



# Introduction to OpenStack Swift

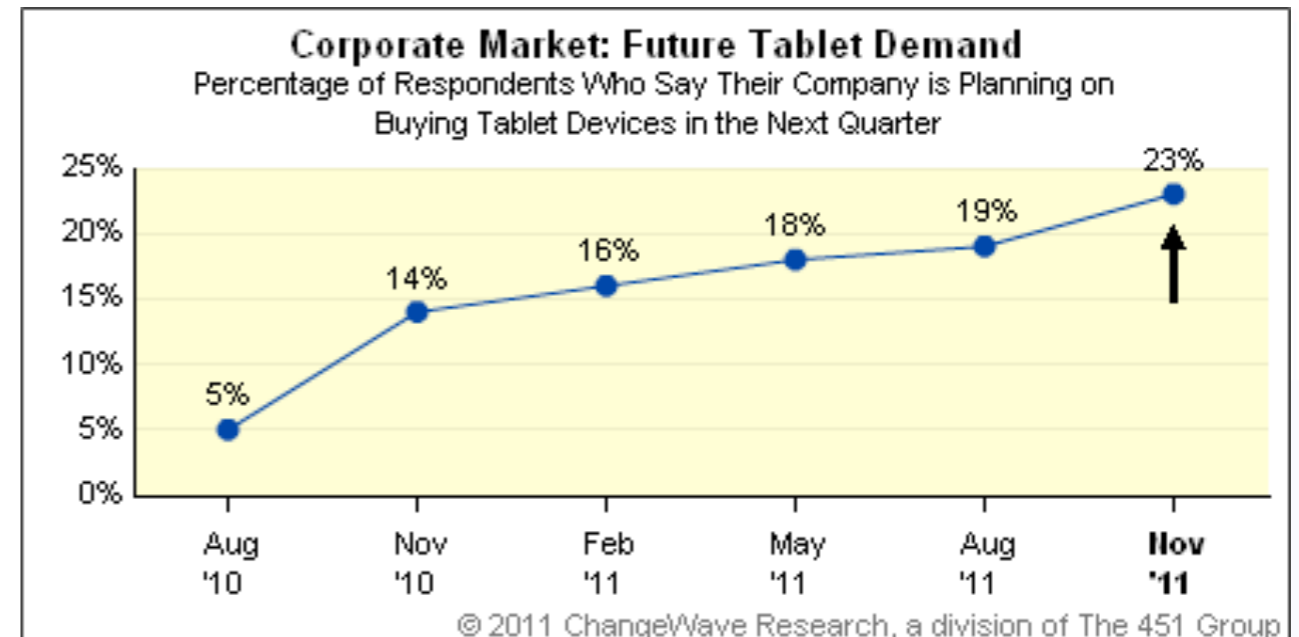
openstack™

November 13, 2012

**Joe Arnold, CEO  
SwiftStack Inc**

 @joearnold

# Mobile/Tablet adoption in the enterprise is accelerating



# IT is looking for an enterprise alternative to consumer file share and sync apps:



**CIO** White Papers Webcasts Solution Centers IT Jobs Council Events  
NEWS ANALYSIS BLOGS SLIDESHOWS  
DRILLDOWNS Applications Careers Cloud Computing Data Center Mobile Operating Systems

