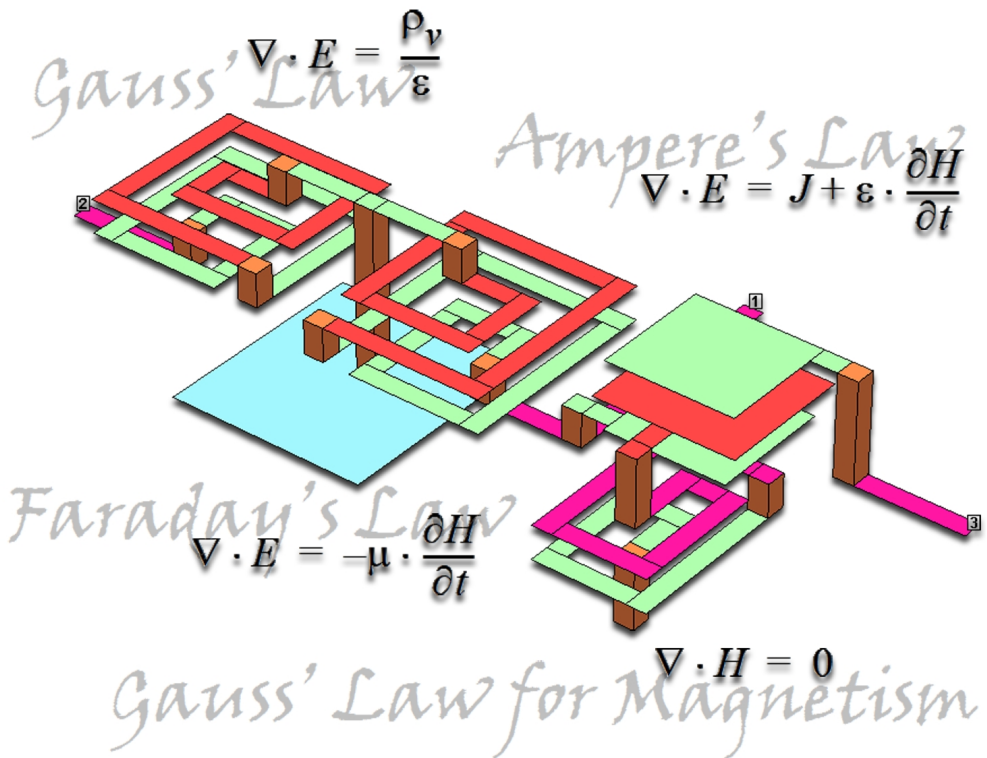




High Frequency Electromagnetic Software

Sonnet[®] Suites Release 17



Linux Installation

Linux Installation

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Linux Installation Manual

1. Requirements

For up to date requirements and testing status, please refer to:

<http://www.sonnetsoftware.com/requirements>

2. Linux Installation Instructions

Installation

These instructions are for users who are loading in Sonnet on a Linux platform. You may do the installation remotely.

1. Obtaining Licensing Information

All users, both previous and new, require a new license. This is true even if you are upgrading from a beta version of this release. You may request a license from the Sonnet web site:

www.sonnetsoftware.com/license

Follow the on screen instructions to request your license.

In response to your license request, Sonnet will email licensing information which allows you enable your software. Once you have received your licensing information from Sonnet, continue the installation at [Installing the Software](#).

2. Installing the Software

Sonnet may only be installed on 64 bit systems, 32 bit systems are not supported.

Please verify all package dependences have been installed prior to installing Sonnet. For a complete list of required packages please visit:

<http://www.sonnetsoftware.com/requirements>

You may run the installation of the software from any directory you wish; just substitute your pathname in place of “/tmp.” To load in the software, do the following:

- a) Login as root.

NOTE: The software does not need to be loaded in using root. However, we suggest that you use root so that users are prevented from changing or removing the Sonnet modules. The software may be loaded under any account.

- b) Download and save the .tar file to the /tmp directory using the download instructions that were emailed to you.
- c) Extract the .tar file using:

```
tar xvf sonnetsuite.<version>.linux64.tar
```

where <version> is the version number of the software you are installing. This will create a sub-directory called "sonnetsoftware."

