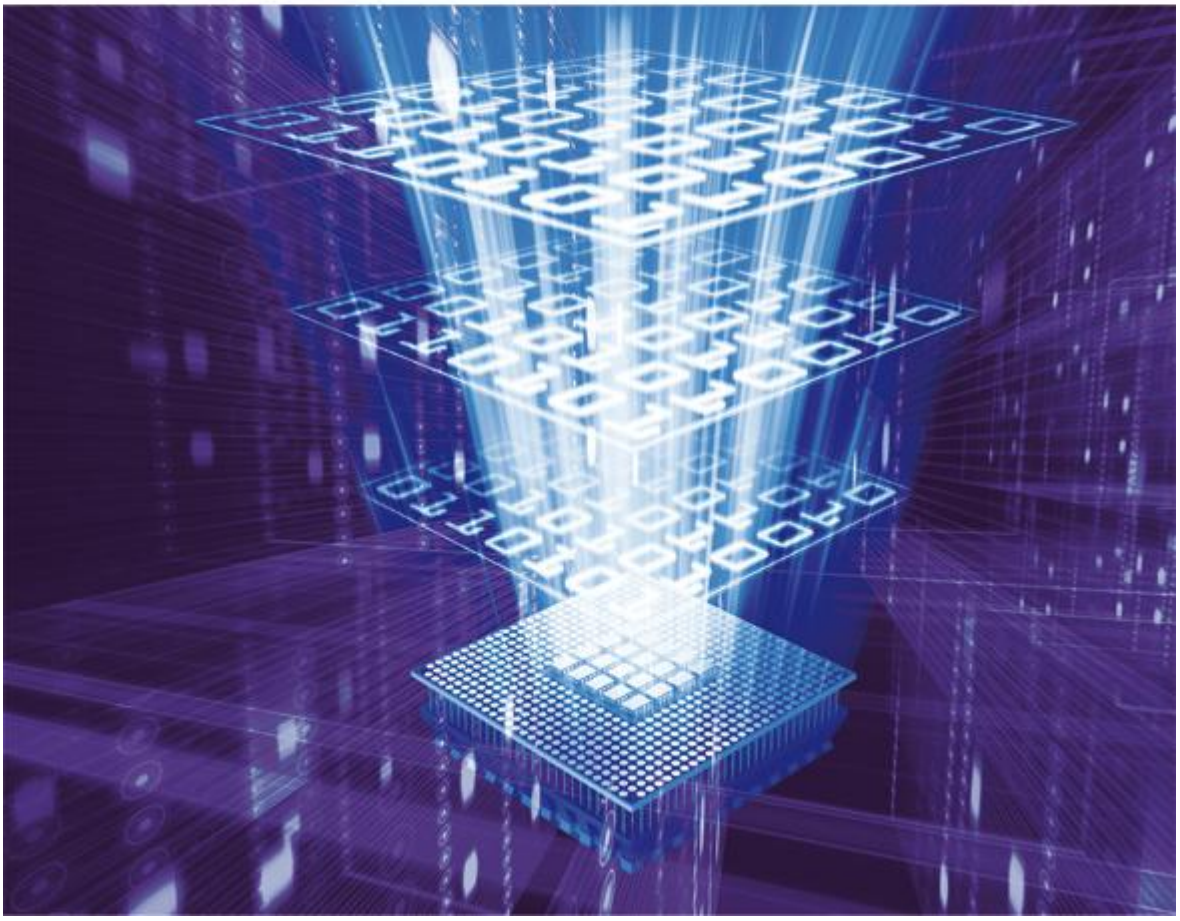
CAPS

hmpp

Hybrid Compiler for Manycore Applications



HMPP Workbench
License Installation Guide

Version 2.4.0

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1 Introduction

Warning:

In this document we assume that the reader knows HMPP concepts introduced in the HMPP Workbench reference manual.

The Hybrid Multicore Parallel Programming workbench (HMPP) provides developers with a set of tools dedicated to build parallel hybrid applications running on manycore systems. These architectures combine general purpose cores with hardware accelerators (HWAs) such as GPUs or SIMD computing units. HMPP allows the programmer to write hardware independent applications where hardware specific codes are dissociated from the legacy code as additional software plug-ins.

