



## Background

This application note describes the license protection mechanism incorporated in Matrox Imaging Library (MIL) release 8 for Microsoft® Windows® 2000/XP without compromising its security. 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 release 8, which is included with MIL release 8. This document assumes the reader has a basic understanding of how MIL/ActiveMIL is licensed, as described in the MIL/ActiveMIL User Guide manuals. For the remainder of this document we will use the term MIL to designate ActiveMIL as well.

## 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 evaluation<sup>1</sup>.

The temporary license is not based on a hardware fingerprint<sup>2</sup>, which allows the user to change hardware components (e.g., frame grabber) 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 date<sup>3</sup>, 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 USB (left) or the parallel port (right).

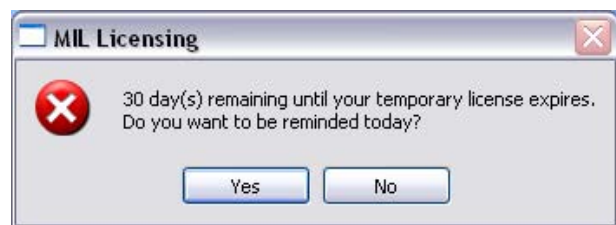


Figure 2: The MIL Licensing dialog box provides the number of days remaining until the temporary license expires as well as the means to temporarily disable the reminder message.



### 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 a parallel or USB port (Figure 1). The development license provides access to all MIL modules and is identified by the stamp "MIL 8 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++ 6.0<sup>4</sup> or Visual C++ .NET 2003<sup>4</sup>. 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® .NET 2003 or Visual C++ .NET 2003.



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.

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 (e.g., frame grabber) 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 MFC 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 application<sup>5</sup>. 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.

### 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 a sequence of alpha-numeric characters that is obtained from Matrox Imaging. A run-time license enables one to run a MIL-based application ONLY for the package(s) (modules and/or group 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 Microsoft Visual Studio®.NET 2003.



**Run-time license (cont.)**

**Software license key**

To obtain a run-time software key, a user will need to start the MIL License Manager utility<sup>6</sup>, which is installed along with MIL (Figure 4) on the target system. 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 or computer ID dongle) to base the license on. Clicking on 'Generate' will produce the Lock Code necessary to obtain the Software License Key from Matrox Imaging. This software license key is then manually entered into the MIL License Manager on the same 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.

**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. Unlike the other packages, the runtime license for the compression/decompression and serial bus driver packages allows application development (i.e., debugging).

A package can be added to an existing run-time license by running the MIL License Manager and selecting the additional package to license (NOTE: do not 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 Imaging.

The run-time license key is stored in a file on the hard drive. The file is called 'lservrc' and is typically located in the \windows\system32 folder. 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.

Identifies which package(s) to license for run-time

Identifies the type of license (i.e., temporary, development or run-time)

Identifies which fingerprint is used to identify the system

User types or pastes in software license key obtained from Matrox Imaging

Lock code identifies system and package(s) selected for run-time license

Figure 4: MIL Licensing Manager utility used to select desired Package(s), Hardware Fingerprint, display Lock Code, and to enter the Software License Key obtained from Matrox Imaging.

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





### Run-time license (cont.)

#### Hardware fingerprints

As previously mentioned, 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 4Sight M, Corona-II, Cronos*Plus*, Meteor-II/1394<sup>7</sup>, Orion, Morphis, Helios, Solios, or a parallel or USB computer ID dongle<sup>8</sup> (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 or computer ID dongle<sup>8</sup> is removed or changed (e.g., upgrade from Matrox Solios to Matrox Helios).

#### 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 4Sight M, Corona-II, Cronos*Plus*, Meteor-II/1394, Orion, Morphis, Helios, Solios, or a hardware license key<sup>8</sup>. In the case of a computer ID dongle<sup>8</sup>, the user will need to re-enter the original software license key in the MIL License Manager.

#### Portability

For a Matrox Corona-II, Cronos*Plus*, Matrox Meteor-II/1394, Orion family, Morphis family, Helios family and Solios family, 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 string on the new system. A computer ID dongle<sup>8</sup> can also be moved from one system to another. However, doing so will require re-entering the original software license key or copying the 'lservrc' file to the appropriate directory.



