

Kusari Installation Guide Release 2.2 (Windows)

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1 Introduction

This document is for system administrators. It describes the installation process of the Kusari Licence Management System.

2 Overview of Kusari

2.1 The NAG_KUSARI_FILE variable

Kusari looks for licence information based on the `NAG_KUSARI_FILE` environment variable. This variable should contain a file name (path), a licence server specification, or a comma-separated list of file names and licence servers. It can also specify that the licence is in the registry (`#@R`) or on a USB key (`#@U`).

See the Kusari User Guide for further information on this variable.

2.2 The `khostid` program

The `khostid` program produces the machine identification string.

This is needed for machine-local licences (node licences and perpetual licences); it must be run on the machine for which the licence is intended.

It is also needed for site licences (both floating licences and uncounted site licences); it must be run on the machine which is to be the licence server.

2.3 Installing a node licence

It is recommended that node-locked licences be installed into the Windows Registry. A command-line program, `klreg`, is provided for this purpose. The registry can also contain a server specification for accessing licences from a remote licence server (`naglmd`).

2.4 Licence server communications

In this release, the licence server will refuse to communicate with a machine on the other side of a NAT (network address translating) router. The `testserver` and `testclient` programs may be used to check that communication to a licence server can be successfully established.

3 Package Contents

The distributed Kusari licence server package contains the following subdirectories:

- bin** The executable files: `khostid.exe`, `klcheck.exe`, `kldctl.exe`, `klreg.exe`, `naglmd.exe`, `testclient.exe` and `testserver.exe`. We recommend that these be installed into the directory `C:\Program Files\NAG`.
- doc** The documentation; this includes the Installation Guide in both PDF and HTML (`k-install-win32.pdf` and `k-install-win32.html`) and the User Guide in both PDF and HTML (`k-using-win32.pdf` and `k-using-win32.html`).

4 Recommended procedure

The recommended installation procedure for a site licence, where no Kusari licence server is currently being run, is as follows:

1. Test the local network to ensure that licence server operation is possible, using the `testserver` and `testclient` programs.
2. Use the `khostid` program on the server machine and send its identification string to NAG.
3. When you receive the licence key(s) from NAG, save them to the server control file.
4. Start the `naglmd` licence server on the server machine.
5. If required, arrange for `naglmd` to be started automatically on boot-up (e.g. add `naglmd` shortcut to the startup menu group)

If the server machine is already running `naglmd`, the procedure is simpler:

1. There is no need to test the local network, since it is already known to be working acceptably.
2. Use the `khostid` program on the server machine and send its identification string to NAG.
3. When you receive the licence key(s) from NAG, append them to the server control file.
4. Stop and restart the `naglmd` licence server.

5 Testing the local network

Two programs are supplied for testing the local network, these are `testserver` and `testclient`.

5.1 The testserver program

The `testserver` program should be run on the server machine. If it starts successfully, it will produce the message

```
[testserver started]
```

If the server cannot start, it will produce an error message. The most likely error messages are either

```
?Port number conflict: TCP port 7733 is already in use
```

or

```
?Port number conflict: UDP port 7733 is already in use
```

These indicate that the default Kusari communication port number is already in use by another application on the server machine, and that another port number should be chosen. The procedure described below (“Choosing different port numbers”) should be followed.

Once the `testserver` program is running successfully, the `testclient` program should be used to test communications. An initial test should be to run the `testclient` on the server machine; if the default port numbers are being used, simply run `testclient` with no arguments.

The `testserver` program will produce informative messages when `testclient` is run, if communications can be established. A message is produced for each of the TCP and UDP tests; for a completely successful test it will display

```
TCP message test seems ok - reporting to testclient  
UDP test passed ok - reporting to testclient
```

If the TCP test passes but the UDP test fails, the second line will instead be

```
UDP test ***** FAILED *****
```

The `testserver` program will exit on receiving an interrupt signal (`SIGINT`), e.g. by typing `Ctrl-C` on its terminal or into its window.

