

Background

This application note describes the license protection mechanism incorporated in Matrox Imaging Library (MIL) release 7 without compromising its security. It assumes the reader has a basic understanding of how MIL is licensed, as described in the Licensing Matrox Imaging Software brochure. Each type of license (temporary, development and run-time) is reviewed with an emphasis on how each one interacts with the PC environment. The topics discussed in this document also apply to ActiveMIL 7, which is included with MIL release 7 and are intended to complement the information already covered in the MIL/ActiveMIL User Guide manuals. For the remainder of this document we will use the term MIL to designate Matrox Imaging Library (MIL) version release 7.

Temporary License

When MIL is first installed, a temporary license is automatically issued to the system for a period of 30 days, regardless of whether a hardware key (dongle) is connected to the system or not (Figure 1). The trial period begins from the day MIL is first used and not from when MIL is first installed. For example, if MIL is installed but first used five days later, the time remaining in the trial period will still be 30 days. The temporary license lets developers create an application using MIL, as well as run a MIL run-time installation while waiting for a permanent license. The temporary license unlocks all MIL modules allowing MIL to be used in its full capacity for the purpose of evaluation¹.

The temporary license is not based on a hardware fingerprint³, which allows the user to change hardware components (i.e., frame grabber, graphics board, Ethernet controller, etc.) in the system without affecting the validity of the temporary license. License verification is performed while the MIL-based application is running. For the first verification, a dialog box is displayed indicating the number of days remaining until the temporary license expires (Figure 2). This dialog box also allows the user to temporarily disable the reminder message.

The temporary license is tamperproof. Once the license has expired it is not possible to prolong or restart the trial period by changing the system date⁴, or by uninstalling and reinstalling the software. Once a temporary license has expired, the only way to continue using MIL is to install a permanent development or run-time license key (Figure 3). Moreover, a MIL installation cannot be used as a MIL-Lite installation once the temporary license has expired.



Figure 1: Hardware key (dongle) for parallel (left) or the USB² port (right).

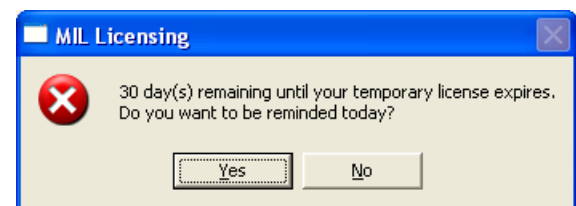


Figure 2: The MIL Licensing dialog box provides the number of days remaining until the temporary license expires as well as the means to temporarily disable the reminder message.

Development License

Each MIL package includes a development license for a single user in the form of a single hardware key (dongle), which is available for the parallel or a USB² port (Figure 1). The development license provides access to all MIL modules and is identified by the stamp "MIL 7 DEV" located across the dongle. Once the dongle is connected to the system, the user is ready to start development. MIL development is defined as the action of running or debugging a MIL-based application within the Microsoft Visual C++ debugger⁵. The definition of ActiveMIL development is similar where a development license is required to use ActiveMIL controls in design-time. The development license is also required to run an ActiveMIL application within Microsoft Visual Basic's IDE or Visual C++ debugger.

Development License (continued)

Once again, license verification is performed while the MIL-based application is running. If the dongle is not present or if the temporary license has expired, a dialog box will appear prompting the user to obtain a license key (Figure 3). When the dongle is present, additional verifications will occur regularly while the application is running but with negligible performance overhead. There is no verification while coding or compiling a program.

Since the development license is not based on a hardware fingerprint, hardware components in the system (i.e., frame grabber, graphics board, Ethernet card, etc.) can be changed. Consequently, the development license is portable and can be transferred to any system. The dongle is required even if a user is debugging a MIL-based application but not actual MIL code (e.g., debugging WIN32 code). If a user needs to debug a non-MIL portion of an application but does not have a development license, all MIL code must be commented out before compiling and debugging the application⁶. Otherwise, the user must make certain that the MIL application allocation is never performed during the debugging session or that the ActiveMIL controls are not present on the form.

