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| Date | December 27, 1999 | Memo Number | STI24:991227B |
| Subject | **ANSYS Tips & Tricks: License Monitoring and Reporting** | | |
| Keywords | General: Configuration: Licensing: Reporting | | |

## 1. Introduction:

The networking licensing scheme used in ANSYS 5.4 through 5.6 as well as DesignSpace for UNIX 4.0 through 5.0 allow for very powerful reporting and monitoring capabilities. This memo provides information on the ways in which users can generate reports of license usage.

## 2. Summary:

The Élan utilities provide information on ANSYS and DesignSpace (UNIX) usage in a number of ways: by license, by user, by machine, and by day/week/month. These capabilities allow system administrators to determine if more licenses are needed at a particular site and which licenses are most popular, especially useful for license renewal purposes. These reports also help determine the best manner in which to appropriate hardware resources (e.g., are only a few workstations being overburdened by multiple jobs running simultaneously?) and budgeting training expenses.

For more detailed information on license reporting, the reader is directed to the ANSYS Installation Guides for UNIX and Windows as well as the Élan online help documentation. Another memo will address specifics of license administration, as this memo only serves to discuss the reporting capabilities of the licensing software.

## 3. Background Information:

Starting with ANSYS 5.4, ANSYS has switched from a combination of Globetrotter's FlexLM licensing software, hardware dongles, and node-locked license keys to Élan network-licensing software.[1] This not only provides a unified licensing scheme but also adds reporting utilities for the system administrator and end-user.[2]

With the Élan utilities provided with the regular ANSYS 5.4 through 5.6 installations, system administrators, managers, and users can keep track of license usage per user and/or machine. This usage can be subdivided by day, week, or month, if needed. This memo serves to introduce the general reporting capabilities of the Élan licensing system used by ANSYS (Windows and UNIX) and DesignSpace (UNIX).

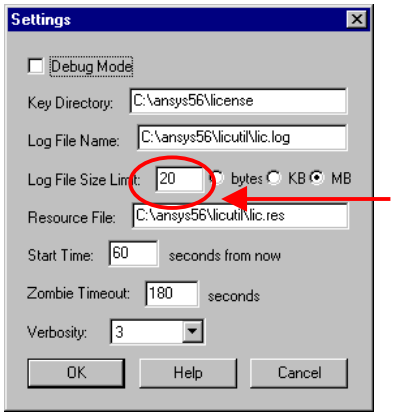
[1] Élan network-licensing software is currently owned and developed by Rainbow Technologies (renamed SentinelLM) but will still be referred to as "Élan" licensing in the remainder of this memo for simplicity.

[2] Globetrotter (FlexLM) sells their license reporting/monitoring utilities SAMsuite as a separate, more costly product. The Élan reporting utilities are included without additional charge to the customer.

### 3.1 Preliminary Setup/Configuration:

The default configuration for the license daemon may not suffice for general use. The main problem lies in the fact that the default license log file size is set to 5 MB. The author found that this generally stores only 2-3 months worth of licensing information. As a result, it is strongly recommended to change this default to 20 MB or more if license usage history for a year or greater is needed. For those who have not changed this, there is still a way to get 4-6 months worth of information since a backup of the previous log file is generated (see below).

To change the default license log file on a license server running on Windows, please perform the following:




1) Open the license control panel via "`Start Menu > Settings > Control Panel > ANSYSLM`".
2) Make sure no clients are running, and click on "Stop" to shut down the license server.
3) Click on the "Settings…" button and a new dialog box with the title "Settings" will appear as shown on the right.
4) Change the "Log File Size Limit" as circled on the right to an appropriate value (20 MB or more is recommended).
5) Click on "OK" to close the "Settings" dialog box.
6) In the "ansyslm" control panel, click on "Launch" to restart the license server.

On UNIX workstations, the startup script for the license daemon "ansys_lm" (or "designspace_lm") needs to be modified such that the "-m" option is changed from "-m 5m" to "-m 20m" or any appropriate value. Note that the letter "m" needs to be appended to the value to ensure that the value is read in megabytes. The startup scripts reside in different locations on various UNIX platforms, so the reader is referred to the "ANSYS Installation and Configuration Guide for UNIX" for specific details.

The license log files are located in the following directories (basically, the "licutil" subdirectory in the ANSYS installation directory):

```
C:\ansys56\licutil\lic.log                    (Windows NT, ANSYS)
/ansys56/licutil/lic.log                      (UNIX, ANSYS)
/usr/local/DesignSpacev5.0/licutil/lic.log    (UNIX, DesignSpace)
```

Whenever the license log reaches the maximum limit (default 5 MB), the license log is renamed "lic.log" to "lic.old" in the above directories, and a new license log file is created. As a result, for users who have not done the above changes to the license daemon but would like to perform reporting functions on their log files, they can utilize this "old" license log file to obtain more information than just 5 MB worth (up to 10 MB worth). They can do so by concatenating the two files "lic.log" and "lic.old" to a new file (e.g., "new.log"). On UNIX systems, this can easily be performed by typing the following command:

```
cat lic.old lic.log > new.log
```

