Node.js Meets Docker

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PayPal
Software

OS / Kernel

Hardware
Applications

Kernel

CPU  Memory  Devices
OS / Kernel

Kernel

CPU    Memory    Devices
System Calls

read()  System Calls  write()

Kernel

PID 8  PID 11  PID 17  PID 23
Control Groups

PID 8  PID 11  PID 17  PID 23

System Calls

Kernel
Namespaces

Kernel

read()  System Calls  write()
Docker

- **Client** – Docker CLI
- **REST API** – Specifies interfaces that programs can use to talk to the daemon and instruct what to do
- **Server** – A daemon process (the dockerd command).
FROM mhart/alpine-node:10
WORKDIR /app
COPY package* .json /app/
RUN npm install — production
COPY . /app/
CMD node /app/index.js
Docker images

- Docker File
- Docker Image
- Docker Container

Steps:
- build
- run
Docker images

Layer
- Ubuntu

Layer
- Tomcat
- Liberty

Container 1
- App 1
- Tomcat
- Ubuntu

Container 2
- App 2
- Liberty

Container 3
- App 3
- Liberty

Container 4
- App 4
- CentOS
Containers

Container Runtime

Host OS
Docker compose

>-

FROM
RUN
CMD

N

Layer Stack
Versioning

POD/VM

NGINX

PM2

Node

Node

Config

image: frameworks/pm2:2.4.0
container_name: pm2
...
image: frameworks/nginx:latest
container_name: nginx

**Latest** - Most up-to-date tag version in docker hub

**Explicit** - Exact tag version
Startup order

depends_on:
  container1:
    condition: service_started
  container2:
    condition: service_healthy
Healthchecks

- Container specific
- Polling
- Shell script

```
healthcheck:
  interval: 10s
  timeout: 5s
  retries: 3
  test:
    curl -kf localhost:8000/health
```
Log driver

- Sidecar
- Configurable

```yaml
logging:
  driver: fluentd
  options:
    host: fluentdhost
    port: 24224
```
Deployment

Master

Controller

Worker

V1  V2

Worker

V1  V2

Worker

V1  V2

Worker

V1  V2
Trends

VMs

Containers

Serverless

Edge

- Smaller
- Faster startup
- Robust Platform