

What's New in Cantata 9.5?

Cantata 9.5 is available from November 2021. This release further extends test management of code change capabilities with integrated impact analysis for more efficient change based testing, adds new project creation for non-Eclipse environments, provides zip/tar installation, and includes various other productivity and flexibility enhancements.

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Introduction

Cantata 9.5 is available from November 2021. This release extends test management capabilities dealing with code changes, with new integrated impact analysis for more efficient change-based testing, adds new project creation for non-Eclipse environments, and replaces the current installer with zip/tar installation.

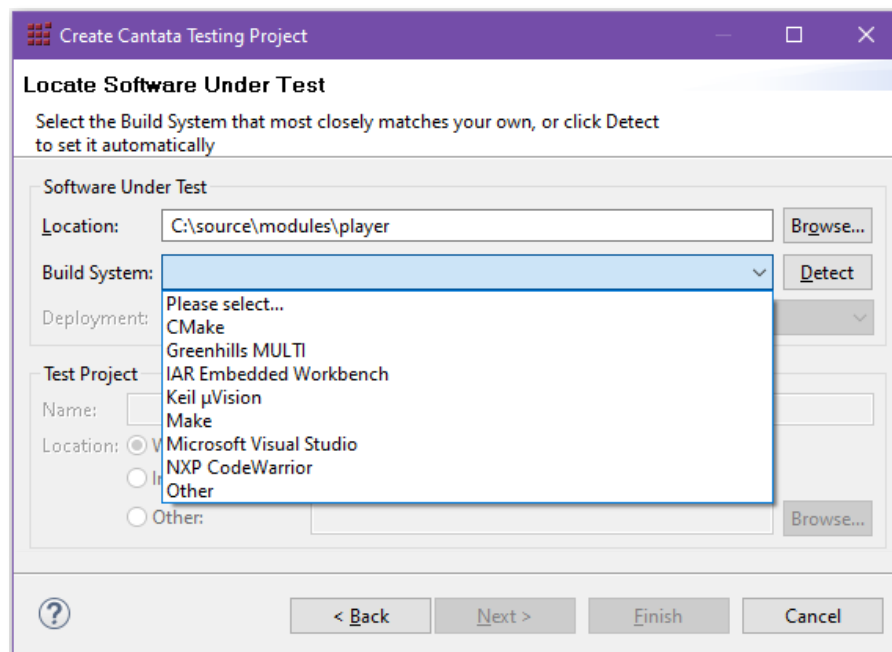
Cantata 9.5 also contains several other productivity and flexibility enhancements as well as fixes. The full set of changes are documented in the Release Notes which track all changes in Cantata since version 4.0. The most important changes in this release are highlighted in the sections below.

New Test Project Creator Wizard

The creation of each new Eclipse test project in Cantata for code built with non-Eclipse based toolchains could be time consuming. Users needed to set up the code to build with their toolchain in an Eclipse project. That process often involved iterative trial builds to resolve missing header file paths and pre-processor defines or macros, before even starting to test the code with Cantata.

