



FLEXlm Protection File System

Why does ESI Group use FLEXlm (Flexible license file) to license its software ?

ESI group needs to license, manage and track a variety of licensing options, platform and product dependencies. FLEXlm is one of the only software that is up to this task. A simple, shrink-wrapped license management product would not be powerful and flexible enough to license all ESI products.

All the software solutions from ESI group have significantly grown to become more and more complex. To deal better with the coupling of different software together with the need of the customers to manage one or several licenses on different computers, the casting team also has recently begun adding a new common license management system, FLEXlm, to protect ProCAST, PAM-QUIKCAST and CALCOSOFT.

Using FlexLM provides ESI customers a standard environment for managing the entire suite of all its industry oriented applications which forms its unique virtual engineering solution.

What is FLEXlm ?

FLEXlm, from Macrovision, is the most popular license management tool on the market today. It allows software to “float” on a network and not be tied to one particular computer. This involves a server-client relationship that requires a client machine to first successfully check out a license from the server in order for an application to be used on that client machine. The criteria for checking out a license can vary according to how the license management is configured.

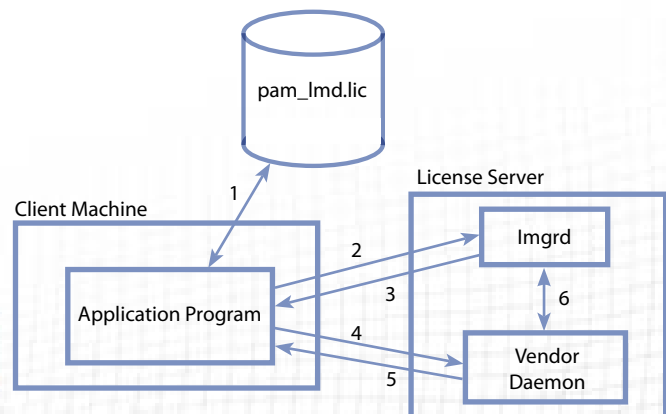
After reviewing several competing license management products, FLEXlm has been chosen by ESI Group because of its sophisticated user-counting methods and flexible licensing capabilities. The fact that FLEXlm is used in over 15,000 products worldwide and is available on all the major operating system platforms made it an even more attractive tool.

How does FLEXlm work ?

There are 3 main components to FLEXlm:

- License manager daemon (lmgrd) - makes initial contact with client application and starts and restarts vendor daemons
- ESI Vendor daemon (name is pam_lmd for all ESI products) - keeps track of the number of licenses checked out, and the license holder name by accessing memory, and grants or denies license check-outs;
- License file - contains licensing data within a text file. It is created by ESI Group.

Here is a flow chart view of the license request process:



- 1 Application looks up server in license file;
- 2 Application contacts licence server at specified port;
- 3 Server sends connection details for vendor daemon;
- 4 Application requests licence from vendor daemon;
- 5 Vendor daemon grants licence to application;
- 6 Vendor daemon sends details to Imgrd which logs them.

Node-locked & Floating licenses

For a node-locked installation, the license file references one or several addresses when identifying

your(s) PC(s) or your(s) workstation(s). So, to keep your license active, it is important that these particular addresses are always available and should never be disabled.

The floating license works on the basis of having a license server accessible on the network. The license server is responsible for receiving a license request from an application. The server knows how many licenses are allowable and how many are currently in use, then it grants or denies a license based on that information.

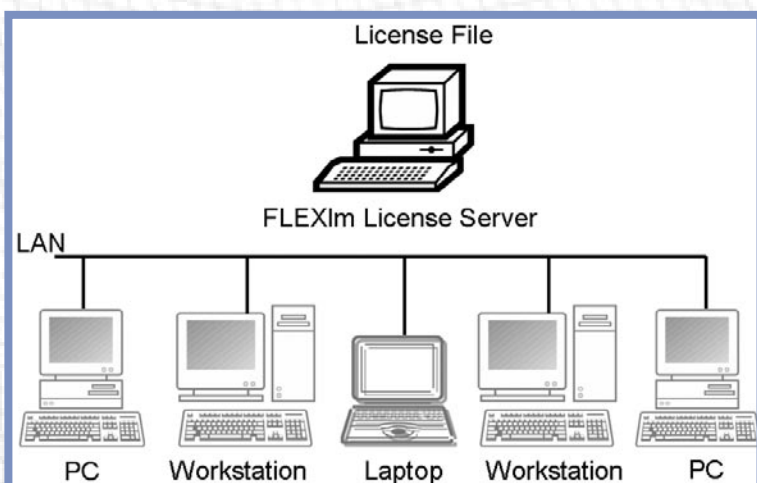
How to track the license management ?

Picture of log file:

```
15:47 (pam_lmd) OUT:
"PROCAST_WIN_IA32" cast01@ESI_server_47
15:47 (pam_lmd) IN:
"PROCAST_WIN_IA32" cast01@ESI_server_47
15:47 (pam_lmd) OUT:
"PROCAST_MESH" cast01@ESI_server_47
17:04 (pam_lmd) IN:
"PROCAST_MESH" cast01@ESI_server_47
```

The log file can be displayed from lmtools application which is delivered with the ESI Group software.

It indicates that the user "cast01", by launching mesh-cast, took out a ProCAST_MESH key from the server "ESI_server_47" at 15:47, and that it was returned at 17:04 when he closed the application. At 15:47, it was checked as well that the Windows platform (Feature "ProCAST_WIN_IA32") was authorized.



Redundant Servers Installation

A redundant server setup with several servers allows the job to continue if one of the servers goes down or is disconnected from the network.

The multiple-server or redundant servers should be on the same subnet and also have excellent communication. This often means that the three servers should be located physically close to each other.

What does "License Manager Error-X" Mean ? How can I fix this problem ?

A number of typical errors can be easily fixed directly by the user. The following table provides hints for the most common error numbers that are displayed by FLEXlm:

Nb	Error Message
-2	Invalid license file syntax
	Make sure that a valid license file is present in the license folder.
-5	No such feature exists
	Ensure that the license file contains the feature name specified in the error message.
-8	Invalid (inconsistent) license key
	- Usually indicates that the license file was altered by the user. - The hostid might be incorrectly encrypted.
-9	Invalid host
	Check that the license file has an hostid that matches the system hosted.
-15	Cannot connect to license server
	Check that the daemon server has been started.
-18	License server does not support this feature
	Application is not checking the same license file as the license server
-88	System clock has been set back
	Ensure that the system clock is set to the current date and not in the past.