



Docker + Ceph = Happiness

and happy = good

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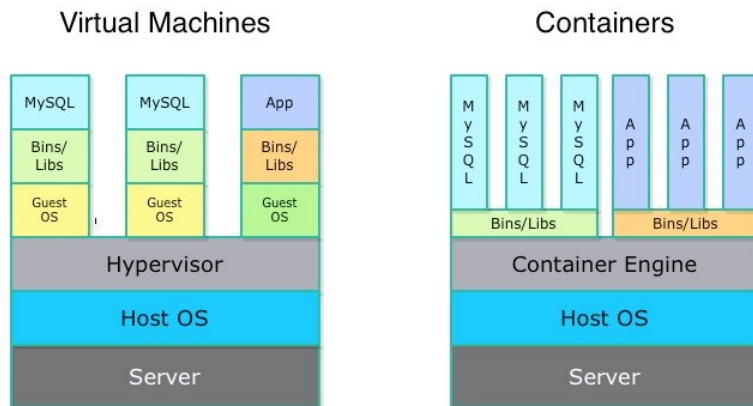
Agenda

- **Containerization Overview**
- **12 Factor Applications**
- **Security Benefits of Docker**
- **Ceph Overview**
- **Why Docker and Ceph**
- **CephFS**
- **Winning**



Containerization Overview

- Massive resource consolidation (~ 5X).
- Rapid and consistent deployments.
- Bridge gap between developers and operations.
- End-to-end audit trail and security controls.
- Standardized workload deployments
- Docker is included and fully supported in SLE 12



Security Benefits of Docker

- No access to production (SSH, CLI, etc...)
- Stateless environment mitigates against APT
- Minimal images mean fewer attack vectors
- Deployment methodology allows for rapid response
- Full audit trail for entire lifecycle of deployment
- Breaks down communication barriers (Dev, Ops, Sec)
- Automation ensures consistency
- AppArmor and/or SELinux to confine everything



