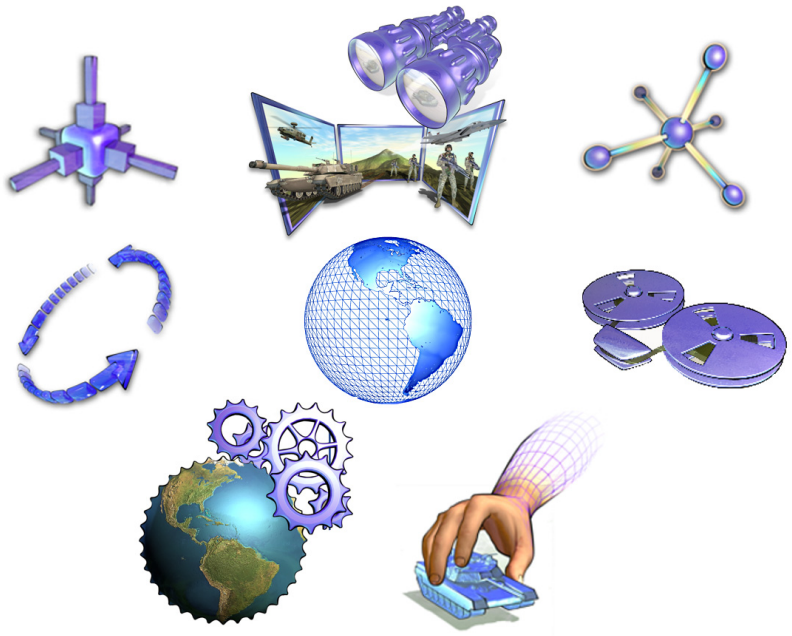

MÄK Products

Installation Guide

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Revision MAK-0-2-111019

Contents

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Installing MÄK Products

A full MÄK product installation includes three components: the application, the License Manager software, and for HLA operation, an RTI (or Runtime Infrastructure.)

1.1. Installing MÄK Products

This section explains how to install MÄK products. You must also install the License Manager files. (For details, please see Chapter 2, *Setting Up the License Manager*.) For HLA, you must install an RTI. (For details, please see Chapter 3, *Installing an RTI*.)

1.1.1. Installing MÄK Products on Windows

Before you install a product, please read the product's Release Notes to see if there are any special instructions for installation. Also note the following:

- VR-Forces and VR-Vantage each have two installers, an application installer and a data installer. You must install both installers. You must install the application installer first.
- The MÄK RTI installation wizard asks if 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 PATHs, 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.
- You must have administrator privileges to install MÄK products on Windows Vista.
- When you install large applications on Vista, 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 is displayed. This is due to how Vista scans setup programs before it executes them. If you experience this problem, turning off User Access Control can reduce or eliminate this delay.

Windows versions of MÄK products are provided as executable installer files on CD or DVD, or as downloaded files.

Some MÄK installation CDs or DVDs have a product installation screen that opens automatically when you insert the CD. To install an application from one of these CDs, just click the name of the product you want to install.

➤ To install a MÄK product, run the installer. Follow the instructions in the installation wizard. (For VR-Forces and VR-Vantage you must install the application and the data.)

1.1.2. Installing Products on a Linux System

Before you install a product, please read the product Release Notes to see if there are any special instructions for installation.

Linux versions of MÄK products are provided as compressed tar files on CD or DVD, or as downloaded files.

