

Large scale software building with CMake in ATLAS

Thursday, 13 October 2016 16:30 (15 minutes)

The offline software of the ATLAS experiment at the LHC (Large Hadron Collider) serves as the platform for detector data reconstruction, simulation and analysis.

It is also used in the detector trigger system to select LHC collision events during data taking.

ATLAS offline software consists of several million lines of C++ and Python code organized in a modular design of more than 2000 specialized packages. Because of different workflows many stable numbered releases are in parallel production use. To accommodate specific workflow requests, software patches with modified libraries are distributed on top of existing software releases on a daily basis.

The different ATLAS software applications require a flexible build system that strongly supports unit and integration tests.

Within the last year this build system was migrated to CMake.

A CMake configuration has been developed that allows one to easily set up and build the mentioned software packages.

This also makes it possible to develop and test new and modified packages on top of existing releases.

The system also allows one to detect and execute partial rebuilds of the release based on single package changes.

The build system makes use of CPack for building RPM packages out of the software releases, and CTest for running unit and integration tests.

We report on the migration and integration of the ATLAS software to CMake and show working examples of this large scale project in production.

Tertiary Keyword (Optional)

Secondary Keyword (Optional)

Primary Keyword (Mandatory)

Software development process and tools

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Session Classification: Posters B / Break

Track Classification: Track 5: Software Development