Robust Infrastructure

services for a global user base

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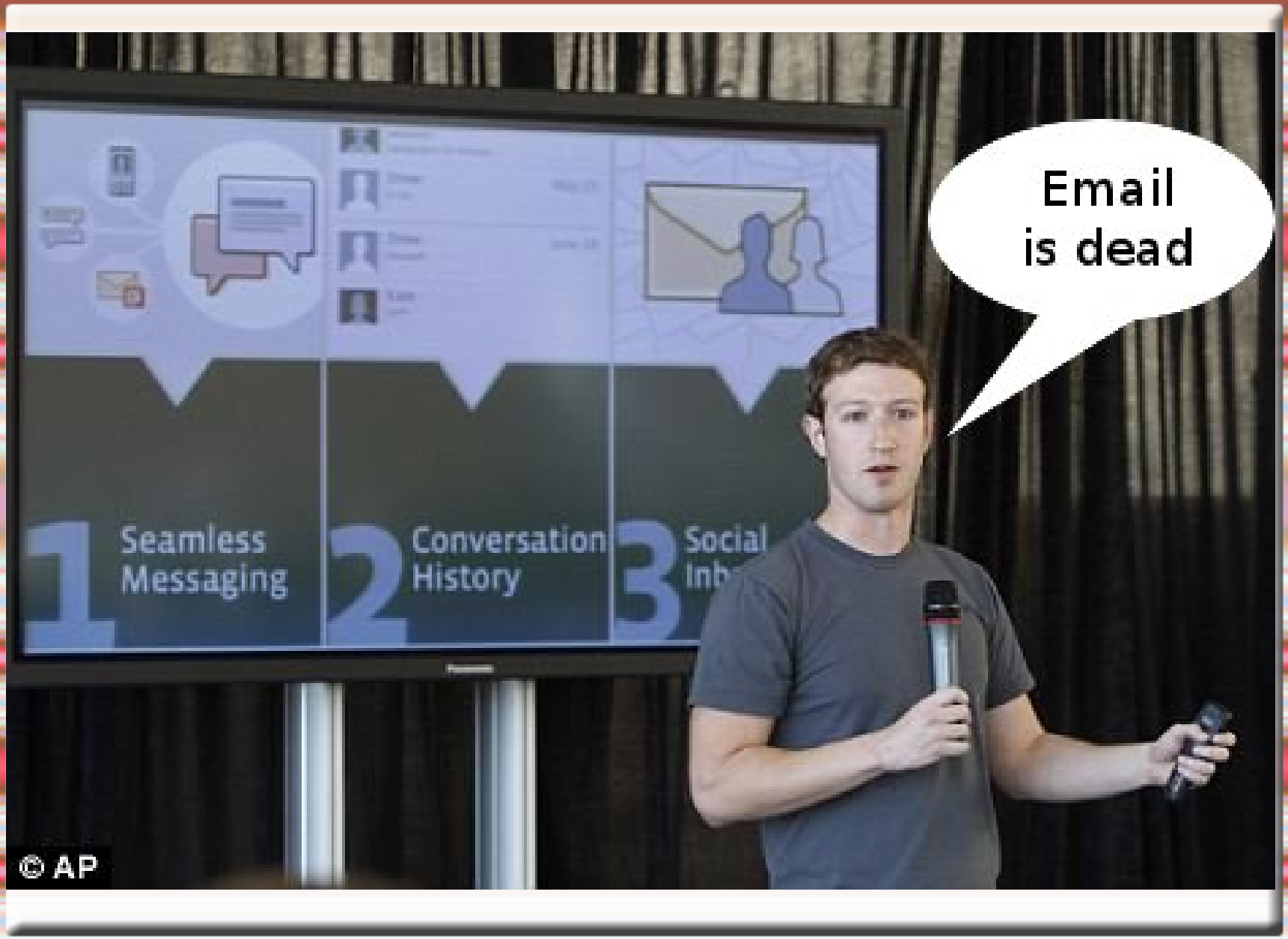
Introduction

Who Am I?

