

Risc-V Container journey

The state we are in now

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Can we have containers
on Risc-V?

Yes!!

192.168.15.16:8080/

carlosedp/echo_on_riscv Tags

+


https://hub.docker.com/r/carlosedp/echo_on_riscv/tags

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carlosedp/echo_on_riscv ☆

By carlosedp • Updated a few seconds ago

Container

Pulls 1

Overview

Tags

Tags (1)

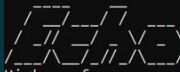
v1.0-riscv64 5 MB

Last update: a few seconds ago

Step 4/4 : ENTRYPOINT ["/echo"]
--> Running in e69f00ede05a
Removing intermediate container e69f00ede05a
--> fb8bfa5b705c
Successfully built fb8bfa5b705c
Successfully tagged carlosedp/echo_on_riscv:latest

carlosedp in ~/work/echo at HiFiveU via devel:2bdba6c078
→ sudo docker run -d -p 8080:8080 carlosedp/echo_on_riscv
df7d1274935e1e4fcc73a1916f8f542f330f66bd33844ff2526c4e58e2e47dff

carlosedp in ~/work/echo at HiFiveU via devel:2bdba6c078
→ sudo docker logs -f df7d1274935e1e4fcc73a1916f8f542f330f66bd33844ff2526c4e58e2e47dff

 v4.1.5
High performance, minimalist Go web framework
https://echo.labstack.com

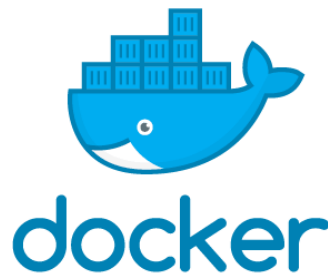
carlosedp in crun at HiFiveU
→ sudo docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
carlosedp/echo_on_riscv	latest	fb8bfa5b705c	49 minutes ago	9.07MB
<none>	<none>	ab6eac0d500e	52 minutes ago	9.07MB
<none>	<none>	5b23b9b06098	About an hour ago	9.07MB

carlosedp in crun at HiFiveU
→ sudo docker push carlosedp/echo_on_riscv:v1.0-riscv64
The push refers to repository [docker.io/carlosedp/echo_on_riscv]
tag does not exist: carlosedp/echo_on_riscv:v1.0-riscv64

carlosedp in crun at HiFiveU
→ sudo docker tag carlosedp/echo_on_riscv carlosedp/echo_on_riscv:v1.0-riscv64

carlosedp in crun at HiFiveU
→ sudo docker push carlosedp/echo_on_riscv:v1.0-riscv64
The push refers to repository [docker.io/carlosedp/echo_on_riscv]
54ae7d38cf38: Pushed
v1.0-riscv64: digest: sha256:29f312792f3760411d8ec60a03fa845eae24949ab589335d309f7d4f26210a43
size: 528



```
carlosedp in riscv-bringup/echo-sample at fedora-unleashed on ↗ master via 🐶 devel:f980a63fcb on 🐳 vlibrary
→ make
go build -o echo-riscv -v
```

```
carlosedp in riscv-bringup/echo-sample at fedora-unleashed on ↗ master via 🐶 devel:f980a63fcb on 🐳 vlibrary
→ make docker
DOCKER_BUILDKIT=1 docker build -t carlosedp/echo-riscv .
[+] Building 4.0s (5/5) FINISHED
⇒ [internal] load build definition from Dockerfile
⇒ ⇒ transferring dockerfile: 139B
⇒ [internal] load .dockerignore
⇒ ⇒ transferring context: 2B
⇒ [internal] load build context
⇒ ⇒ transferring context: 9.07MB
⇒ CACHED [1/1] COPY echo-riscv /
⇒ exporting to image
⇒ ⇒ exporting layers
⇒ ⇒ writing image sha256:5397f67276dba4c77cb29aec3cb40c938b63a598f5c7b5d926991fcddcbf8bc2
⇒ ⇒ naming to docker.io/carlosedp/echo-riscv
```

```
carlosedp in riscv-bringup/echo-sample at fedora-unleashed on ↗ master via 🐶 devel:f980a63fcb on 🐳 vlibrary
→ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
carlosedp/echo-riscv	latest	5397f67276db	2 minutes ago	9.07MB

```
carlosedp in riscv-bringup/echo-sample at fedora-unleashed on ↗ master via 🐶 devel:f980a63fcb on 🐳 vlibrary
→
```

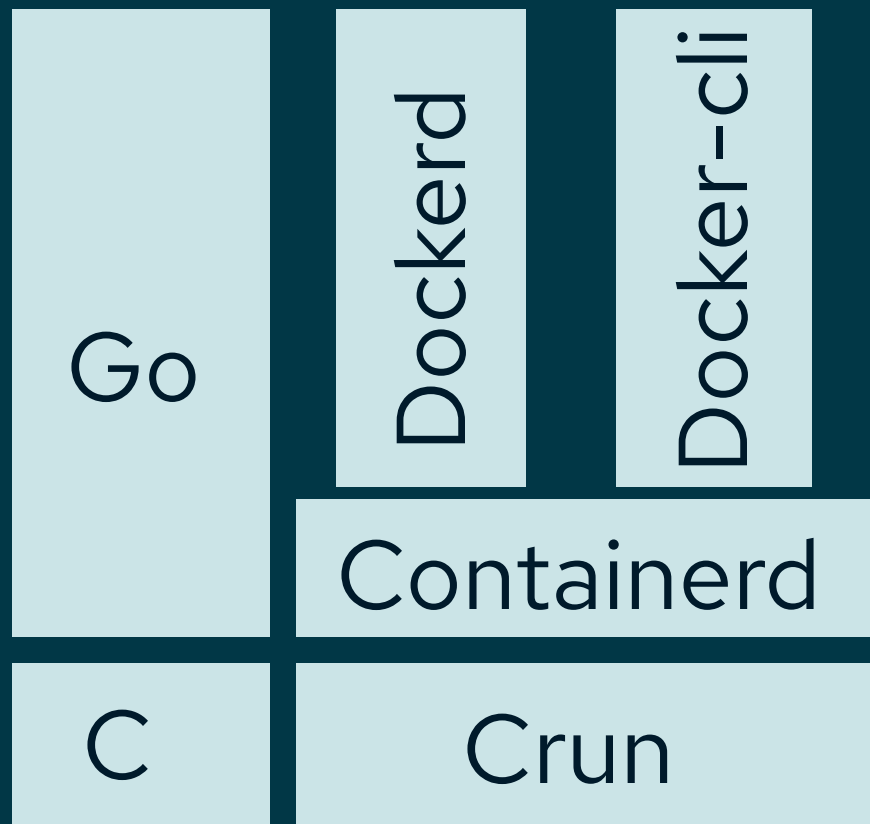
Docker pre-reqs

- Golang
- Runtime (runc)
- ContainerD
- Docker Daemon
- Docker Client

Docker pre-reqs – Not easy

- Golang
 - x/net
 - x/sys
- Runtimes – runc
 - CGO
 - Relocations
 - buildmode=pi
 - ???
 - Libseccomp
 - Apparmor
- Runtimes – crun
- ContainerD
- Docker Daemon
- Docker Client

Working Stack



Work to be done

- CGO
 - Assembly
 - Relocations - more assembly
 - buildmode=pie - probably even more assembly
- Runtimes - runc
- Libseccomp
 - Kernel support
 - Libseccomp PR
- Apparmor
 - ???
- Dockerd
 - netns
 - libnetwork

Demo

Thanks!

Check out the reqs tracker at: <https://github.com/carlosedp/riscv-bringup>

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