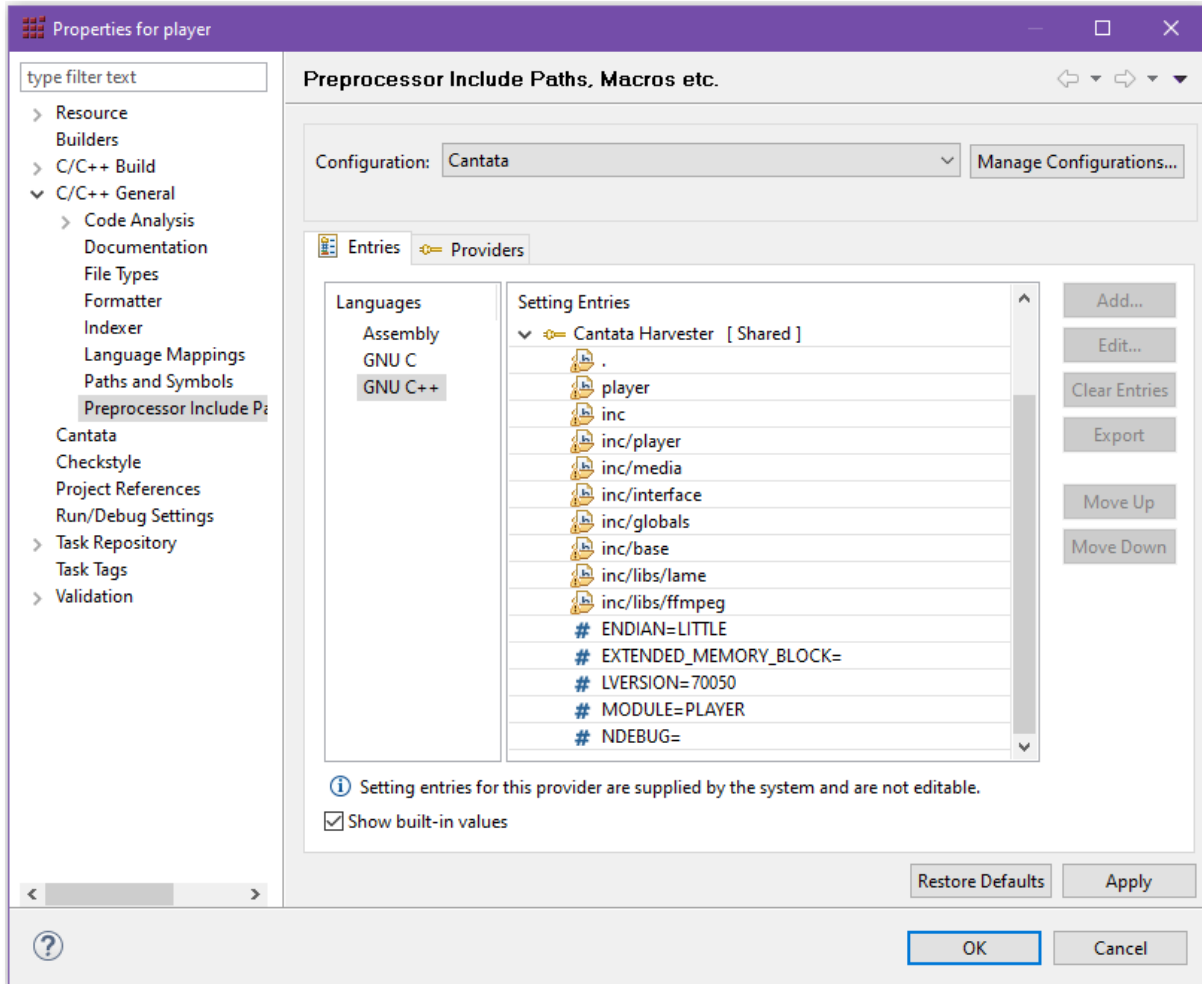
Cantata 9.5 automates this preliminary process through a new Cantata Testing Project wizard which can automatically detect and import these build system settings for the following toolchains:

- CMake
- GreenHills MULTI®
- IAR Embedded Workbench®
- Keil µVision®
- Make
- Microsoft Visual Studio®
- NXP CodeWarrior® Development Studio



Non-Eclipse Build System Selection in Cantata 9.5 Testing Project Wizard

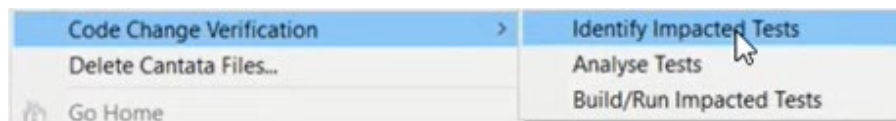
The include paths and pre-processor defines or macros imported from the non-Eclipse toolchain can be viewed in Eclipse for the Cantata test project using standard Eclipse project properties.



Eclipse Project Properties displaying imported include paths and pre-processor defines

Change Based Testing with new Impact Analysis

The existing Cantata Code Change Analysis capability for guided maintenance of tests when the software under test changes has been enhanced with a new Impact Analysis feature in Cantata 9.5. Together, these capabilities provide a complete solution for code change verification and Change Based Testing.



New Cantata 9.5 project context menu for Code Change Verification

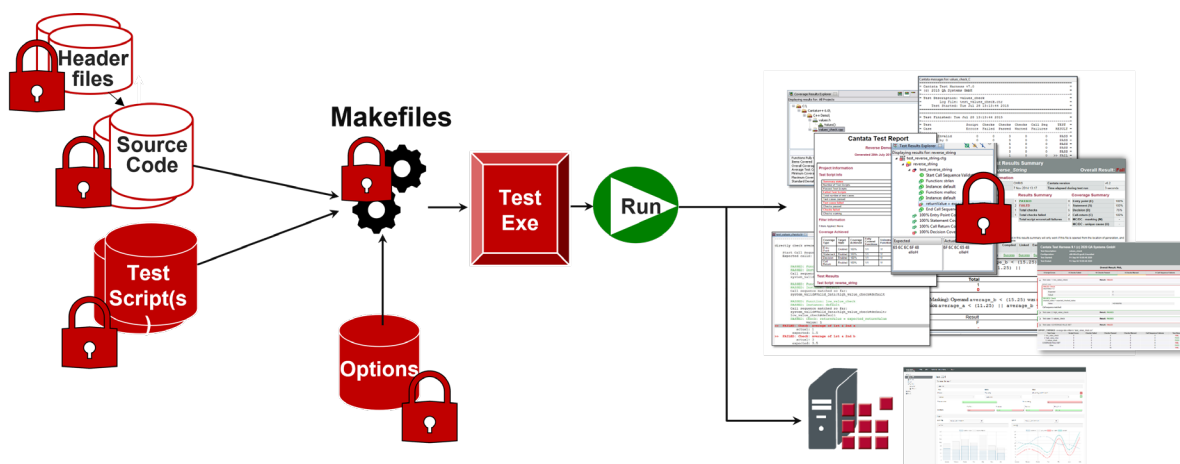
The concept of Change Based Testing is to re-run only a subset of tests, on code items affected by changes made to parts of the codebase, or how that code is built, as part of a more efficient regression testing strategy.