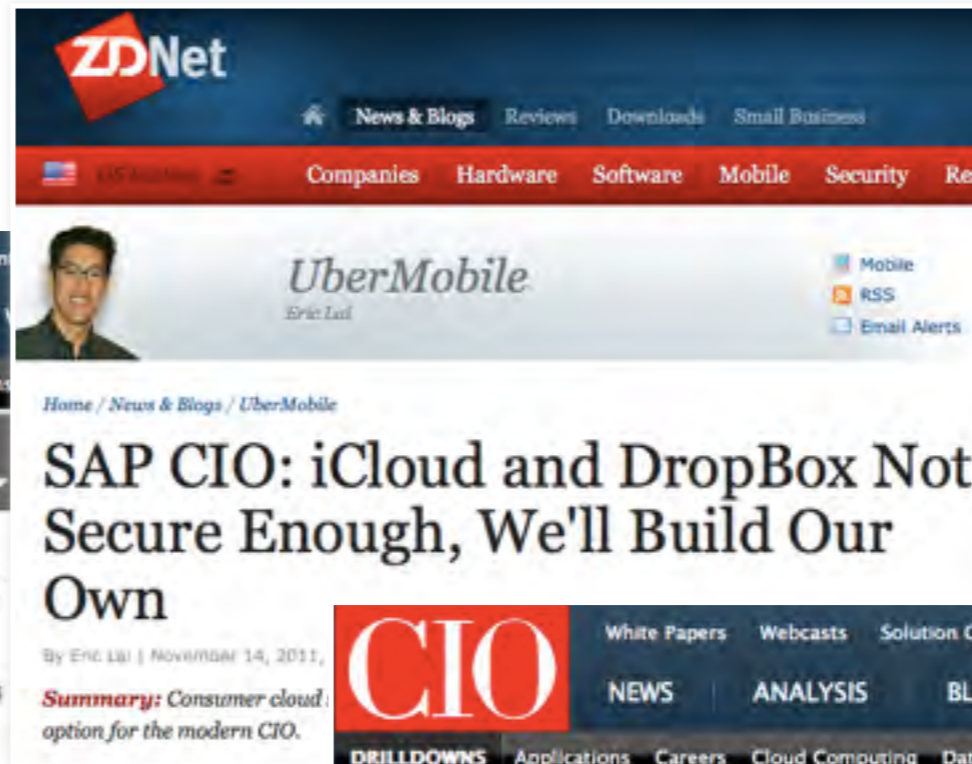
**McAfee** An Intel Company VIEW OUR RESOURCES  
2012 Threat Predictions Report (McAfee Labs) The New Reality of Stealth Crimeware (McAfee Labs)

## Dropbox Left Document Storage Accounts Open for Four Hours

Online storage service Dropbox accidentally turned off password authentication for its 25 million users for four hours on Monday – although “much less than 1 percent” of those accounts were accessed during the period, the company said. It is still investigating whether any of those accounts were improperly accessed.

By Jeremy Kirk  
Tue, June 21, 2011

Like 5 +1 0



**ZDNet** News & Blogs Reviews Downloads Small Business  
US Location Companies Hardware Software Mobile Security Rese

**UberMobile**  
Eric Lai Mobile RSS Email Alerts

Home / News & Blogs / UberMobile

## SAP CIO: iCloud and DropBox Not Secure Enough, We'll Build Our Own

By Eric Lai | November 14, 2011

**Summary:** Consumer cloud option for the modern CIO.



**CIO** White Papers Webcasts Solution Centers IT Jobs Council  
NEWS ANALYSIS BLOGS SLIDESHOWS  
DRILLDOWNS Applications Careers Cloud Computing Data Center Mobile Operating Sys

**McAfee** An Intel Company VIEW OUR RESOURCES  
2012 Threat Predictions Report (McAfee Labs) The New Crimewa

## Researcher: Dropbox Misrepresents Security Features

Cloud data storage and synchronization company Dropbox has been hit with a complaint to the U.S. Federal Trade Commission alleging that the company has deceived consumers about the level of encryption security it offers.

