

Implementing a Container in 100 lines of go

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Background and Disclaimer

- Based on a blog post from Julian Friedman (Doctor Julz) – 2016
 - <https://www.infoq.com/articles/build-a-container-golang/>
 - ex. IBM Bluemix (aka IBM Cloud Foundry)
 - he presented it in the Boeblingen lab around that time
- Adopted for a conference talk by Liz Rice – 2018
 - <https://www.youtube.com/watch?v=8fi7uSYlOdc>
- Adapted by me to cgroup v2
- To be used in my Cloud Computing lecture

Goals

- Re-implement a simplified version of "docker run" in go
 - Start a container
 - Gradually implement (some) isolation
 - Implement (some) resource limitation
 - Command line:

```
// Docker original
docker          run <image> <cmd> <params>

// Our version
go run main.go run          <cmd> <params>
```

- Make you envious that you did not invent Docker and got all the money

Isolation - Let's get our hands Dirty

Namespaces

- Are defining what you see
 - Unix Timesharing System (hostname)
 - Process IDs
 - Mounts
 - Network
 - User IDs
 - Interprocess Communication
 - ...

Resource Limits - Let's get our hands Dirty

Cgroups

- Are defining what you can use
- Are controlled via a filesystem Interface
- Memory
- CPU
- I/O
- Process Numbers

Resources

- GitHub Repo: <https://github.ibm.com/martin-henke/containerdemo>

Questions