12 Factor Applications

I. Codebase

One codebase tracked in revision control, many deploys

II. Dependencies

Explicitly declare and isolate dependencies

III. Config

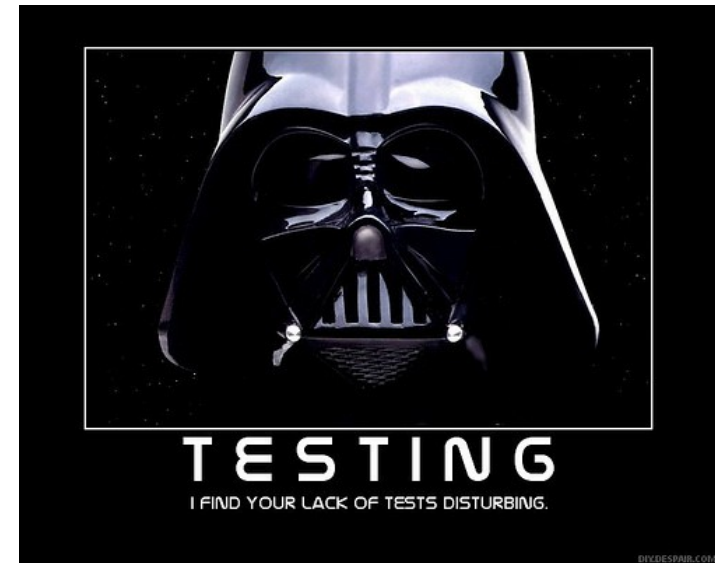
Store config in the environment

IV. Backing Services

Treat backing services as attached resources

V. Build, release, run

Strictly separate build and run stages



12 Factor Applications (contd)

VI. Processes

Execute the app as one or more stateless processes

VII. Port binding

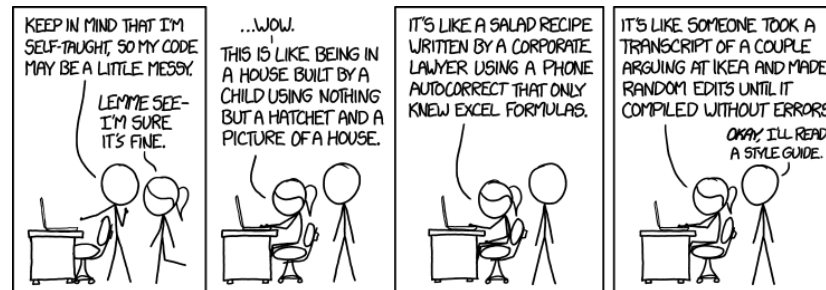
Export services via port binding

VIII. Concurrency

Scale out via the process model

IX. Disposability

Maximize robustness with fast startup and graceful shutdown



12 Factor Applications (contd)

X. Dev/prod parity

Keep development, staging, and production as similar as possible

XI. Logs

Treat logs as event streams

XII. Admin processes

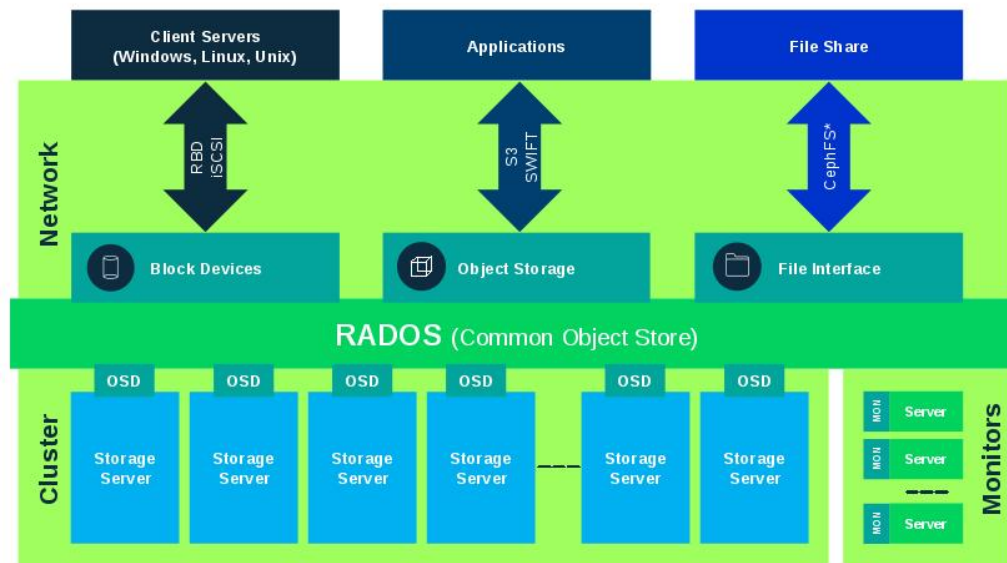
Run admin/management tasks as one-off processes

<https://12factor.net/>



Ceph Overview

- Enterprise ready
- Massively scalable
- Open source
- Commodity hardware
- Large ecosystem
- Storage Nodes
- Monitor Nodes
- Gateway Nodes



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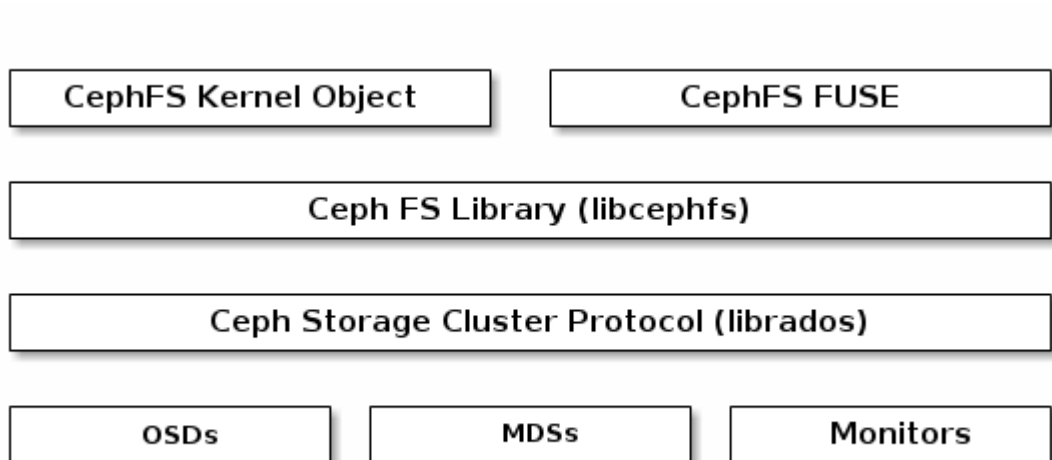
Why Docker and Ceph

- **Stateless containers**
- **Stateful data**
- **Location independent access**
- **Robust access protocols**
- **Massively scalable**
- **Open source**
- **Great SUSE support**



CephFS

- Accessible via FUSE or kernel
- POSIX compliant
- Failover MDS options
- Performance considerations
- Scalability considerations
- Access from Docker hosts



Demo

- **SES Cluster with:**
 - 1 Admin node
 - 1 Calamari node
 - 3 OSD/MON Nodes
 - 1 MDS Node
- **Docker**
 - 1 Docker Host





We adapt. You succeed.

Demo