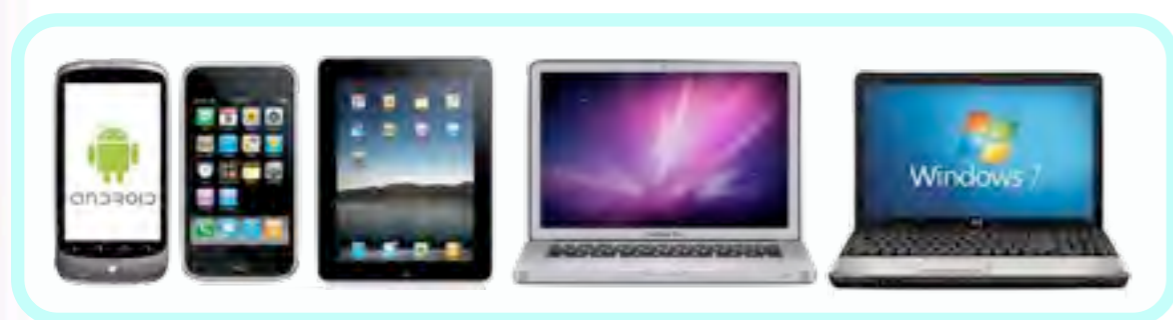
By John E. Dunn  
Tue, May 17, 2011

Like

# Applications need to support the data needs of millions of users



# Service-provider grade storage



# Swift and OpenStack

## Overview of Swift

### Swift Use Cases

### Swift Architecture

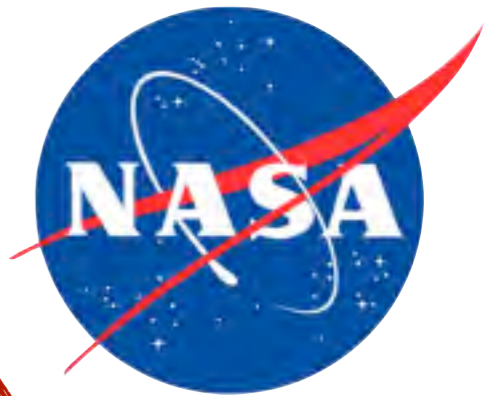
# Swift and OpenStack

Overview of Swift

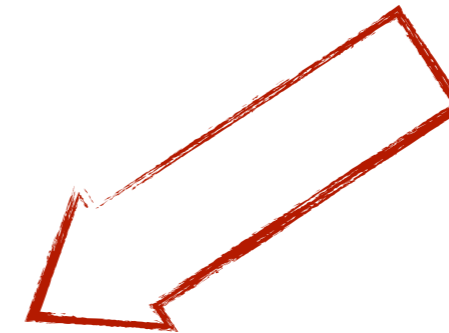
Swift Use Cases

Swift Architecture

  
**rackspace**  
**Cloud Files**



**Swift**



**Compute**

**openstack™**



## Swift is Similar to Amazon S3



Data

**HTTP API**



Storage

---

**NOT** blocks  
**NOT** filesystem  
**NOT** SAN/NAS/DAS

---



**VS.**



## OpenStack Swift

- Object storage system similar to Amazon S3
- +70 developers
- Apache 2 License



**WE ARE  
HIRING!****RACKSPACE®  
CLOUD FILES™****On-Demand Storage  
& Content Delivery**  
POWERED BY OPENSTACK®  
— CLOUD SOFTWARE —**Rana**  
Racker Since 2008

Live Chat



Overview



Pricing



Compare



Technology



The API



Screenshots



Support



FAQs



Resources

STARTING AT  
**10¢/GB/Mo.**

Sign Up

[Home](#) / [Hosting Solutions](#) / [Cloud Hosting](#) / [Cloud Hosting Products](#) / [Cloud Files](#)Share this on: [in](#) [f](#) [t](#)

## Store it on Cloud Files, serve it fast on Akamai's CDN

Cloud Files, powered by **OpenStack®**, provides an easy to use online storage for files and media which can be delivered globally at blazing speeds over Akamai's content delivery network (CDN). Whether your storage needs are modest—or monumental—you enjoy built-in redundancy, an easy-to-use control panel, and **Fanatical Support®** from day one.

### At a Glance

- ✓ Pay as you grow pricing starting at 10¢/GB/Mo.
- ✓ Akamai CDN delivery of your content starting at 18¢/GB
- ✓ Use as much or as little storage as you want
- ✓ Store files and media of any size
- ✓ Highly scalable, redundant online storage
- ✓ Cloud Files is built with OpenStack technology
- ✓ No long-term contracts

"Cloud Files proves to be a simple and easy way to store in the internet and distribute them for performance or high-availability (or both)."

**Matthew Sacks**  
The BitSource**Swift Deployment Example:  
Rackspace  
USA**

# Ultra Durable Storage You Never Need to Worry About

[Overview](#) [Features](#) [Pricing](#) [FAQ](#)

With HP Cloud Object Storage, there's no need to fear the cloud. Our service is designed for ultra-high durability so your data is available for immediate retrieval. Every object is copied three times and stored in physically separated availability zones. And it's all running on high-performance HP servers, allowing you to scale on demand right when you need it. So go about your business without the hardware headaches. We've got you covered.

[Download the HP Cloud Object Storage solution brief.](#)

## Durable to the nth degree

Durability is our middle name. We make three copies of every file you upload and distribute them across physically separate availability zones, each with dual power and internet connections. This means your data is preserved, protected, and always available when you need it.

## Scale with a click of the mouse

We know your business never stops.

## Reliable. No surprises.

You can count on the HP Cloud to provide consistent storage access. Once you upload your files, you can rest easy knowing that your files are always there right when you need them. We do all the 'heavy lifting' – from authentication to replication – to ensure there are no surprises along the way.