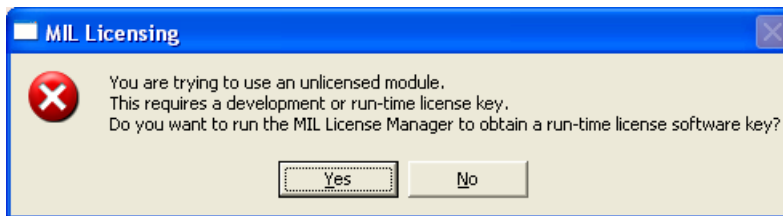


Figure 3: Expired MIL temporary license informs the user that they are trying to use an unlicensed module. To continue using MIL, the user must either install a permanent development or run-time license key.

Run-time License

MIL run-time is another way of describing MIL redistribution, which is the installation of a run-time version of MIL on a target system for deployment. A run-time license takes the form of either a software or hardware key (dongle). The software key is an alphanumeric code with 80-90 characters that is obtained from Matrox. A run-time license enables one to run a MIL-based application ONLY for the package(s) (groups of modules) purchased. An error message (Figure 3) will appear and MIL will cease to function if one tries to run a MIL-based application with an unlicensed package, or debug the MIL code within a debugger when using a run-time license. The same error message will result if an ActiveMIL application is run using an unlicensed package, or an ActiveMIL application is opened in design time within a RAD environment.

Software license key

To obtain a run-time software key, a user will need to start the MIL License Manager utility⁷, which is installed along with MIL (Figure 4). In the MIL License Manager, a user selects which package to license for run-time, as well as which fingerprint (i.e., Matrox Imaging board, Matrox graphic board, Ethernet controller, etc.) to base the license on. Clicking on 'Generate' will produce the Lock Code necessary to obtain the Software License Key from Matrox. This software license key is then manually entered into the MIL License Manager on the target system. Once entered, the user of the target system will no longer be prompted to obtain a license key unless the hardware fingerprint has changed, or the application tries to use an unlicensed package. This software license key should be recorded along with the lock code and put in a safe place for future reference.

A package can be added to an existing run-time license by running the MIL License Manager and selecting the additional package to license (WARNING: do not reselect existing packages or change the fingerprint). Clicking on 'Generate' will produce a new lock code that is necessary to obtain a revised Software License Key for the additional package(s) from Matrox.

The run-time license key is stored in a file on the hard drive. The file is called 'lservrc' and is located in \winnt\system32 directory under Windows NT/2000, or in \windows\system directory under Windows 98/Me⁸. This file stores the permanent run-time and temporary license keys. Note that this file must not be modified. Consequently, users should not attempt to enter the software license key directly into this file.