The sonnetinstall script requires qt5-qtbase for X86_64 to be installed. Please verify this is installed on your system before performing the next step of running the sonnetinstall script.

- d) Change directory to "/tmp/sonnetsoftware/"
- e) Type:

```
./sonnetinstall
```

Then follow the screen instructions. You may install the software in any directory you wish; enter the desired pathname when prompted by the installation script.

3. User Environment Setup

To execute the software, you must first define the environment variable, SONNET_DIR, to the directory where you loaded in the software, then add the directory, "\$SONNET_DIR/bin", to your PATH. Also, Sonnet is a graphical program and requires that you define your DISPLAY variable.

Home Directory and Display

NOTE: In the instructions below, replace <Sonnet Directory> with the name of your Sonnet directory.

You do not need to set your DISPLAY if the DISPLAY is already set.

csh users: If you are using csh, then you should have the following lines in your ".login":

```
setenv SONNET_DIR <Sonnet Directory>
```

```
set path=( $path $SONNET_DIR/bin )
```

```
setenv DISPLAY :0
```

After updating your ".login" file, log out of the system, then log back in to

activate the changes.

sh, ksh, and bash users: If you are using sh, ksh, or bash, then you should have the following lines in your “.profile”:

```
SONNET_DIR=<Sonnet Directory>; export SONNET_DIR
```

```
PATH=$PATH:$SONNET_DIR/bin; export PATH
```

```
DISPLAY=:0; export DISPLAY
```

After updating your “.profile” file, log out of the system, then log back in to activate the changes.

4. Installing the License

The license is used in conjunction with the license manager to determine which products you are authorized to use. You must have a license to run Sonnet Suites.

You should have received your license information in response to the License Request form you sent to Sonnet. Your license information should have been sent in an e-mail.

Please follow the instructions in your email to install the license file. Once the license file is installed, continue with [Starting the License Manager](#).

5. Starting the License Manager

Before you can run the Sonnet programs, you must start the license manager daemon, lmgrd. The lmgrd program will start-up the Sonnet vendor daemon, sonnetd. You can have only one Sonnet vendor daemon running on a particular license server.

NOTE If your license server uses a firewall, the firewall must be configured to allow the two licensing programs, “lmgrd” and “sonnetd” to execute. Please see your system administrator for instructions on configuring your firewall.

Start the license manager on the license server.

Type:

```
bin/sflexnet start
```

6. Start License Manager on Boot

Typically, you will want to start up the license manager daemon each time you reboot the server. To do this you must make a change to your system startup files to start up the license manager daemon automatically on bootup. If you are upgrading to a new release of Sonnet Suites then these changes may have already been made. If you wish to use FLEXnet commands directly to start up the license manager then see [Starting FLEXnet Using lmgrd](#).

NOTE: In the instructions below, replace <Sonnet Directory> with the full path to our Sonnet directory.

To change the startup files on your system, so that the license manager daemon automatically starts when you reboot the server, you should run the program soninstallservice. For instructions on running this program, type:

```
cd <Sonnet Directory>
```

```
bin/soninstallservice -h
```

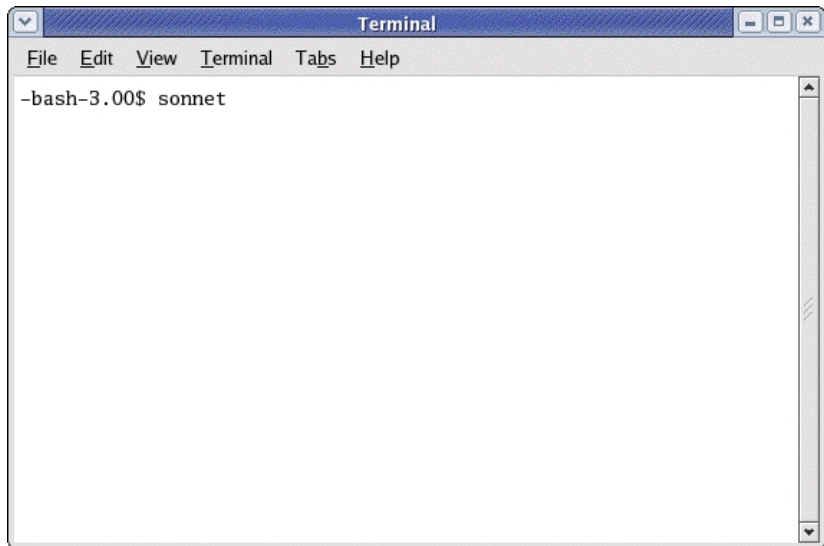
where <Sonnet Directory> is the name of the directory in which you installed Sonnet Suites.