The ability to identify and re-run only those Cantata unit / integration tests affected by a set of changes, makes it considerably more time efficient to get the confidence that regression errors have not been introduced. This becomes most effective when an engineer wants to quickly verify that a set of changes to code or build options do not introduce regression errors elsewhere. Or, to quickly re-run an appropriate set of tests as part of a Continuous Integration repository branch check-in.

Cantata 9.5 uses a built-in checksum of all the components of a unit or integration test executable to uniquely identify these for any given test run. These components include the Cantata test script, any test data header files included by the script, the source code under test and its header files, as well as the Cantata makefiles and Cantata options used to build the test executable. These test component assets and unique checksums are updated on each run of the test. This comprehensive and controlled baseline for a test execution, allows for the identification of all impacted Cantata tests, irrespective of which changed component impacted them.

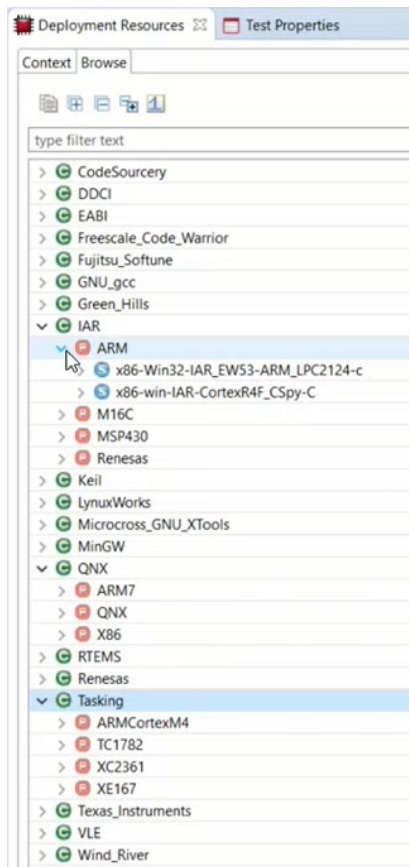
This impact analysis allows for continuous integration style builds to be performed on a regular basis without the need to completely re-run every test, every time. Regression test runs can therefore become Change Based Test runs. Another enhancement in Cantata 9.5 is the ability to only re-run previously failing tests, allowing further refinement of an efficient regression testing strategy.

In addition to all the test executable input components being identified by a unique hash, the test execution results are similarly controlled with checksums. In addition to supporting Impact Analysis and Change Based Testing, this means all elements of Cantata testing provide the secure evidence of test status, for compliance with safety standards requirements governing management of lifecycle data.



Cantata 9.5 test components uniquely locked by checksums for Impact Analysis and testing evidence security

Built-in Library of Target Deployment Options



The Cantata 9.5 Target Deployment Editor has been enhanced to include a new Deployment Resources component. This database library contains thousands of Cantata target set-up options for cross-compilers, chip architectures, memory settings, language extensions and more. The database library is created from hundreds of completed Cantata target deployments registered with QA Systems. At each future release, this library will be updated with new settings from all further registered Cantata target deployments, so that all users benefit from the growing install base of Cantata used embedded platform configurations.

The target set up options can be browsed in a tree view, or the context for each option directly matched and selected with the in-built database library of how that specific option has been successfully configured in previous target deployments.

This new built-in library in conjunction with various improvements to the Deployment Editor workflow, make Cantata 9.5 easy for users to maintain existing supplied Cantata target deployments, when their build tool chain or execution environment is updated or variants of it are created.

New Zip/Tar Installer

In previous versions the Cantata installer InstallAnywhere® installer program would occasionally face restrictions from user's firewalls and anti-virus software. Additionally, Windows environment variables modified by the installer could inadvertently affect users other tools. Cantata 9.5 resolves these issues by replacing the installer with a single .zip (for Windows) or .tar.gz (for Linux) archive for user's to extract. This new approach also provides faster installation of Cantata into Dockers and Virtual Machines to support automated Continuous Integration and parallelised regression testing.

Updated Platform Versions Support

As with every version of Cantata, support for platforms has been updated.

Cantata is tightly integrated with leading Integrated Development Environments which are Built-on-Eclipse®, and toolchains available as Eclipse-Ready® plug-ins. Cantata 9.5 is built on the Eclipse 2019-12 release (Eclipse 4.14) and is also available to install as an Eclipse-Ready plug-in set for versions from Luna (4.4) up to Eclipse 2021-03 (4.19).

The Microsoft Visual Studio® 2017 and GCC compiler versions up to 8.2 on Windows and up to 11.2 on Linux, are now also supported in Cantata 9.5.

(4.14)

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