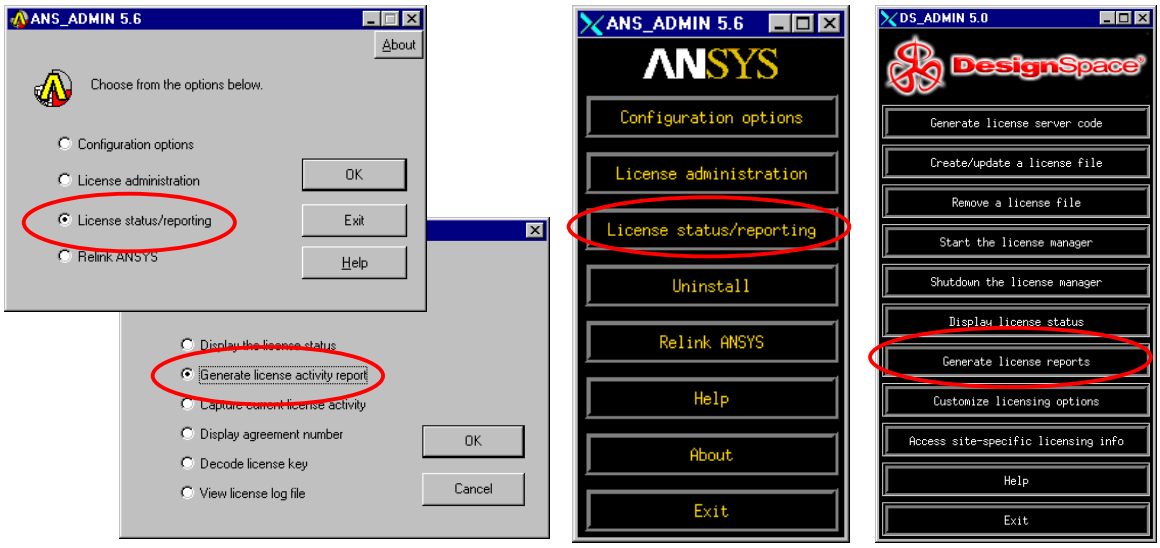
This new license log file "new.log" can be used in the subsequent discussions below to gather extra license history.

For users wishing to perform license reporting on a non-license server, please copy the license log file from the directory on the server as specified above. One can copy the file to a temporary directory such as `C:\temp` (Windows) or `/tmp` (UNIX).

### 3.2 Using the Graphical User Interface (GUI) Reporting Tools:

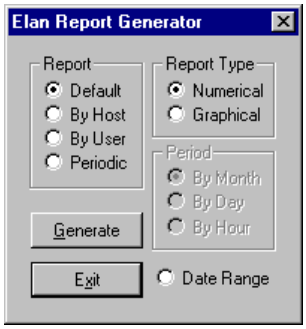
The GUI reporting tools will be discussed first, then the command-based reporting tools will be discussed in the next section for users wishing to automate reporting or to import results to Excel for better graphical presentation. To use the reporting features, the user must have access to the license log file "lic.log" which resides on the server. This text file can either be copied on a client machine or accessed over the network if the reporting is to be done on a computer other than the server.

The GUI reporting tools can be accessed via the ANSYS Administration Utility. On Windows systems, this can be found via "`Start Menu > ANSYS 5.6 > ANS_ADMIN Utility`". On UNIX systems, this can be launched via `/ansys55/bin/ans_admin56` (ANSYS) or `/usr/local/DesignSpacev5.0/licutil/ds_admin50` (DesignSpace).

