Instructions for building the DataCenter project

Prerequisites:

1) Install OMNeT++
   - The code was last tested with OMNeT++ version 4.3.1 which can be obtained from http://www.omnetpp.org
   - Follow the instructions in the included OMNeT++ Installation Guide
   - **Note:** If during compilation, you receive a flurry of warning messages related to “hidden overloaded virtual functions”, you may want to add the following lines to the configure.user script:

     ```
     CFLAGS_DEBUG='-Wno-overloaded-virtual'
     CFLAGS_RELEASE='-Wno-overloaded-virtual'
     ```

2) Launch the OMNeT++ IDE and create a workspace for OMNeT++

3) Install INET as a project in the workspace
   - The DataCenter code was last tested with INET version 2.2.0
   - The IDE may present a prompt asking if you want to install INET, if it does not, visit the project page: http://inet.omnetpp.org/
   - **Note:** depending on your compiler, you may encounter an error, compiling INET due to an iterator variable being redefined in the last few lines of inet/src/linklayer/radio/Radio.cc.
     This can be fixed by replacing the lines:

     ```
     it = sensitivityList.find(0.0);
     if (it == sensitivityList.end())
     ```

     With the following:

     ```
     SensitivityList::iterator it = sensitivityList.find(0.0);
     if (it == sensitivityList.end())
     ```

4) Install the boost c++ libraries
   - Use a package manager (e.g., Yum, Fink, MacPorts, etc or visit http://www.boost.org/

5) Clone the DataCenter repository into your workspace
   - E.g., cd ~/workspace ;
     git clone https://github.com/mhaitjema/DataCenter.git

6) Run make in the BuildFatTree folder in order to build the FatTree NED generation tool
   - E.g., cd ~/workspace/DataCenter/BuildFatTree ; make

7) Build the DataCenter project from the IDE or command line by following the instructions below

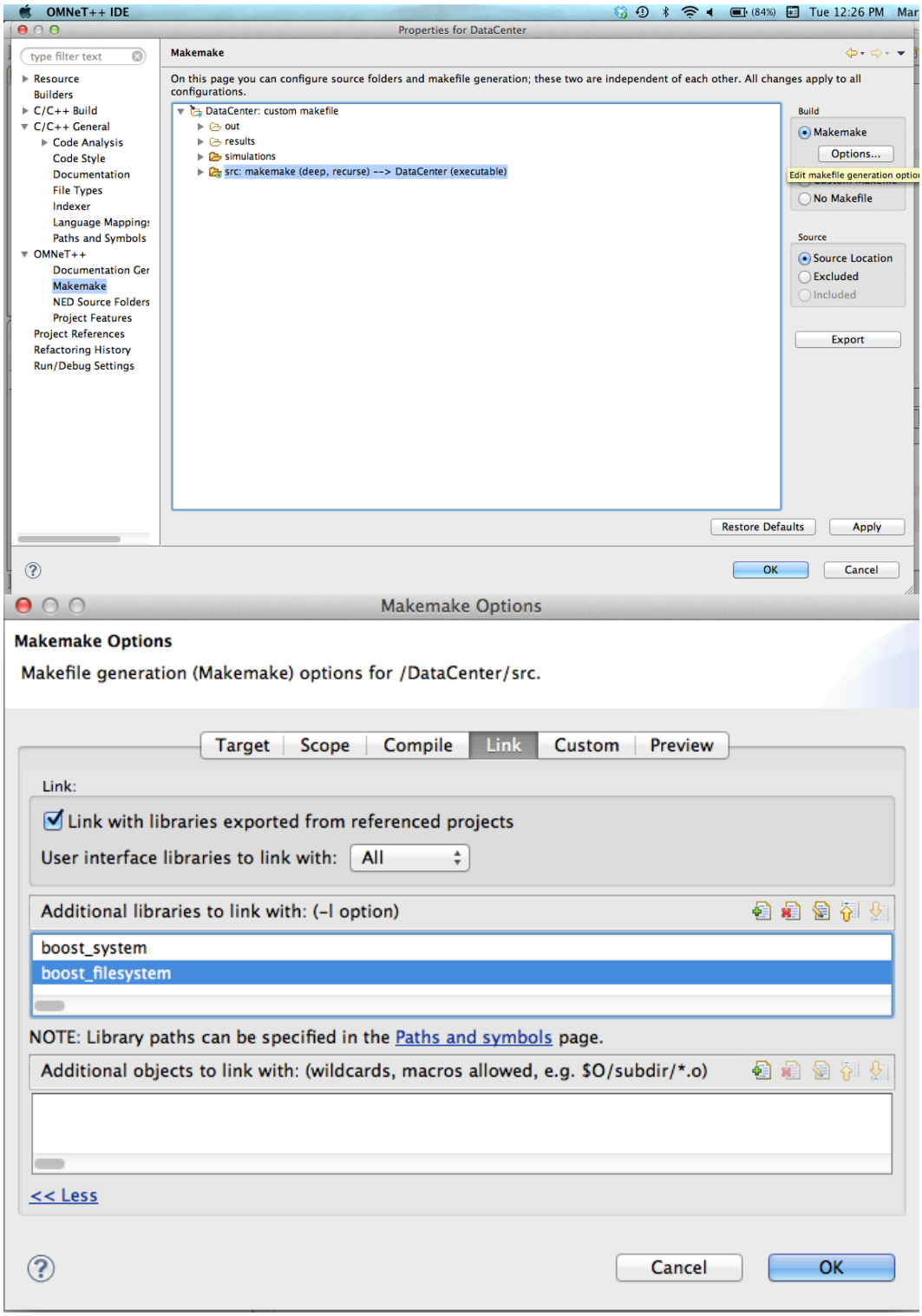
Build the project from the command line:

1) From the root of the DataCenter project directory run “opp_makemake -f” to configure your makefiles
    - E.g., cd ~/workspace/DataCenter/; opp_makemake -f
    - You may need to edit the file “makemakefiles” to point to the correct version of your boost libraries (or refer to chapter 9 in the OMNeT++ Manual for help using opp_makemake).
2) Run “make” to build the DataCenter project
    - By default, the project will be built twice to create both a debug and a release version. You can specify make MODE=release or make MODE=debug to build only a specific version.

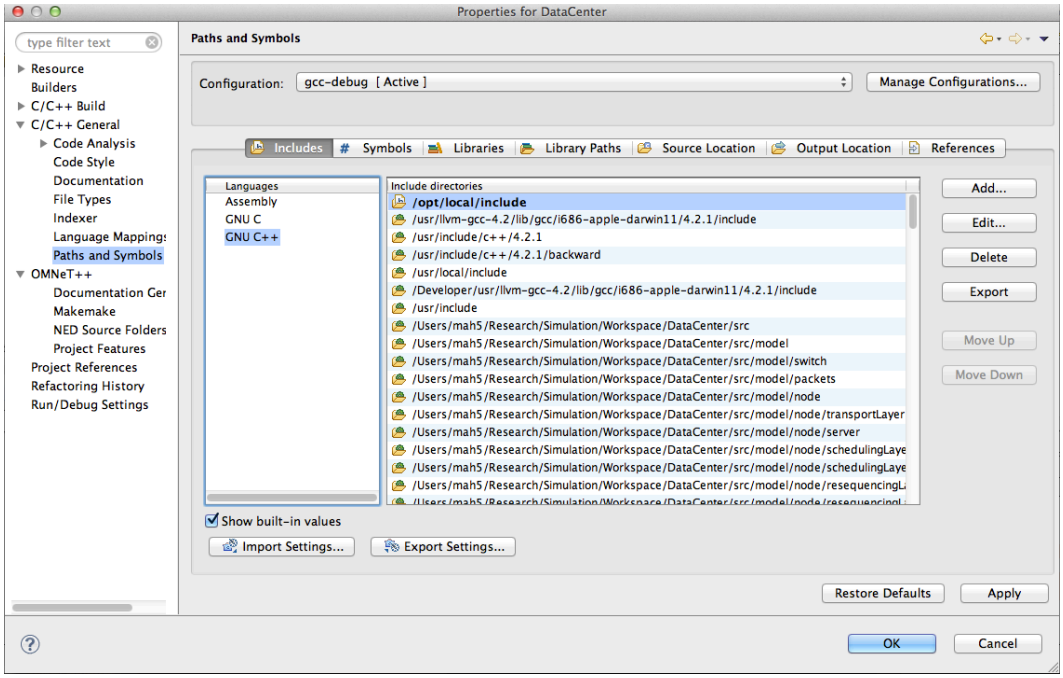
Setup and build the project in the IDE:

1) Choose “Import” from the File menu and then select “Existing Projects into Workspace” under “General” in the dialog.
2) Click “Browse” next to “Select root directory” and choose the path root path of your workspace (e.g. ~/workspace).
3) Make sure “DataCenter” is checked under “Projects:” and click finish.
4) Right click on the DataCenter folder in the project explorer and choose “Open Project” if the icon does not already indicate the project is open.
5) Right click on the DataCenter project and choose “Properties”
    - Under “Project References”, make sure INET is checked
    - Click “OMNet++” and make sure that under "Makemake" only the src folder is set as "Included".
    - Press “Options…” and under “Link” add the boost system and filesystem libraries under “Additional libraries to link with”.
    - Press “OK” and the “Apply”
6) Add the path to the boost include and boost lib folders in “Paths and Symbols” under “C/C++ General”
   Note: The screen shots below demonstrate the last two steps under OS X.
7) Once you’ve pressed ok, choose “Build All” under the “Project” menu to compile the project. This may automatically cause INET to be compiled if it has not.

Note: If you get the message that the file ".eclipse_keyring" is not found, when loading the OMNeT++ IDE in OS X, edit the Info.plist file found at */Applications/OMNeT++ 4.3.1 IDE/Contents/Info.plist* and comment/remove the line containing "<string>keyring</string><string>~/.eclipse_keyring</string>".



Note: In mountain lion and onwards (OS X 10.8+), the boost libraries have the -mt extension appended to the end of the library name.


Properties for DataCenter
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Configuration: gcc-debug [Active]
Manage Configurations...
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Libraries
Library Paths
Source Location
Output Location
References
Languages
Assembly
GNU C
GNU C++
Include directories
/opt/local/include
/usr/llvm-gcc-4.2/lib/gcc/i686-apple-darwin11/4.2.1/include
/usr/include/c++/4.2.1
/usr/include/c++/4.2.1/backward
/usr/local/include
/Developer/usr/llvm-gcc-4.2/lib/gcc/i686-apple-darwin11/4.2.1/include
/usr/include
/Users/mah5/Research/Simulation/Workspace/DataCenter/src
/Users/mah5/Research/Simulation/Workspace/DataCenter/src/model
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Add...
Edit...
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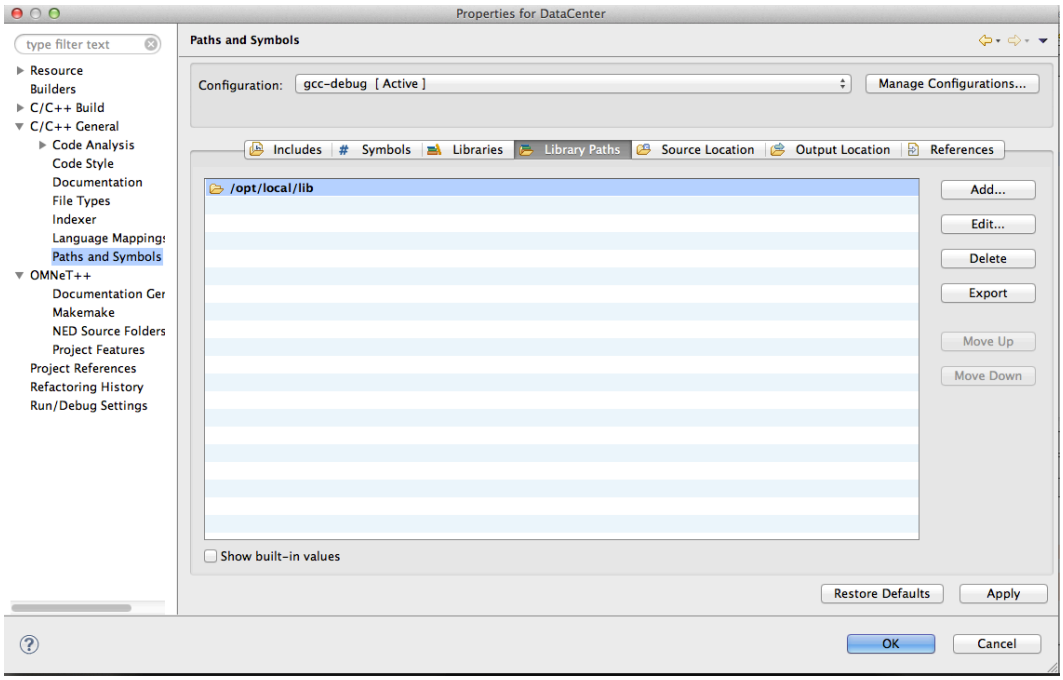
Show built-in values
Import Settings...
Export Settings...
Restore Defaults
Apply
OK
Cancel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Apply
OK
Cancel