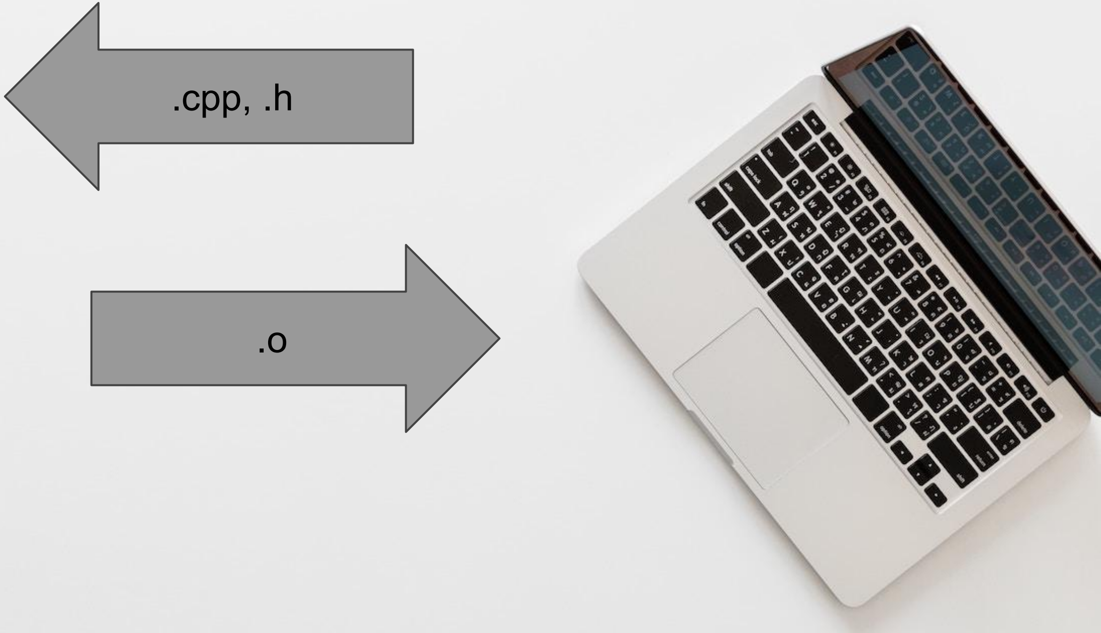
Funner LLVM development

Nico Weber, @thakis

Goma



.cpp, .h

.o

https://chromium.googlesource.com/infra/goma/client/

```
cmake -GNinja -DLLVM_ENABLE_ASSERTIONS=ON -DCMAKE_BUILD_TYPE=Release
-DLLVM_TARGETS_TO_BUILD=X86 ../llvm-rw/ -DLLVM_ENABLE_DIA_SDK=NO
-DCMAKE_C_COMPILER=c:/path/to/bin/clang-cl.exe
-DCMAKE_CXX_COMPILER=c:/path/to/bin/clang-cl.exe
-DCMAKE_C_COMPILER_LAUNCHER=c:/goma/goma-win64/gomacc.exe
-DCMAKE_CXX_COMPILER_LAUNCHER=c:/goma/goma-win64/gomacc.exe
-DCMAKE_C_FLAGS="-m32 -Wno-nonportable-include-path" -DCMAKE_CXX_FLAGS="-m32
-Wno-nonportable-include-path"
```

LLVM should keep using cmake

IMHO, not great for hacking on LLVM

Slow, so caches. Now needs to solve one of the two hard problems.

Environment changed? New build dir. Want to change build config? New build dir. Etc.

```
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-Wno-nonportable-include-path"
```

Build file syntax
workable but not fun.

gn: fast, fun

“generate ninja”

