

# **ADINA System 9.3**

## **Installation Notes**

*for*

**x86\_64 Linux**

**ADINA R & D, Inc.  
71 Elton Avenue  
Watertown, MA 02472**

**support@adina.com  
www.adina.com**

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### System Requirements

The following table describes the system requirements for ADINA System 9.3. The solver programs are available in the AVX (advanced vector extensions) version and non-AVX version.

Category	Minimum Requirement
Operating System	Linux kernel 2.6.18, glibc 2.5  Linux kernel 2.6.32, glibc 2.12 (AVX version)
Hardware	About 500 MB free disk space CD-ROM drive if installing from CD
Software	Intel Fortran compiler (optional) version 11 (or 14 for AVX version) to customize the user-coded subroutines
Memory	256 MB (more recommended)

## 1. Installation and Setup

### 1.1 Mounting the CD-ROM Drive

If you are installing the ADINA System 9.3 from the self extracting file downloaded from the ADINA ftp site, please skip to Section 1.2.

Insert the ADINA System 9.3 CD in the CD-ROM drive and mount the drive if it is not automatically mounted. The `mount` command described below is provided as a reference. Please consult your system administrator if you have problem mounting the CD-ROM drive.

```
mount /mnt/cdrom (or /media/cdrom)
```

### 1.2 Selecting the ADINA Home Directory

Select the directory to install the ADINA System. This directory will be referred to as the "ADINA home directory" or `<ADINAHOME>`. Create the directory if it does not exist. Change the working directory to the ADINA home directory.

For example, if the ADINA home directory is `/usr/adina93`, the commands will be:

```
umask 022
mkdir /usr/adina93
cd /usr/adina93
```

### 1.3 Starting the Installation

If you are installing from the CD, enter the command to start the setup script.

```
sh <CD-ROM mount directory>/setup
```

If you are installing from the self-extracting file **adina93#.x64**, make sure the file has execute permission. Place the file in the `<ADINAHOME>` directory and run it.

```
chmod +x adina93#.x64
./adina93#.x64
```

If the machine supports AVX, the setup will install the AVX version by default. Otherwise, it will install the standard non-AVX version by default.

During the setup, you will be asked for the type of ADINA license you have. The procedures for setting up the node-locked license and floating license are described in Sections 1.4 and 1.5 respectively.

## 1.4 Node-Locked License Setup

During installation setup, you will be prompted whether you want to install the password. The automatic node-locked license installation can read either an existing license file (**license.dat**) or the license file (renamed as **adina.txt**) that you receive from ADINA R & D.

To obtain the license file, please run the **adhostid** command to get the system ID of your machine and send the system ID to ADINA R & D ( [password@adina.com](mailto:password@adina.com) ). The license file will be sent to you via email.

The easiest way to install the password is to rename the license file received via email as **adina.txt** and placing it in the ADINA home directory for automatic installation. If you did not install the password during setup, you can use the **adpass** script to install the password at any time.

```
cd <ADINAHOME>
./adpass
```

## 1.5 Floating License Server Setup

The ADINA floating license uses the Reprise License Manager (RLM). Note that the license server machine can be a Linux or Windows machine.

For **University users**, you need to provide the IP subnets where ADINA will be used, e.g. 152.12.\*.\*. You may specify up to 5 subnets.

On the machine to be used as the ADINA floating license server,

1. Run the **rlmhostid** command (in <ADINAHOME>/rlm) to obtain hostid for the server.

```
cd <ADINAHOME>/rlm
./rlmhostid ether
```

Send the output of the above **rlmhostid** command to ADINA R & D ( [password@adina.com](mailto:password@adina.com) ).

2. Once you receive the floating license file (e.g., **yourcomp.lic**), put the file in the <ADINAHOME>/rlm directory and start the rlm license server program using the command **rlm**.

```
./rlm -dlog rlm.log &
```

where **rlm.log** is the server debug log file.

For more information on the RLM License Administration, please refer to the document **RLM\_License\_Administration.pdf** in <ADINAHOME>/rlm. Note that not all options described in the document are available in the ADINA System.

## 1.6 Accessing the ADINA System

The shell scripts to access the ADINA System are all located in the **tools** subdirectory. Therefore, you should add the directory **<ADINAHOME>/tools** to the user's command search path for the user to properly access the ADINA system.

The script to start ADINA User Interface (AUI) program is `au9.3`. You can access the components of the ADINA System from the AUI. The individual components of the ADINA System can also be accessed using the following scripts:

<b>Component / Feature</b>	<b>Script</b>
AUI (ADINA User Interface) program	<code>au9.3</code>
ADINA Structures, ADINA Thermal, ADINA CFD/EM, ADINA FSI (Fluid-Structure Interaction) and ADINA TMC (Thermo-Mechanical Coupling) Solvers	<code>adina9.3</code>
User Interface for Solution Programs ADINA Graph View (-graph option) ADINA FSI/CFD Steered Adaptive Meshing (-adp option)	<code>ai9.3</code>
Verification problem checking	<code>apdiff</code>

Each of these scripts supports the `-help` option, which provides a description of the available options for the script.

