ΔV EMA Electro Magnetic Applications, Inc.
7655 West Mississippi Avenue, Suite 300, Lakewood, CO 80226-4332 (303) 980-0070, Fax: (303) 980-0836

EMA3D

version 3.1

Software Installation Guide

for UNIX

and Linux

EMA3D version 3.1.2 01-November-2007

EMA3D version 3.1 Software Installation Guide for UNIX and Linux

C O N T E N T S

EMA3D Installation Documentation

A copy of this document is also on the EMA3D CD, in the subfolder "unix/installdocs".

Installing CADfix - Use the Correct CADfix Setup Type

EMA3D uses the software product CADfix as a graphical front-end. The installations of EMA3D and CADfix are separate. The two products may be installed in either order.

When installing CADfix, the user is usually presented with a choice of "Setup Type" to install. The choices are usually:

1: CADfix Data Exchange (or sometimes called "DX")
2: CADfix CAE Modeller
3: CADfix license manager only

Use "CADfix CAE Modeller" when installing CADfix for use with EMA3D. It is important to choose this Setup Type for use with EMA3D. The "Data Exchange" or "DX" setup type is for automated CAD database translation and repair and does not contain the interactive command-line functionality required for preparing a model for use with EMA3D. The "CADfix license manager only" option should be used if you want to install the CADfix license manager on a machine on which CADfix will not be used.

Overall Procedure

The overall procedure for installing EMA3D is:

1) install the software - see section "Installing EMA3D"
2) install a license key - see section "Setting Up Licensing"
3) source the setup scripts - see section "Running EMA3D"
4) locate the documentation - see section "EMA3D Documentation"
5) Additional Information: - see section "gnuplot" for more information about gnuplot, a free third-party plotting program included with EMA software.
- see section "Adobe Acrobat Reader" for instructions on obtaining and installing Adobe Acrobat Reader if you do not already have Acrobat Reader on your system.

Installing EMA3D

Perform the following steps to install EMA3D on a UNIX or Linux system:

1) Load the EMA3D CD into the CD-ROM drive

2) Navigate to the "unix" subdirectory of the CDROM, e.g.,

```
% cd /cdrom/cdrom0/unix
```

3) Run the setup script "install.sh", e.g.

```
% ./install.sh
```

4) The setup program will prompt you for some choices, including choice of platform (depending on what is on the CDROM), installation directory, and installation type. The installation type "EMA3D License Manager Only" should be used if you have a machine on which you want to run the license manager but do not want to install EMA3D. Otherwise choose the "EMA3D" setup type which includes the license manager.

Running EMA3D

Installing a License

Before running EMA3D you must either install a standalone license, or set-up the license server with a floating network license. See the section "Setting Up Licensing" for more information.

Running EMA3D

Before attempting to run EMA3D, you should source the set-up script "ema3d_setups_csh" (for C-shell (csh)) or "ema3d_setups_sh" (for Korn or Bourne shells (ksh or sh)).

example:

```
# (sh or ksh)
% . ema3d_setups_sh

# (csh)
% source ema3d_setups_csh
```

You should also source the setup script before running CADfix. You can run CADfix without sourcing the EMA3D setup script, but the additional EMA-provided toolboxes and tools for setting-up an EMA3D problem from within CADfix, will not be present.

These scripts do the following:

1) add the full pathname of the EMA3D "bin" subdirectory to the PATH environment variable so that EMA3D may be run from the command-line.

2) add the full pathname of some EMA3D "man" subdirectories to the MANPATH environment variable so that certain man pages are available (see "documentation" section of this Installation Guide).

3) define certain environment variables that convey to CADfix the location of certain EMA files and tools that are incorporated into the CADfix GUI for use when CADfix is used as the front-end to EMA3D.

These scripts are placed in the top-level installation directory by the installation program. The command to source the appropriate script can be placed in a system login script or in individual users' login scripts. See your system documentation for instructions on how to do this.

See "Appendix A: EMA3D Environment Variables" near the end of this document for more information on the use of environment variables by EMA3D/CADfix.