The present document introduces the license policy implemented with HMPP and describes how to set an HMPP license on a customer's system:

This document comes in addition to the following manuals:

- `HMPP Directives, Reference Manual`. This manual introduces the main HMPP concepts and describes the HMPP directives. This document is the main document for people who want to discover HMPP;
- `HMPP Codelet Generator Directives, Reference Manual`. This manual describes how to enhance your codelet generation by using HMPPCG directives. An HMPP preprocessor allowing users to factorize HMPP directives is also described;
- `HMPP Linux Manual`. This manual describes how to compile and run your application on Linux platforms. It also introduces the compilers and Operating Systems supported;
- `HMPP Windows Manual`. This manual describes how to compile and run your application on Microsoft Windows platforms. It also introduces the compilers and Operating Systems supported;

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2 What is subject to license?

The compilation of an application using HMPP requires a license delivered by CAPS entreprise. This license takes the form of a "`xxxxx.lic`" file provided on demand by CAPS entreprise.

It should be noted that only the compilation step required a license. An application generated by HMPP can be used on any system without any license, while respecting the terms of the End User License Agreement.

3 HMPP License Types

HMPP is commercialized with 2 kinds of licenses:

- User-based node-locked license
- Floating license

A USB dongle provided by CAPS entreprise may also be necessary to complete the installation. The procedure to install the dongle is also described in this document.

3.1 User-based Node-locked License

User-based node-locked licenses are delivered for a single user identified by its login, on a specific workstation identified by at least one host ID. A user-based node-locked license can only be used if both conditions are valid

If several users want to use HMPP, each user must have his own HMPP license.

To obtain a user-based node-locked license, please execute the following procedure:

1. Install HMPP on your system
2. Execute the command "`hmpp --licenses`" with your login,
3. Complete the missing information (see Figure 1):
   - First Name
   - Name
   - Company
   - E-mail
   - Phone number

   This information is required by CAPS entreprise. The others fields are automatically filled by the script.
4. Send to CAPS entreprise (licenses@caps-entreprise.com) or to your reseller the corresponding result

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- CAPS entreprise or your reseller will send back to you the corresponding license file

5. Install the license file into your home directory.

```
If you need the generation of a new license, the following information
will be required by CAPS entreprise.
You can send them to licenses@caps-entreprise.com.

--------------------------------
First Name:   <TO BE COMPLETED>
Name:         <TO BE COMPLETED>
Company:      <TO BE COMPLETED>
E-Mail:       <TO BE COMPLETED>
Phone number: <TO BE COMPLETED>
Software: HMPP
Version:  xxxx
Platform: xxxx
Username: xxxx
Hostname: xxxx
Ethernet:
 - xxxxxxxxxx
IP address:
 - xxxxxxxxxx
 - xxxxxxxxxx
--------------------------------
```

Figure 1 - "hmpp --licenses" output

Then you can check that the license is properly setup by running "`hmpp --licenses`" again.

Warning:

For a user-based node-locked license, the command "`hmpp --licenses`" must be executed on the system on which HMPP will be used and with the HMPP end-user login.

HMPP license are searched in the following directories, in this order:

1. Paths present in `CAPS_LICENSE_PATH` environment variable
2. Current path
3. Home directory
4. `HMPP_PATH/licenses` directory

3.2 HMPP Floating License

This kind of license defines a number of tokens that allows a similar number of developers to use HMPP concurrently. Tokens are distributed by a floating license server that can be installed on any computer.

When a developer uses HMPP to compile an application, it requests a token from the license server.

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If a token is available, it is checked out from the license server and locked for one hour, reserved for the only use of this user.

If no token is available (i.e., the maximum number of tokens allowed by the floating license has already been checked out) the compilation aborts and the user has to wait for a token to become available to use HMPP.

To obtain a floating license, please execute the following procedure:

1. Install HMPP on the system hosting the license server
2. Execute the command "`hmpp --licenses`" in a console
3. Complete the missing information (see Figure 1):
   - First Name
   - Name
   - Company
   - E-mail
   - Phone number

   This information is required by CAPS entreprise. The others fields are automatically filled by the script.
4. Send to CAPS entreprise (licenses@caps-entreprise.com) or to your reseller the corresponding result
   - CAPS entreprise or your reseller will send back to you the corresponding license file

3.2.1 Installing the License Server on Linux

The following procedure will be executed on the node that will host the license server. We consider that HMPP has already been installed this node.

1. Copy `HMPP_PATH/caps-licserver-run.sh` to `/etc/init.d`
2. In `/etc/inid.d/caps-licserver-run.sh`, update the variable USER to specify the user that will execute the license server (it is not recommended to use root). Other variables can keep their default values
3. Verify that `caps-licserver-run.sh` can be run as root (mode 740)
4. Copy the license file to `HMPP_PATH/licences`
5. Then launch the license server:

```
/etc/init.d/caps-licserver-run.sh start
```

Then you can check on your compilation node that the license server is properly setup by running "`hmpp --licenses`" again.