### What is Object Storage?

- Scalable storage for files
- Pay for only what you use
- Drive with your own hardware

[Tweet](#)

[+1](#)

[Like](#)

Sign Up For Public Beta

[SIGN UP NOW](#)

### Sales Chat

Questions? We are here to help!

[CHAT NOW](#)

### Feature List

Data protection

Performance

Scalable, on-demand capacity

Object size

Unique object keys

[See All](#)

Swift Deployment Example:  
**HP Cloud**  
USA

## Cloud Hosting

Intelligent IT Infrastructure solutions that deliver unmatched performance and platform flexibility

- Home
- Enterprise IP
- Content Delivery Network
- Colocation
- Managed Hosting
- Dedicated Hosting
- Cloud Hosting
  - Private Cloud Solutions
  - Public Cloud Solutions
  - Cloud Storage Solutions
    - Our Cloud Storage Solution
    - Cloud Storage API**
    - Cloud Storage Pricing
    - Cloud Storage FAQs
- Cloud Computing
  - Fundamentals
- Commitment to Service
- Service Point Locations
- Resources
- IT IQ
- About Us

Live Chat

Call 877.843.7627

Get A Quote

Contact

## Cloud Storage API

Internap Cloud Storage works with **OpenStack's open source API** so you can feel confident in Internap Cloud Storage as a long-term solution that addresses your concerns for vendor lock-in and allows you to take full advantage of a growing ecosystem around an open source platform.

The API allows you to create a direct link between your network environment and your online file storage location. This integration allows you to simplify storage accessibility with your internal network server resources.

### Advantages of Using Cloud Storage API

- Seamlessly tie your application environments to the **Internap Cloud Storage service**
- Upload files directly to Internap Cloud Storage
- Create and organize file storage "containers"
- Access directory lists of containers and files

### Cloud Storage API Documentation

- **Internap Cloud Storage Developer Guide**
- **Getting Started with the Client APIs and the Fog Gem**

### More About Cloud



#### Virtualization to the Cloud: Featuring Research From Gartner

There are several stages in the road from virtualization to the cloud and the journey should be planned strategically, rather than one step at a time.

**Download this newsletter** to learn about the various options enterprises face on the road to virtualization and find the right path for your business.

### Cloud Portal

Swift Deployment Example:  
**Internap USA**

### ucloud biz 상품안내

ucloud server

ucloud server+

ucloud VPC

ucloud CDN

ucloud DB

**ucloud storage**

ucloud engine

**beta**  
coming soon

ucloud VDI

ucloud backup

ucloud 매니지드

부가서비스

#### 고객센터

ucloud 문의시간 : 평일 09:00~18:00



문의전화

**080-2580-005**

평일야간(18시 이후) / 휴일 문의 안내



서비스 장애 및 기술지원 문의 가능

**02-3219-2432**



문의하기



미리 계산해보세요!