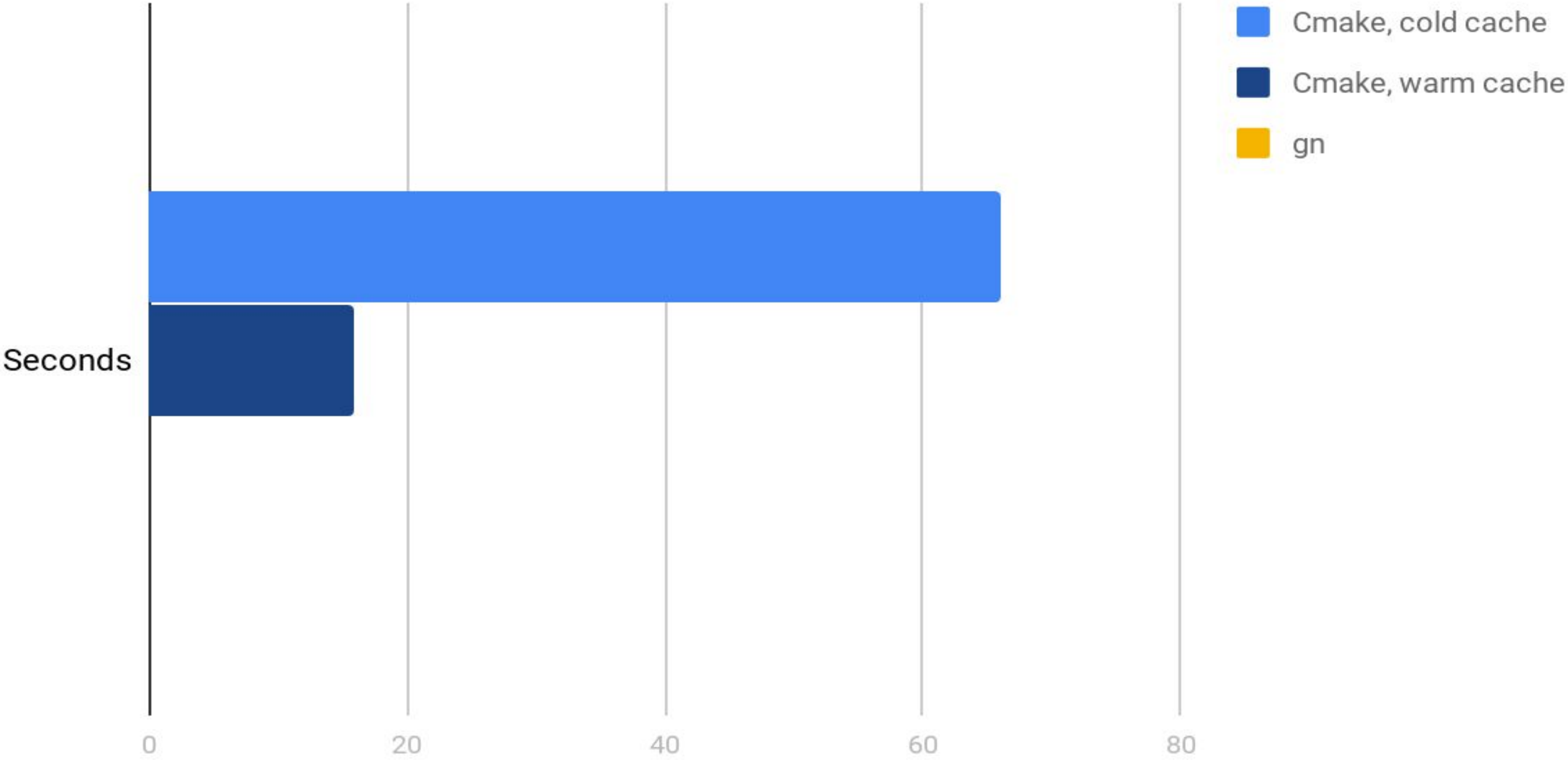
Used by Chrome, Fuchsia, …

https://gn.googlesource.com/gn

https://is.gd/gn_intro

Manually converted llvm, lld, clang to gn

Time to generate .ninja files



What works?

- Everything needed for check-llvm, check-lld, check-clang
- On Linux, Mac, Win hosts
- Targets X86, ARM, AArch64
- Debug/Release, Asserts on/off, some other build flags

Workflow

- `gn gen some/dir`
- `ninja -C some/dir check-lld`
- Put something like this in some/dir/args.gn:

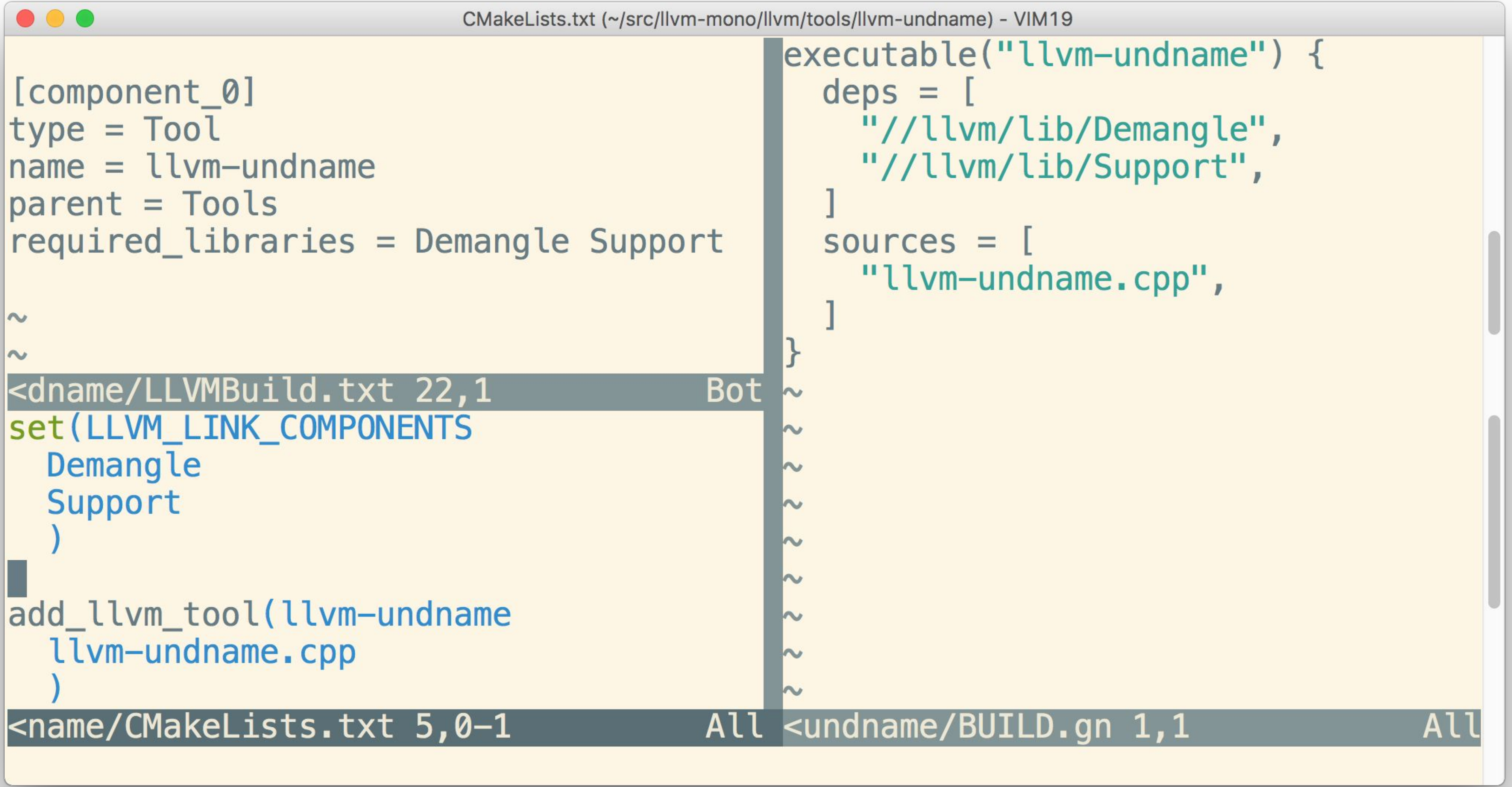
```
use_goma = true

clang_base_path = "c:/path/to"
```

Workflow

- gn gen some/dir
- ninja -C some/dir check-lld
- Put something like this in some/dir/args.gn:

```
is_debug = true / false
```

