Homebrew LLVM

LLVM Distributors Conference 2021

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Homebrew
Background

- macOS and Linux

- rolling release

- binaries

- ~6000 software packages

- ~25 maintainers

- Hosted on GitHub

Configuration

- Single package: `brew install llvm`

- `-DLLVM_ENABLE_PROJECTS=clang;clang-tools-extra;lld;lldb;mlir;polly`

- `-DLLVM_ENABLE_RUNTIMES=compiler-rt;libcxx;libcxxabi;libunwind;openmp`

- `make`

- Build with PGO on macOS

- <u>Gory Details</u>

Testing

- Pull request triggers CI

- Full build and <u>smoke tests</u>

  - cf. <u>LLVM Toolchain Integration Test Suite</u>

- Recursive dependents

Things We Could Do Better

- Some users just want `clang-tidy`

- Bootstrap caching

- More comprehensive test coverage

- Test release candidates more proactively

- Enable LTO on macOS builds

Things We Struggle With

- No ABI versioning for `libLLVM` on macOS

- Build failures on tagged releases

Questions, Comments, or Contributions?

- https://github.com/ClangBuiltLinux/llvm-distributors-conf-2021/issues/21

- https://github.com/Homebrew/discussions/discussions

- https://github.com/Homebrew/homebrew-core/pulls

Gotchas

- Using a Runtimes build on Linux

  - https://github.com/Homebrew/homebrew-core/pull/78176

  - https://github.com/Homebrew/linuxbrew-core/pull/23339

- Linking statically with `libc++` on Linux

  - https://github.com/Homebrew/linuxbrew-core/pull/23393

- Building with PGO on macOS Catalina or earlier

  - https://github.com/Homebrew/homebrew-core/blob/566a5de5cfd920994618270d7580973ae61130f1/Formula/llvm.rb#L232-L248

Thank you!