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

Rob Guglielmetti
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Berkeley, CA USA
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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!)
Why?

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Cross platform tools don’t help much if underlying simulation engines are unavailable/out of date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
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  – Full reference documentation
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.)
Installing CMake

Easy to Get CMake

- [http://www.cmake.org/cmake/resources/software.html](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](http://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**

![CDash Dashboard](https://public.kitware.com/CDash/index.php/project-CMake)

** nightly changes as of 2006-02-20 21:00:00 EST**

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<th>Build Warnings</th>
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**nightly expected**

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Radiance Dashboard


![Radiance Dashboard Screenshot](image)

### Nightly

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**Data Source:**

NATIONAL RENEWABLE ENERGY LABORATORY

**Innovation for Our Energy Future**
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

Project: CMake
Site: destiny.kitware
Build Name: HP-UX-aCC
Build Time: 2009-04-29T14:28:00 EDT
Type: Continuous
Tests failing: 85

*Tests failing* (first 5)
FindPackageTest (http://www.cdash.org/CDash/testDetails.php?test=21959898&build=322849)
FindModulesExecuteAll (http://www.cdash.org/CDash/testDetails.php?test=21959899&build=322849)

-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
After all that...

Nightly Builds & Installers!
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)
And…

GUIer rvu!
Discuss

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