To install a products 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 productxx-os.tar.gz
   ```

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

1.2. Installing the MÄK RTI Java Bindings

The MÄK RTI provides a set of Java bindings for both the RTI1.3-NG API and the SISO DLC HLA 1516 API. The Java binding is a thin layer of C++ code that exposes the native C++ API of the RTI to Java applications.

To use the Java bindings, you must install the Java Development Kit (JDK) 1.2 or later and configure your system as described in the following sections.

1.2.1. Unix Installation

In addition to the normal RTI setup, you must add or edit the following environment variables:

- Add *makrtix.x/lib/hla.jar* to the CLASSPATH environment variable
- Linux or Solaris: Add *makrtix.x/lib* to the LD_LIBRARY_PATH variable
- IRIX: Add the *makrtix.x/lib* to the LD_LIBRARYN32_PATH variable
- HLA 1516 only: Install the MÄK RTI HLA 1516 Java Fedtime Library as described in "Installing the HLA 1516 Java Fedtime Library"

1.2.2. Windows Installation

In addition to the normal RTI setup, you must add or edit the following environment variables:

- Add the *makrtix.x\lib\hla.jar* to the CLASSPATH environment variable
- Add the *makrtix.x\lib* directory to the PATH environment variable
- HLA 1516 only: Install the MÄK RTI HLA 1516 Java Fedtime Library as described in "Installing the HLA 1516 Java Fedtime Library"

1.2.3. Installing the HLA 1516 Java Fedtime Library

HLA 1516 specifies that the federate developer shall provide a Logical Time implementation. For Java federates the MÄK RTI offers two methods of doing this:

- You can create an HLA 1516 time implementation in Java and add the new time class files to the CLASSPATH environment variable.
- You can use the default time implementation provided by the MÄK RTI. The default implements time as a Java double.

Configuring UNIX Systems to use the HLA 1516 Java Fedtime Library

Add or edit the following environment variables:

Linux or Solaris

- Add the full path of the directory containing *libjvm.so* to the LD_LIBRARY_PATH variable. This library is distributed as part of the JDK. Its location is system dependent.
- Add the *makrtix.x\lib\java* directory to the LD_LIBRARY_PATH environment variable in front of the *makrtix.x\lib* directory. This ensures that the RTI loads the *libfedtime1516* library required by the Java bindings instead of the default *libfedtime* library.

IRIX

- Add the full path to the directory containing *libjvm.so* to the LD_LIBRARYN32_PATH variable.
- Add the *makrtix.x\lib\java* directory to the LD_LIBRARYN32_PATH environment variable in front of the *makrtix.x\lib* directory. This ensures that the RTI loads the *libfedtime1516* library required by the Java bindings instead of the *default libfedtime* library.

Configuring Windows to use the HLA 1516 Java Fedtime Library

Add or edit the following environment variables:

- Add the full path to the directory containing *jvm.dll* to the LD_LIBRARY_PATH variable. This library is distributed as part of the JDK. Its location is system dependent.
- Add the *makrtix.x\lib\java* directory to the PATH environment variable in front of the *makrtix.x\lib* directory. This will ensure that the RTI loads the *libfedtime1516* library required by the Java bindings instead of the default *libfedtime* library.

Developing a Custom Logical Time Implementation

If you are developing a custom Logical Time implementation:

1. Add the custom classes to the CLASSPATH environment variable.
2. Create a new environment variable named RTI_JAVA_TIME_CLASS and set its value to the fully qualified name of the custom *LogicalTimeFactory* class. The fully qualified name is the name of the class preceded by the full package name. The package name must use "/" instead of "." as a separator. For example, the fully qualified name for the default MÄK RTI LogicalTimeFactory is *com/mak/makrti1516/time/DtLogicalTimeDoubleFactory*. In Java, this corresponds to:

   ```
   package com.mak.makrti1516.time;
   public class DtLogicalTimeDoubleFactory implements LogicalTimeFactory;
   ```

3. Create a new environment variable named RTI_JAVA_TIME_INTERVAL_CLASS and set its value to the fully qualified name of the custom *LogicalTimeIntervalFactory* class. The fully qualified name is the name of the class preceded by the full package name. The package name must use "/" instead of "." as a separator. For example, the fully qualified name for the default MÄK RTI LogicalTimeIntervalFactory is: *com/mak/makrti1516/time/DtLogicalTimeDoubleIntervalFactory*. In Java, this corresponds to:

   ```
   package com.mak.makrti1516.time;
   public class DtLogicalTimeDoubleIntervalFactory implements
     LogicalTimeIntervalFactory;
   ```

2

Setting Up the License Manager

MÄK products use the FLEXlm license manager. Before you can use a MÄK product, you must obtain a valid license file and configure the license server and client machines. Contact the MÄK sales department for information about special licensing agreements.

2.1. 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 MÄK product. The machines on which MÄK products are running are called clients. On each client you must specify the server to use.

The license server executes vendor daemons (for MÄK, *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", so you can install product software on as many computers as you want, but at any given time, you can run only as many instances of a product as you have licensed.

MÄK supports two types of 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.

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. So 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 1 illustrates the client-server architecture for FLEXlm and MÄK products.

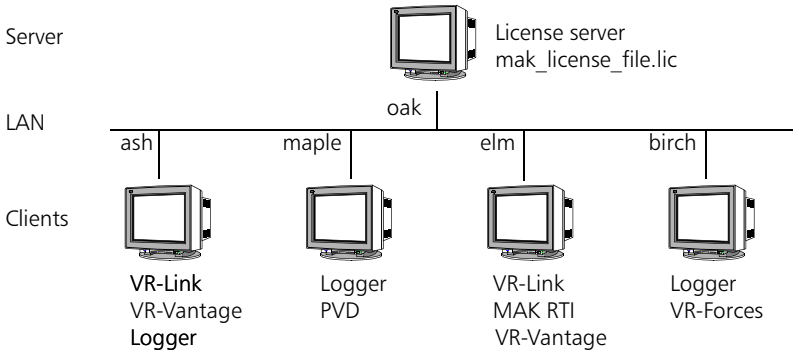

Figure 1. License management example architecture

2.2. Installing and Configuring the License Manager

The general procedure for installing and configuring license management is as follows (each step is explained in the rest of this section):

1. Install the License Manager software.
2. Request a license file.
3. Put the license file in the *LicenseManager* directory on the license server.
4. If you are using a dongle license, install drivers and configure the server.
5. Run the License Manager.
6. Specify the license server on all client machines.

If you have MÄK products installed and you purchase additional licenses or products, you must get a license file for the new products or licenses. For this procedure, please see "Adding Additional License Files," on page 2-9.

2.3. Install the License Manager Software

The License Manager software is included on product CDs or DVDs and is also available as a download. For the latest installers, please go to www.mak.com/license-support.html.

2.3.1. Installing the License Manager on Windows

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

To install the License Manager:

1. Run the installer.
2. Follow the instructions of the installation program. By default, the installer installs files to *C:\MAK\LicenseManager*.

2.3.2. Installing the License Manager on a UNIX System

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

To install the License Manager:

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