Who is FastMail?

Who is Opera?


Email
is dead
1
Seamless
Messaging
2
Conversation
History
3
Social
© AP

Email is Dead?

Compatibility

Un-changeable

Privacy

Business / Orders / Receipts

Our Customers

Individuals, Businesses, “White Label”

Services: Webmail / IMAP / “extras”

24hr Operations

½ million users / 3 part time admins

When I started – the bad bits

Redhat 7.3

Manual “install script”

No replication

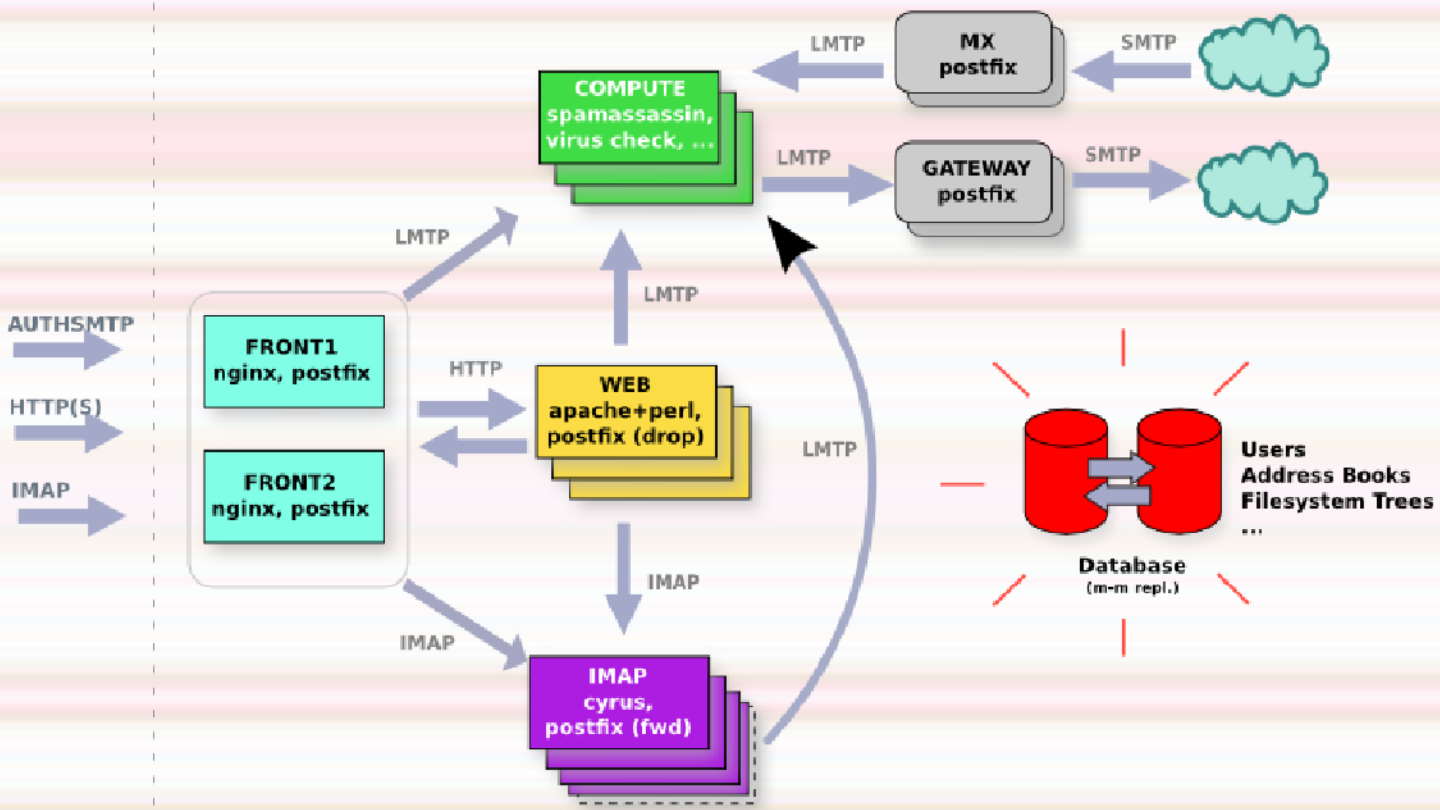
When I started – the good bits

End to end monitoring

Too good! I kept getting woken up

Version control (CVS => SVN => Git)