5.2 The `testclient` program

The `testclient` tests the communication between a client machine (one that will be running the software product) and the licence server machine. First, the `testserver` program should be running on the licence server machine. Then, the `testclient` program should be run. Its command line is:

```
testclient server-spec
```

The `server-spec` takes the same form as in the `NAG_KUSARI_FILE` variable, i.e. the server machine name followed by a colon, optionally followed by the port number. If no `server-spec` is present, it is treated as `localhost:.`

If the `testclient` program cannot connect to the `testserver` program, it will produce the message:

```
?Test FAILED - cannot connect to server  
(Perhaps it is not running, or on a different machine?)
```

You should check that you have specified the right machine name, and that either you are using the default port numbers or have specified the same port number for `testclient` as you did for `testserver`.

If both the TCP and UDP tests pass, `testclient` will display

```
TCP message test passed ok.  
UDP message test passed ok.
```

If the UDP test fails, the second line will be replaced by

```
UDP message test ***** FAILED *****
```

If your site has multiple sub-nets, the `testclient` program should be run on a machine in each sub-net to confirm that it will work.

If you cannot get the `testserver` and `testclient` programs to communicate successfully, you should contact NAG with the exact messages that were produced.

5.3 Choosing different port numbers

Decide which port number to test; you should avoid any port number that is already in use or which may be in use; see the list maintained by the Internet Assigned Numbers Authority for guidance: this may be found at <http://www.iana.org/assignments/port-numbers>.

The procedure specified above for using `testserver` and `testclient` should be followed, but with the port number specified. For `testserver`, use the `-port` option; for example, to test port 7734, do

```
testserver -port 7734
```

For `testclient` program, specify the port number as part of the server name; for example, to communicate with the server on port 7734 on the local host do

```
testclient localhost:7734
```

6 The server control file

The server control file contains all of the licences that will be controlled by the `naglmd` licence server, and may contain other control information as detailed below.

6.1 Server licence key lines

There are two kinds of server licence: uncounted and floating.

6.1.1 Uncounted Licences

An uncounted licence authorises the licence server to allow any number of concurrent uses of the software.

It is indicated by the `SITE` or `SITEG` keywords, and contains the expiry date and a licence key.

6.1.2 Floating Licences

A floating licence authorises the licence server to permit up to a specified number of concurrent users of the software.

One licence is required for each combination of user id and machine for which concurrent use is required; for example, two different users on the same machine will require two licences, as will the same user on two different machines. However, only one licence is required for multiple uses by the same user on a single machine.

By default, products will queue for a licence if all the licences are currently checked out. An informative message may be produced (depending on the software product) when this happens.

A floating licence key line is indicated by the `FLOATING` or `GFLOATING` keywords, and contains the number of licences available, the expiry date, and a licence key.

6.2 The LOG line

The `LOG` line specifies the log file for `naglmd`. It begins with the `LOG` keyword, which is followed by a blank and then the filename. If the `naglmd` command line contains the `/LOG` option, the `LOG` line will be ignored.

If no `LOG` line is present, and the `/LOG` option is not used, `naglmd` will log any errors and information messages (such as licence requests) to `C:\Program Files\NAG\naglmd.log`.

6.3 The PORT line

The `PORT` line specifies which TCP and UDP port numbers are used by `naglmd` for communication. This line is only very rarely needed, when there is a conflict between the default port numbers used by `naglmd` and another application running on the server machine. It begins with the `PORT` keyword, which is followed by a blank and then the TCP port number (this number must lie between 1025 and 49151). If the UDP port number differs from the TCP port number, it should be specified on the same line; it is separated from the TCP port number by a comma, and consists of the letter 'U' followed by a number between 1025 and 49151.

Licence keys issued for one pair of port numbers will not work on any other ports.

6.4 Comments

A server control file may also contain blank lines and comment lines. Each comment line begins with a '#' or '!' character, and is completely ignored.