```
tar -xvzf MAKLicenseManager-linux-setup.tar.gz
```

2.4. 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
- MÄK invoice number of your purchase
- Basic contact information for you and your company
- Platforms for which you have purchased MÄK products
- Number of licenses for each platform and product.

2.4.1. 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 **Programs** → **MAK Technologies** → **License Manager** → **License Manager**. The License Manager utility opens (Figure 2).

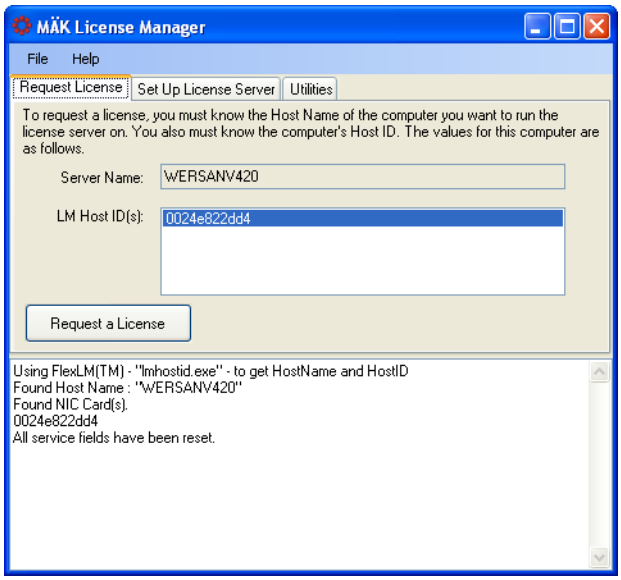

Figure 2. License Manager

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 up the Get Licenses page at www.mak.com and inserts the server name and host ID.

5. Complete the license request page and submit it. MÄK will e-mail you a license file.

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. Go to http://www.mak.com/support/get-licenses.html and complete the license key request form. MÄK will e-mail you a license file.

2.4.2. Identifying the Host ID and License Server Name on Linux Computers

To find out the host ID and server name on Linux:

1. On the license server, in a command window, change to the *LicenseManager* directory.
2. Execute *lmhostid*. This program reports a unique number that MÄK 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. Go to http://www.mak.com/support/get-licenses.html and complete the license key request form. MÄK will e-mail you a license file.

2.5. Put the License File in the License Manager Directory

When you receive your license file, put it in the *LicenseManager* 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.

- We recommend 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 *LicenseManager* directory, do not overwrite the file. For details, please see the instructions in "Adding Additional License Files," on page 2-9.

2.6. Specify the License Server

You can specify the license server interactively or by setting an environment variable.

- If you are running MÄK 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 MÄK application.
- You can clear the saved license configuration by deleting the cache file:
- Windows — *C:\Documents and Settings\user_name\Application Data\MAK\licenses1.xml*
- UNIX — *.mak/licenses1.xml*

To specify the license server interactively:

1. On a computer on which you have not configured license management, start a MÄK application. The License Setup dialog box opens (Figure 3). It prompts you to enter the hostname of the license server and optionally, a port number.

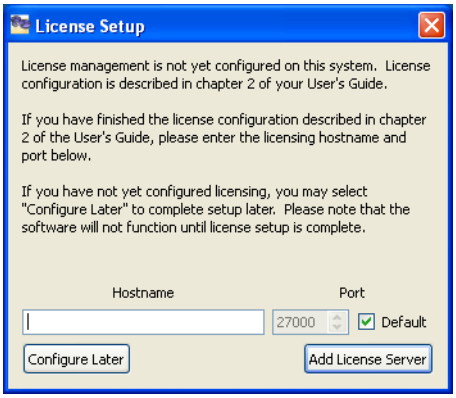

Figure 3. License Setup dialog box

2. Type the host name in the Hostname box.

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 MÄK applications until you set up license management.

3. Optionally, specify a port. (For information about why you might want to specify a port, please see "Specifying a Port for the License Server and Daemon," on page 2-10.)

4. Click Add License Server. The application will start.

2.6.1. 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 in an environment variable. The MAKLMGRD_LICENSE_FILE environment variable identifies the server machine. If you set this environment variable, it overrides the settings stored by the license setup procedure.

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, please see Section 2.8, "Specifying a Port for the License Server and Daemon".

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

Windows

To add the MAKLMGRD_LICENSE_FILE in Windows:

1. Open the Control Panel.
2. Click System. The System Properties dialog box opens.
3. Click the Advanced tab.
4. Click the Environment Variables button. The Environment Variables dialog box opens.
5. Click the New button. The New System Variable dialog box opens.
6. In the Variable Name field, enter MAKLMGRD_LICENSE_FILE.
7. In the Variable Value field, enter `@server_name`, where `server_name` is the name of the license server.
8. Click OK to back out of each dialog box and set the variable.

Linux

On Linux, you set environment variables in your *.cshrc* (or equivalent startup file). Set the variable similarly to the following example:

```
setenv MAKLMGRD_LICENSE_FILE @oak
```

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

```
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 MÄK products. For details, please see "Run the License Server," on page 2-11.

2.7. Adding Additional License Files

If you buy additional MÄK products, or additional licenses for products you already have, you must get an additional license file.

➤ To request an additional license file, follow the license request procedure in "Request a License File," on page 2-5.

To add a new license file to your license server:

1. Put the new file in the *LicenseManager* 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 if 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 *LicenseManager* directory, not a specific file. (For details, please see "Running FLEXlm as a Service on Windows," on page 2-12.)
3. Stop the license server daemon (as explained in "Shutting Down the License Server," on page 2-11) and restart it.

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

2.8. 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 MÄK 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 as follows:

   ```
   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 as follows:

   ```
   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 as follows:

   ```
   VENDOR maklmgrd ./maklmgrd port
   ```

   For example:

   ```
   VENDOR maklmgrd ./maklmgrd 2568
   ```

2.9. Run the License Server

The License Manager daemon must be running on the server machine before you can run your MÄK applications.

On Windows, we recommend that you run the license server as a service. The procedure for setting this up is in "Running FLEXlm as a Service on Windows," on page 2-12.

➤ To start the license server, in a console window, change to the *LicenseManager* 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`.

2.9.1. Shutting Down the License Server

➤ To stop the license server, in a console window, change to the *LicenseManager* 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.

2.10. 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 MÄK application. 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 previously in this chapter.
2. On the Start menu, choose **Programs** → **MAK Technologies** → **License Manager** → **License Manager**. The License Manager utility opens (Figure 2).
3. Select the Set Up License Server tab (Figure 4). The fields are automatically populated with the default locations for the License Manager daemon (*lmgrd.exe*) and the path for license files.