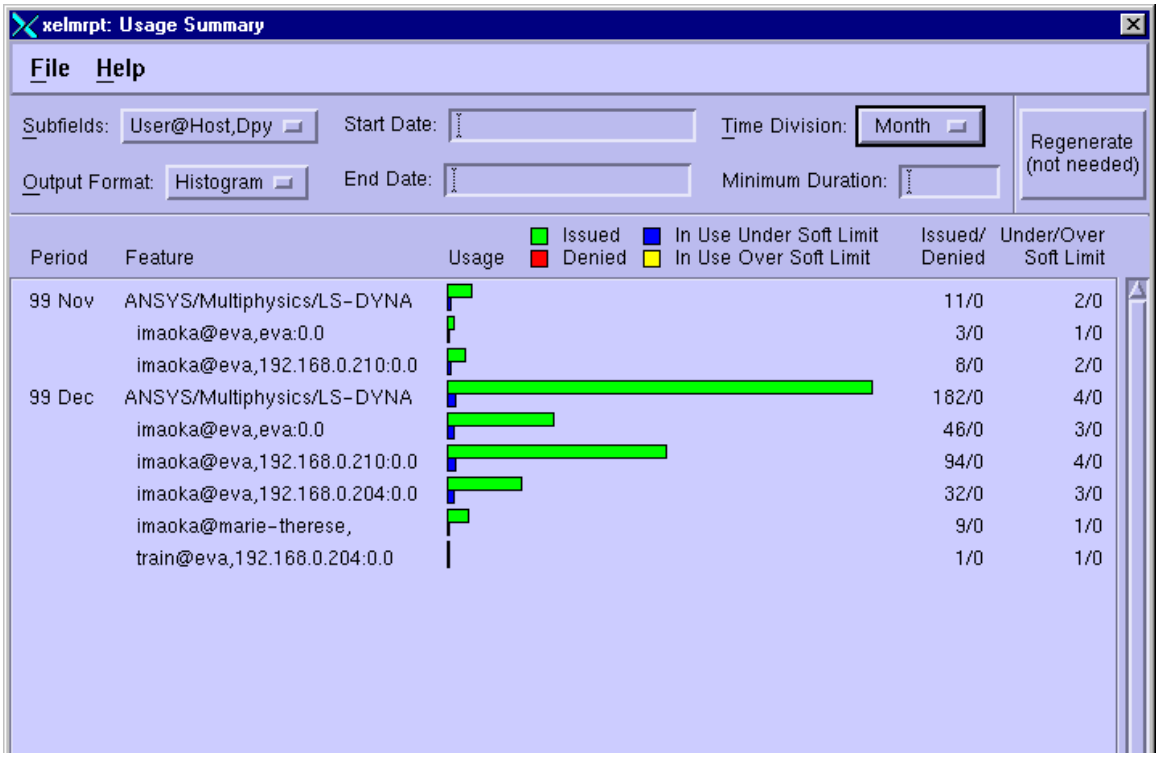



The administration utilities shown above correspond to ANSYS 5.6 and DesignSpace 5.0. The ANS_ADMIN utilities for ANSYS 5.4 and 5.5 differ somewhat from 5.6 but are similar to the DesignSpace one shown on the far right. Once "License status/reporting" (or "Generate license reports") is selected, a second dialog box will appear as shown above. If the user selects "Generate license activity report", another program will appear which will allow the user to generate reports. On Windows, the user may be prompted to select the license log file – select it from the license directory as noted above or, on a client machine, select the license log file which was copied from the server.

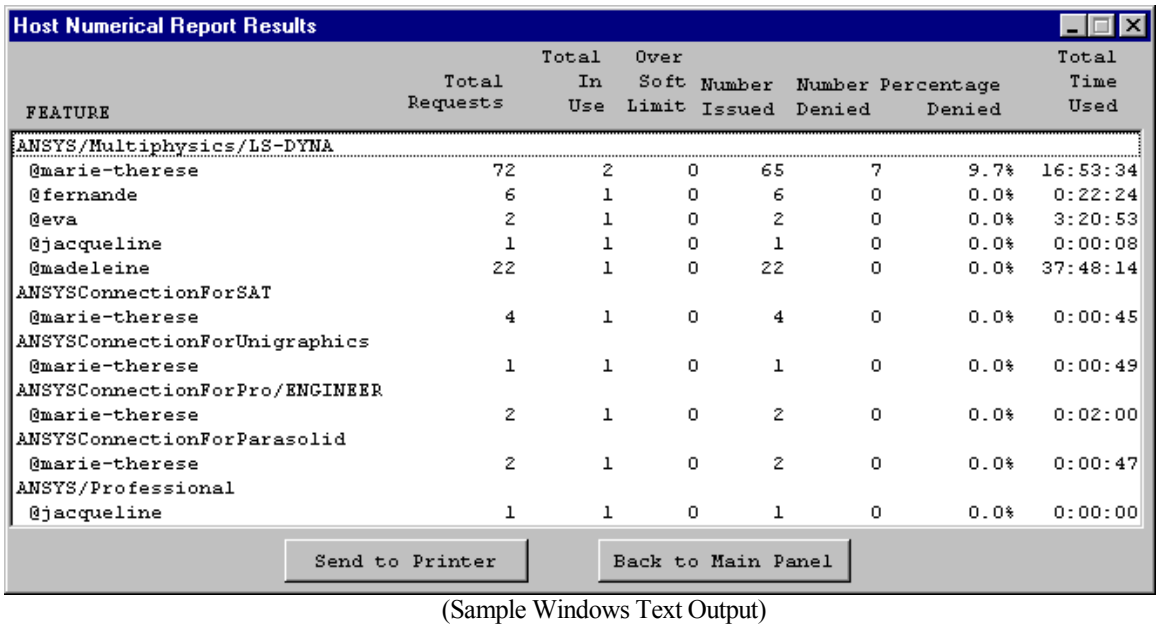
The secondary process/program is called "wlmrpt" on Windows and "xelmrpt" on UNIX systems. The resulting dialog box is shown below (left is Windows, right is UNIX):




If the user selects "Generate" on the Windows version or "Usage Summary" on the UNIX version of the reporting tool, summaries of license usage can be generated as shown below:




(Sample UNIX Graphical Output)




(Sample Windows Text Output)

The following reports will utilize the Windows-based reporting tool for simplicity, but the UNIX counterpart is very similar. Both text and graphical output will be shown together.