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3.2.2 Installing the License Server on Windows

The following procedure will be executed on the node that will host the license server. We consider that HMPP has already been installed on this node.

In this section, we will consider that the license file as been copied in `C:\licenses`.

The HMPP license server can be installed as a Windows service.

Before installing the service, it is advised to run the license server manually once, to ensure that no problem will occur silently.

To start the license server manually, open a Windows console as Administrator (see Figure 2), and execute the following command:

```
lmx-serv-caps.exe -licpath C:\licenses
```

At the first start, a pop-up can warn you that the Windows Firewall as detected that `lmx-serv-caps.exe` was blocked (see Figure 3). You will need to allow this program to access to your network.

On Figure 4, you can see an expected result of the license server execution. A warning message will inform you if the firewall still blocks some required ports (`UDP 6200` is used for automatic server discovery whereas `TCP 6200` is used for client connection).

A correct log should mention the name of the license file and inform you that the HMPP feature is available.

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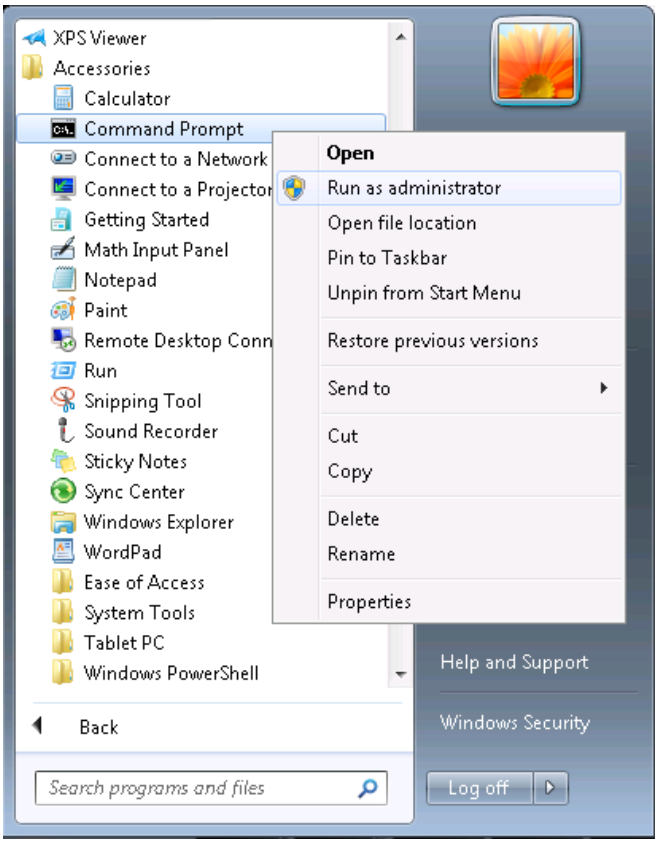