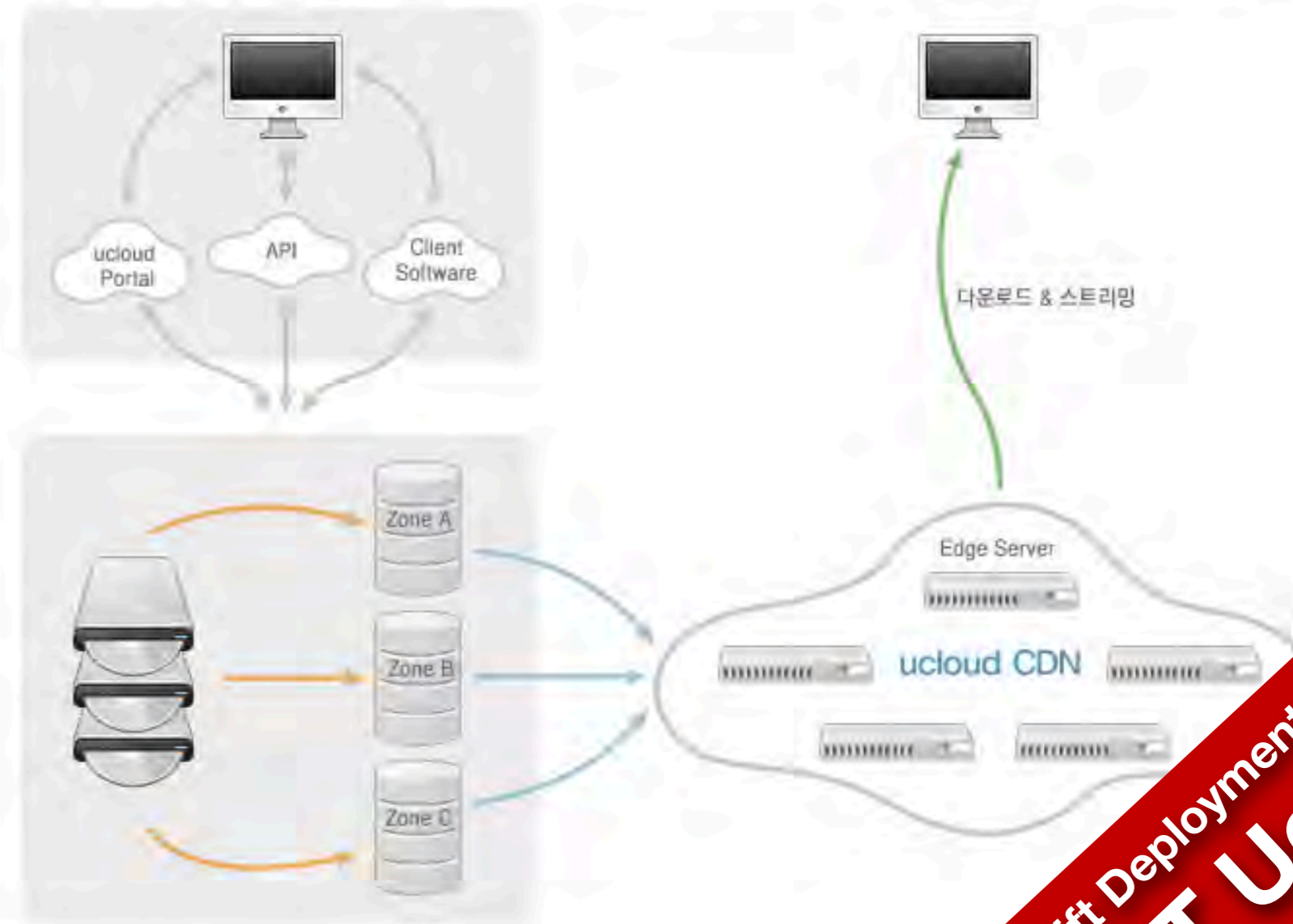
ucloud 요금 계산기

### ucloud storage (Storage Service)

ucloud storage는 대용량 데이터 파일 및 미디어 콘텐츠의 간편한 저장 및 무제한 확장성을 제공하는 Cloud 스토리지 서비스입니다.

**▶ 상품 신청**

- 파일 시스템이 아닌 Object Storage라서, 간편한 Restful API나 들로서 접근하며 실시간 데이터보다는 장기간 보관하는 데이터 저장에 더욱 적합합니다.
- 데이터는 호환, API 및 스토리지 풀에 의해 업로드/다운로드가 가능하며, 3중 Copy하여 저장하고, ucloud CDN을 통하여 다운로드/스트리밍으로 빠르게 접근하여 사용할 수 있습니다.
- 세계적인 오픈소스 Cloud 커뮤니티인 Openstack object storage(Swift\*) 기반 스토리지로서 검증된 SW이며 수 많은 use case 및 활발한 ecosystem이 있습니다.



#### \* Openstack Object Storage(Swift)란?

Openstack 커뮤니티의 핵심 프로젝트로 PB급 이상의 고확장 Storage를 제공할 수 있는 Cloud 인프라 구축을 위한 Openstack Software를 제공하는 커뮤니티를 가리킵니다.

Swift Deployment Example:  
**KT Ucloud**  
Korea

# Object Storage

- CloudLayer Overview
- CloudLayer Computing
- Content Delivery Network
- Object Storage

Chat Live Now

### Related Downloads

Object Storage Overview

### Related Links

Object Storage on KnowledgeLayer

Object Storage on SLDN

## Object Storage

Introducing the most searchable object-based storage solution yet.

Archive, manage, and serve large amounts of unstructured data across the Internet with ease. We've taken OpenStack Object Storage (code-named Swift) at its core, and created an all-new storage solution that does more than any other object storage service on the market.

Built-in search and indexing lets you easily find the object you're looking for based on assigned rich metadata.