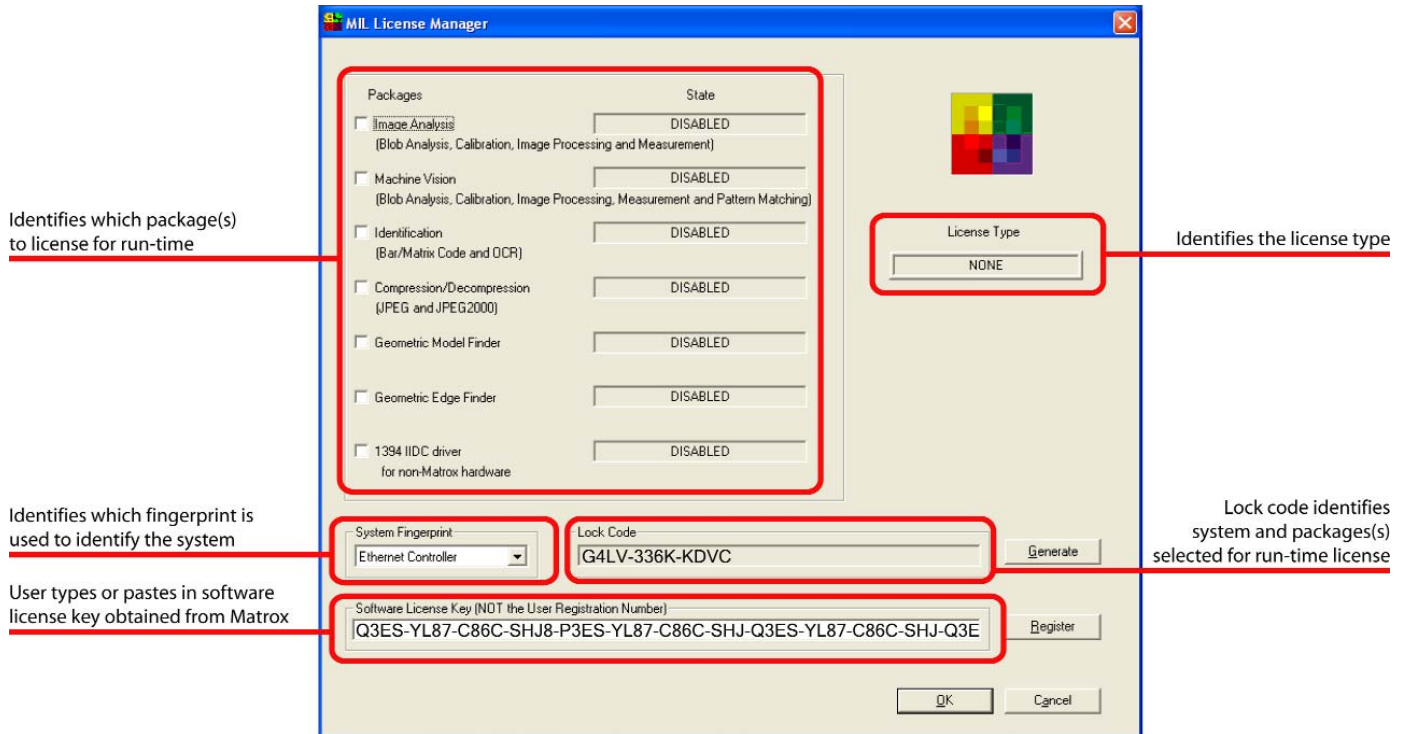
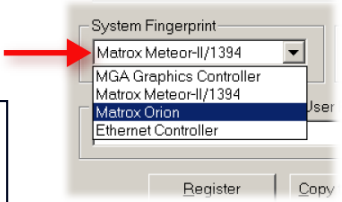


Figure 4: MIL Licensing Manager utility used to select desired Packages (groups of modules), System Fingerprint, display Lock Code, and to enter the Software License Key obtained from Matrox.

Compression/Decompression and serial bus driver with MIL-Lite

The compression/decompression and serial bus driver packages can also be used with MIL-Lite. In order to do so, an appropriate Software License Key must be obtained using the MIL Licensing Manager (on the CD but not installed automatically). Unlike the other packages, the runtime license for the compression/decompression and serial bus driver packages allows application development (i.e., debugging).



MIL License Manager lists the best choice for a System Fingerprint first in the pull-down menu.

Hardware Fingerprints

As mentioned earlier, a lock code is needed to generate a software license key. The lock code contains the unique ID of the system derived from a hardware fingerprint. The fingerprint can be based on the presence of either a Matrox Corona-II, CronosPlus, Meteor-II/1394², Orion, any other Matrox board with a Matrox graphics controller (i.e., Matrox Genesis main board, Matrox Millennium G400, G450, G550, etc.)¹⁰, the Ethernet controller on the motherboard or on an adapter board, or a parallel or USB² computer ID dongle¹¹ (Figure 5). Which fingerprint is used to create the lock code is selected by the user in the MIL License Manager utility based on the available hardware. By default, MIL License Manager provides the best fingerprint selection as the first item in the pull-down menu (Figure 4).

The run-time license will become invalid if a selected fingerprint is changed. Specifically, if the Matrox Imaging board, Matrox Graphics board, Ethernet controller or computer ID dongle¹¹ is removed or changed (e.g., upgrade from Matrox Corona to Matrox Orion).



