The Open Sourcing of Infrastructure

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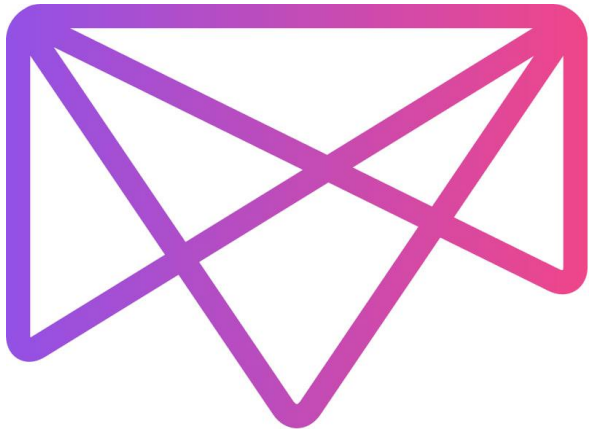
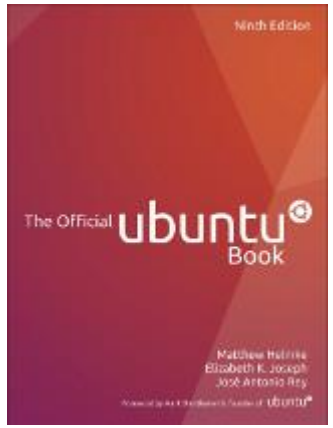
MESOSPHERE

Elizabeth K. Joseph, Developer Advocate

- Developer Advocate at Mesosphere working on DC/OS, Apache Mesos
- 15+ years working in open source communities
- 10+ years in Linux systems administration and engineering roles
- Author of The Official Ubuntu Book and Common OpenStack Deployments



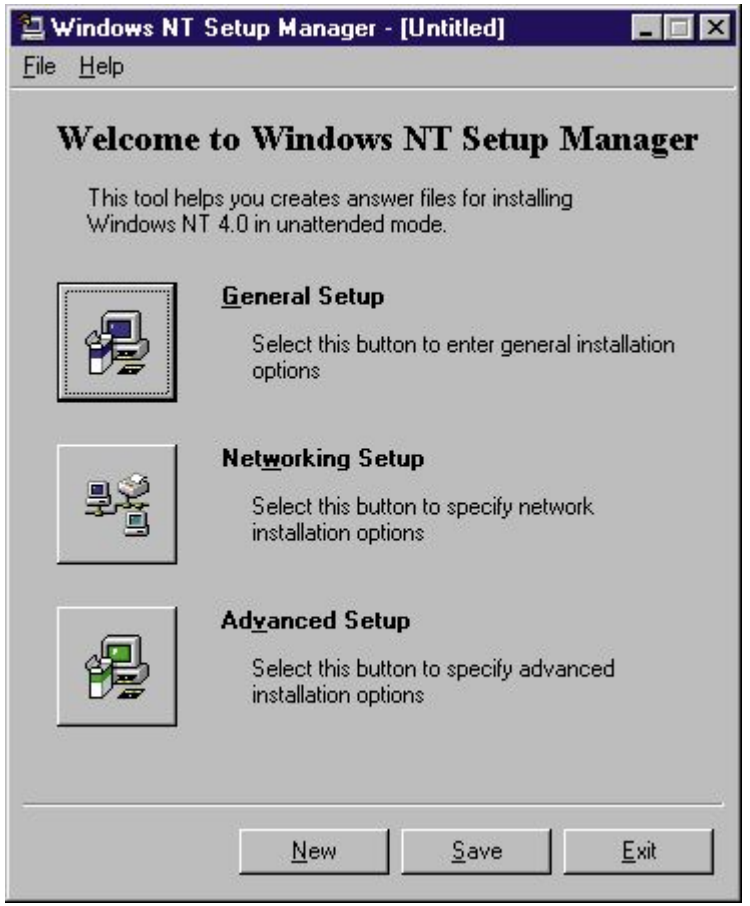
DC/OS



The [recent] history of infrastructure

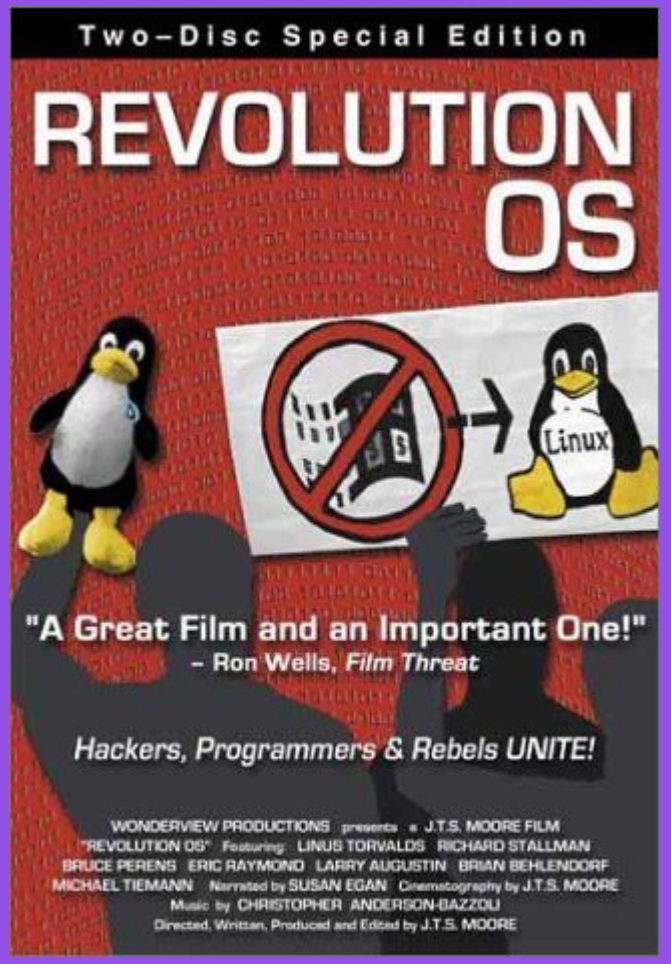
(from a highly opinionated, open source view)

“To make a server, first add...”



