

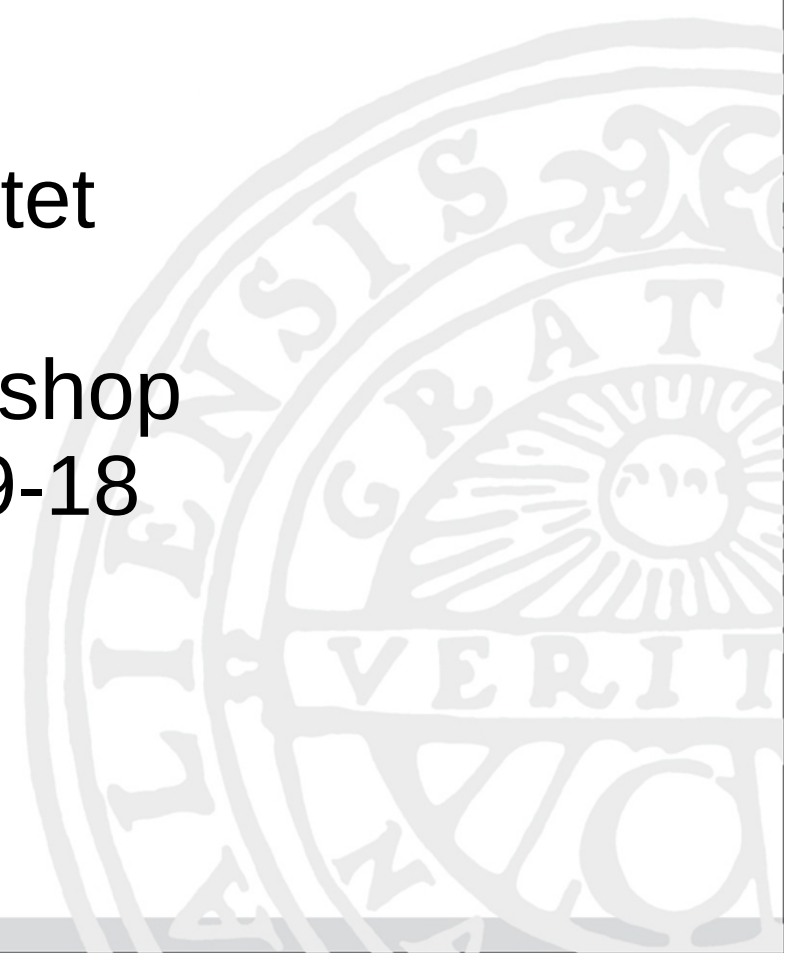


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# Packaging ROOT for Fedora and EPEL

Mattias Ellert  
Uppsala Universitet

ROOT Users' Workshop  
Saas-Fee 2015-09-18



# Fedora and EPEL

- Fedora is a Linux distribution
  - Software distributed in Fedora must have an open source license and be packaged according to the Fedora Packaging Guidelines
- EPEL (Extra packages for Enterprise Linux) is an add-on repository for RedHat Enterprise Linux and its derivatives (CentOS, SL, ...)
  - EPEL is maintained by the Fedora project

# Building ROOT for Fedora

- The ROOT build that is packaged should be as complete as possible
- But installation should be modular – the build is split up in 90+ separate packages
- When building the Fedora version of ROOT, some rarely used modules get compiled, often using different versions of dependencies than was used before
- This results in bug reports and patches which sometimes surprise the ROOT developers

# No bundled libraries

- In Fedora there should be one shared copy of each library
  - Packages are not allowed to bundle their own versions of their dependencies
- For most of the external dependencies, ROOT has configure flags to not use bundled code
  - `--disable-builtin-afterimage`, `--disable-builtin-zlib`, ...
- For a few, such flags are missing – patching required
  - `unuran`, `gl2ps`

# No bundled fonts

- The no bundling rule is not only for libraries but for other system resources as well, such as fonts
- Patch ROOT to call font-config to find system provided fonts instead of using the bundled fonts

# Architecture support

- ROOT works well on ix86 and x86\_64
- The support for some other architectures used by Fedora and EPEL like ppc, ppc64 and arm is either missing or has some glitches
  - This is mostly due to missing or broken support in CINT
  - ROOT 6 could possibly help

# configure vs. cmake

- Why are there two different ways to configure a root build? And why don't they do things the same way?
- configure is more complete
  - It finds dependencies for more modules
- cmake has test suite integration

# Documentation generation

- As part of the building of the ROOT package the ROOT user guide is generated using the freshly compiled root
- This requires running the root binary inside the build tree even though it was configured to be installed elsewhere using `--prefix`
  - This is not really supported and requires quite a lot of tweaks



# Running the test suite

- The test suite is currently not run as part of the package build – but I would really like it to be
- This has the same problem as the documentation generation that running a root binary intended to be installed from inside the build tree is not supported
- Requires using cmake

# What about ROOT 6?

- The ROOT package in Fedora and EPEL is currently based on the latest ROOT 5 release
- ROOT 6 requires gcc 4.7 or later – so not for EPEL 5 and 6
- ROOT 6 bundles a private and substantially patched version of llvm and clang, using the system version does not work
- The documentation generation is very memory intensive in ROOT 6 – the migration to doxygen will help

# Conclusions

- Packaging ROOT for Fedora and EPEL, complying to the Fedora Packaging Guidelines has been challenging
- The bug reports and feature requests resulting from this effort don't always make sense to the ROOT developers

# Things that would make things easier

- Make it possible to run the root binary compiled for installation in the build tree to make it easy to generate documentation and run the test suite
- Avoid having to choose between being able to build a complete set of modules (using configure) and being able to easily run the test suite (using cmake) – make at least one of them feature complete
- Add missing `--disable-builtin-xxx` flags

# References

- ROOT in the Fedora Package Database
  - <https://admin.fedoraproject.org/pkgdb/package/root/>
- The Fedora Packaging Guidelines
  - <https://fedoraproject.org/wiki/Packaging:Guidelines>