Once the script has been sourced to include the EMA3D "bin" path in the PATH environment variable, EMA3D can be executed at the command line:

```
% ema3d
```

EMA3D will prompt you for the name of an input file. The input file name can also be given as a command-line argument:

```
% ema3d testmodel.emin
```

If all the information in the input file is self-consistent and there are no errors, EMA3D will proceed with the computation. See the User Manual for EMA3D for extensive, detailed information about using EMA3D and CADfix.

EMA3D version

The exact version of EMA3D that is installed can be determined with the following command:

```
% e3dver
```

It is a simple shell script that echoes the EMA3D version and date release.

Running the EMA3D/CADfix interfaces

Traditionally, EMA3D has been accompanied by two interface programs that enable it to interoperate with CADfix: the program "famtoema3d", which translates geometrical information and EMA3D problem information from the CADfix model database file to the EMA3D input file format; and the program "famfromema3d", which translates simulation result data from the EMA3D output file format to a CADfix result database file.

In the current release of EMA3D, the function of "famtoema3d" is performed by a GUI tool within the CADfix GUI. To find this tool, select the toolbox

named "EMA3D_ReviewTool" from the drop-down list of toolboxes in the CADfix GUI, and click the button "EMA3DREV". The "Model Review Tool" will open, displaying summary information about the EMA3D simulation data in the CADfix database. The button at the bottom labeled "FTE" performs the "famtoema3d" conversion.

The function of "famfromema3d" is still a separate, command-line program. If the EMA3D setups script has been sourced as described earlier, you can run famfromema3d at the UNIX command prompt:

```
% famfromema3d
```

famfromema3d will prompt you for the name of an EMA3D output file. You can also supply the output file name as a command-line argument:

```
% famfromema3d testmodel.emout
```

The EMA3D output file (*.emout file), and the corresponding CADfix database from which the model was build (*.fbm file), must both be in the current working directory to run famfromema3d.

> NOTE: CADfix was called "FAM", for "Field Analaysis Modeller", in earlier releases. The name "FAM" or "fam" still persists in some places. The naming convention "famfromanalysis" or "famtoanalysis" is still the standard convention for programs that translate information between CADfix and any analysis program.

famfromema3d for Different Versions of CADfix

famfromema3d is built using some CADfix executable code, and is therefore somewhat dependent on the version of CADfix being used for correct operation. The version of famfromema3d that is executed when you run "famfromema3d" as shown above, is built for CADfix 7.0. The EMA3D installation also includes versions of famfromema3d for CADfix 5.1 and 6.0. These versions have names that indicate which version of CADfix they are built for, and can be executed as follows:

For CADfix 5.1, use the following:

```
% famfromema3d510
```

For CADfix 6.0:

```
% famfromema3d600
```

For CADfix 7.0, you can use the following:

```
% famfromema3d700
```

Or, for CADfix 7.0 you can just use "famfromema3d" as indicated before. "famfromema3d" and "famfromema3d700" are two copies of the same executable file with different names.

EMA3D Documentation

The following user manuals and documentation are part of the EMA3D software installation:

Installation Documentation

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docs/install_ema3d.pdf

- EMA3D Installation Guide for UNIX and Linux (this document)

docs/install_ema3d.txt

-text file version of install_ema3d.pdf

EMA3D User Manual Set

---

docs/EMA3DGettingStartedManual.pdf
docs/EMA3DOverviewManual.pdf
docs/EMA3DTrainingManual.pdf
docs/EMA3DProjectObjectivesManual.pdf
docs/EMA3DPreparationManual.pdf
docs/EMA3DReviewToolManual.pdf
docs/EMA3DExecutionManual.pdf
docs/EMA3DPostProcessingManual.pdf

