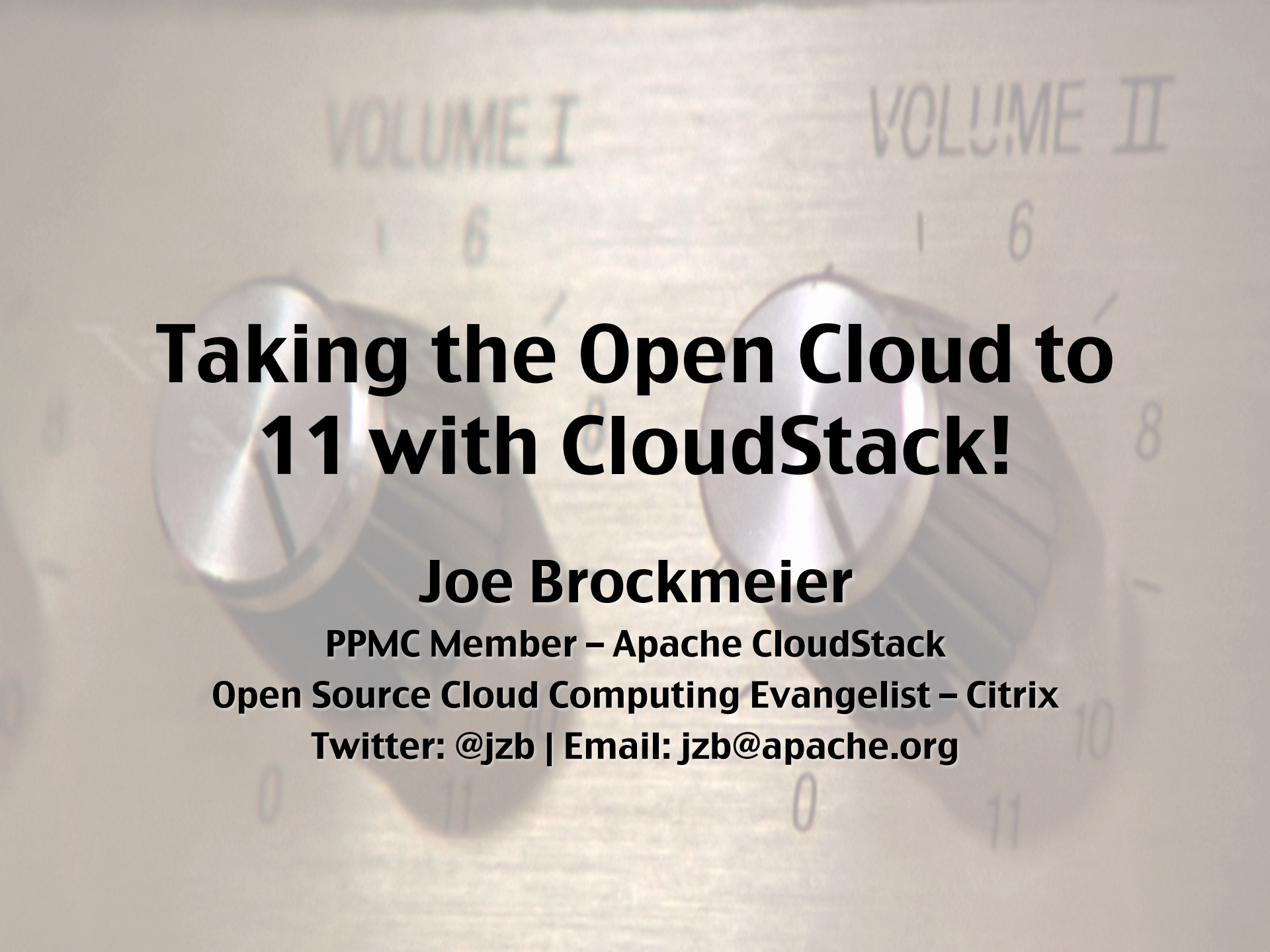


Taking the Open Cloud to 11 with CloudStack!

Joe Brockmeier

PPMC Member – Apache CloudStack

Open Source Cloud Computing Evangelist – Citrix

Twitter: @jzb | Email: jzb@apache.org

What This Talk is About

(Aside from kittens, unicorns, and rainbows.)