Protect your own Application

Programmers can use MIL Licensing in conjunction with a third-party Software Protection Library to protect their own application. A unique system fingerprint can be obtained using the MIL MapInquire() function or ActiveMIL's Application.Inquire method. Inquire types include the hardware component upon which the system fingerprint is based, as well as the MIL module for which there is a valid license. See the MIL and ActiveMIL Command Reference manuals for more information.

Run-time License (continued)

Recovery

In the event that the operating system crashes and requires reinstallation, a logical reformat of the hard drive will not affect the validity of the software license key. Once the run-time version of MIL is reinstalled, the run-time license will simply need to be reactivated. This is done automatically in the case of a Matrox Corona-II, CronosPlus, Meteor-II/1394, Orion, 4Sight/4Sight-II, or a hardware license key¹¹. In the case of a Matrox board with an Matrox Graphics controller, Ethernet controller or a computer ID dongle¹¹, the user will need to re-enter the original software license key in the MIL License Manager.

Portability

For Matrox Corona-II, CronosPlus, Matrox Meteor-II/1394, and Orion, the license is also stored on the board itself. Therefore the board can be moved to a different system without having to re-enter the license number on the new system. For boards with a Matrox Graphics controller, Ethernet controller or a computer ID dongle, the board or computer ID key can still be moved to another system. However doing so will require re-entering the original software license key or copying the 'lservrc' file to the appropriate directory.

Hardware license key¹¹

As mentioned earlier, a run-time license is also available as a hardware key (dongle) instead of using a software key derived from a system fingerprint. The hardware license key is available for the parallel or USB² port and is identified by the stamp 'MIL 7 RT x x x x' or 'MIL 7 RT x x x x x x' (Figure 6) located across the face of the dongle, where 'x x x x' or 'x x x x x x' identifies the package (group of modules) that the key is valid for. Once the dongle is connected to the system, a user is able to run the MIL-based application. One major benefit to using a hardware key is its easy portability from one PC to another.



Figure 5: Parallel or USB² computer ID dongle¹¹ can be used when a system does not have the hardware that can act as a fingerprint or a user requires easier license portability.



Figure 6: MIL run-time hardware license keys (dongles), shown only for the parallel port, are available for various MIL run-time packages. The stamp identifies which package the dongle is valid for (e.g., dongle labeled 'MIL 7 RT 0 0 0 G 0 0' is valid for the GMF module).

Endnotes:

1. Note that the temporary license for MIL and Matrox Inspector are independent.
2. USB dongle supported only under Microsoft® Windows® 98, Me, 2000 and XP.
3. An identification based on the unique characteristic of a PC component or peripheral.
4. The temporary license does accommodate the change into or out of daylight saving time.
5. Includes the running of SoftICE as well as actively debugging an application with SoftICE.
6. Note that it is not possible to disable the ActiveMIL controls (OCXs) within a rapid application environment (RAD).
7. A silent command-line version (i.e., no Matrox GUI) called 'Gencode' can be found on the MIL 7 CD.
8. Default directories.
9. The IEEE 1394 camera must be connected and powered (except under Microsoft® Windows NT® 4.0).
10. A fingerprint can also be based on Matrox 4Sight/4Sight-II.
11. Requires the installation of an additional device driver so MIL can recognize the dongle.

For more information, please call: 1-800-804-6243 (toll free in North America) or (514) 822-6020
or e-mail: imaging.info@matrox.com or <http://www.matrox.com/imaging>

Corporate headquarters:

Canada and U.S.A.
Matrox Electronic Systems Ltd.
1055 St. Regis Blvd.
Dorval, Quebec H9P 2T4
Canada
Tel: (514) 685-2630
Fax: (514) 822-6273

Offices:

Europe, Middle East & Africa
Matrox VITE Limited
Sefton Park
Stoke Poges
Buckinghamshire
SL2 4JS
UK
Tel: 01753 665511
Fax: 01753 665599

France
Matrox France SARL
2, rue de la Couture
Sillac 225
94528 Rungis Cedex
Tel: (0) 1 45-60-62-00
Fax: (0) 1 45-60-62-05

Germany
Matrox Electronic Systems GmbH
Inselkammerstr. 8
D-82008 Unterhaching
Tel: 089/62170-0
Fax: 089/614 9743