You may also use this utility to install the Remote **em** service. Please refer to the **Remote em Computing** manual.

7. Testing the Installation

Test the installation by opening a New Geometry project in the project editor. To do so, perform the following

- a) **Open a terminal.**
- b) If you do not know how to do this, please see your system administrator.



- c) Enter "sonnet" at the prompt.

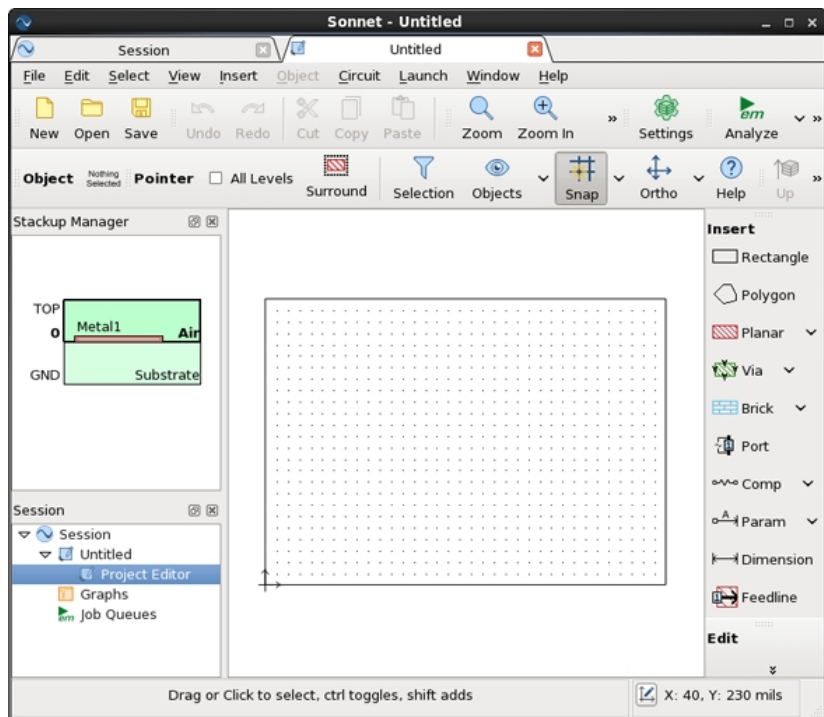
The Sonnet session window appears on your display.

- d) Click on the Edit Project button on the Sonnet task bar and select "New Geometry" from the pop-up menu which appears.



Edit
Project

If the installation was successful, this opens a Sonnet session window with a project editor tab displaying a new geometry file open as shown below.



8. Verifying OpenGL is installed.

OpenGL must be installed on each Linux platform where the project editor and current density viewer are executed. To verify if you have OpenGL installed, follow the directions below: If OpenGL is not installed then see your system administrator.

Run the following command:

glxinfo | grep OpenGL

If OpenGL is installed, you will see something like the following:

```
OpenGL vendor string: Mesa project: www.mesa3d.org
OpenGL renderer string: Mesa GLX Indirect
OpenGL version string: 1.2 (1.4 Mesa 5.0.2)
OpenGL extensions:
```

If OpenGL is not installed, then nothing will be displayed.

Removing the Software from your System

If you have an evaluation copy of Sonnet Suites, you should remove the software once your evaluation is completed.