And so rose the proprietary world of software

With proprietary Unix and Windows-based platforms, the stage was set for the golden age of proprietary software in the 1990s and into the 2000s.



Linux was an upstart, at best seen as "cheap Unix"

Lots of FUD around open source

I liked it anyway.

So I got a junior Linux systems administrator job!

Some of the topics during a seminar I spoke at in the 00s

- What is Free/Open Source Software (FOSS)?
- How & Why Linux and FOSS can Deliver Business Results
- Managing FOSS: Thousands of Alternatives - How To Choose?
- Using Open Source Web Applications to Produce Business Results

Turning point: LAMP stack

Flood of changes to how we interact with software

Reluctance to be locked-in by a vendor

Greater concern over security

Wanted the ability to fix bugs ourselves

Learned that innovation is stifled when software is developed in isolation

Flood of changes to how we use software

Downtime becoming [considerably more] unacceptable

Increase in reliance upon scaling and automation

Transition from server “pets” to “cattle”

Larger focus on data (retention, speed)

“[T]he seeds of the future were found in free software and the Internet rather than in the now-establishment technologies offered by Microsoft.”

Tim O’Reilly, What's the Future and Why It's Up to Us

Open source is now ubiquitous

Source: “The state of the Octoverse 2016” https://octoverse.github.com/

Developers are using, developing on, **contributing to, and sharing** open source software!

Operations is using and developing on open source software.

When I left my ops job, I left my tools behind

Time to open source ops stuff!

Done!

Configuration management

- Puppet Modules
- Chef Cookbooks
- Ansible Playbooks

Open application definitions

- DC/OS Universe Catalog
- Juju Charms

Full disk images

- Dockerhub and other container registries

Welcome to the present!

The Cloud.

Including IaaS, PaaS, SaaS...

Open Sourcing Infrastructure:

PHASE 2

What were some of the reasons for going open source in the first place?

- Security
- Ability to diagnose and fix bugs without vendor intervention
- Increased control over our data and services
- Avoiding vendor lock-in

“Most people just consume the cloud without thinking ... many users are sinking cost into infrastructure that is not theirs, and they are giving up data and information about themselves without thinking.”

Edward Snowden, OpenStack Summit, May 9, 2017

Let’s think.

Is the service I’m using adhering to open standards, or am I locked in?

What is my recourse if the service vendor goes out of business

...or is bought by a competitor?

Does the vendor have a history of communicating clearly and honestly with their customers about downtime, security, etc?

Does the vendor respond to bugs and feature requests?

Will the vendor use our data in a way that I’m not comfortable with?

(or worse, isn’t allowed by your own customer agreements)

Initial costs may be low, but do you have a plan to handle long term, growing costs?

You *could* consider all these things and acknowledge them as acceptable risks.

Many organizations do!

Just make sure you are *actually*, *seriously* considering the risks.

Or look again to Open Source

Various infrastructure technologies are available:

- OpenStack
- Kubernetes*
- Docker swarm mode*
- DC/OS with Apache Mesos*

...and more in the future with a constantly growing ecosystem!

* Can be used in the cloud or on premises

EXAMPLE: DC/OS Architecture Overview

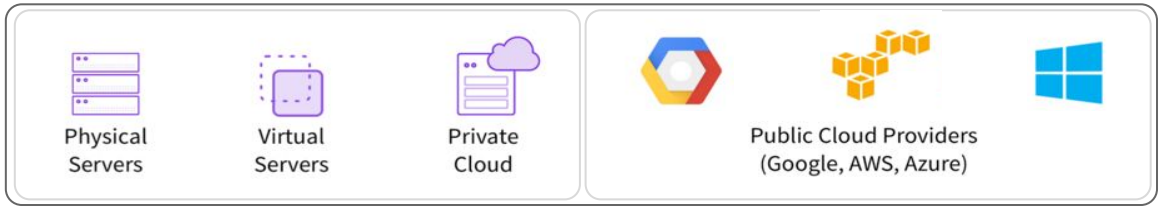
Services & Containers

HDFS	Jenkins	Marathon	Cassandra	Flink
Spark	TensorFlow	Kafka	MongoDB	Your App

DC/OS

Container Orchestration	Security & Governance	Monitoring & Operations	User Interface & Command Line
MESOS			

ANY INFRASTRUCTURE



I leave you with: Hybrid Cloud

Open source tooling can be platform agnostic, all you need is some kind of Linux install, this gives you:

- Opportunity to use multiple cloud platforms at once, or in-house components of your infrastructure
- Ability to migrate between cloud and in-house platforms as cost, performance or other metrics change
- Gives your developers choice about where their applications run

“Why open source should be the first choice for cloud-native environments” article

https://opensource.com/article/17/8/open-sourcing-infrastructure

Questions?

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