Figure 2: Start a Windows console as Administrator

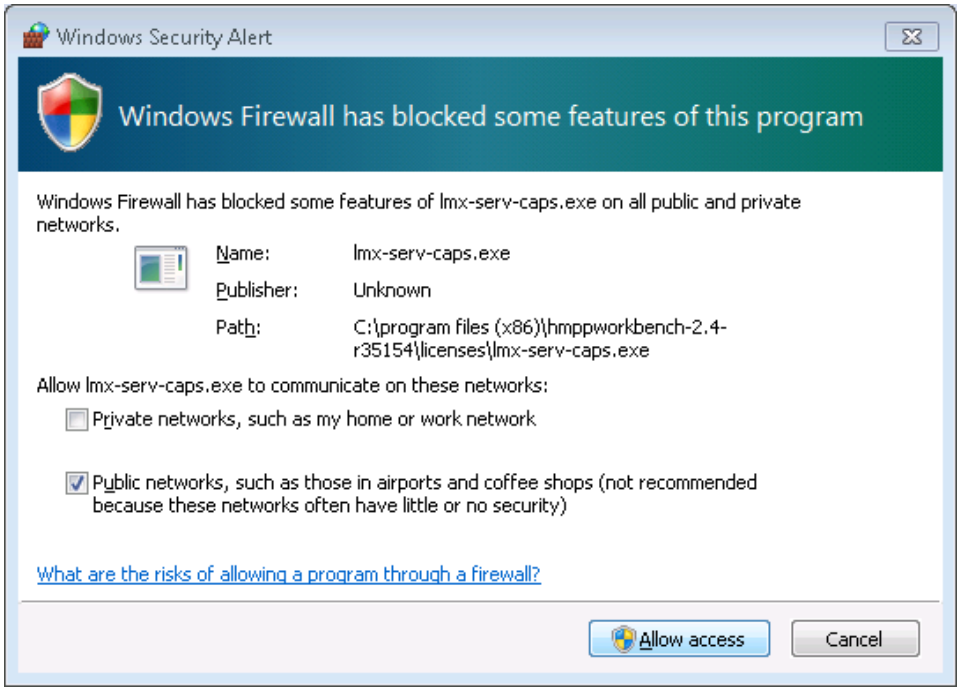

Figure 3: Firewall Alert

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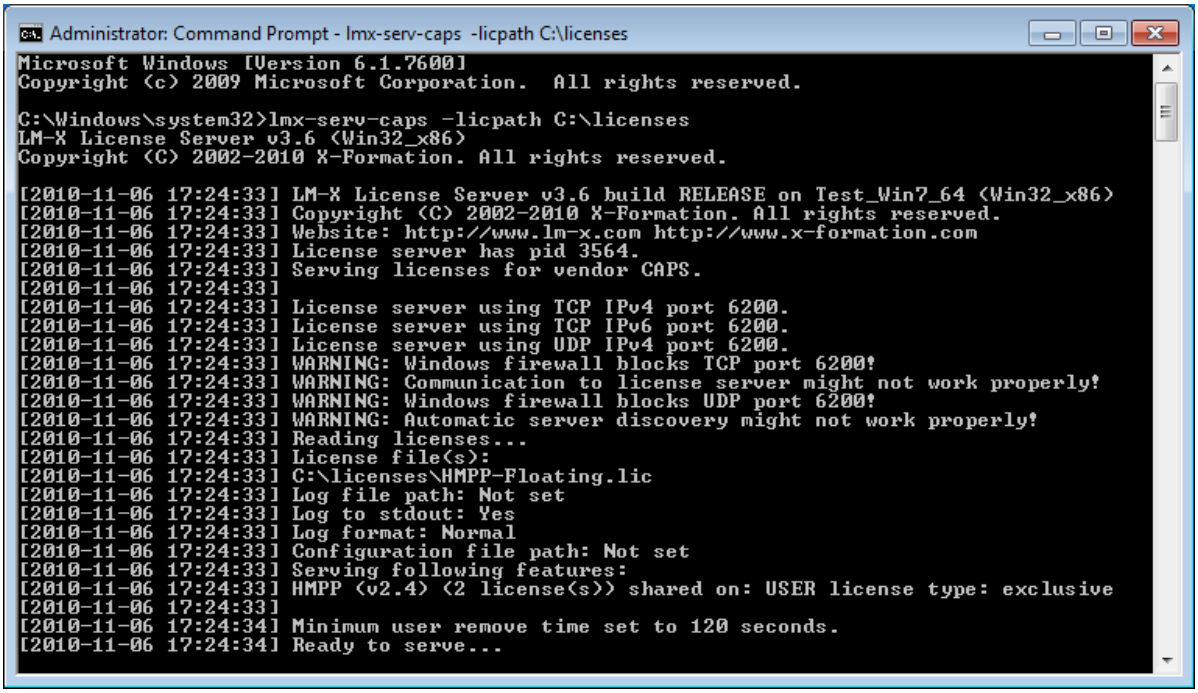

Figure 4: Manual start of the license server

You can stop the server using the `CTRL-C key`.

Now you can register a Windows service that will automatically start the license server at the system startup.

In the same administrator console, execute the command[1]:

```
sc create "CAPS License Server" binPath= "\"C:\Program
Files\HMPPWorkbench-2.4.0\licenses\lmx-serv-caps.exe\" -b -lf
c:\licenses\log.txt -licpath C:\licenses"
```

Then you can start the service with:

[1] The command describes below must be adapted according to the HMPP version that you use as well as you local installation which may differ.

