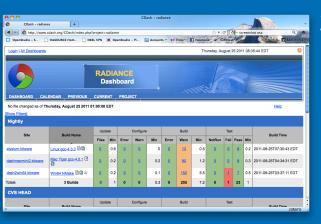


The Radiance Dashboard A Cross-platform, automated build and test framework for Radiance source code



Rob Guglielmetti 2011 Radiance Workshop Berkeley, CA USA Aug 25, 2011



NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

Overview

- Why?
- How/What?
 - About Cmake
 - Building with Cmake
 - Testing with CTest/Cdash
 - Radiance dashboard
 - Packaging with Cpack
- What('s in it for me?)
 - Nightly Radiance builds/installers
 - New Qt-based rvu (runs on Windows!)



Grew out of a need for a large cross platform software project (OpenStudio)

Cross platform tools don't help much if underlying simulation engines are unavailable/out of date

The Radiance Cmake/Dashboard project attempts to keep Windows binaries semi-automatically up to date

Cmake offers developers some nifty functionality as well, but main goal is to offer Windows users easier entry to using Radiance. That's it.

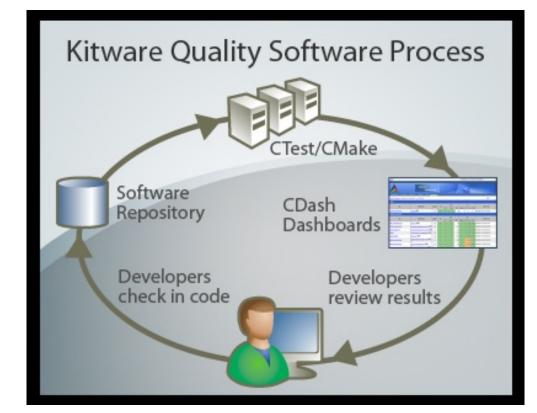
How?

Cmake

Family of Software Development Tools

- Build CMake
- Test CTest/CDash
- Package CPack

Open-Source Cross platform



CMake – Cross Platform Build System

Where to get help

- Mastering CMake Book
- Web Page: www.cmake.org
- http://www.cmake.org/Wiki/CMake
- mailing list: cmake@cmake.org



CMake Documentation

Mastering CMake Book Web Page: www.cmake.org http://www.cmake.org/Wiki/CMake mailing list: cmake@cmake.org

- Full reference documentation
- http://www.cmake.org/cmake/help/documentation.htr
- Ships HTML, man, and command line help
 - Tutorial included and tested in source tree (Tests/Tutorial/)
 - configured files
 - optional build components
 - install rules, test properties
 - system introspection
 - CPack
 - CTest with CDash



CMake Features

One simple language for all platforms

- Windows, Mac, Linux, UNIX variants
- HPC/Embedded platforms via cross-compilation (ParaView/ python)
- Generates native build systems
 - Makefiles (GNU, NMake, Borland, etc.)
 - Open IDEs (e.g. KDevelop, Eclipse)
 - MS Visual Studio 6,7,8,9 IDE
 - Apple Xcode

Out-of-source build trees leave source clean Interactive configuration via GUI Multiple configurations (Debug, Release, etc.)

Easy to Get CMake

- http://www.cmake.org/cmake/resources/software.html
- Many Linux distributions and Cygwin include CMake packages
 - apt-get install cmake
- Installing CMake from www.cmake.org
 - Windows Binary installers
 - Linux Binaries can be installed anywhere, (don't need root)
 - Mac
 - Other UNIX on download page
 - Source can bootstrap on any Unix platform

Cache Editors: cmake-gui (qt), ccmake (curses)



Testing with CMake, CTest and CDash

Testing command in CMake

- add_test (testname exename arg1 arg2 arg3 …)
- Executable is expected to return 0 for passed
- Can set other test passing conditions based on output matching.

ctest – an executable that is distributed with cmake that can run tests in a project.