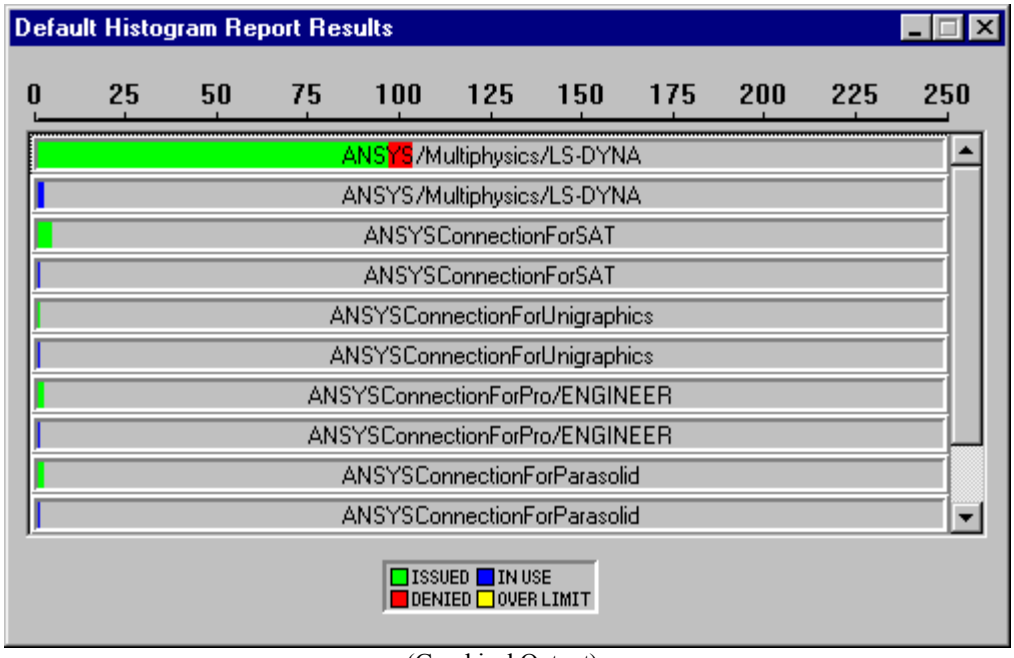
**License Summary (Default Report)**

Default Numerical Report Results

| FEATURE | Total Requests | Total In Use | Over Soft Limit | Number Issued | Number Denied | Percentage Denied | Total Time Used |
|---|---|---|---|---|---|---|---|
| ANSYS/Multiphysics/LS-DYNA | 103 | 2 | 0 | 96 | 7 | 6.8% | 58:25:13 |
| ANSYSConnectionForSAT | 4 | 1 | 0 | 4 | 0 | 0.0% | 0:00:45 |
| ANSYSConnectionForUnigraphics | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:49 |
| ANSYSConnectionForPro/ENGINEER | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:02:00 |
| ANSYSConnectionForParasolid | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:00:47 |
| ANSYS/Professional | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:00 |

Send to Printer  Back to Main Panel

(Text Output)




(Graphical Output)

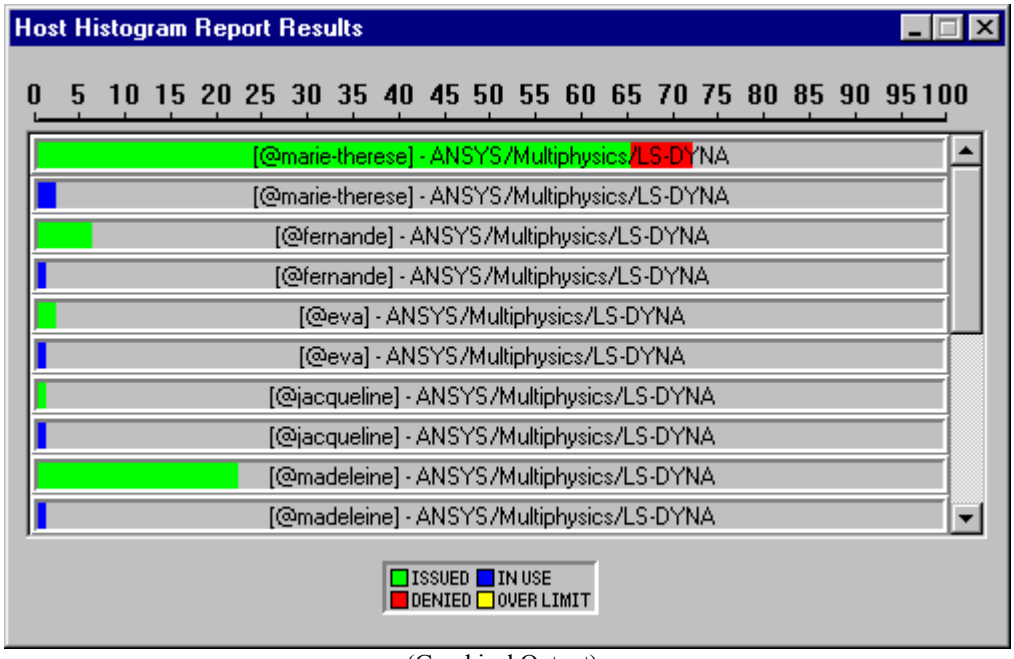
**Summary of License Usage by Host (Client)**

**Host Numerical Report Results**

| FEATURE | Total Requests | Total In Use | Over Soft Limit | Number Issued | Number Denied | Percentage Denied | Total Time Used |
|---|---|---|---|---|---|---|---|
| ANSYS/Multiphysics/LS-DYNA | | | | | | | |
| @marie-therese | 72 | 2 | 0 | 65 | 7 | 9.7% | 16:53:34 |
| @fernande | 6 | 1 | 0 | 6 | 0 | 0.0% | 0:22:24 |
| @eva | 2 | 1 | 0 | 2 | 0 | 0.0% | 3:20:53 |
| @jacqueline | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:08 |
| @madeleine | 22 | 1 | 0 | 22 | 0 | 0.0% | 37:48:14 |
| ANSYSConnectionForSAT | | | | | | | |
| @marie-therese | 4 | 1 | 0 | 4 | 0 | 0.0% | 0:00:45 |
| ANSYSConnectionForUnigraphics | | | | | | | |
| @marie-therese | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:49 |
| ANSYSConnectionForPro/ENGINEER | | | | | | | |
| @marie-therese | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:02:00 |
| ANSYSConnectionForParasolid | | | | | | | |
| @marie-therese | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:00:47 |
| ANSYS/Professional | | | | | | | |
| @jacqueline | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:00 |