To remove the software from your system:

1. **Login as root.**
2. **Stop the license manager**

Type:

```
cd <Sonnet Directory>  
bin/sflexnet stop  
cd ..
```

3. **Remove the software.**

Type:

```
rm -rf <Sonnet Directory>
```

3. Get Host ID

If you are evaluating or purchasing then you will need to select a machine to act as the license server. All of the requests for licenses will be sent to this server. If you have a floating license, then you will be able to run Sonnet Suites on any supported platform in the network. If you are purchasing a node-locked license, then you must also get the hostid for the machine to which the software is locked.

For triple-redundant servers, list all three hostids.

For Linux PC license servers, your Host ID is the Ethernet address.

Get Host ID with Suites not yet Installed

If you have not yet installed Sonnet Suites, then you may obtain the hostid using the instructions below:

Linux PC:

Your hostid is your ethernet address. To obtain your ethernet address, enter the following command on the license server:

```
/sbin/ifconfig eth0
```

The value after HWaddr in the output is your ethernet address; you should remove the colons. An example is shown below with the ethernet address in bold. After removing the colons the value is 000BDBC7A4DE

```
11.02.0.059 alpha (mfg)> /sbin/ifconfig eth0
eth0 Link encap:Ethernet HWaddr 00:0B:DB:C7:A4:DE
inet addr:192.56.4.17 Bcast:192.56.4.255 Mask:255.255.255.
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:409190 errors:0 dropped:0 overruns:0 frame:0
TX packets:79932 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:512123697 (488.3 Mb) TX bytes:15198013 (14.4 Mb)
```

Get Host ID with Suites Installation Already Completed

This sections applies to all Linux license servers. If you have already installed the software from Sonnet, then you may obtain the hostid by performing the following:

1. Log on to the license server, open a terminal and type:

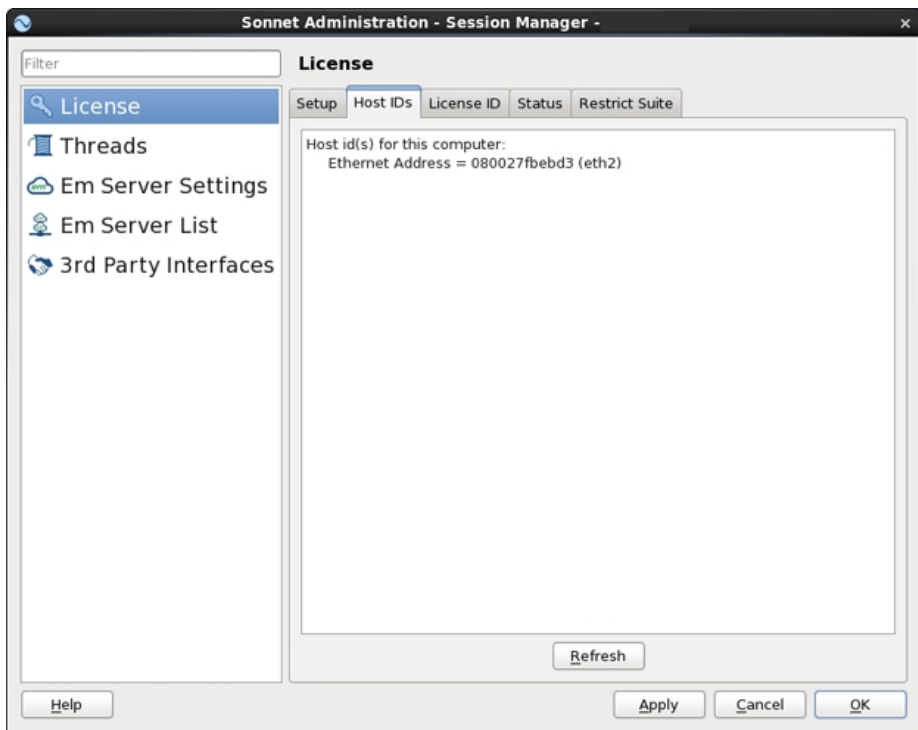
```
sonnet
```

2. When the Sonnet session window appears on your display select **Admin** ⇒ **License** from the main menu.

The Sonnet Administration dialog box appears with the License page displayed.

3. If it is not already selected, click on the Host IDs tab.

The Host IDs tab is displayed with the HostID for the server in the window.