## 1.7 Verification Problems

The `samples` subdirectory contains the set of verification problems (in batch commands) to help you verify your installation as well as to build your own models. It contains the following subdirectories and the `ref.pl2` file. In particular, the ADINA primer problems provide step by step tutorials with instructions given in the ADINA Primer manual.

Directory/File	Contents
<code>a</code>	ADINA Structures linear problems
<code>b</code>	ADINA Structures nonlinear problems
<code>em</code>	ADINA EM (ElectroMagnetics) problems
<code>f</code>	ADINA CFD and ADINA FSI problems
<code>t</code>	ADINA Thermal and ADINA TMC problems
<code>primer</code>	ADINA primer problems
<code>iges</code>	ADINA-AUI IGES interface examples
<code>ref.pl2</code>	Reference result file

## 1.8 Online Manuals

The ADINA manuals are available as online pdf documents. You need to select the option to install the online documents in order to access them. To view the online documents, you also need to have a pdf reader (e.g., Acrobat Reader). If you do not have any pdf reader on your system, you can download and install one from the internet.

The online manuals can be accessed through the AUI Help menu or by opening the files directly from the `<ADINAHOME>/docs` directory. In addition, specific help (html files) on the use of the AUI is also available from the Help menu or the individual dialog boxes.

## 2. User-Coded Subroutines

The user-coded subroutines for ADINA Structures, ADINA Thermal, ADINA CFD are used to incorporate user-coded materials and loadings (Structures only) into the ADINA System. These user-coded subroutines are compiled and linked into a shared library (`lib*.so` file) which is then loaded automatically in the corresponding executable when the program starts.

### 2.1 Building the Shared Library

Building the shared library is the same as building any other FORTRAN programs. The compiler and linker options are all set up properly in the `Makefiles` located in the `adina9.3`, `adinat9.3`, `adinaf9.3`, `adfsi9.3` and `adtmc9.3` or corresponding `*_avx` subdirectories, and you can simply type `make` to rebuild the corresponding shared library. Please refer to the ADINA Theory and Modeling Guide manuals for instructions to modify the user-coded subroutines.

### 2.2 Location of the Shared Library (option `-lib`)

(Note: The ADINA program will not start if the shared library is not found.)

The default location of the shared library is in the same directory as the respective executable (i.e., in the `adina9.3`, `adinat9.3`, `adinaf9.3`, `adfsi9.3`, `adtmc9.3` or corresponding `*_avx` subdirectories respectively). The script `adina9.3`, supports the `-lib` option which can be used to specify the directory that contains the corresponding shared library. This `-lib` option is very useful if you have a different number of user-coded materials/loadings, as you can keep the corresponding shared libraries in different directories and use the `-lib` option to select the one you want to use.

### 3. File Naming Conventions

The ADINA System uses certain filename extension conventions. The most common file extensions are listed in the table below (the problem name is *femodel*). Note that not all files are produced or required for a particular analysis.

<b>Filename</b>	<b>Description</b>
<b>Pre-Processing</b>	
<i>femodel.in</i>	ADINA-IN input file
<i>femodel.ilg</i>	ADINA-IN log file
<i>femodel.idb</i>	ADINA-IN database file saved by the AUI
<b>Analysis</b>	
<i>femodel.dat</i>	ADINA Structures, Thermal, or CFD/EM input file generated by the AUI pre-processor
<i>femodel.out</i>	Analysis output file
<i>femodel.msg</i>	Analysis message file
<i>femodel.por</i>	Analysis porthole (result) file
<i>femodel.res</i>	Analysis restart file
<i>femodel.map</i>	Analysis mapping file
<i>femodel.log</i>	Additional output files for ADINA FSI and ADINA TMC analyses
<i>femodel.rto</i>	ADINA Structures runtime option file
<i>femodel.mds</i>	ADINA Structures mode shape file
<i>femodel.tem</i>	ADINA Structures temperature file
<i>femodel.tgr</i>	ADINA Structures temperature gradient file
<i>femodel.mtx</i>	ADINA Structures stiffness and mass matrix file
<i>femodel.ite</i>	Convergence history file for ADINA FSI/CFD analysis with FCBI-C elements, or ADINA Structures nonlinear analysis
<i>femodel.egy</i>	Energy output file requested for an ADINA Structures analysis
<b>Post-Processing</b>	
<i>femodel.plo</i>	ADINA-PLOT input file
<i>femodel.pl2</i>	ADINA-PLOT check list file
<i>femodel.pdb</i>	ADINA-PLOT database file saved by the AUI