Send to Printer  Back to Main Panel

(Text Output)




(Graphical Output)

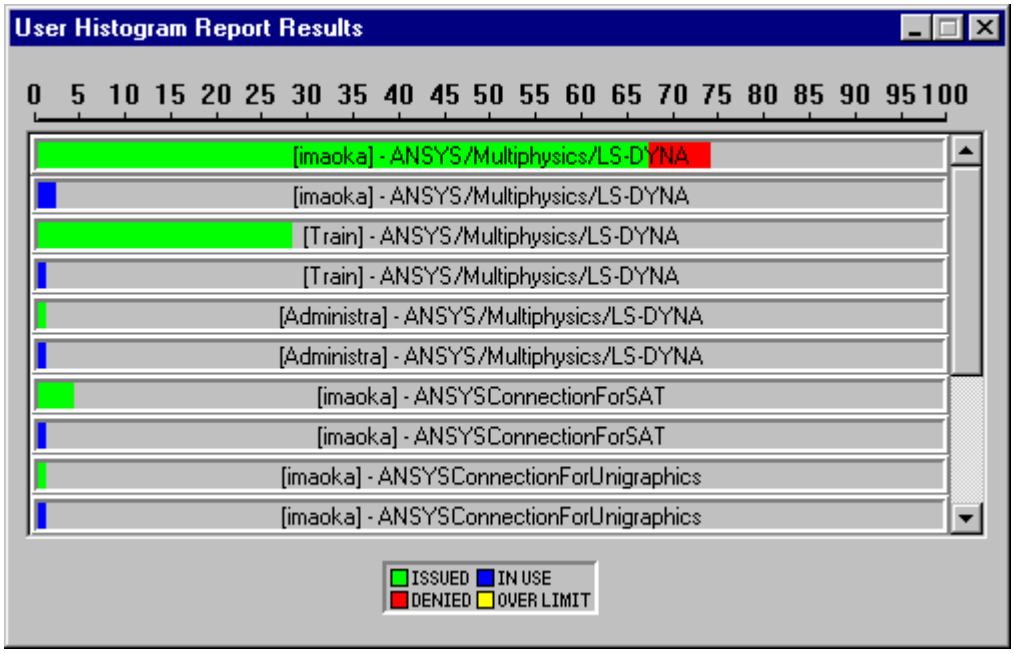
**Summary of License Usage by Username (Account)**

**User Numerical Report Results**

| FEATURE | Total Requests | Total In Use | Over Soft Limit | Number Issued | Number Denied | Percentage Denied | Total Time Used |
|---|---|---|---|---|---|---|---|
| ANSYS/Multiphysics/LS-DYNA | | | | | | | |
| imaoka | 74 | 2 | 0 | 67 | 7 | 9.5% | 20:14:27 |
| Train | 28 | 1 | 0 | 28 | 0 | 0.0% | 38:10:38 |
| Administra | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:08 |
| ANSYSConnectionForSAT | | | | | | | |
| imaoka | 4 | 1 | 0 | 4 | 0 | 0.0% | 0:00:45 |
| ANSYSConnectionForUnigraphics | | | | | | | |
| imaoka | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:49 |
| ANSYSConnectionForPro/ENGINEER | | | | | | | |
| imaoka | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:02:00 |
| ANSYSConnectionForParasolid | | | | | | | |
| imaoka | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:00:47 |
| ANSYS/Professional | | | | | | | |
| Administra | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:00 |

Send to Printer  Back to Main Panel

(Text Output)




(Graphical Output)

