Starting the License Server Manager on UNIX Platforms

If any licenses in the license file are counted (license count > 0), the license server manager, and hence the license server system, must be started before the FLEXenabled application can be used.

The license server manager, `lmgrd`, is started either manually on the command line or automatically at system startup. Both methods are discussed in the following sections.

Note: *Start lmgrd only on the server machine specified on the SERVER line in the license file.*

If you are running three-server redundant license server systems, maintain an identical copy of the license file (as well as the lmgrd and the vendor daemons binaries) locally on each server machine rather than on a file server. If you do not do this, you lose all the advantages of having redundant servers, since the file server holding these files becomes a single point of failure.

Manual Start

Start `lmgrd` from the UNIX command line using the following syntax:

```
lmgrd -c license_file_list -L [+]debug_log_path
```

where

- `license_file_list` is one or more of the following:
  - the full path to a single license file
  - a directory, where all files named `*.lic` in that directory are used
  - `debug_log_path` is the full path to the debug log file

  Prepending `debug_log_path` with the `+` character appends logging entries.

Start `lmgrd` by a user other than root since processes started by root can introduce security risks. If `lmgrd` must be started by the root user, use the `su` command to run `lmgrd` as a non-privileged user:

```
su username -c "lmgrd -c license_file_list -l debug_log_path"
```

where *username* is a non-privileged user. You must ensure that the vendor daemons listed in the license file have execute permissions for *username*. The paths to all the vendor daemons in the license file are listed on each VENDOR line.

Automatical Start

On UNIX, edit the appropriate boot script, which may be `/etc/rc.boot`, `/etc/rc.local`, `/etc/rc2.d/Sxxx`, `/sbin/rc2.d/Sxxxx`. Include commands similar to the following. See the following notes for a full explanation.

```
/bin/su daniel -c 'echo starting lmgrd > \
/home/flexlm/v5.12/hp700_u9/boot.log'

/bin/nohup /bin/su daniel -c 'umask 022; \
/home/flexlm/v5.12/hp700_u9/lmgrd -c \
/home/flexlm/v5.12/hp700_u9/license.dat >> \
/home/flexlm/v5.12/hp700_u9/boot.log'

/bin/su daniel -c 'echo sleep 5 >> \
/home/flexlm/v5.12/hp700_u9/boot.log'

/bin/sleep 5

/bin/su daniel -c 'echo lmdiag >>\
/home/flexlm/v5.12/hp700_u9/boot.log'

/bin/su daniel -c '/home/flexlm/v5.12/hp700_u9/lmdiag -n -c\
/home/flexlm/v5.12/hp700_u9/license.dat >> \
/home/flexlm/v5.12/hp700_u9/boot.log'

/bin/su daniel -c 'echo exiting >>\
/home/flexlm/v5.12/hp700_u9/boot.log'
```

Please note the following about how this script was written:

- All paths are specified in full because no paths are assumed at boot time.
- Because no paths are assumed, the vendor daemon must be in the same directory as `lmgrd`, or the VENDOR lines in the license file must be edited to include the full path to the vendor daemon.

- The `su` command is used to run `lmgrd` as a non-root user, **daniel**. It is recommended that `lmgrd` not be run as root since it is a security risk to run any program as root that does not require root permissions. `lmgrd` does not require root permissions.
- **daniel** has a `csh` login, so all commands executed as **daniel** must be in `csh` syntax. All commands not executed as **daniel** must be in `/bin/sh` syntax since that is what is used by the boot scripts.

- The use of `nohup` and `sleep` are required on some operating systems, notably HP-UX and Digital UNIX. These are not needed on Solaris and some other operating systems, but are safe to use on all.
- `lmdiag` is used as a diagnostic tool to verify that the server is running and serving licenses.

Note: *This does not start the daemon until you reboot your license server machine.*