

Omnet++ 4.0 base/IDE and INET Framework installation under FreeBSD 8

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Abstract—FreeBSD [1] is a UNIX orientated operating system which is also the default desktop for many at the Centre for Advanced Internet Architectures (CAIA). Omnet++ [2] is an object-orientated modular discrete event network simulation framework. The INET framework is a package designed for Omnet++ that has a library of modules. Omnet++ and the INET framework is developed and tested under Linux. This report outlines the steps needed to achieve a working Omnet++4.0 framework and IDE under FreeBSD 8.

I. INTRODUCTION

Omnet++ [2] is a C++ object orientated modular discrete event network simulation framework. Originally developed for Linux [3], it can be installed on other systems. The INET framework [4] is an open source communication package designed for Omnet++. Included with the package is a full library of modules to simulate internet protocols and network devices.

This report outlines how to compile and install Omnet++ 4.0 under FreeBSD 8 [1]. Readers are assumed to have basic knowledge of UNIX and FreeBSD use.

II. OMNET++ SOURCE AND INSTALLATION

Download and untar Omnet++4.0 source code into a directory. Building of Omnet++ is achieved in the omnetpp4.0 directory.

A. Omnet++ Dependencies and preparation

Before building Omnet++, check/build the following from ports or packages:

- linux_base-f10 compatability
- linux-f10-libxml2-2.7.3_2
- LibXML (/usr/ports/textproc/libxml)
- BLT (/usr/ports/x11-toolkits/blt)
- SUN Java (/usr/ports/java/linux-sun-jdk16)
- tcl8.4 (/usr/ports/lang/tcl84)
- tk8.4 (/usr/ports/lang/tk84)

- doxygen (/usr/ports/devel/doxygen)
- ImageMagick (/usr/ports/graphics/ImageMagick)
- giftrans (/usr/ports/graphics/giftrans)

B. configure.user

Before building Omnet++, a few compiling variables, library includes, binary links and options need to be adjusted. Edit configure.user with the following:

```
MAKE=/usr/local/bin/gmake
#or type `which gmake`
#to find the exact location.
WISH=wish8.4

JRE=
/usr/local/linux-sun-jdk1.6.0/bin/java

TK_CFLAGS="-I/usr/local/include
-I/usr/X11R6/include
-I/usr/local/include/tk8.4
-I/usr/local/include

TK_LIBS="-L/usr/X11R6/lib -lX11
-L/usr/local/lib -ltk84 -ltcl84"

LIBXML_CFLAGS="-I/usr/local/include
-I/usr/local/include/libxml2/libxml
-I/usr/local/include/libxml2"

LIBXML_LIBS="-L/usr/compat/linux/usr/lib
-L/usr/local/lib -lxml2"
```

C. Shell environment settings

Depending on the shell being used, the following environment variables should be set by editing `/.cshrc` (if using `csh` or `tclsh`) or editing `/etc/login.conf` for a universal system approach.

```
setenv PATH $PATH:/location of omnet4.0bin
setenv TCL_LIBRARY /usr/local/lib/tcl8.5
```

Make sure to restart shell or re-login for environmental variables and added paths to take affect.

D. Compiling Omnet++4.0

With the new environmental variables and paths, one little quick trick is needed to get Omnet++ samples built. Omnet++ requires the use of GNU Make (gmake) instead of BSD Make (by default called), we need to set also the following temporarily just for the build:

```
setenv MAKE /usr/local/bin/gmake
```

Note: Everytime a new shell is used or if one is developing for Omnet under FreeBSD, the above should be set so GNU make is used instead of BSD make before proceding to build the Omnet project.

Run `./configure` to setup make files and configuration files. Dependencies and packages that can be left out are MPI (for parrallel processing) and Akaroa. Run “gmake” and wait for Omnet++ to be built.

Once compiled, you can test by the following:

```
cd samples/dyna
./dyna
```

A simulation will load allowing you to choose the number of clients.

E. Running the IDE

The command `omnetpp` starts the IDE client. `omnetpp` is actually a script which checks if you have java installed and executes the correct binary. The script will query the system type by “`uname -sm`” which will fail as the system will detect FreeBSD as suitable system to run omnet. The `omnetpp` script should be edited to add the following:

```
*FreeBSD*)
    ./ $LAUNCHER &
    ;;
```

Ensure you have the linux sun java package installed. The SUN java binary is installed in `/usr/local/linux-sun-jdk1.6.0/bin/java`. When the java command is ran, it should execute the SUN java version. Typically java is a symlink to an installed binary. Simply change the symlink to the correct java binary.

Once the above has been completed, run `omnetpp`. The OmnetIDE will load, though there is a current issue when building projects using the IDE. Unfortunately the wrong “make” is called. GNU make should be called instead of BSD make. So far projects have been build via command line. The alternative to building projects is via the command line.

III. INET FRAMEWORK

Download INET Framework and untar into the `omnetpp4.0` directory or into your workspace (if intended to use the IDE) then execute the following:

Temporarily once again set the following environmental variable:

```
setenv MAKE /usr/local/bin/gmake
```

then select one of the following to compile:

```
make makefile #creates shared library
make makefile_exe #creates binary
make makeall #creates shared library
make makeall_exe #created binary
gmake
```

To view an example of the INET framework:

```
cd examples/inet/nclients/
./run
```

IV. CONCLUSION

This report has given details on quickly getting Omnet++4.0 and the INET Framework working under FreeBSD 8.0. Readers of this report I hope are inspired to write a patch or modify the install process of the Omnet install scripts.

V. ACKNOWLEDGEMENTS

Tony Cricenti for providing an initial instructions to porting Omnet++3.0.

REFERENCES

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