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```
net start "CAPS License Server"
```

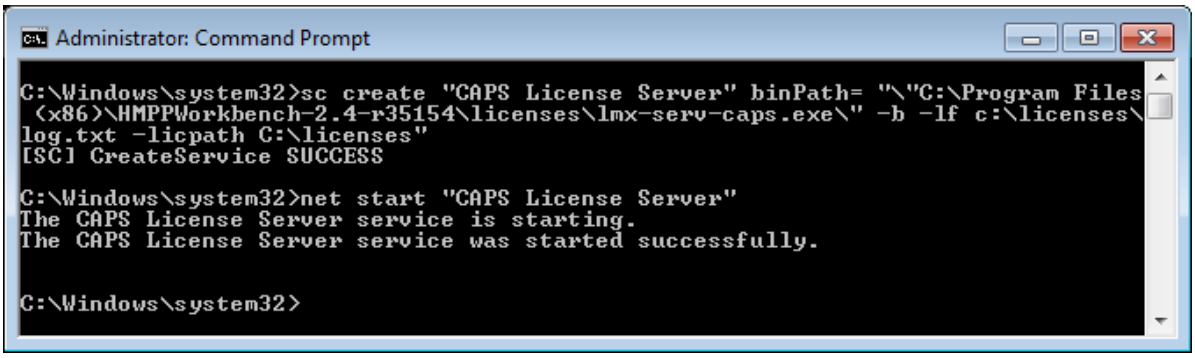

Figure 5: Register and start service

The license service can be stopped using:

```
net stop "CAPS License Server"
```

The license service can be unregistered using:

```
sc delete "CAPS License Server"
```

3.2.3 Troubleshooting

If HMPP can't find the license server, you can force the automatic license server discovery by setting `CAPS_LICENSE_PATH=6200@licserver`.

If it is still failing, a firewall on the license server may block the connection from the compilation node. The license server is listening on TCP and UDP port 6200. You can check that the compilation node can connect to the license server by executing "telnet `licserver 6200`".

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3.3 Dongle

In some cases, an USB dongle may be required to use HMPP. The installation of the driver follows two steps:

1. First installation of the dongle driver
2. The "`hmpp --licenses`" command will show the dongle ID (see Figure 6)

```
First Name:   <TO BE COMPLETED>
Name:         <TO BE COMPLETED>
Company:      <TO BE COMPLETED>
E-Mail:       <TO BE COMPLETED>
Phone number: <TO BE COMPLETED>
Software: HMPP
Version:  xxx
Username: xxx
Hostname: xxxx
Ethernet:
 - xxxxxxx
 - xxxxxxx
IP address:
 - xxxxxxx
 - xxxxxxx
Dongle:
 - 34678DAE            <--- dongle ID
```

Figure 6 – "hmpp –-licenses" output with HMPP USB dongle

3.3.1 Dongle Installation on Linux

The dongle driver can be found in the directory "`HMPP_ PATH/licenses/dongle_drivers`".

The name of the driver archive file is `Sentinel_HASP_Linux_Run-time_Installer_script.tar.gz`. This archive contains a `readme.html` explaining the installation procedure (very simple).

Please note that:

- In case of a user-based node-locked license, the HMPP dongle must be installed on the end-user's system,
- In the case of a floating license, the HMPP dongle must be installed on the HMPP license server.

In practice, you need to:

- Unpack the archive file:

```
$tar xzf Sentinel_HASP_Linux_Run-time_Installer_script.tar.gz
$cd Sentinel_HASP_Linux_Run-time_Installer_script
```

- Then execute the "`dinst`" utility as root:

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```
$ ./dinst .
```

(Note that the final "." is required for the file location)

- Plug the dongle
- Then you can check on "http://localhost:1947" that the dongle is correctly recognized
- If you don't see the dongle plugged, you may need to restart the dongle driver using the following command:

```
$ /etc/init.d/aksusbd restart
```

Then execute the command "hmpp --licenses" to get the dongle information and send the result to CAPS entreprise or your reseller. The figure below describes the output that you should get in this context.

Warning:

In some Linux distributions, some additional packages are required to allow execution of 32-bit binaries:

- Ubuntu 9.04 and later: ia32-libs

- Fedora 9 and later: glibc.686

3.3.2 Dongle Installation on Windows

If the HMPP USB dongle is plugged into a machine that does not have the dongle drivers installed, the Windows "Found New Hardware" dialog will appear. You can follow the prompts in this dialog to install the drivers using Windows Update. Depending of your configuration of windows Update, the procedure may be completely silent, or require validating some pop-up windows.

You can check on "http://localhost:1947" that the dongle is correctly recognized

Then execute the command "hmpp --licenses" in a Windows console to get the dongle information and send the result to CAPS entreprise or your reseller. The figure below describes the output that you should get in this context.

Warning:

Take care to wait for the complete installation of the USB dongle driver before to launch the "hmpp --licenses" command. In some case, this operation may take some times.

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BIBLIOGRAPHY

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[R3]	HMPPWorkbench-2.4.x_Windows_Manual.pdf, CAPS entreprise
[R4]	HMPPWorkbench-2.4.x_Linux_Manual.pdf, CAPS entreprise
[R5]	HMPPWorkbench-2.4.x_Eclipse_StartGuide.pdf; CAPS entreprise

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