fastmail infrastructure



http://www.fastmail.fm
http://mail.messagingengine.com

Last update: 19 Jan 2011

Case study: RAID6 Failure

3 disks failed in 12 hours

Over a week to get everyone back online

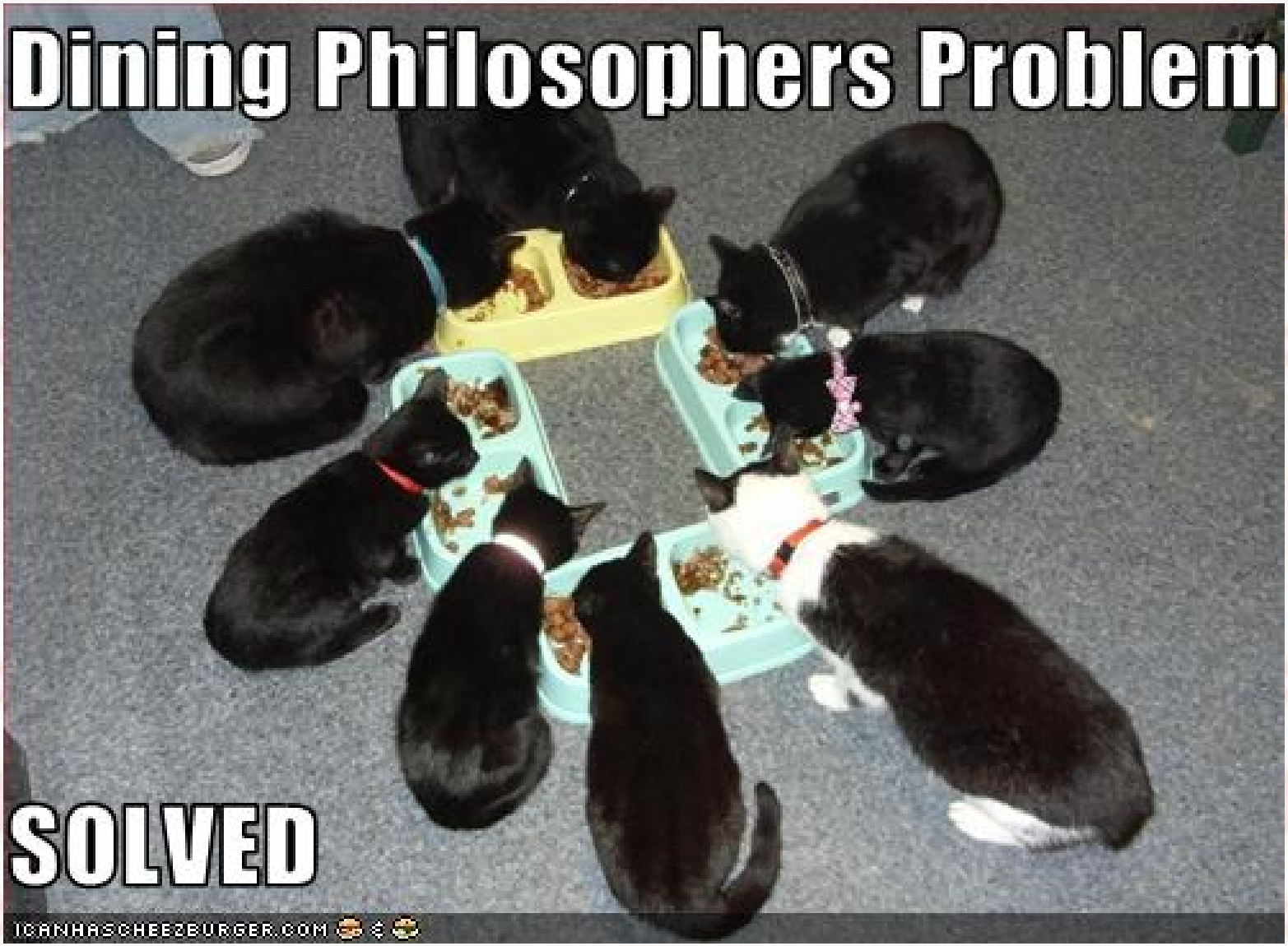
Filesystem check alone took days

Replication: choices

Application native vs low-level (drbd)

Minimise single points of failure

Cyrus – something already existed


Dining Philosophers Problem
SOLVED
ICANHASCHEEZBURGER.COM

Side track – philosophy of data

3 types (creator / primary / cache)

Backups

Integrity

Data Integrity

Never trust any layer

Check at the level where you care

Fail-safe checks

Linux-HA / Automated Failover

More outages from heartbeat than real!

Cascading failures

Kept the tools, not the “brain”