- EMA3D User Manual Set

EMA3D tools/utilities documentation
---

docs/ema3d_utilities_ref.pdf

- reference manual for the command-line utilities
included with EMA3D (PDF format)

docs/ema3d_utilities.README

- list and overview of the command-line utilities

docs/addfiles.README
docs/derivfile.README
docs/fft.README
docs/filter.README
docs/makesource.README
docs/multisource.README
docs/shiftsource.README
docs/source.README
docs/source2.README
docs/sumfile.README
docs/tfunc.README
docs/writenode.README
docs/writeprobe.README
docs/xferNewSource.README

docs/compute_Pavail.README
docs/compute_Pin.README
docs/compute_Pout.README
docs/compute_Prefl.README
docs/compute_Skn.README
docs/compute_Snn.README
docs/compute_TrFn.README
docs/compute_Vin.README
docs/compute_Znn.README
docs/RCS.README
docs/RXS.README

- individual read-me files for each utility (same information
as in the utilities reference manual

docs/man/man1

- this directory contains man page versions of all the
utility read-me files above

gnuplot documentation
---

docs/man/man1/gnuplot.1
- man page for gnuplot, a third-party plotting program
frequently used with EMA3D

gnuplot3.7.3/man/man1/gnuplot.1
- duplicate copy of the above man page

Rainbow SLM license manager software (for system administrators)
---

lic/docs/SLM71sys.pdf
- Rainbow Sentinel License Manager System Administrator's Guide
(for use by system administrators)

lic/man/man1/lsdecode.1
lic/man/man1/lsmon.1
- man pages for lsdecode and lsmon, Rainbow SLM utilities
(for system administrators)

lic/README - quick-start instructions for setting-up a license server

Files with a name like "README", "*.readme", "*.README" or "*.txt" are text files that may be viewed with any text file viewer.

Files with extension .pdf are Adobe Portable Document Format (PDF) files. They require Adobe Acrobat Reader to view them. To view these files, first launch Adobe Acrobat Reader:

```
% acroread
```

Then click the "File" menu, choose "Open...", and navigate to the location of the desired document listed above. Check the installation location or consult your system administrator if you are not sure where to find the documents listed above.

If you do not have Adobe Acrobat Reader on your system, see the section "Adobe Acrobat Reader", below, or consult your system administrator.

EMA3D Utilities

EMA3D Utilities

Several command-line utilities, useful in working with column-formatted ASCII data files produced by and used with EMA3D, are part of the EMA3D distribution. They are located in the "bin" subdirectory of the EMA3D installation. If the setups script has been sourced (see the section "Running EMA3D"), you can run them from a command prompt the same way you run ema3d. For example,

```
% writeprobe
```

EMA3D Utilities Documentation:

Documentation on the meaning and usage of the EMA3D command-line utilities are installed in the "docs" subdirectory of the EMA3D installation:

<install_dir>/ema3d312/docs

The file "ema3d_utilities.README" contains a list and overview of all of the utilities.

See the section "EMA3D Documentation" for a list of the utilities README files.

EMA3D Utilities Documentation - man pages:
---

man page versions of the utilities reference pages are available. If the setups script has been sourced, which sets the MANPATH (see the section "Running EMA3D"), you can access the man pages from the command-line, for example:

```
% man writeprobe
```

Invoking the following man page:

```
% man ema3d_utilities
```

gives a list and overview of all utilities. The command "man utility_name" gives the man page for a specific utility.

gnuplot

gnuplot installed automatically

EMA3D result waveforms may be viewed with any available third-party plotting package. The freely-available "gnuplot" is fit for this purpose, and is included with the EMA3D software distribution. gnuplot is installed automatically by the installation script along with the EMA3D software.

If you wish to not have gnuplot installed on your system, you may remove the gnuplot directory and all its contents from the hard drive without disturbing the rest of the EMA software installation. The gnuplot directory will be something like

<install_location>/ema3d312/gnuplot4.0.0

(The version designation in the directory name may vary).