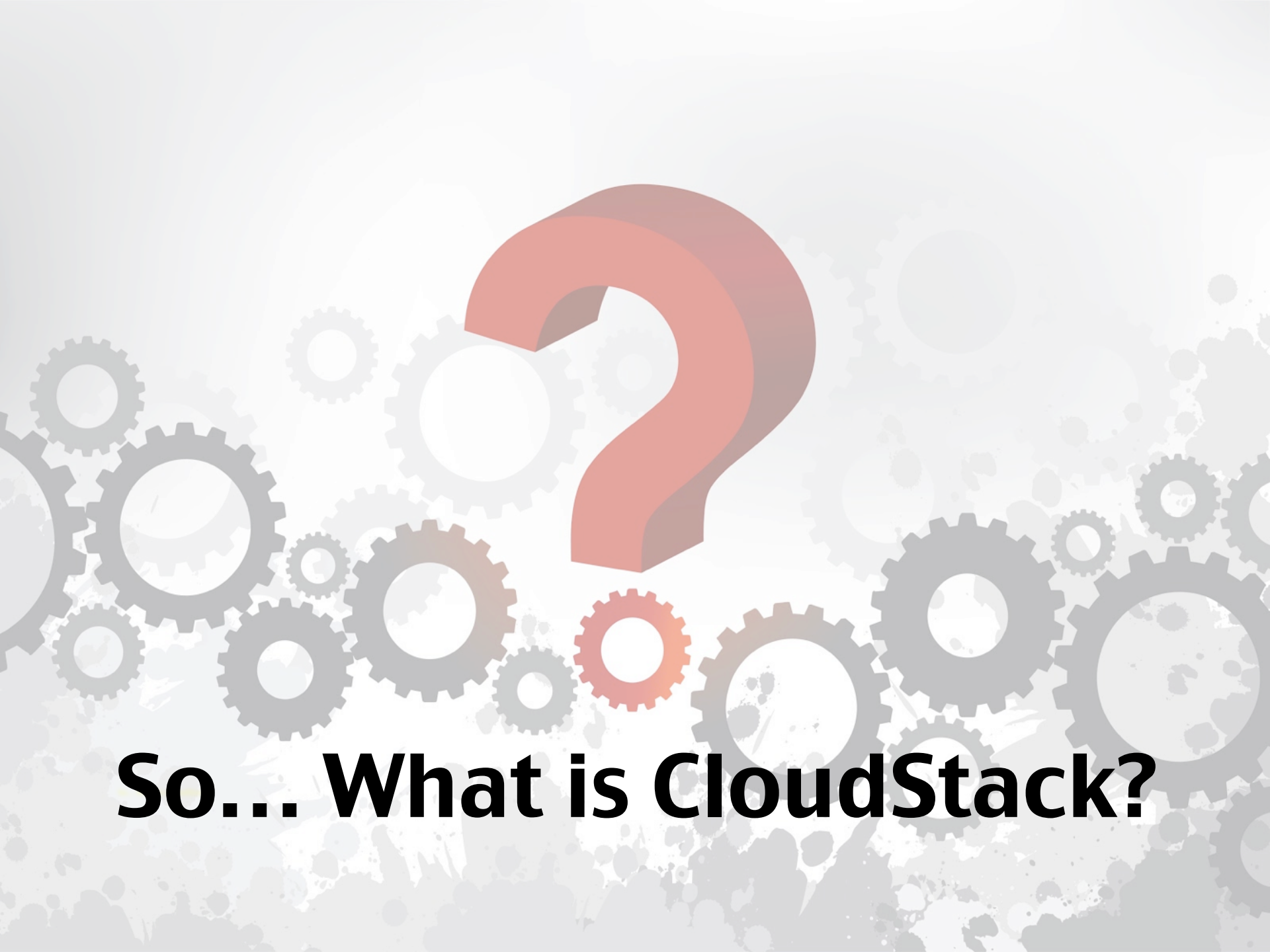
Cloud, blah, blah, blah

- When thinking about “cloud” we mean:
  - On Demand, Self-Service
  - Broad Network Access
  - Resource Pooling
  - Rapid Elasticity
  - Measured Service
  - API