With storage clusters in our data centers around the world and full integration with the global SoftLayer CDN, you can replicate or transfer your data anytime, anywhere.

And our per-gigabyte pricing model helps you control costs with free private and inbound network traffic.

Taggable, searchable, and immediately available. We're building a better cloud for the companies that build the future.

### Features

#### Integrated Indexing and Search

Quickly access information through user-defined metadata key-value pairs, file name or unique

#### Worldwide Storage Clusters

Storage clusters in North America, Europe, and Asia—all connected via a private network for fast replication and transfer.

Available now with prices starting at \$0.12 per GB.

Storage	\$0.12/GB
Private Network Bandwidth	FREE
Public Inbound Bandwidth	FREE
Public Outbound Bandwidth	\$0.10/GB
CDN Bandwidth	\$0.12/GB
CDN SSL Bandwidth *	\$0.15/GB

\*Coming soon

ORDER NOW

Swift Deployment Example:  
Softlayer  
USA

LIVE CHAT



# Cloud Storage

**Simplicity, stability and security** are at the core of our cloud offering. And from **12c per gigabyte**, you can enjoy cost efficiency without compromising service. Try a **free**, no-commitment 3-month trial.

[Find out more](#)[Start your free trial now >](#)

## Who is benefiting from Haylix products?



**MYER**

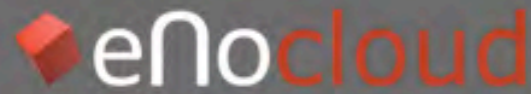


AustralianSuper



Fast Reliable Secure Simple

Swift Deployment Example:  
**Haylix**  
Australia



POWERED BY



# eNoCloud

First OpenStack Hybrid Cloud Solutions

Public and Private : The best of both worlds

[www.enocloud.com](http://www.enocloud.com)

## MULTI-CLOUD



L'infrastructure idéale n'existe pas! Adaptez l'infrastructure à vos besoins et non l'inverse...1 fournisseur de services, 1 SLA, N plateformes

+ CONTINUER

## HAUTE PERFORMANCE



La Haute Performance et la Haute Disponibilité sont nos spécialités. L'amélioration de l'expérience utilisateur est notre « mojo »

+ CONTINUER

## OPENSTACK



Atout de poids pour le futur du Cloud Computing, OpenStack est en phase de devenir un standard sur le marché. eNovance a rejoint l'initiative...

+ CONTINUER

## Nos références

*Nous sommes fiers du travail que nous réalisons pour nos clients et pour l'ensemble de nos projets. L'atteinte de vos objectifs (qu'ils soient clairs ou ambigus), l'apport de valeur ajoutée et l'obtention de résultats sont au cœur de notre mission.*