The EMA3D setup scripts "ema3d_setups_sh" and "ema3d_setups_csh" (see the section "Running EMA3D") add the directory path containing the gnuplot executables to the PATH environment variable. They also add the path containing a gnuplot man page to the MANPATH environment variable. If the setup script has been sourced, you should be able to run gnuplot from the UNIX command prompt:

```
% gnuplot
```

NOTE: some systems (particulary Linux) may already have a version of gnuplot installed. In this case, you might get the pre-existing installation when you enter "gnuplot" at a command prompt, because the EMA3D setup scripts put the EMA-installed gnuplot directory at the end of PATH. If you wish to use the EMA-installed version instead (for example, if the EMA-installed version is a more recent version), you can edit the setup scripts to put the EMA-installed gnuplot location at the beginning of PATH. The setup scripts already contain a line to do this, which is commented-out by default. Just comment-out the line that puts the directory at the end of PATH, and un-comment the line that puts the directory at the beginning of PATH. There are comments in the setup scripts that tell you how and where to do this.

You should also be able to read the gnuplot man page:

```
% man gnuplot
```

If the man page does not come up, you may need to run "catman" to create the "windex" databases in the MANPATH directories. See your system administrator or UNIX or Linux documentation for details.

source code to compile for alternate platforms or terminal types

The installation script installs a copy of gnuplot that has been pre-compiled by EMA, from the gnuplot source code distribution, for the appropriate platform and using the default set of terminal drivers. A copy of the raw gnuplot source code distribution is included on the EMA3D CD but is not installed by the installation script. This may be used, if you wish, to compile a version of gnuplot for some other platform, or to add or remove terminal drivers for particular terminal types. The source code is set-up to compile

more or less automatically on a variety of systems. For more information, look on the EMA3D CD in the following directory:

unix/gnuplot-4.0.0

and read the file "gnuplot-4.0.0.readme". You will find directions for both compilation and installation on a wide variety of platforms.

For more information on gnuplot, visit the main gnuplot web site at:

http://www.gnuplot.info

disclaimer

Gnuplot is free, third-party software provided as a convenience to EMA software end-users in accordance with the Gnuplot Copyright. EMA does not support gnuplot; it is included "as-is" on the CD and in the EMA software installation.

See "Appendix D: Gnuplot Copyright" for the Gnuplot Copyright statement.

Adobe Acrobat Reader

Most of the manuals included with the EMA3D distribution are in Adobe Portable Document Format (PDF). Viewing them requires Adobe Acrobat Reader, which is available for free.

Acrobat Reader from Adobe

Acrobat Reader can be obtained from the Adobe web site at:

http://www.adobe.com

Acrobat Reader from the EMA3D CD

Acrobat Reader is included on the EMA3D CD for convenience. It is not installed by the installation script, but it can be installed separately if you do not have Adobe Acrobat Reader on your system. Look in the subdirectory "unix/acrobat" of the the CD-ROM. Look for a directory corresponding to your platform, for example "unix/acrobat/solaris8" or "unix/acrobat/irix6.5", then look for a directory called "install", then look for a file called "README" in the "install" directory for further instructions.

Setting Up Licensing

Licensing Overview

Software licensing for EMA software is managed by the Sentinel License Manager product, version 7.2, from Rainbow Technologies.

End-users of EMA software may choose between two basic types of licensing: a floating network license (also called a server license), or a standalone license. The type of licensing you wish to use will determine the type of license key you will request EMA, Inc. to issue. It also will determine whether you need to run the license server.

With a floating network license, the license server software is installed on one machine along with a floating network license key for the product(s) purchased. Users may use the EMA software product(s) on any machine with network access to the license server machine; the application checks out a license key from the server when it is run. Several machines can share the same license(s) up to the concurrent usage limit (number of licenses purchased).

With a standalone license, the license server is not used. A license key for the software product(s) purchased is installed on each individual machine, and the software application reads the license key directly. Each machine requires its own individual license.

After you have decided which type of licensing you wish to use, follow the instructions below. If you decide to use standalone licensing, you may skip the sections "License Server Installation" and "License Server Startup".

Obtaining and Installing a License - Overall Procedure

Use the following overall procedure to obtain and install a license for EMA3D.