In Other Words: Solving Real Problems

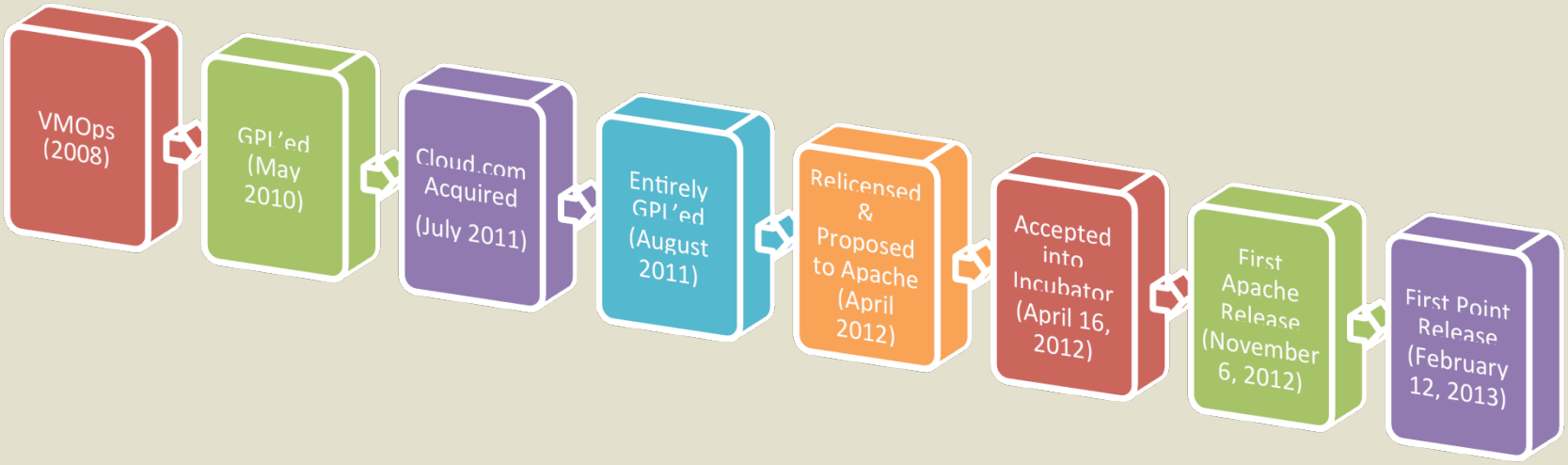
- Eliminating Virtual Sprawl
- Programmatic Access to Infrastructure
- Self-Provisioning for Customers via GUI or API
- Maximizing Resources
- Hosting Dual Workloads (Legacy and Cloud)
- Robust, Scalable, Fashionable*

** That last one, maybe not so much.*



So… What is CloudStack?

CloudStack History (so far)



CloudStack Design Goals

- Multi-tenancy
- Broad Hardware/Hypervisor Support
- Orchestrate Hardware Resources that may be behind a firewall
- Horizontally scalable management layer
- Beautiful and Functional UI

High-Level Features

A set of applications that:

- Provide separation between tenants
- Handle allocating compute resources (inc. custom allocators)
- Let users provision compute resources
- Manage High Availability
- Massively scalable (thousands of nodes)
- Resource usage accounting
- And more…

Management Server

- UI/API bits are stateless (state is stored in a MySQL database)
- All UI functionality is available as an API call
- Restful API
  - Unauthenticated API on 8096 for localhost (disabled by default)
  - Authenticated on port 8080
  - Responses in XML or JSON

Domains, Projects, and Users

- CloudStack has a top-level domain called ROOT
- You can create sub-domains
- You can create 3 types of accounts, admins, domain-admins, or users
- Projects can be used to hold resources for time-limited projects

Hypervisor Support

- KVM
- XenServer
- Xen Cloud Platform
- VMware via vCenter
- Bare Metal via IPMI

CloudStack Primary Storage

- Where the VMs volumes reside.
- Supports NFS, iSCSI, Clustered Logical Volume Manager, and others. (Depends on hypervisor)
- Hypervisor communicates with primary storage – mgmt server only communicates with host hypevisor.
- You can use local storage, but lose some features.

CloudStack Secondary Storage

- Stores templates, ISOs, and snapshots
- Historically NFS – added the option of object storage recently
  - Includes Swift, GlusterFS, Ceph and others (in various states of production readiness)
- Managed by Secondary Storage VM –
  - Manages moving templates and snapshots from/to primary storage, aging out snapshots, etc.

