

# **ADINA DMP System 9.3**

## **Installation Notes**

*for*

**Linux (only)**

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## 1. About ADINA DMP System 9.3

The ADINA Distributed Memory Processing (DMP) System 9.3 is available for clusters composed of x86\_64 running Linux (kernel 2.6 or higher). Currently, it is capable of solving ADINA, ADINA-F and ADINA-FSI models.

In ADINA DMP, the solution process for explicit and implicit problems is different. For explicit problems, the force vector assembly and all explicit contact algorithms are DMP, while for implicit problems only the sparse and 3-D iterative solvers are DMP. Consequently, the file handling is different. For successful explicit solutions, ADINA creates a set of output files per node and indexes it automatically, while for successful implicit solutions, there is only one set of output files. In ADINA-F DMP and ADINA-FSI DMP, only the sparse solver is DMP and there is only one set of output files. For more information regarding the ADINA DMP System and how the DMP programs work, please refer to the installed documentation located on `<ADINA_DMP_HOME>/docs` (`<ADINA_DMP_HOME>` is the ADINA DMP System installation directory).

In order to use the ADINA DMP System, a special DMP floating license is required. Please see the next sections for the complete list of hardware and software prerequisites, including how to obtain a DMP floating license.

## 2. ADINA DMP System prerequisites

The following are the hardware and software prerequisites for the ADINA DMP System:

- a Beowulf cluster composed of x86\_64 processors running a Linux operating system with kernel 2.6 or higher,
- the communication protocols rsh and rlogin (and ssh if chosen during installation of ADINA DMP) on the cluster must work without a password requirement,
- the firewall must be turned off on all nodes of the cluster,
- the hypervisor capability in Red Hat Enterprise Linux 7 and later versions must be disabled—the interface `virbr0` must be shut down and the service `libvirtd` disabled
- the ADINA DMP System must be installed on a shared partition, that is, on a global file system (e.g., a file system mounted on all the cluster nodes via NFS), and
- a special DMP floating license must be obtained from ADINA R & D, Inc. (see below).

Note that the ADINA DMP System comes together with self-contained Message Passing Interface (MPI) executables. It uses Open MPI 1.4.3. Consequently, the user does not need to install an MPI package.

### 3. Installing ADINA DMP

#### 3.1 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 3.2.

Insert the ADINA DMP System 9.3 CD in the CD-ROM drive and mount the drive if it is not automatically mounted.

The typical mount command in Linux is

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

Please consult your system administrator if you have a problem mounting the CD-ROM drive.

#### 3.2 Selecting the ADINA DMP System installation directory

Select the directory to install the ADINA DMP System, i.e., the ADINA DMP System installation directory or <ADINA\_DMP\_HOME>. Note that it must be a global directory on your cluster. If it does not exist, then create the directory. Change the working directory to the ADINA DMP System installation directory.

For example, if the ADINA DMP System installation directory is `/usr/adina_dmp93`, the commands will be:

```
umask 022
mkdir /usr/adina_dmp93
cd /usr/adina_dmp93
```

#### 3.3 Starting the setup Script

If you are installing from the CD, copy the contents of the CD to <ADINA\_DMP\_HOME> and then start the setup script from that directory.

```
./setup_dmp
```

If you are installing from the self-extracting file `addmp9.3.#.tar.gz`, place the file in the <ADINA\_DMP\_HOME> directory, unzip and untar it.

```
tar xzvf addmp9.3.#.tar.gz
```

Then run the `setup_dmp` script to install DMP onto your cluster.

```
chmod +x setup_dmp
./setup_dmp
```

During the setup you will be asked for the type of ADINA floating license that you have, the name or IP address of the floating license server, whether InfiniBand is used instead of TCP for networking, as well as for the remote execution tool that ADINA DMP will use on your cluster (e.g., rsh, ssh).

### 3.4 How to obtain a DMP floating license

A license server machine must have been set up previously. This is done with the standard (non-DMP) ADINA System installation disk. Note that the license server machine does not necessarily need to be a node of the cluster. It can be any external machine that is accessible to the cluster via a network.

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
./adrlmid
```

Send the output of the above adrlmid 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.

### 4. Additional information

Information on running ADINA DMP as well as answers to frequently asked questions on ADINA DMP may be found at <ADINA\_DMP\_HOME>/README\_DMP.