Figure 5: Computer ID and MIL run-time hardware license keys (dongles) are labeled with 'MTX IMG'. The run-time hardware license keys are available for various MIL run-time packages. To identify which package the dongle is valid for, open the MIL License Manager with the dongle connected. New (top) and old (bottom) USB dongles shown above.

#### Protect your own application

Programmers can use MIL in conjunction with a third-party license management software to protect their own application. A unique system fingerprint can be obtained using the MIL MappInquire() 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 (cont.)

### Hardware license key<sup>8</sup>

As mentioned earlier, a run-time license is also available as a hardware key (dongle) preprogrammed by Matrox Imaging to provide access to the package(s) required. One major benefit to using a hardware key is its easy portability from one PC to another. Once the dongle is connected to the system, a user is able to immediately run the MIL-based application. The hardware license key is available for the parallel or USB port and is identified by the stamp 'MTX IMG' (Figure 5) located across the face of the dongle. To identify the license type of the key, with the key connected open the MIL Configuration utility (MilConfig) and select the Licensing menu tab (Figure 6). To identify for which package(s) the dongle is valid for, with the key connected open the MIL License Manager (Figure 4). Note that a hardware license key can be used with a software license key. The hardware license key will provide access to some package(s) while the software license key will provide access to another package (or other packages).

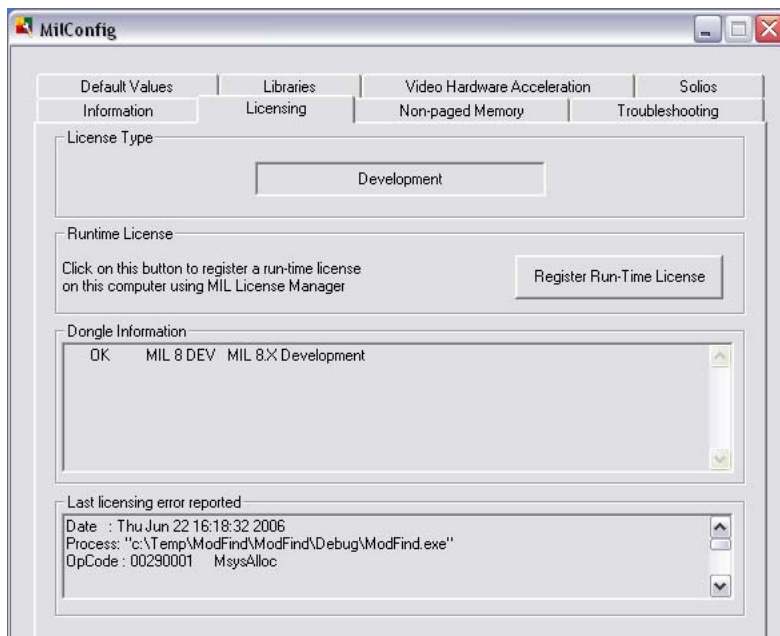


Figure 6: To identify the dongle type, check the Licensing tab in MIL configuration utility (MilConfig).

#### Endnotes:

1. Note that the temporary license for MIL and Matrox Inspector are independent.
2. An identification based on the unique characteristic of a PC component or peripheral.
3. The temporary license does accommodate the change into or out of daylight saving time.
4. Includes the running of SoftICE as well as actively debugging an application with SoftICE.
5. Note that it is not possible to disable the ActiveMIL controls (OCXs) within Microsoft Visual Studio .NET 2003.
6. A silent command-line version (i.e., no Matrox GUI) called 'Gencode' can be found on the MIL 8 CD.
7. The IEEE 1394 camera must be connected and powered.
8. Requires the installation of an additional device driver in order for MIL to recognize the dongle.

#### Corporate headquarters:

Canada and U.S.A.  
 Matrox Electronic Systems Ltd.  
 1055 St. Regis Blvd.  
 Dorval, Quebec H9P 2T4  
 Canada  
 Tel: +1 (514) 685-2630  
 Fax: +1 (514) 822-6273

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](mailto:imaging.info@matrox.com) or <http://www.matrox.com/imaging>

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