11
- location, 13

documentation

- installation, Windows, 11

dongle

- license, 23
- Linux, 24-25
- troubleshooting, 25, 37
- Windows, 24

dump file, See dmp file

E

environment variable

- MAK_INSTALL_DIR, 11, 18
- MAK_LOG_DIR, 13
- MAK_SHARED_DATA_ROOT, 18
- MAK_SHARED_DATA_STEM, 18
- MAKLMGRD_LICENSE_FILE, 28, 30
- RTI_CONFIG, 40

executable
 installation location
 Windows, 11

F

FDD file, 40
FED file, 40
file
 FDD, 40
 FED, 40
 license, 27
 RID, 40
FLEXlm
 license file, 27
 license server name, 27
 multiple licenses, 30
 port, 30
floating license, 22
FOM, 40

H

host ID
 FLEXlm, 26
 getting, 26
host name, 27

I

installation, 6, 8
 data
 advanced, 18
 compatibility, 15
 directory, 17
 options, 19
 default directory, Windows, 11
 documentation, Windows, 11
 license manager, 23
 Linux, 11
 MAK data, 14, 17
 RTI, 40
 SensorFX, 13
 Windows, 10

L

license
 checkout failure, troubleshooting, 34
 clear cache, 32
 dongle, 23, 25

floating, 22
installation, 23
MAK, executable not found, 36
multiple manager process, preventing, 36
SensorFX, 13
support, 37
unable to acquire, troubleshooting, 35
unsupported product, troubleshooting, 37
license file, 27
 adding new, 30
 requesting, 25
license manager
 Linux, 24
 Windows, 24
license server
 name, 27
 port, 30
 running, 31
 status, 31
Linux
 license manager, 24
 license, dongle, 25
 product installation, 11
lmgrd, 21-22, 34
lmhostid, 26
lmstat program, 31
log file
 callstack, 11
 location, 13

M

MAK data
 compatibility, 15, 19
 install, 14, 17
 advanced, 18
 directory, 17
 options, 19
 troubleshooting, 20
 version, 15
MAK license manager, troubleshooting, 36
MAK RTI configuration, 40
MAK_INSTALL_DIR environment variable, 11, 18
MAK_SHARED_DATA_ROOT
 environment variable, 18
MAK_SHARED_DATA_ROOT environment variable,
 18
maklmgrd, 22
 daemon, 30
MAKLMGRD_LICENSE_FILE environment variable,
 28, 30

P

path

- default Windows install, 11, 18
- MAK data, 17-18
- MAK RTI, 40

PDB files

- Linux, 12
- Windows, 12

port

- license server, 30
- troubleshooting license, 35

product installation, 8

- build information, 8
- Linux, 11
- Windows, 10

R

request for license file, 25

RID file, 40

rid.mtl file, 40

RTI, 40

RTI_CONFIG environment variable, 40

running the license server, 31

S

SDK toolkit, 13

- documentation, 11

SensorFX

- installation, 13
- license, 13

server name, FLEXlm, 26

software, downloading, 8

status

- license server, 31

T

toolkit

- API, 13
- SDK, 13

troubleshooting

- data, 20
- dongle installation, 37
- license checkout failure, 34
- license manager process, multiple, 36
- license port, 35
- MAK data, 20

MAK license management not found, 36

product not supported, 37

unsupported product, 37

V

variable, environment, See environment variable

version

- data, 15, 19
- product, 8

W

Windows

- default install directory, 11
- license manager, 24
- product installation, 10

X

XML

- RTI configuration file, 40