4. FLEXnet Licensing Support

This release of Sonnet Suites implements floating licensing using FLEXnet Licensing from Flexera Software (previously Macrovision). You may already be familiar with this software since most vendors use it to manage their licenses. This section talks about Sonnet Suites specific issues for FLEXnet Licensing. Refer to the [FLEXnet License Administration Guide](#) available in the PDF format on the Sonnet web site, for a detailed description of FLEXnet licensing. This manual is published by Flexera Software.

FLEXnet Standard Configuration for Sonnet Suites

The following is the standard configuration for Sonnet

Version	FLEXnet Licensing 11.14.1.3
License File	\$SONNET_DIR/licenses/sonnet.lic
Option File	\$SONNET_DIR/licenses/license.opt
Log File	\$SONNET_DIR/log/flex*.log
Daemon Name	sonnetd
Time out default	15 minutes

Sonnet Suites uses FLEXnet Licensing 11.14.1.3. You must be cautious if you plan to combine Sonnet Suites with other vendor licenses. When combining license files, you must use a single license manager daemon (lmgrd). You can not use Sonnet Suites with an earlier version of lmgrd.

The Sonnet graphical tools, such as **xgeom**, and **emvu**, all have time-out enabled. If these programs are not used in 15 minutes, another user may check out the timed-out license. The default time-out period can be changed using the FLEXnet licensing TIMEOUT feature stored in the options file.

If the "sonnet.lic" file is stored in "\$SONNET_DIR/licenses" directory, then all Sonnet programs internally set the SONNETD_LICENSE_FILE environment variable to "\$SONNET_DIR/licenses/sonnet.lic". Therefore, the users do not have to set this

environment variable. If the “sonnet.lic” file is moved to a different directory, then this variable must be set.

FLEXnet licensing Administration *sflexnet*

For your convenience a script called ***sflexnet*** has been added to help administer FLEXnet licensing. From ***sflexnet*** you can start and stop the licensing manager and get a status of the licenses. To get a full list of options, type in “*sflexnet*”, then type in “help”.

Some commands that *sflexnet* can handle are:

start	Starts the license manager. Before the license manager is started, <i>sflexnet</i> makes sure another license manager is not already running. Also, a new log file is created in “\$SONNET_DIR/log”. By default, 5 log files are kept around.
stop	Stops the license manager by executing the <i>lmdown</i> command. If the <i>lmdown</i> command is not successful, you will be asked if you want to kill the license manager.
restart	Restarts the license manager by executing a “stop” then a “start”.
status	Determines the status of the license manager.
status -a	Determines the status of all of the licenses.
status <feature>	Determines the status of a specific feature. To determine the names of the features use “status -a”.
diag <feature>	Tries to get a license for the feature. Prints out diagnostic information if a license can not be obtained. Useful in determining why a license can not be obtained by a user.
log	Prints out the last 10 lines of the license manager log file.

You can either execute ***sflexnet*** as an interactive utility or you can run single ***sflexnet*** commands by typing in “***sflexnet*** <command>”.

The script ***sflexnet*** actually executes FLEXnet commands and handles setting the environment for these commands. From ***sflexnet*** you can execute FLEXnet commands directly, like ***lmstat***, ***lmhostid***, ***lmdown***, etc. For example, to get the status of the ***xgeom*** license, type:

```
sflexnet lmstat -f xgeom
```

For a description of FLEXnet commands see the License Administration Tools chapter in the [FLEXnet License Administration Guide](#).

Sflexnet assumes that the license file is stored in “\$SONNET_DIR/licenses/sonnet.lic”.

Starting the License Manager

Before you can run any of the Sonnet Suites programs you must have the license daemon running on the license server. You can start the license daemon, one of three ways:

- **Suggested method:** Start the FLEXnet license manager in the server's local system startup files. See [Start License Manager on Boot](#) for instructions.
- Start the license daemon by running the “***sflexnet start***” command on the license server. This must be done each time the license server machine is rebooted.
- Run any of the Sonnet Suites programs on the license server machine. If the license manager is not running, then it will be started up automatically.

