

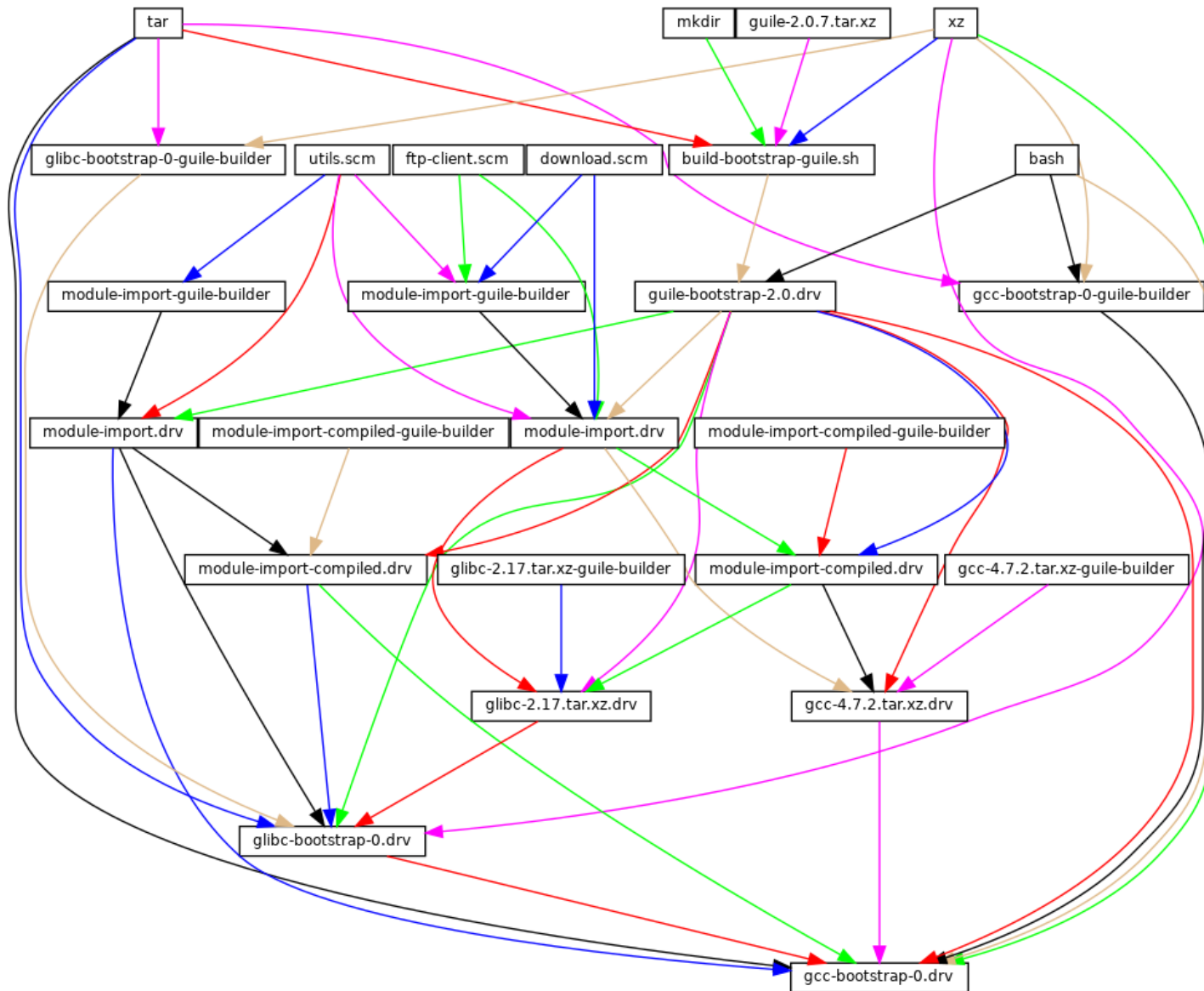
Porting RISC-V to GNU Guix

Efraim Flashner

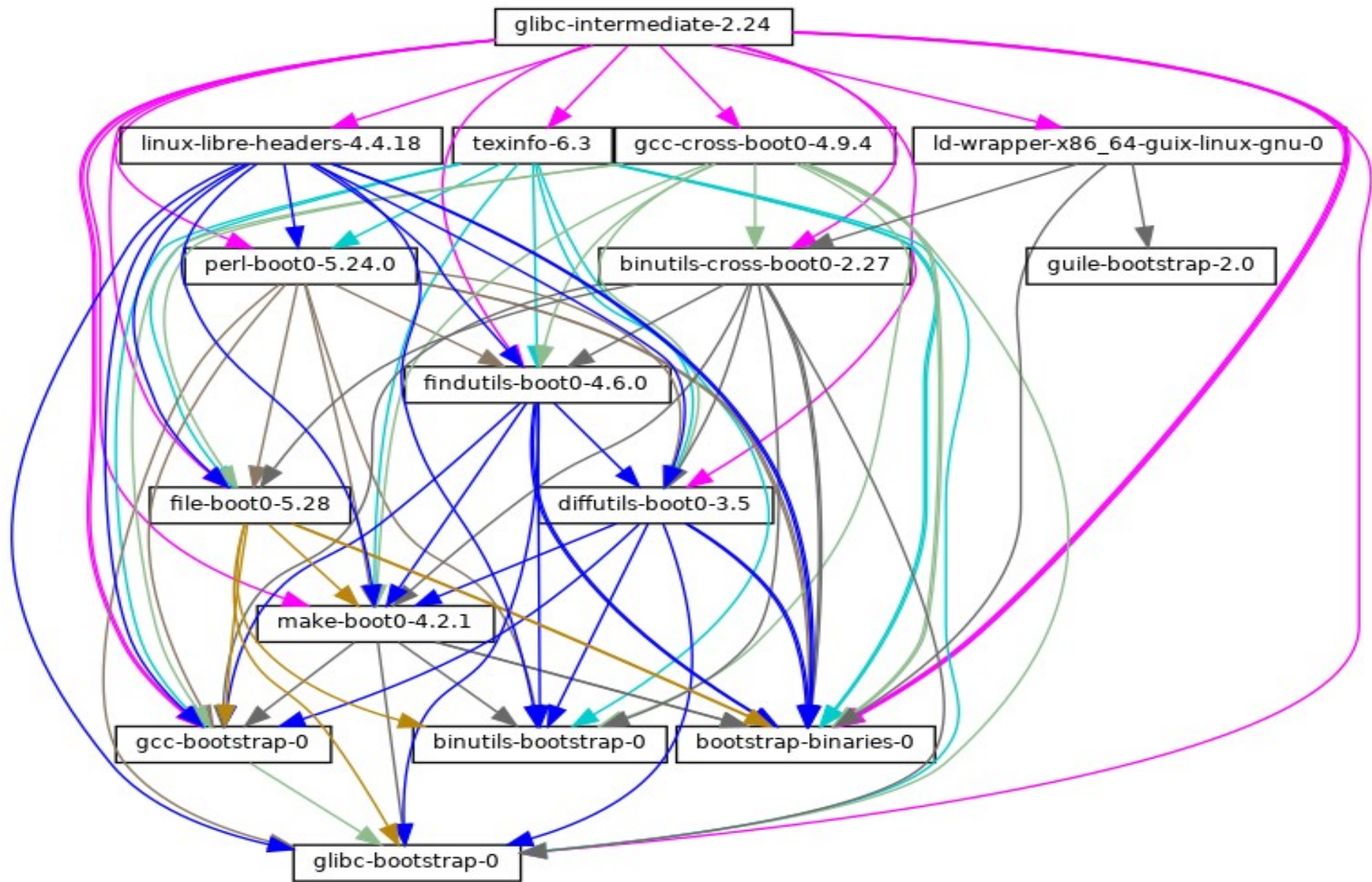
Porting RISC-V to Guix

- Some stuff about guix
- Transactional diagram
- Build container
- DAG
- Built natively

Porting RISC-V to Guix



Porting RISC-V to Guix



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What other architecture(s) is it similar to?

