Contribution ID: **488** Type: **Oral**

Sustainable software packaging for end users with conda

Tuesday, 5 November 2019 14:45 (15 minutes)

The conda package manager is widely used in both commercial and academic high-performance computing across a wide range of fields. In 2016 conda-forge was founded as a community-driven package repository which allows packaging efforts to be shared across communities. This is especially important with the challenges faced when packaging modern software with complex dependency chains or specialised hardware such as GPUs. Conda-forge receives support from Anaconda Inc. and became an officially supported PyData project in 2018. Conda is a language independent package manager which can be used for providing native binaries for Linux, macOS and Windows with x86, arm64 and POWER architectures.

The ROOT framework is a fundamental component of many HEP experiments. However, quickly installing ROOT on a new laptop or deploying it in continuous integration systems typically requires a non-negligible amount of domain-specific skills. The ability to install ROOT within conda has been requested for many years and its appeal was proven with it over 18,000 downloads within the first 5 months of it being made available. In addition, it has subsequently been used as a base for distributing other packages such as CMS's event display package (Fireworks) and the alphatwirl analysis framework.

In this contribution we will discuss the process of adding ROOT releases to conda-forge and how nightly builds of ROOT are being provided to allow end users to provide feedback on new and experimental features such as RDataFrame. We also discuss our experience distributing conda environments using CVMFS for physics analysts to use both interactively and with distributed computing resources.

Consider for promotion

Yes

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Session Classification: Track 5 –Software Development

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