

# Remote Execution Caching Compiler (RECC)

Engineering

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# What is RECC?

- Remote Execution Caching Compiler (RECC)
  - Open source build tool that wraps compiler commands and optionally forwards them to a remote build execution service
  - Encompasses the capabilities of both ccache and distcc
  - Supports remote linking and caching
- Designed to share caches across diverse toolchains
  - Works with many compiler toolchains (GCC, Clang, Solaris CC)
  - Supports multiple operating systems (Linux, macOS, Solaris)
- Compatible with any remote execution API server supported by Bazel
  - Single Host Server/Proxy: BuildBox-CASD
  - Distributed Server: BuildGrid

# How RECC Works?

- Computes dependency tree with clang-scan-deps (or gcc -M or CC -xM)
- Creates comprehensive Cache Key to produce **deterministic** output:
  - Actual compiler command
  - Checksum of input Merkle tree (including all dependencies)
  - Relevant environment variables
  - OS and toolchain properties
- Provides sandboxed execution locally or remotely
  - Allows for higher parallelism than ``-j $(nproc)`` without a job server

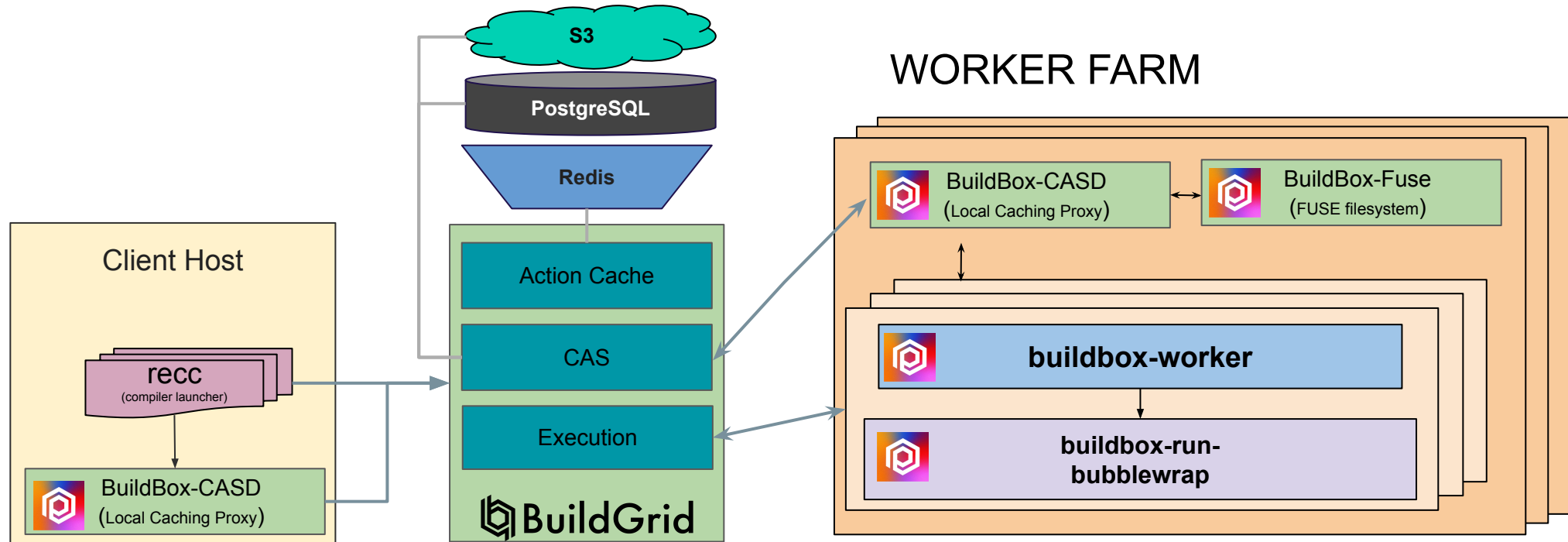




# Real-World Results:

- Stats at Bloomberg:
  - Tens of millions of compiles daily
  - 80% cache hit rate on cacheable compiles
- Shared cache across developer builds
- Used in all phases of the Software Development Lifecycle (SDLC)
- Distributed remote compilation and linking
- Builds on Small VMs with recc; outperforms non-recc builds on larger physical machines

# Caching + Distributed Cache + Distributed Build:





# Discover More!

Install via Homebrew:

<https://gitlab.com/BuildGrid/buildbox/homebrew-buildbox>

Install via Debian:

<https://gitlab.com/BuildGrid/buildbox/buildbox-packaging>

Explore the code: <https://gitlab.com/BuildGrid/buildbox>

Reach out on Slack:

<https://buildteamworld.slack.com/channels/recc>

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