Starting FLEXnet Using Imgrd

You may have other applications using FLEXnet licensing for licensing and wish to start the license server the same way as your other applications. In general, ***sflexnet*** was created to simplify the startup procedure, but it is not necessary. You can directly access the FLEXnet commands. All of the FLEXnet commands are delivered in the “\$SONNET_DIR/arch/linux64/flexnet64” directory. An example of a startup line using the FLEXnet module directly is:

```
/opt/sonnet/arch/linu64/flexnet64/lmgrd -c /opt/sonnet/licenses/sonnet.lic
```

Updating the “sonnet.lic” File

You may at times receive a new “sonnet.lic” file. When this occurs, you will have to restart the license manager. This section explains how this is done. For the experienced FLEXnet administrator, you may want to do a “lmreread” instead of restarting the license manager.

Before restarting the license manager, you should backup the existing license file and save the new “sonnet.lic” to the same location. Edit the “sonnet.lic” file and on the SERVER line change “this_host” to the hostname or IP address of the license server.

The following are instructions to restart the license manager.

1. First login as “root” on the license server.
2. Change directory to the Sonnet Suites directory.

Type:

```
cd <Sonnet Directory>
```

3. Determine the users that are using the Sonnet Suites applications.

Type:

```
bin/sflexnet status -a
```

4. Ask these users to quit their Sonnet Suites applications.

Users who are using Sonnet programs like **em**, **xgeom**, etc. may lose their license when the license manager is restarted. These programs will have to be exited, then restarted. Note that in **xgeom**, even without a license the users may still save their work to a file. Also, in all of the applications it may take a few minutes before the application actually loses the license.

5. Restart the license manager.

Type:

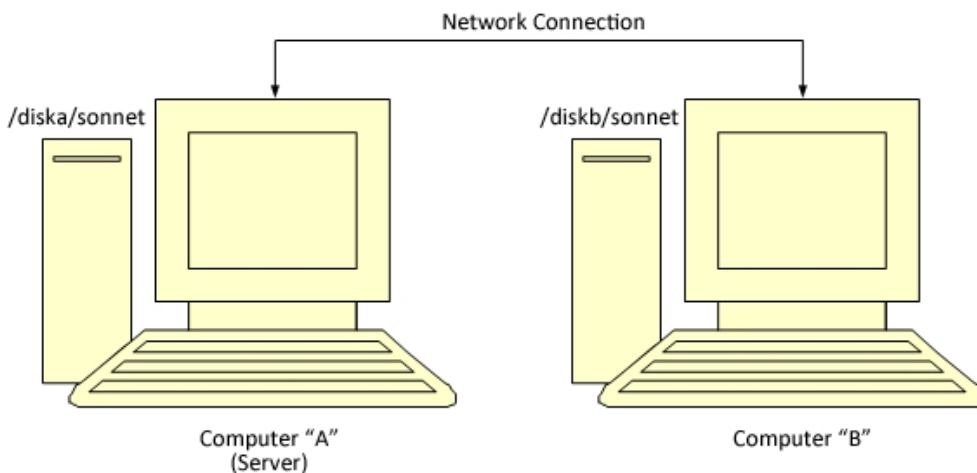
```
bin/sflexnet restart
```

The **sflexnet** program will run lmstop then lmgrd to restart the license manager.

Networked Computers with Local File Systems

The instructions in this manual assume that your computers share a common file system. However, your network may not have a common file system. Instead it may only have local file systems. The example that follows explains the installation procedure for computers that are on the same network but do not share a common file system.

Suppose you have two machines, “A”, and “B” with disks “/diska” and “/diskb” as shown below, follow these steps:



1. Follow the installation instructions in [Linux Installation Instructions](#) for the server (Computer “A”). Make sure this is running properly before proceeding.
2. Copy the software from /diska/sonnet to /diskb/sonnet. This copies all of the software, including the “sonnet.lic” file.
3. Run “sonnetconfig” on computer “B”.
4. Redefine the SONNET_DIR variable to point to “/diskb/sonnet” for users logged onto computer “B”, and “/diska/sonnet” for users logged onto computer “A”.

NOTE: The license manager runs only on the license server (computer “A”). Do not attempt to start the license manager on any other computer (computer “B”).