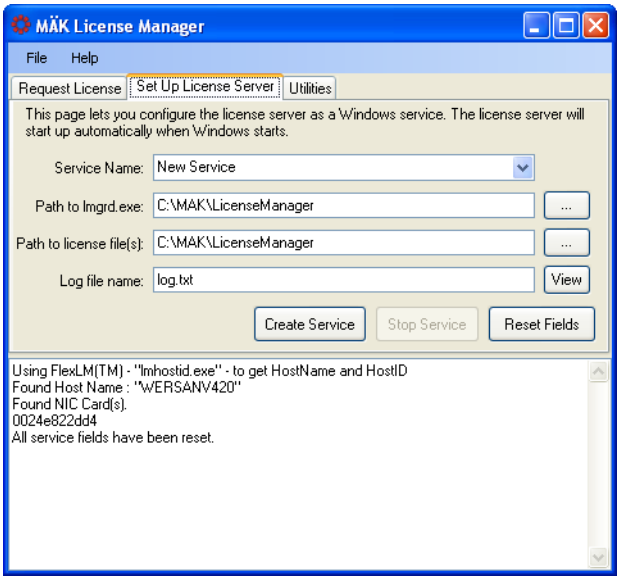

Figure 4. Set Up License Server tab

4. If you did not install to the default location, change the path for *lmgrd.exe* to point to the *LicenseManager* directory.
5. If you are not installing the license files in the *LicenseManager* directory, change the Path to License Files value.
6. Click Create Service.

2.11. Installing a Dongle License

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.

2.11.1. 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. On Windows, you can use the License Manager utility to clear the cache.

To clear the license cache:

1. On the Start menu, choose **Programs** → **MAK Technologies** → **License Manager** → **License Manager**. The License Manager utility opens (Figure 2).
2. Select the Utilities tab (Figure 5).

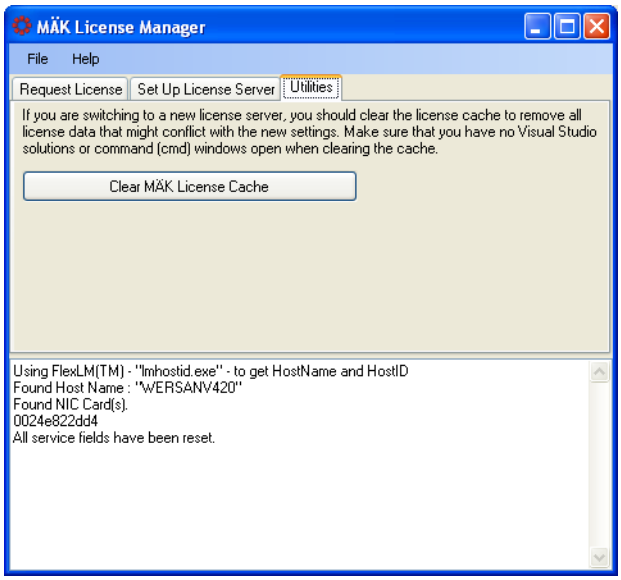

Figure 5. Utilities tab

3. Click Clear MÄK License Cache.

2.11.2. Installing a Dongle License on Windows

1. Install the License Manager software.
2. Download the FlexIdInstaller application from ftp://ftp.mak.com/out/FLEXidInstaller.exe
3. Run *FLEXidInstaller.exe*.
4. On the Select Options panel of the installation wizard, select FLEXid 9 Drivers.
5. When the installer is finished, if a reboot is required, reboot your computer.
6. Download the HASP installer from: ftp:\\ftp.mak.com\out\HASPUserSetup.exe
7. Run *HASPUserSetup.exe* and follow the installation instructions.
8. Insert the license dongle into a USB port.
9. Copy the license file you received from MÄK to the *LicenseManager* directory on the computer.

If you do not have a license file, you must request one from MÄK. Please follow the instructions for requesting a license at http://www.mak.com/support/get-licenses.html

10. Set the MAKLMGRD_LICENSE_FILE environment variable to the location of the license file. For example, if the file is called *makDongle.lic* and it is in *C:\MAK\LicenseManager*, set MAKLMGRD_LICENSE_FILE to *C:\MAK\LicenseManager\makDongle.lic*.
11. Start the license server.
12. Start your application.

2.11.3. Installing a Dongle License on Linux

1. Install the License Manager software.
2. Download the flexlmDongleDriver installation from ftp://ftp.mak.com/out/HDD_Linux_dinst.tar.gz
3. Untar the package as follows:

   ```
   tar -zxf HDD_Linux_dinst.tar.gz
   ```

4. Change directory to *HDD_Linux_dinst*.
5. As the superuser, run *./dinst*. (This is a platform independent Linux installer provided by the makers of FLEXlm.)