1) install the license server if you are using floating network licensing
2) generate locking information for the license server machine (for network licensing) or for the individual machine(s) (for standalone licensing)
3) transmit the locking information to EMA
4) receive one or more license key files (usually by e-mail)
5) install the key file(s) in the correct location(s)

Follow the instructions below to perform each step of the procedure:

Step 1) License Server Installation and Startup (floating network license only)

License Server Installation (floating network license only)

If you wish to use a floating network type of license, you must install the license server on one machine of your choice. This is accomplished by running the EMA3D setup as described in "Installing EMA3D". The setup option "EMA3D License Manager Only" can be used to install just the license server on a machine where you do not want to install EMA3D.

The setup option "EMA3D" includes all the licensing software files -- running the "License Server Only" setup is not necessary if you have already run setup and chosen the "EMA3D" installation option.

License Server Startup (floating network license only)

Once the licensing software has been installed on a machine, the license server can be started by changing dir to the "lic" subdirectory of the EMA3D installation and using the following command:

```
% ./lserv -s ./lservrc
```

where, lservrc is the license file which has been installed in the "lic" subdirectory.

A command similar to the above may be put in a system startup script to start the license server every time the machine boots. See your system documentation or UNIX documentation for instructions on how to do this. For starting the server from such a startup script, you will want to use the command in the form:

```
<license_dir_path>/lserv -s <license_dir_path>/lservrc
```

I.e., use full pathnames in a startup script.

License Server Control Script (floating network license only)

A shell script is provided which may be used to control the license server (start and stop it). This script is located at

```
<installation_dir>/ema3d312/lic/slm_ema_daemon
```

This script will probably not work on your system as-is; it should be edited before use to customize it for your site (by setting certain directory pathnames in the script) and to customize it for your system (by adjusting organization, semantics, syntax or system commands) before using it.

> DISCLAMER: The license server control script is meant as an example or framework to be used by the system administrator as a time-saver compared to creating their own startup/control script from scratch. Since daemon startup scripts can vary widely between different implementations of UNIX, and are sometimes used differently even on different instances of the same system from the same vendor, EMA cannot guarantee that this script will work on your system, or that the script will not cause some undesirable effect on your system. The script should be studied carefully and understood before it is used. Use it at your own risk.

The script was developed on a Solaris 8 machine, so it conforms to Solaris-style startup script semantics and organization.

Note that the script launches the license server daemon process as user "slm". So you will either want to create such a user for running the daemon, or change the daemon startup line in the script to launch the daemon as a different user (running application daemons as user "root" is not recommended as a general precaution).

Step 2 & 3) Obtain machine locking codes and transmit them to EMA

Machine Locking Codes (Fingerprinting)

In order to obtain a license or licenses for the software you have purchased, you will need to obtain some machine locking codes for the machine on which the license server will run (in the case of network licensing), or the

machine(s) on which the EMA software will run (in the case of standalone licensing). This is done with the utility "echoid", which is part of the Rainbow licensing software. To run the utility, change directory to the "lic" subdirectory and run it by name at a command prompt as in the example below. The output from "echoid" in the example below is only a sample, your lock codes depend on your machine hardware configuration and will be different from those shown in the example.

example:

```
% cd <install_dir>/ema3d312/lic
% ./echoid

     SentinelLM 7.20 Host Lock Code Information Utility
       Copyright (C) 1998 Rainbow Technologies, Inc.


                Lock Code 1       1-2524D
                Lock Code 2       0-0

%
```

NOTE1: Do not confuse "echoid" with any native UNIX or Linux command. "echoid" is a utility included with the Rainbow Technologies licensing software used by EMA.

NOTE2: When running "echoid", the file "echoid.dat" MUST be in the current working directory from where you are running it, in order to generate the correct locking codes! Running "echoid" without first making the "lic" subdirectory your current working directory will result in incorrect locking codes. Always change dir to this directory first. (As an alternative, the file "echoid.dat" could be copied to your current working directory before the command "echoid" is run.)