Porting RISC-V to Guix

- Just another niche architecture
- Faster adoption than aarch64



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- No JIT in most situations
like powerpc64le
- Too new for old `config.sub` `config.guess`
scripts
like aarch64

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```
config.guess timestamp = 2014-11-04
```

```
uname -m = riscv64
```

```
uname -r = 5.19.0-1012-generic
```

```
uname -s = Linux
```

```
uname -v = #13~22.04.1-Ubuntu SMP Thu Jan 12 15:34:31 UTC 2023
```

```
/usr/bin/uname -p =
```

```
/bin/uname -X =
```

```
hostinfo =
```

```
/bin/universe =
```

```
/usr/bin/arch -k =
```

```
/bin/arch =
```

```
/usr/bin/oslevel =
```

```
/usr/convex/getsysinfo =
```

```
UNAME_MACHINE = riscv64
```

```
UNAME_RELEASE = 5.19.0-1012-generic
```

```
UNAME_SYSTEM = Linux
```

```
UNAME_VERSION = #13~22.04.1-Ubuntu SMP Thu Jan 12 15:34:31 UTC 2023
```

```
configure: error: cannot guess build type; you must specify one
```


Porting RISC-V to Guix

```
gcc/config/riscv/linux.h
```



```
#define STARTFILE_PREFIX_SPEC          \
    "/lib" XLEN_SPEC "/" ABI_SPEC "/"  \
    "/usr/lib" XLEN_SPEC "/" ABI_SPEC "/" \
    "/lib/ "                             \
    "/usr/lib/ "
```

Porting RISC-V to Guix

Millak commented on Jul 10, 2022

Contributor ...

This was tested on a HiFive Unmatched board with rust-1.54.

  Add support for riscv64 ...

Verified ✓ 6017504

thepowersgang commented on Jul 11, 2022

Owner ...

Did that "Just Work" doing a full bootstrap on a riscv64 machine? (I.e. `./build-1.54.sh` and `make -C run_rustc RUSTC_VERSION=1.54.0`)

Millak commented on Jul 11, 2022

Contributor Author ...

I also passed `RUSTC_TARGET=riscv64gc-unknown-linux-gnu` and used the distro packaged `llvm-13`.

I broke out the steps in `build-1.54.sh`. Looks like I ran 'make test' after `make run_rustc` and skipped 'make local_tests'. I also used the bundled `libgit2`. So yeah, I think you can say it basically just worked :)

<https://git.savannah.gnu.org/cgit/guix.git/tree/gnu/packages/rust.scm?h=staging#n286>

Took about 56 hours to build rust-1.54. I used the tagged 0.10 `mrustc` commit with my patch. About 6 hours for each of rust-1.55, 1.56 and 1.57. I then used rust-1.57 to build `librsvg`.



 **thepowersgang** merged commit `495f85b` into `thepowersgang:master` on Jul 17, 2022

6 checks passed

[View details](#)

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```
349 (synopsis "Compiler for the Rust programming language")
350 (description "Rust is a systems programming language that provides memory
351 safety and thread safety guarantees.")
352 (home-page "https://github.com/thepowersgang/mrustc")
353
354 ;; The intermediate generated code is known to be inefficient and
355 ;; therefore the build process needs 8GB of RAM while building.
356 ;; It may support i686 soon:
357 ;; <https://github.com/thepowersgang/mrustc/issues/78>.
358 (supported-systems '("x86_64-linux" "aarch64-linux" "riscv64-linux"))
```

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```
@@ -338,9 +343,11 @@
```

```
safety and thread safety guarantees.")
```

```
(home-page "https://github.com/thepowersgang/mrustc")
```

- ;; So far mrustc is (x86_64|aarch64)-only. It may support i686 soon:
- + ;; The intermediate generated code is known to be inefficient and
- + ;; therefore the build process needs 8GB of RAM while building.
- + ;; It may support i686 soon:
- ;; <<https://github.com/thepowersgang/mrustc/issues/78>>.
- (supported-systems '("x86_64-linux" "aarch64-linux"))
- + (supported-systems '("x86_64-linux" "aarch64-linux" "riscv64-linux"))

Porting RISC-V to Guix

- go: gccgo@10 => go@1.16 => newer go
go@1.16 fails the test suite
- node: backport support to node@10
later versions have a circular dependency
between llhttp and node
- java: backport support to before java7?
- haskell: grab a binary from Debian?

Porting RISC-V to Guix

```
guix build hello --tune
```

Porting RISC-V to Guix

Thank you