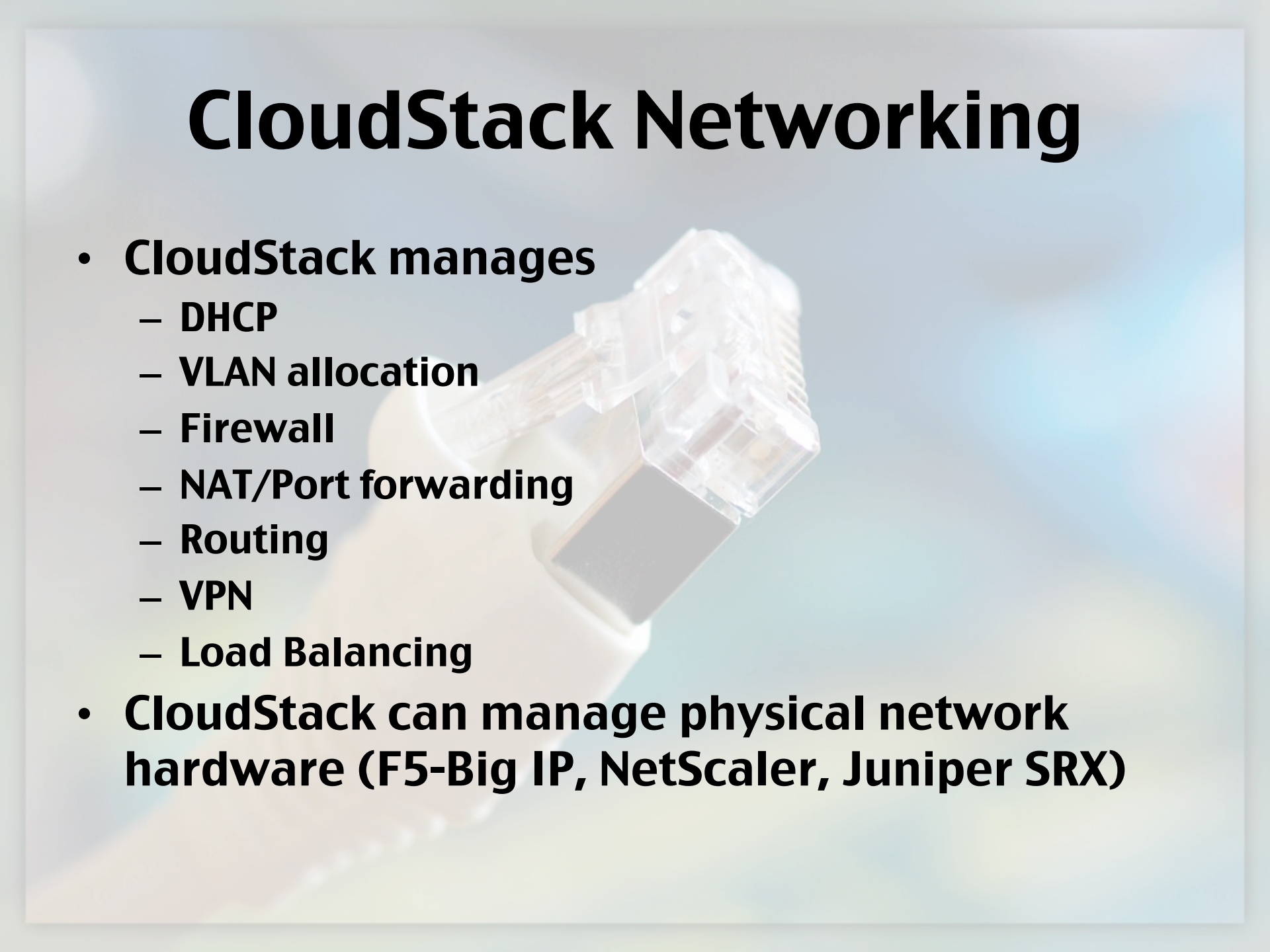
CloudStack Allocation

- How are VMs placed, storage allocated, etc.?
- CloudStack has several defaults
  - First fit
  - Fill first
  - Disperse
- Don't like those? Create your own!
- Allows over-provsioning
- OS Preference

RFMTTR (High Availability)

- RFMTTR – "really fast mean time to recovery."
- CloudStack is *not* (alone) a magical HA solution.
- Watches HA-enabled VMs to ensure they're up, and that the hypervisor it's on is up. Will restart on another if the hypervisor goes down.
- Redundant router.