Return the resulting locking code(s) to EMA and EMA will generate and issue appropriate licenses based on those locking codes.

Step 4 & 5) Receive and install license key file(s)

License Key File Installation

You will be issued one or more license codes to activate the EMA software you have purchased. Each license code is an alphanumeric string, usually e-mailed as an ASCII text license key file. When you receive a license key file, save it as (or save a copy of it as) a text file named "lservrc". Where you place the key file depends on whether you are using network or standalone licensing.

For standalone licensing:

Place the key file "lservrc" in the "bin" subdirectory of the EMA3D installation. This directory will be "<install_dir>/ema3d312/bin", the same directory containing the EMA3D executable program files. EMA3D will find the license key file when it runs by looking in the same directory where it lives. Do this on each machine on which EMA3D is installed and for which you have been issued a license.

For a standalone license on a UNIX or Linux system, you should also set the environment variable "LSERVRC" to the full path name of the license key file as in the following example:

example of setting LSERVRC to the license key file path name:

(Korn or Bourne shell):

```
unix prompt% set LSERVRC=<install_dir>/ema3d312/bin/lservrc
unix prompt% export LSERVRC
```

(or, more compactly):

```
unix prompt> export LSERVRC=<install_dir>/ema3d312/bin/lservrc
```

(C shell)

```
unix prompt% setenv LSERVRC <install_dir>/ema3d312/bin/lservrc
```

Note that LSERVRC should be set to the full path name of the file "lservrc", including the file name, not just the directory containing the file. Also note that LSERVRC should be exported (Korn or Bourne shell), or should be set as an environment variable rather than a shell variable (C shell), so that it will be visible in subshells. You might wish to put the command to set LSERVRC in users' login or shell-initialization scripts or a system login or initialization script.

For network licensing:

Place the key file "lservrc" in the "lic" subdirectory of the EMA3D installation. This directory will be "<install_dir>/ema3d312/lic", the same directory containing the license server executable program and other license manager files. If you are installing a new license file, you will have to stop the license server (which can be done with the tool "lsrvdown" in the "lic" directory) and re-start it to pick up the new license keys.

If you already have a network license key file named "lservrc" containing licenses for other EMA products, or for products from other vendors using the Sentinel License Manager license server, append the contents of the new key file to the existing file instead of replacing it.

License Key File Format:

The format of the license key file is important in order for the EMA software or license server to successfully read it. License keys issued by EMA will be in the correct format when they are sent. However, if the format becomes altered or if you experience trouble, the following are the important points to observe:

- Every line in a license file consists of a license code string, optionally followed by a comment. A '#' denotes the beginning of a comment.
- There should be exactly one license code string in each line of the file.
- Every line in the file must begin with a license code string and not some other text, not even a comment.
- The permissions of the file must be set so that the users (in the case of standalone licensing) or the license server (in the case of network licensing) have permission to read it.

Documentation:

For more detailed information about the Sentinel License Manager, refer to the "Sentinel License Manager System Administrator's Guide". It contains extensive documentation about the Sentinel License Manager, including many more features than are used by EMA3D. A copy of the guide is installed with EMA3D in the following location:

<install_dir>/lic/docs/SLM71sys.pdf

The file is named "SLM71sys.pdf". It is in Adobe Portable Document Format.

Appendix A: EMA3D Environment Variables

EMA3D is tied together with CADfix through several environment variables. Shell scripts to set these variables are created by the installation program and placed in the top-level installation directory, so setting these variables is automatically done if these scripts are sourced. However, if you experience trouble with environment variables, the following is a list and description of the required EMA3D environment variables, and their required values. Symptoms of trouble with EMA3D environment variables may include: EMA3D CADfix GUI toolboxes or tools not appearing under the drop-down list of toolboxes in the CADfix GUI; EMA3D macros not being found when you try to invoke them from CADfix (either from a tool button or by name from the CADfix command-prompt); a TCL error to the effect of "unknown command" or "command not found" when you try to launch an EMA3D CADfix GUI tool.