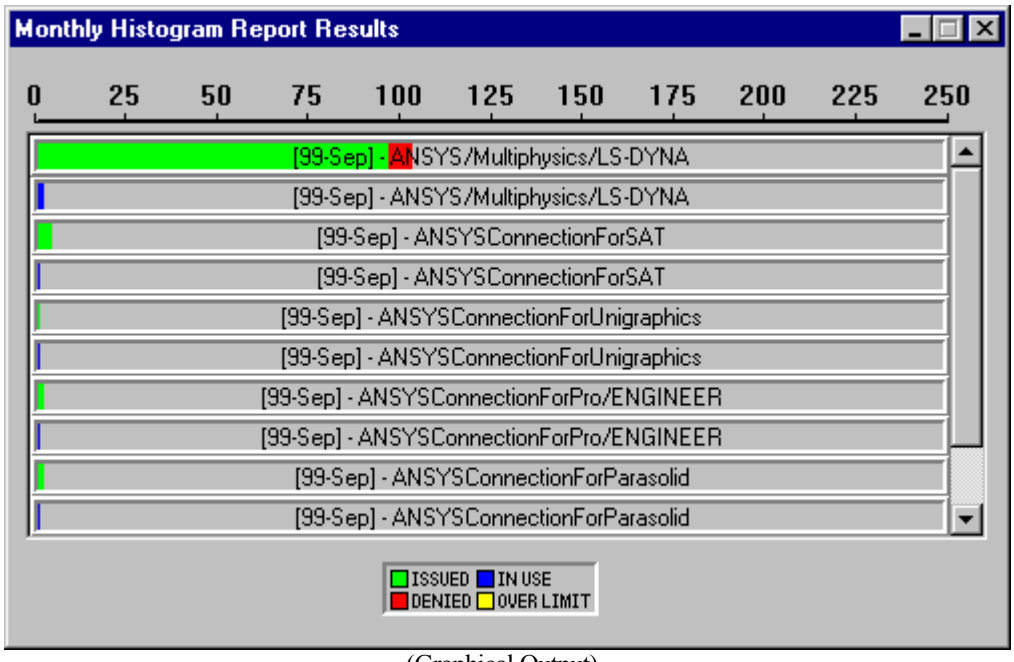
**Summary of License Usage by Month**

Monthly Numerical Report Results

| FEATURE | Total Requests | Total In Use | Over Soft Limit | Number Issued | Number Denied | Percentage Denied | Total Time Used |
|---|---|---|---|---|---|---|---|
| ANSYS/Multiphysics/LS-DYNA | | | | | | | |
| 99-Sep | 103 | 2 | 0 | 96 | 7 | 6.8% | 58:25:13 |
| ANSYSConnectionForSAT | | | | | | | |
| 99-Sep | 4 | 1 | 0 | 4 | 0 | 0.0% | 0:00:45 |
| ANSYSConnectionForUnigraphics | | | | | | | |
| 99-Sep | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:49 |
| ANSYSConnectionForPro/ENGINEER | | | | | | | |
| 99-Sep | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:02:00 |
| ANSYSConnectionForParasolid | | | | | | | |
| 99-Sep | 2 | 1 | 0 | 2 | 0 | 0.0% | 0:00:47 |
| ANSYS/Professional | | | | | | | |
| 99-Sep | 1 | 1 | 0 | 1 | 0 | 0.0% | 0:00:00 |

Send to Printer  Back to Main Panel

(Text Output)




(Graphical Output)

The above screen shots will hopefully give the reader enough familiarity with the type of output which can be expected. Usage can be subdivided by license, user, host, and time period (month, week, day). Also, specific date ranges can be requested as well.

There are other useful information contained in the reports: the hours in which licenses were in use, the number of license requested, and the display/host used (for UNIX where users are remotely logging into other workstations). The "Number of licenses denied" in the reports reflect instances where users requested more licenses than available. This is useful when determining if more licenses may be needed. The "Total in use" reflects the maximum amount of licenses used at any given time while "Total requests" represents the total number of licenses used over that time period. The "Over soft limit" column does not pertain to ANSYS licensing and can be ignored.

Unfortunately, at this time, the reporting tool cannot export the graphics to a file, so the user must use "screen snapshots" in order to incorporate this information in reports. An alternative is to use the command-method as discussed below to redirect information to a text file for later use in Excel for better graphing capabilities.

As mentioned above, the GUI reporting tools are called "wlmrpt" on Windows and "xelmrpt" on UNIX systems. While these commands have been executed as explained above via the "ANS_ADMIN56" Administrative Utility, it may be more useful to note exactly where the "real" executable is located in case the user would like to execute the programs directly. *This is especially true for users generating reports on workstations other than the license server.*

These executables reside in the following directories:

```
C:\ansys56\licutil\intel\wlmrpt                          (Windows NT, ANSYS)
/ansys56/licutil/<platform>/xelmrpt                      (UNIX, ANSYS)
/usr/local/DesignSpacev5.0/licutil/<platform>/xelmrpt    (UNIX, DesignSpace)
```

where <platform> is the specific UNIX platform type. For Windows users, if the executable is drag-and-dropped to the desktop, a shortcut will be made which can be accessed more easily. UNIX users can include the path directory to their path environment variable in their shell resource file (e.g., `.profile` or `.cshrc`) for easier access.

For Windows, if "wlmrpt" is launched, it will ask for a log file – select the license log file when prompted. The user can use the "new.log" file if created from Section 3.1. For UNIX, if launching the "xelmrpt" as a stand-alone utility, type in the log file location as an argument to load that license log. For example:

```
/ansys56/licutil/<platform>/xelmrpt /ansys56/licutil/lic.log
```

### 3.3 Using the Command-Based Reporting Tools:

Similar information may be obtained by the command-based reporting tools. These generally are executed within a DOS Command prompt (Windows) or xterm window (UNIX).

The command-based reporting tool is called "elmrpt" and can be found at:

```
C:\ansys56\licutil\intel\elmrpt                          (Windows NT, ANSYS)
/ansys56/licutil/<platform>/elmrpt                       (UNIX, ANSYS)
/usr/local/DesignSpacev5.0/licutil/<platform>/elmrpt     (UNIX, DesignSpace)
```

The usage of "elmrpt" is the same for both Windows and UNIX platforms. The simplest way to execute the command is as follows:

```
C:\ansys56\licutil\intel\elmrpt C:\ansys56\licutil\lic.log
/ansys56/licutil/<platform>/elmrpt /ansys56/licutil/lic.log
```

