Software packaging is an indispensable part of build and prerequisite for deployment processes [1].

Full ATLAS [2] software stack consists of Trigger and Data Acquisition (TDAQ), High Level Trigger (HLT), and Offline software.

These software groups depend on some 80 external software packages.

The software consists of around 8 GB of files organised into about 2000 packages.

We present tools, package PackDist [3], developed and used to package all this software, including external, except for TDAQ project.

PackDist is based on and driven by CMT [4]. ATLAS software configuration management and build tool, and consists of shell and Python scripts.

makes use of the CMT commands and query mechanisms to visit the CMT projects and packages tree, and to retrieve the configuration/meta-data parameters, including dependencies.

is highly configurable by means of configuration files with simple colon or equal sign separated parameter and value syntax, command line options, and the PACKOPTS environment variable.

The packaging unit used is CMT project.

Each CMT project is packaged as several packages

- platform dependent (one per platform available)
- source code excluding header files
- other platform independent files
- documentation (built optionally)
- debug information packages (built optionally)

The necessary external software, not natively managed by CMT, is used via dedicated interface CMT packages which provide the meta-data—normally, its location via the <package>_export_path macro—for PackDist to package the external software.

Several configuration setup packages are also packaged.

The dependencies among the project platform specific packages are set to be the dependencies of the CMT projects. The project platform specific packages are also made dependent on those external software packages for which the dedicated interface CMT packages are included in the CMT project, as well as on configuration setup packages and CMT.

Packaging can be done recursively to package all the dependencies.


The RPM package payload is built from the contents of the compressed archive which is part of the Pacman package while the meta-data, such as dependencies, name, version, release, pre- and post-install scripts, etc., are the same by design. This guarantees that installations of packages of either format are identical.

The tools are functional on the platforms supported by ATLAS - GNU/Linux and Mac OS X.

Distribution Kit

The whole set of packages for one software release, called distribution kit, comprises ATLAS specific software, some 80 external software packages and several configuration packages and totals some 120 packages for one platform.

Also packaged are physics analysis projects (currently 6) used by particular physics groups on top of the full release.

The tools provide an installation test for the full distribution kit.

Deployment

The packaged software is used for software deployment on all ATLAS computing resources:

- the detector and trigger computing farms
- collaboration laboratories computing centres
- grid sites
- physicist laptops
- CERN Virtual Machine File System (CVMFS)

Use Cases

The deployed software covers the use cases of

- running all applications
- software development

References

2. ATLAS experiment, http://cern.ch/atlas