The following is a list of the necessary environment variables and their required values.

Variable	Meaning and required value
CADFIXSITECONFIG	Conveys to CADfix the location of the custom site-level CADfix configuration file, named "CADfix", which contains the definitions of the EMA-provided CADfix toolboxes and tool buttons which should appear in the CADfix GUI. Typical value: <install_dir>/ema3d312/fammacros
FAMMACROPATH	Conveys to CADfix the location of the custom EMA macros invokable from within CADfix either by name, or (for some macros) from a tool button inside an EMA toolbox. Typical value: <install_dir>/ema3d312/fammacros
EMATCL	Conveys to CADfix the location of the EMA TCL source files, which implement some of the EMA CADfix GUI tools that appear in some of the EMA toolboxes. Typical value: <install_dir>/ema3d312/tclsrc
EMABITMAPS	Conveys to some of the EMA CADfix GUI tools, the location of bitmaps which are displayed for illustrative purposes in some of the EMA CADfix GUI tool dialog boxes. Typical value: <install_dir>/ema3d312/tclsrc

Additional environment variables not related to CADfix:

Variable	Meaning and required value
PATH	Conveys to the system, the locations of directories in which to look for executable programs invoked from the command line. Typical value: <install_dir>/ema3d312/bin
MANPATH	Conveys to the system, the locations of directories in which to look for man pages. Typical value: <install_dir>/ema3d312/docs/man

Additional environment variables used by the EMA installation of gnuplot:

Variable	Meaning and required value
GNUHELP	Conveys to the gnuplot, the location of the gnuplot help file, so that interactive help is available from within gnuplot. Typical value: <install_dir>/ema3d312/ gnuplot4.0.0/share/gnuplot/4.0/gnuplot.gih
GNUPLOT_DRIVER_DIR	Conveys to gnuplot, the location of the directory containing the gnuplot X11 driver file necessary for the proper operation of gnuplot. Typical value: <install_dir>/ema3d312/gnuplot4.0.0/libexec/gnuplot/4.0

Environment variables used by the Sentinel License Manager licensing system:

Variable	Meaning and required value
LSERVRC	Specifies the location of the license key file "lservrc". This environment variable should only be necessary for a standalone license key. For a standalone key, it may be necessary to set this variable to enable the licensing in the application to locate the key file, which is normally placed in the EMA3D "bin" directory. The setup scripts contain a line to set this variable to the appropriate location for a standalone key file, but it is commented-out. It can be un-commented in the setup script if it is necessary for a standalone key file. For a floating network key file, it should remain commented-out. typical value: <install_dir>/ema3d312/bin/lservrc
LSHOST	For network/floating licensing only; Specifies the name of the license server machine for network licensing. If you are using a floating network license, this environment variable can be set to the name of the machine running the license server. Normally this is not necessary as the application uses a subnet broadcast to locate any available license server. However, if the license server is on a different subnet than the machine running the application, you will need to set this environment variable in order for the application to locate the license server, since subnet broadcast is only received by machines on the same subnet. You can also set this, if you wish, to disable the broadcast mechanism and direct the application to directly contact the specified machine for a license. The license server machine can be specified either by name or by IP address.

For more information or assistance with environment variables, consult your UNIX documentation or system documentation or contact EMA, Inc.

Appendix B: Platform Compatibility & System Requirements

The following are the system requirements for EMA3D version 3.1 for UNIX. Please note that these are the system requirements for EMA3D only. CADfix (a separate software package that serves as a graphical front- and back-end to EMA3D) has its own system requirements that are separate from those listed below for EMA3D. Consult the CADfix Installation Guide for system requirements for CADfix.

Some system requirements are platform-specific, others are common to all variants of UNIX.

SUN Solaris

The SUN Solaris version of EMA3D in this distribution was prepared on a SUN Ultra60 running Solaris 8. Here are the SUN Solaris-specific system requirements:

Hardware Platform:
processor: SUN SPARC family processor.

Software Platform:
operating system: Solaris 8 or compatible.