CloudStack Networking



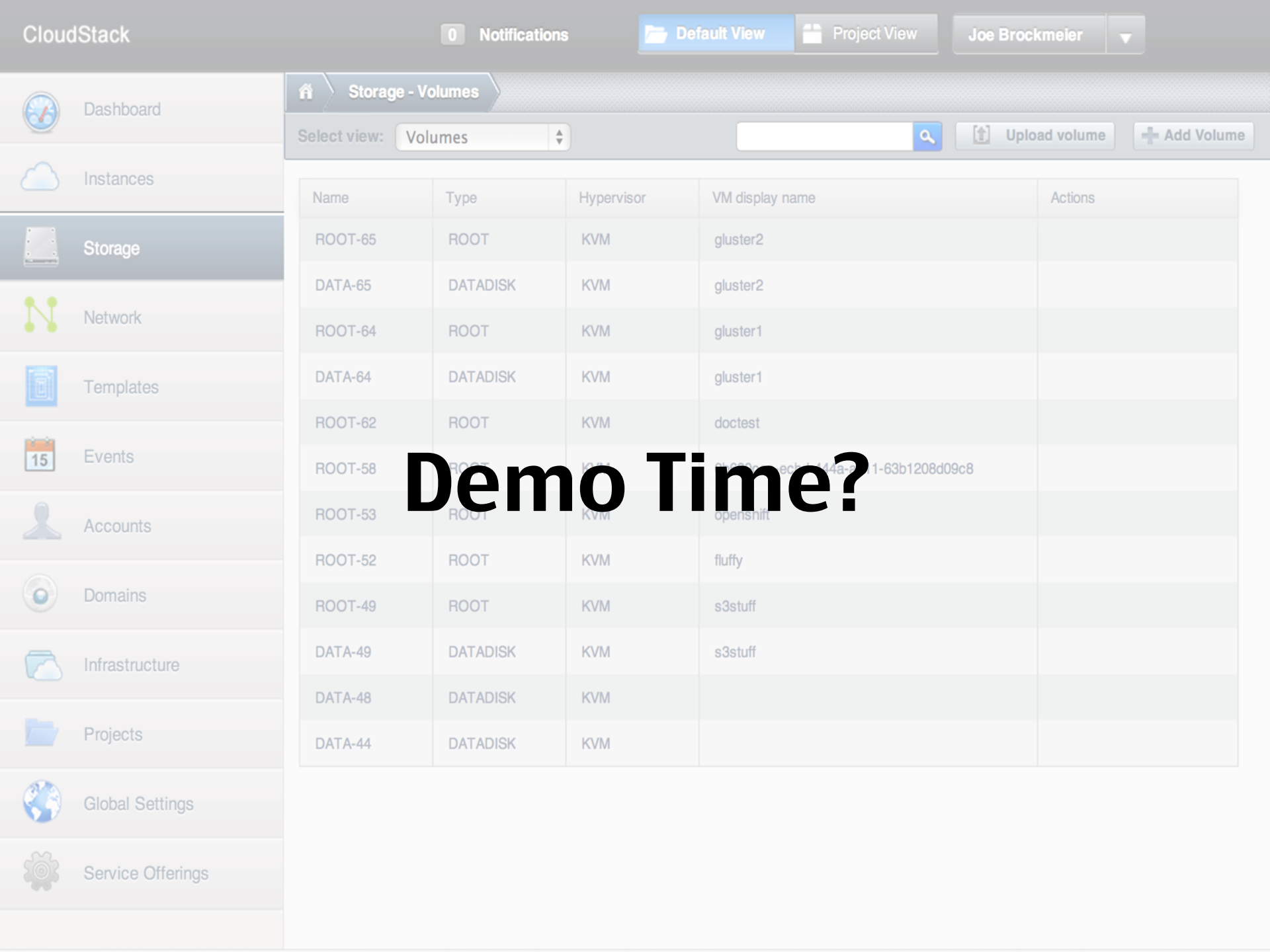
- CloudStack manages
  - DHCP
  - VLAN allocation
  - Firewall
  - NAT/Port forwarding
  - Routing
  - VPN
  - Load Balancing
- CloudStack can manage physical network hardware (F5-Big IP, NetScaler, Juniper SRX)

Misc. Features

- Usage Accounting
- UI is Easily Re-Themed / Replaced
- Over-Provisioning
- LDAP Integration
- Notification and Capacity Thresholds
- CloudMonkey CLI
- Much more!

Getting Started

- Visit CloudStack.org
- Start with RPMs or Debian Packages (CentOS/RHEL 6.3 and Ubuntu LTS 12.04 supported)
- Sign up for cloudstack-users@incubator.apache.org
- Talk to us! #cloudstack on Freenode


CloudStack
0 Notifications
Default View
Project View
Joe Brockmeier
Dashboard
Instances
Storage
Network
Templates
Events
Accounts
Domains
Infrastructure
Projects
Global Settings
Service Offerings
Storage - Volumes
Select view: Volumes
Upload volume
Add Volume
Name
Type
Hypervisor
VM display name
Actions
ROOT-65 ROOT KVM gluster2
DATA-65 DATADISK KVM gluster2
ROOT-64 ROOT KVM gluster1
DATA-64 DATADISK KVM gluster1
ROOT-62 ROOT KVM doctest
ROOT-58
ROOT-53 ROOT KVM openshift
ROOT-52 ROOT KVM fluffy
ROOT-49 ROOT KVM s3stuff
DATA-49 DATADISK KVM s3stuff
DATA-48 DATADISK KVM
DATA-44 DATADISK KVM
Demo Time?

That's All! Thanks!

Joe Brockmeier

jzb@apache.org

@jzb on Twitter / jzb on Freenode