The command is basically using "elmrpt" followed by the location of the log file. The above command produces the following output:

```
                                 Total   Total  Over   Number Number Percent  Total
   Feature                     Requests InUse SoftLim Issued Denied Denied  Time Used
-------------------------------------------------------------------------------------
   ANSYS/Multiphysics/LS-DYNA       103     3            96      7    7%    58:25:13
   ANSYS/Professional                 1     1             1      0    0%     0:00:00
   ANSYSConnectionForParasolid        2     1             2      0    0%     0:00:47
   ANSYSConnectionForPro/ENGINEER     2     1             2      0    0%     0:02:00
   ANSYSConnectionForSAT              4     1             4      0    0%     0:00:45
   ANSYSConnectionForUnigraphics      1     1             1      0    0%     0:00:49
```

Additional arguments for the "elmrpt" command are as follows (arguments highlighted in **bold**):

**-d** [from-to]
**-d** [from]  Limit reporting for dates between from and to, inclusive. The from and to dates may be specified in one of two formats:

95-Feb-3 12:30:00
95/2/3 12:30:00

For example,

elmrpt -d "95-Feb-3 - 95-Feb-10 12:30"
elmrpt -d "95/3/15 - 95/4/15 5:00"

Note that in either format, the day, hour, minutes, and seconds will default to zero if its value is missing. If the hyphen and to date are missing, the report will run to the last date.

**-f** feature  Only list activity for the feature named. Multiple -f options may be used to limit display to several features. This option is currently unavailable with xelmrpt.
**-h**  Print a usage histogram instead of numeric data. (See also the -w option below.)
**-i**  Print the release number of elmrpt and the version of the Élan License Manager library it was compiled with, then exit.
**-l**  License listing. Display a summary of Élan License Manager licenses available along with the number of tokens, soft limit, start date, expiration date, and key file name. No other options are meaningful with -l.

**-m** #[units]  Minimum duration. Ignore commands that execute for less than the time specified by #. A single letter "s," "m," "h," "d," or "w" following the value # may be used to specify units of seconds, minutes, hours, days, or weeks, respectively. The default is seconds.

With a low #, such as 5 or 10 seconds, this option may be used to effectively eliminate phantom statistics
—those from commands that Élan License Manager checks out, but fail to execute. This option may also be used when you wish to eliminate short application sessions from your statistics. For example, -m1m will only display applications that have run for at least one minute.
With a large number, only long application sessions will be gathered. For example, -m1h will only display applications that have run for at least one hour.

**-t** timeunit  Display total license activity for each timeunit, where timeunit may be "month," "day," "hour," "minute," "second." (A unique abbreviation, such as "min," is ok.) For example,

elmrpt -d "95/3/15 - 95/4/15 5:30" -t hour

If the -t option is not specified, a grand total is printed.

**-u** category  Detail report by each user, as specified by category. The category may contain one or more key letters "u," "h," and "d" for user name, host, and display, respectively. Key letters may be applied in any combination of 1 to 3 letters. For example, -uu details per user name only; -uh details per host name only; and -uuh provides more detail, with results displayed for each distinct user@host.
**-w** #  Display width of # character units. The default is 78. This option is currently only valid with the -h (histogram) option.

For example, the following command:

```
C:\ansys56\licutil\intel\elmrpt -uuh C:\ansys56\licutil\lic.log
/ansys56/licutil/<platform>/elmrpt -uuh /ansys56/licutil/lic.log
```

will produce the output below:

```
Feature                          Requests InUse SoftLim Issued Denied Denied  Time Used
-------------------------------------------------------------------------------------
   ANSYS/Multiphysics/LS-DYNA          103     3             96      7    7%    58:25:13
            Administra@jacqueline        1     1              1      0    0%     0:00:08
            Train@fernande               6     2              6      0    0%     0:22:24
            Train@madeleine             22     2             22      0    0%    37:48:14
            imaoka@eva                   2     1              2      0    0%     3:20:53
            imaoka@marie-therese        72     2             65      7   10%    16:53:34
   ANSYS/Professional                    1     1              1      0    0%     0:00:00
            Administra@jacqueline        1     1              1      0    0%     0:00:00
   ANSYSConnectionForParasolid           2     1              2      0    0%     0:00:47
            imaoka@marie-therese         2     1              2      0    0%     0:00:47
   ANSYSConnectionForPro/ENGINEER        2     1              2      0    0%     0:02:00
            imaoka@marie-therese         2     1              2      0    0%     0:02:00
   ANSYSConnectionForSAT                 4     1              4      0    0%     0:00:45
            imaoka@marie-therese         4     1              4      0    0%     0:00:45
   ANSYSConnectionForUnigraphics         1     1              1      0    0%     0:00:49
            imaoka@marie-therese         1     1              1      0    0%     0:00:49
```