SGI IRIX

The SGI IRIX version of EMA3D in this distribution was prepared on an SGI Octane running IRIX 6.5.20. Here are the SGI IRIX-specific system requirements:

Hardware Platform:
processor: SGI MIPS processor or compatible.

Software Platform:
operating system: SGI IRIX 6.5.x.

Linux

The Linux version of EMA3D in this distribution was prepared on a 32-bit Intel platform running Red Hat Enterprise Linux 3.0. Here are the Linux-specific system requirements:

Hardware Platform:
processor: Intel x86-family 32-bit processor.

Software Platform:
operating system: RedHat Enterprise Linux 3.0 (kernel 2.4) or compatible.

UNIX (all)

Here are the system requirements common to all versions of UNIX:

Hardware Platform:	
hard disk space (installation):	160 MB
hard disk space (user)*:	1 GB minimum, 5 GB or more recommended
system memory**:	256MB minimum, 500MB - 2 GB recommended
swap file size:	appropriately proportional to system memory (for example, 100% to 150% of system memory size is one commonly used rule of thumb)
graphics card/display:	no graphics card or display requirement

Software Platform:	
graphics system:	no graphics requirement

*User disk space requirements vary significantly depending on the amount of input and output data required for a particular EMA3D problem (input/output data file size), and the amount of space required for associated data files that may be produced in the course of pre- or post-simulation analysis. In fact, input and output data file size can vary for the same problem depending on length of simulation, number of output probes and time-spacing of output data points, and many other factors. Since disk space is rather cheap, a good rule of thumb is "the more, the better".

**System memory requirements vary significantly depending on what types of problems you want to solve with EMA3D. The memory image size of a particular EMA3D problem is affected by many, many factors related to the nature of the problem and how you are solving it. There is technically no upper limit to the possible memory image size of an EMA3D problem, while some useful EMA3D problems can be solved with only a few kilobytes of memory. Experience and familiarity with the software will, over time, give you a feel for how much memory you need to solve your problems of interest; there are no other strict requirements. The requirements mentioned are very rough guidelines only, and should allow you to solve a variety of useful EMA3D problems.

For more specific advice regarding memory requirements for your problems of interest, contact EMA, Inc.

Please note that these are memory requirement suggestions for the EMA3D problem memory image size by itself, and does not include memory required by the operating system. For best performance, additional memory should be allowed for the operating system and/or other applications or system software.

Appendix C: CADfix Compatibility

EMA3D version 3.1 is designed for use with CADfix versions 5.1, 6.0, and 7.0. CADfix is a product of Transcendata Europe Ltd.

Appendix D: Gnuplot Copyright

Gnuplot is distributed with EMA software in accordance with the Gnuplot Copyright, quoted here:

GNUPLOT v4.0.0 COPYRIGHT

```
/*[
 * Copyright 1986 - 1993, 1998, 2004   Thomas Williams, Colin Kelley
 *
 * Permission to use, copy, and distribute this software and its
 * documentation for any purpose with or without fee is hereby granted,
 * provided that the above copyright notice appear in all copies and
 * that both that copyright notice and this permission notice appear
 * in supporting documentation.
 *
 * Permission to modify the software is granted, but not the right to
 * distribute the complete modified source code.  Modifications are to
 * be distributed as patches to the released version.  Permission to
 * distribute binaries produced by compiling modified sources is granted,
 * provided you
 *   1. distribute the corresponding source modifications from the
 *    released version in the form of a patch file along with the binaries,
 *   2. add special version identification to distinguish your version
 *    in addition to the base release version number,
 *   3. provide your name and address as the primary contact for the
 *    support of your modified version, and
 *   4. retain our contact information in regard to use of the base
 *    software.
 * Permission to distribute the released version of the source code along
 * with corresponding source modifications in the form of a patch file is
 * granted with same provisions 2 through 4 for binary distributions.
 *
 * This software is provided "as is" without express or implied warranty
 * to the extent permitted by applicable law.
]*/
```