Control your core tools

Cyrus: from patches to maintainer

Postfix: still 8 patches

Fix the right place, don't “work around”

Repeatable Automated Installs

~10 min to reinstall any machine

“production.dat” microformat

Templated, version controlled config

Redundant Everything

Can shut down any machine in 5 min.

Different replication per data type

“Never” need scheduled downtime

Slots and Stores

Every machine works – no “hot spare”

Spread load on failure

300 => 500Gb “units of storage”

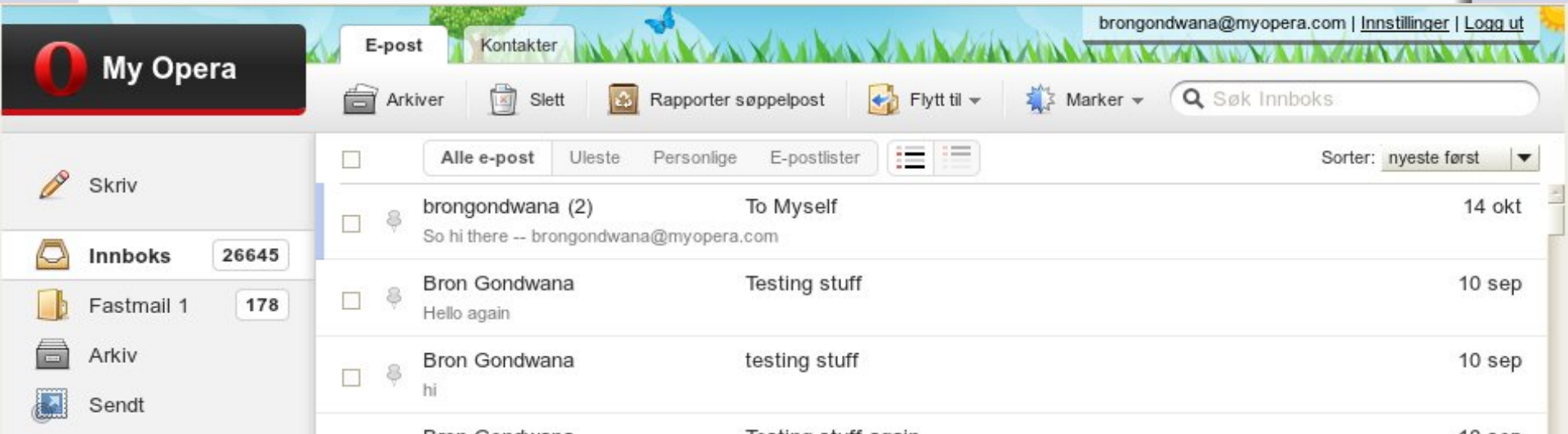
Hundreds of them!

Summary

Reliability is an ongoing process

Monitor, fix what fails for next time

Simple, low interdependence is best

Make everything repeatable and version controlled

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