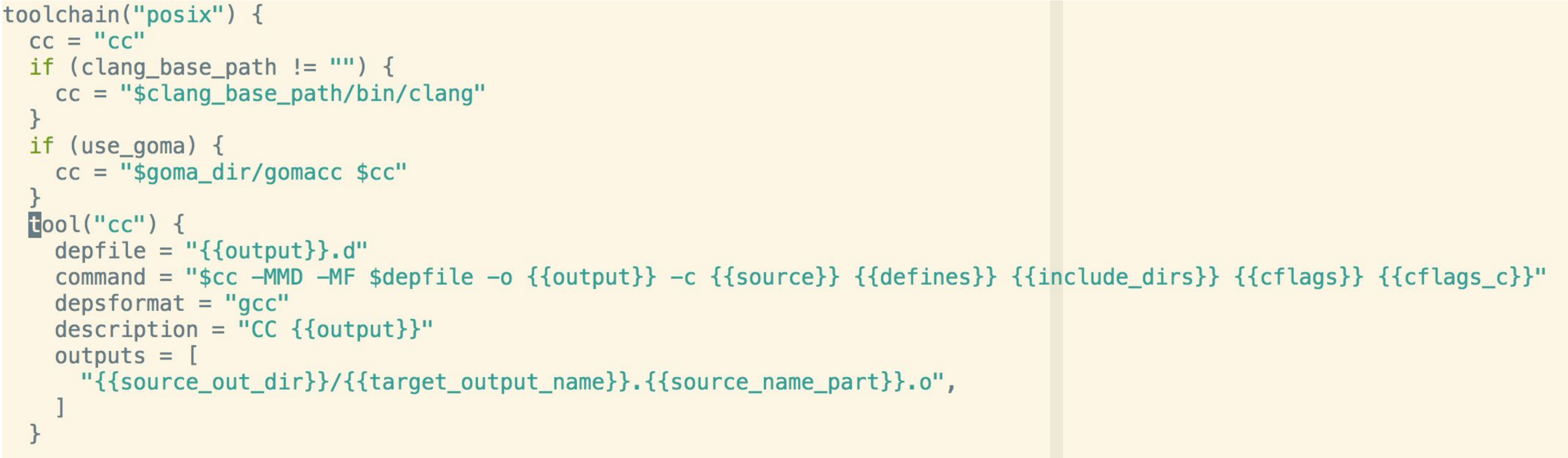
`gn args --list some/dir` for list of toggles


CMakeLists.txt (~/src/llvm-mono/llvm/tools/llvm-undname) - VIM19
<dname/LLVMBuild.txt 22,1 Bot
<name/CMakeLists.txt 5,0-1 All
<undname/BUILD.gn 1,1 All

```

[component_0]
type = Tool
name = llvm-undname
parent = Tools
required_libraries = Demangle Support

~
~
```

```
set(LLVM_LINK_COMPONENTS
  Demangle
  Support
  )

add_llvm_tool(llvm-undname
  llvm-undname.cpp
  )
```

```
executable("llvm-undname") {
  deps = [
    "//llvm/lib/Demangle",
    "//llvm/lib/Support",
  ]
  sources = [
    "llvm-undname.cpp",
  ]
}
~
~
~
~
~
~
~
~
~
```



```
toolchain("posix") {
  cc = "cc"
  if (clang_base_path != "") {
    cc = "$clang_base_path/bin/clang"
  }
  if (use_goma) {
    cc = "$goma_dir/gomacc $cc"
  }
  tool("cc") {
    depfile = "{{output}}.d"
    command = "$cc -MMD -MF $depfile -o {{output}} -c {{source}} {{defines}} {{include_dirs}} {{cflags}} {{cflags_c}}"
    depsformat = "gcc"
    description = "CC {{output}}"
    outputs = [
      "{{source_out_dir}}/{{target_output_name}}.{{source_name_part}}.o",
    ]
  }
```

mostly simple

`gn format` means build files are consistently formatted “configure” step runs at build time! lld part of build can run while clang configures.

configure bad: serially
at start of build &
monolithic config.h
causes needless
rebuilds

Cool features

- Targets can list data deps; easy to zip up all files needed for e.g. “check-llvm”, send to other machine, run tests there
- `gn desc --json` dumps description of build; can convert to bazel BUILD files, Android blueprint, … from there
- Can create MSVC, Xcode, Eclipse, QTCreator… project files (which shell out to ninja for actual building)
- Great support for builds using multiple toolchains (e.g. cross builds, multi-stage builds in one build dir, …)

If you want to try it

Get gn as described on https://gn.googlesource.com/gn

In your monorepo:

```
git remote add nico https://github.com/nico/llvm-project-20170507
```

```
git fetch nico gn && git checkout nico/gn
```

```
gn gen out/gn && ninja -C out/gn
```

(`gn args --list out/gn` to see build toggles)

Keeping gn files in sync annoying? Did it for the last 8 months, no big deal