   After running this, you should be able to plug in the USB dongle and have the device recognized as an Aladdin Hasp device. To verify the installation, run */sbin/lsusb*. You should see "Aladdin Knowledge Systems HASP v0.06" listed for the plugged in USB dongle.
6. Insert the license dongle into a USB port.
7. Copy the license file you received from MÄK to the *LicenseManager* directory on the computer.

If you do not have a license file, you must request one from MÄK. Please follow the instructions for requesting a license at http://www.mak.com/support/licenses.php

8. Set the MAKLMGRD_LICENSE_FILE environment variable to the location of the license file. For example if the file is called *makDongle.lic* and it is in */home/makUser/makDongle.lic*, set MAKLMGRD_LICENSE_FILE to */home/makUser/makDongle.lic*.
9. Start the license server.
10. Start your application.

2.11.4. Moving a Dongle to a Different Computer

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

2.11.5. Troubleshooting Dongle Installations

If your MÄK application does not run and reports it cannot find a license or some other license-related error, try the following:

- Verify that the dongle is fully plugged in.
- Verify that the system can see the dongle, as follows:

  a. In a console window, change directory to the *LicenseManager* directory.

  b. Run the following command:

  ```
  lmhostid.exe -flexid
  ```

  This will return the flexid of the dongle, or specify that the driver is missing. If the driver is missing, install the FLEXid software.

2.12. Managing Licenses for the MÄK RTI

The MÄK 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.

2.13. Troubleshooting the License Manager

This section describes some common problems that FLEXlm users face.

2.13.1. Unable to Get a License

If you are unable to get a license for a MÄK application and the FLEXlm log file (*LOG*) indicates that the port is in use, it is possible that you have more than one lmgrd or maklmgrd processes running. It is also possible that an application that was using a license is thought to have terminated, but is 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 click Task Manager.)
   - On Linux, enter the following commands:

     ```
     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 Linux, kill a process with the kill command, for example:

     ```
     kill -9 1385 878
     ```

     where 1385 and 878 are process IDs.
   - On Windows, select a process in the Task Manager, Processes tab and click End Process.

   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. (To open the Task Manager, press **`Ctrl+Alt+Delete`** and click Task Manager.)
4. If in step 2 you killed the license server, start it with the `runLm` command.

2.13.2. 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 will ensure that you do not start multiple license servers.

2.13.3. License Manager Cannot Find MÄK 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 as follows:

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 MÄK represents this location with a dot as shown below:

   ```
   VENDOR maklmgrd .
   ```

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

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


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

2.13.4. The License Manager Reports an Unsupported Product

If you receive an error message indicating an unsupported product, you are trying to use a MÄK 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 sales@mak.com to purchase a license or update maintenance.

If you are trying to run your application with an RTI other than the MÄK RTI and you get the unsupported product message, it is possible that your application is finding the DLLs for an unlicensed version of the MÄK RTI before it finds the other RTI. To fix this problem do the following:

- Make sure that the other RTI path precedes the MÄK 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 MÄK RTI in that directory.

3

Installing an RTI

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

3.1. Installing an RTI

An RTI is a software library (and perhaps supporting executables) that implements the HLA Interface Specification. In HLA, applications exchange FOM data through RTI calls, which means that all HLA applications need to use an RTI.

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 MÄK products, please see the release notes for your MÄK application or the Product Versions page on the MÄK web site at: http://www.mak.com/product_version.php.

3.1.1. Installing the MÄK RTI

To install the MÄK RTI, follow the instructions in Chapter 2 of *MÄK RTI Reference Manual*.

Configuring Your System to Use the MÄK 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 as follows:

- Linux — LD_LIBRARY_PATH
- Windows — PATH.

The MÄK RTI needs to know where to find the following 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.

Running Applications with the MÄK RTI

In many cases, you do not need an RTI server, such as the rtiexec, or a central application to use the MÄK RTI, however you can run the rtiexec if you want to. (It is required to use certain features of the MÄK RTI.) Be sure the FLEXlm license server is running, then start the applications, and they should be able to communicate. (For information about the license server, please see "Setting Up and Using the FLEXlm License Manager".) Please see *MÄK RTI Reference Manual* for information about the rtiexec and changing the networking parameters such as multicast addresses and UDP ports.