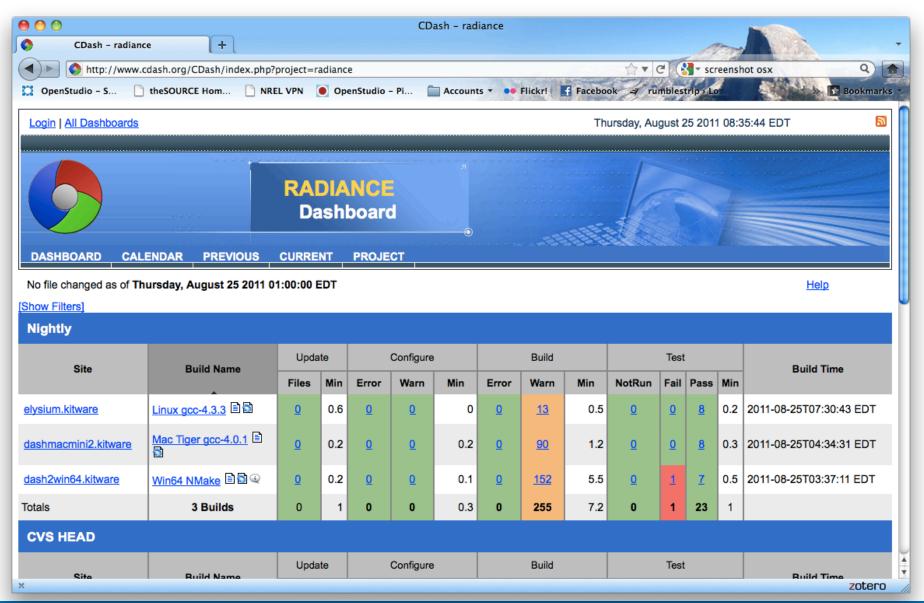
- Used for continuous integration testing
- Client for CDash
- Can be use for both CMake based projects and other build systems

CDash Dashboard www.cdash.org

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Radiance Dashboard

http://www.cdash.org/CDash/index.php?project=radiance



CDash Email Notification

A submission to CDash for the project CMake has failing tests. You have been identified as one of the authors who have checked in changes that are part of this submission or you are listed in the default contact list.

Details on the submission can be found at http://www.cdash.org/CDash/buildSummary.php?buildid=322849

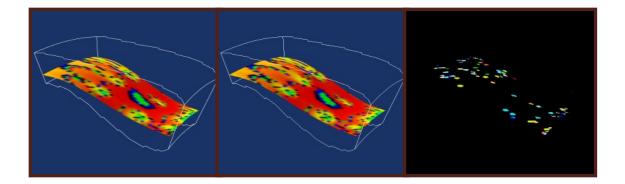
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-CDash on www.cdash.org

CDash Testing

Purify / valgrind Coverage (gcov, bullseye) Configuration coverage – Make sure different OS's, Libraries and options are covered Image difference testing



CPack

CPack is bundled with CMake

Creates professional platform specific installers

 TGZ and Self extract TGZ (STGZ), NullSoft Scriptable Install System (NSIS), OSX PackageMaker, RPM, Deb

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After all that...

Nightly Builds & Installers!

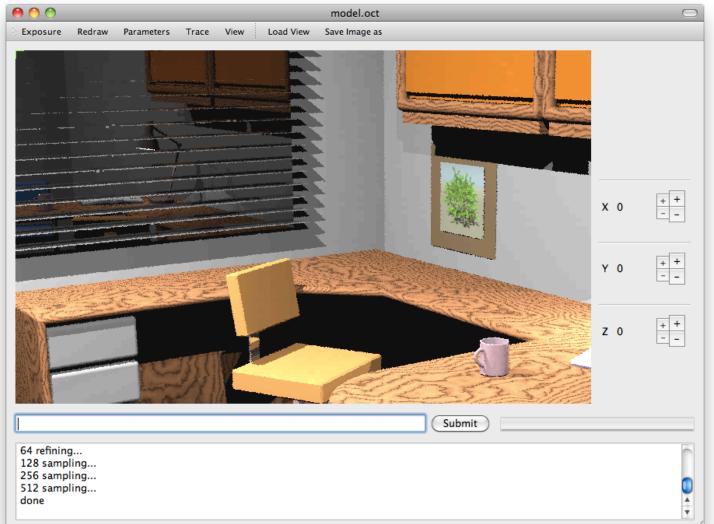
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And...

Cross platform rvu!

Uses Qt, new -o option (still defaults to x11 on Mac & Linux, but option

avail.



And...

Cross platform rvu!

Defaults to Qt version on Windows (tested on Windows7 and XP)

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- Dependencies
- Who will use all of this (versus just builds)?
- How best to integrate (working lunch topic?)