Sonnet Suites applications may now be run on either computer. When a Sonnet Suites application is run on computer “B”, it reads the SERVER line in the license file on

“/diskb/sonnet” and determines that computer “A” is the server. It then requests a license from the license manager running on computer “A”.

Combining Licenses

You may combine the Sonnet licensing information with other applications using FLEXnet. You can either use a single lmgrd with multiple license files or a single lmgrd with a single license file. Refer to the [FLEXnet License Administration Guide](#) for a detailed description of FLEXnet. Before attempting to combine license files, you should be very familiar with this manual.

When combining license files, you must use a single license manager daemon (lmgrd). You can not use Sonnet Suites with an earlier version of lmgrd, therefore you must use the most recent version of lmgrd.

In general, we suggest that you do not combine Sonnet's license with other vendor's licenses. If, however, you wish to combine the licenses, we suggest that you first run Sonnet Suites separately from other FLEXnet applications to verify that you have a good license and that the license manager works. Then you can combine the licenses.

Once you have combined the licenses, you must set the SONNETD_LICENSE_FILE variable to point to the location of the “sonnet.lic” file.

Licensing Functionality

FLEXnet can give you some useful features. For example,

- You can make a list of users who may only have access to a specific feature. For example, a specific group may have purchased the software. You could restrict the users of the software to only users in this group.
- You may prevent a user or users from accessing a specific feature.
- You can reserve copies of a feature for a specific user or host. For example, you can reserve a copy of **xgeom** for a specific user or for a specific computer.

5. License Usage for Multi-threaded Processing

There are two types of multi-threaded licenses for Sonnet Suites. The Desktop license which enables up to eight threads of processing at one time and the High Performance license which allows you to use up to 64 threads at a time. It is not uncommon to have both types of licenses available when using floating licenses for multiple users. In this case, the software uses an algorithm whose intention is to make the most efficient use of your licenses. The software always uses the highest thread capacity license as long as it provides a speed advantage. If there is no speed advantage then the lesser capacity license is used. There are some scenarios described below to demonstrate how the algorithm operates.

Scenario 1: You have one Desktop license and one High Performance license and are performing your analysis on a computer with six cores. Since your computer is only capable of processing six threads at a time, there is no speed advantage to using the High Performance license, so the Desktop license is used to run the job. If the Desktop license is not available, then the High Performance license would be used.

Scenario 2: You have one Desktop license and one High Performance license and are performing your analysis on a computer with twelve cores. The software would attempt to use the High Performance license first since this license can utilize all available processing resources and therefore finish the job faster. If the High Performance license is not available, then the Desktop license is used, but this limits the analysis to only six of your cores.

Scenario 3: You have one desktop license and one High Performance license and are performing your analysis on a computer with 24 cores. The software would attempt to use the High Performance license first so that all 24 cores would be used and the analysis would take less time. Only 24 of the possible 48 threads enabled by the license would be used due to the physical limitations of the computer. If the High Performance license is not available, then the Desktop license is used, but this limits the analysis to only six of your cores. Note that in the case of the High Performance license, the extra 24 threads available in the license (total of 48 but you are only using 24) are unused and unavailable to other users while the license is checked out.

It is possible to override this algorithm by using your own settings for multi-threaded license use. There are two ways to do so: using the thread initialization file or the Thread Control dialog box.

The thread initialization file is usually used by a system administrator to set up thread controls for multiple users. The thread initialization file, threadcontrol.ini may be found in the data folder in the Sonnet installation. Select the **Admin** ⇒ **Diagnostics** ⇒ **Explore Sonnet Data Folder** command from the session tab main menu, then navigate to the Data folder. The fields available in the initialization file are the same as the controls available in the dialog box; see below for details.

The second way to override the algorithm is through the Thread page of the Sonnet Administration dialog box. The settings in this page affect only your analysis jobs. To access the Threads page, select **Admin** \Rightarrow **Setup** from the main menu in the session tab, then click on Threads in the Sidebar menu of the Sonnet Administration dialog box which appears. See **Threads** in Help for a detailed explanation of the thread controls.