Simple histograms can be produced as follows:

```
C:\ansys56\licutil\intel\elmrpt -h -t day C:\ansys56\licutil\lic.log
/ansys56/licutil/<platform>/elmrpt -h -t day /ansys56/licutil/lic.log
```

```
|Feature        +=issued -=denied o=in use *=in use over softlimit
-------------------------------------------------------------------------------
99    Sep 10|ANSYS/Multiphysics/LS-DYNA     +                              |2+0
            |                                                             |1+0
99    Sep 11|ANSYS/Multiphysics/LS-DYNA                                   |1+0
            |                                                             |1+0
99    Sep 12|ANSYS/Multiphysics/LS-DYNA     ++                             |4+0
            |                                                             |1+0
99    Sep 12|ANSYSConnectionForSAT          +                              |2+0
            |                                                             |1+0
99    Sep 13|ANSYS/Multiphysics/LS-DYNA     ++                             |3+0
            |                                                             |1+0
99    Sep 14|ANSYS/Multiphysics/LS-DYNA     +++                            |5+0
            |                                                             |1+0
99    Sep 15|ANSYS/Multiphysics/LS-DYNA     ++++++++                       |12+0
            |                               oo                            |3+0
99    Sep 16|ANSYS/Multiphysics/LS-DYNA     ++++++++++++++++++++++++++----- |37+7
            |                               oo                            |3+0
99    Sep 17|ANSYS/Multiphysics/LS-DYNA                                   |1+0
            |                                                             |1+0
99    Sep 17|ANSYS/Professional                                           |1+0
            |                                                             |1+0
```

Similar to the GUI version of the tools, output can be sorted in a variety of ways (by license, user, host, time period) and within specified dates. The "elm.hlp" on Windows and manpages on UNIX provide more information on the usage of this command.

The output from the "elmrpt" utility can be redirected to a file to be imported into Excel for better plotting and general graphical manipulation. Use of the ">" redirect symbol is recommended as follows:

```
elmrpt lic.log > output.txt
```

and "output.txt" can be imported as a fixed-width text file into Excel.

If the "elmrpt" command is used often, it is helpful to add the directory to your pathname. In Windows NT, select "`Start Menu > Settings > Control Panel > System > Environment Tab`", select the "PATH" variable, and add ";C:\ansys56\licutil\intel", including the semicolon, at the end of the "Value" text box.

In UNIX, using the C-shell, add the line:

```
set path=($path /ansys56/licutil/<platform>/)
```

to your ".cshrc" file, where <platform> is your platform type.

After performing the above, one can run "elmrpt" by simply typing in the command in any command/terminal window.

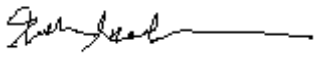
**4. Conclusion:**

As shown above, the Élan reporting utilities provide very powerful reporting capabilities useful to system administrators, managers, as well as users. Both user-friendly graphical tools as well as command-based tools are available to generate this information. The amount of license usage as well as licenses "denied" (over the limit of max licenses available) help provide better planning and allocation of resources in the company.

For users wishing to perform reporting on a separate workstation, the license log file can be copied from the server onto the workstation and reports generated from there. For help in automating this process on Windows or UNIX (or for additional help with any of the above points), please call CSI Technical Support. We hope to help make the licensing usage information accessible to you and, at the same time, easy to implement.

**5. References:**

1) "ANSYS [5.4 through 5.6] Installation and Configuration Guide [for Windows and UNIX]", ANSYS, Inc. [5.4 version available on ANSYS website]
2) "Élan License Manager System Administrator's Guide", Rainbow Technologies (formerly developed by Élan Computer Group, Inc.) [available on ANSYS website]



Sheldon Imaoka
Collaborative Solutions, Inc. (LA Office)
Engineering Consultant

## ANSYS Tips and Tricks

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Corrections, comments, and suggestions are welcome and can be sent to operator@csi-ansys.com [they will be distributed to the appropriate person(s)]. While CSI engineers base their "Tips & Tricks" on technical support calls and user questions, ideas on future topics are appreciated. Users who wish to submit their own "ANSYS Tips and Tricks" are encouraged to do so by emailing the above address for more information.

## XANSYS Mailing List

The xansys mailing list is a forum for questions and discussions of the use of ANSYS. As of 12/99, there are more than 900 subscribers with topics ranging from Structural, Thermal, Flotran, to Emag analyses, to name a few. Users are encouraged to subscribe to evaluate the usefulness of the mailing list for themselves. Also, either (a) using the mail program to filter [xansys] messages or (b) using the "digest" option to receive one combined email a day is strongly recommended to minimize sorting through the volume of postings.

```
This list is for *ALL* users of the ANSYS finite element analysis program from
around the world. The list allows rapid communication among users concerning
program bugs/ideas/modeling techniques. This list is NOT affiliated with ANSYS,
Inc. even though several members of the ANSYS, Inc. staff are subscribers and
regular contributors.

To SUBSCRIBE: send blank email to xansys-subscribe@onelist.com
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Archived on http://www.infotech.tu-chemnitz.de/~messtech/ansys/ansys.html
ANOTHER archive on http://www.eScribe.com/software/xansys/
(A poor archive is also at http://www.onelist.com/archives.cgi/xansys)
```

## CSI ANSYS Technical Support

Collaborative Solutions, Inc. is committed to providing the best customer support in our industry. Three people will be devoted to technical support from 8:00am to 5:00pm PST every working day. CSI customers with active TECS (maintenance) agreements may contact CSI by any of the following ways:

```
Phone:  760-431-4815 (ask for ANSYS technical support)
Fax:  760-431-4824
Web:  http://www.csi-ansys.com
E-mail:  firstname.lastname@csi-ansys.com
Anonymous ftp site: ftp://ftp.csi-ansys.com

CSI Engineers:
Karen Dhuyvetter
Greg Miller
Sean Harvey
Alfred Saad
Bill Bulat
Sheldon Imaoka
David Haberman
```

All comments and suggestions are welcome.