6.5 A sample server file

```
! This is where we want the log file to be written.
!  
LOG C:\Program Files\NAG\naglmd.log  
  
! We have a site licence for the NAG FL90 library (Mark 4) on Windows,  
! using the NAGWare f95 compiler.  
!  
FNW3204DN SITEG 2006/12/31 "AidmYczVlY+hF9c1qhDyd0ja"  
  
! We have 10 floating licences for the NAGWare f95 compiler on Windows:  
!  
NPW3250NA FLOATING=10 2006/12/31 "vKmOEjxwkeVjcjjkJgGuoW0k"  
  
! And that's all folks.
```

7 Running the licence server

Each `naglmd` licence server can only be run on its specified server machine, and the server machine can only run one `naglmd` server at a time. When run, it reads its server control file (by default this is located in `C:\Program Files\NAG\naglmd.ctl`, unless the NAG Kusari Service is being used — see section 7.3).

No output is produced if the startup is successful; any errors encountered after startup will be written to the log file.

`naglmd` normally logs all licence requests (whether granted or not), and any errors that might occur.

`naglmd` can be shut down by using the `STOP` command to `kldctl`.

7.1 User id

`naglmd` need not be run under the `Administrator` user id; it will run successfully as long as it can read its control file and write messages to its log file. (However, it is safe to run `naglmd` as `Administrator` because it only reads from its own control file and writes to its own log file.)

7.2 Options

`/FILE=slfile`

Read the server control file *slfile* instead of `c:\Program Files\NAG\naglmd.ctl`.

`/HELP` Display brief help message listing the possible options for `naglmd`.

`/LOG=logfile`

Write log messages to *logfile*. Errors attempting to write to the log file will be reported to the console (if there is one). This option overrides any `LOG` line in the server control file.

`/NOLOG_REQUESTS`

Do not write information about licence requests to the log file, only error and status messages.

`/PORT:number`

Use TCP port *number* instead of 7733. This option is overridden by any `PORT` line in the server control file.

`/UPOINT:number`

Use UDP port *number* instead of 7733. This option is overridden by any `PORT` line in the server control file.

`/VERSION`

Display the Kusari Release version numbers.

If the command line consists solely of the `/HELP` option or the `/VERSION` option, `naglmd` will exit immediately after displaying the requested information.

7.3 Automatic startup

It is recommended that `naglmd` be started automatically on the server machine. You may need to be administrator in order to do this.

1. Install the NAG Kusari Service from `NAGService.msi`. *
2. Create the server control file `naglmd.ct1` in the installation directory (by default this is located at '`C:\Program Files\NAG\NAG Kusari Service`', or on 64-bit Windows '`C:\Program Files (x86)\NAG\NAG Kusari Service`'). This file should contain the server licence described in Section 6.
3. Go to Control Panel/Administrative Tools/Services, scroll down to `NAGService`, right click this and select Start.
4. Go to Control Panel/Administrative Tools/Event Viewer, select NAG and check that the service has started successfully.

'Administrative Tools' are under 'Performance and Maintenance' when Category View is being used.

Subsequently the `naglmd` licence server will start automatically at boot time.

8 Utility Programs

The `klcheck` program takes a single argument which is a NAG product code. It then attempts to check out that product and reports whether it was successful, and if successful the type of licence it obtained and from where.

The `klctl` program is provided for controlling `naglmd`. It takes a command as its first argument. The `PLIST` command lists the product which are controlled by a particular `naglmd`. The `PINFO` command has a product code argument, and lists the details for that product on `naglmd`. The `REREAD` command causes `naglmd` to reread its control file. Finally, the `STOP` command shuts `naglmd` down.

The `PLIST` and `PINFO` commands can be used anywhere by anyone, but the `STOP` command can only be used on the machine running `naglmd`, and only by the same user.

The optional second argument is a licence server specification, as defined above, which only needs to be provided for a remote server or a non-default port number on a local server.

The `klreg` program is provided for storing licence information in the Windows Registry, and is described in the Kusari User Guide.

* On older Windows systems that do not have .NET Framework 4.0, use `NAGService_net20.msi` instead.