Swift Deployment Example:  
**eNovance**  
France

# Swift and OpenStack

## Overview of Swift

### Swift Use Cases

### Swift Architecture



# Three Types of Storage

# Block Storage



# File Storage



# Object Storage



# OpenStack Swift

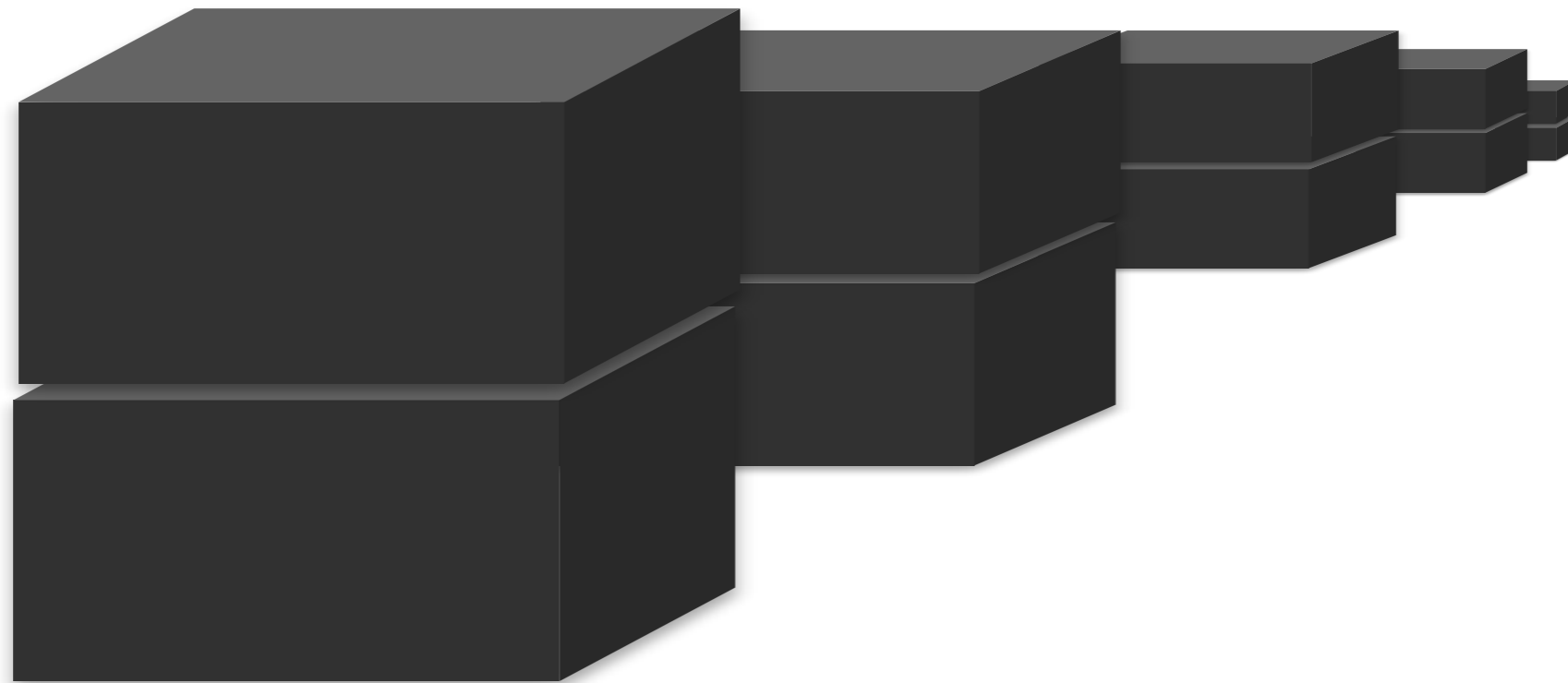
is Object Storage for OpenStack





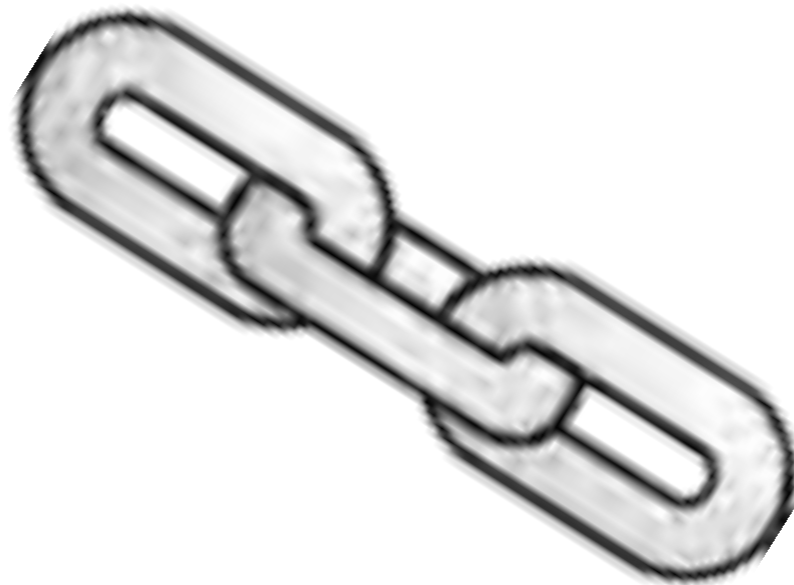
# OpenStack Swift

is Highly Scalable



# OpenStack Swift

is Extremely Durable



# OpenStack Swift

is Highly Concurrent



# OpenStack Swift

is Built for Operators



# Swift and OpenStack

## Overview of Swift

### Swift Use Cases

## Swift Architecture



# Swift Use Cases

---

# Swift Use Cases

Web/Mobile Applications

---

Private Filesharing Applications

---

Data Analytics

---

Infrastructure as-a-service

# Swift Use Cases

## Web/Mobile Applications

---

Private Filesharing Applications

---

Data Analytics

---

Infrastructure as-a-service

---



---

# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

---

Mobile Gaming

# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

Store images / audio / video

Lazily create image thumbnails with  
Swift Middleware

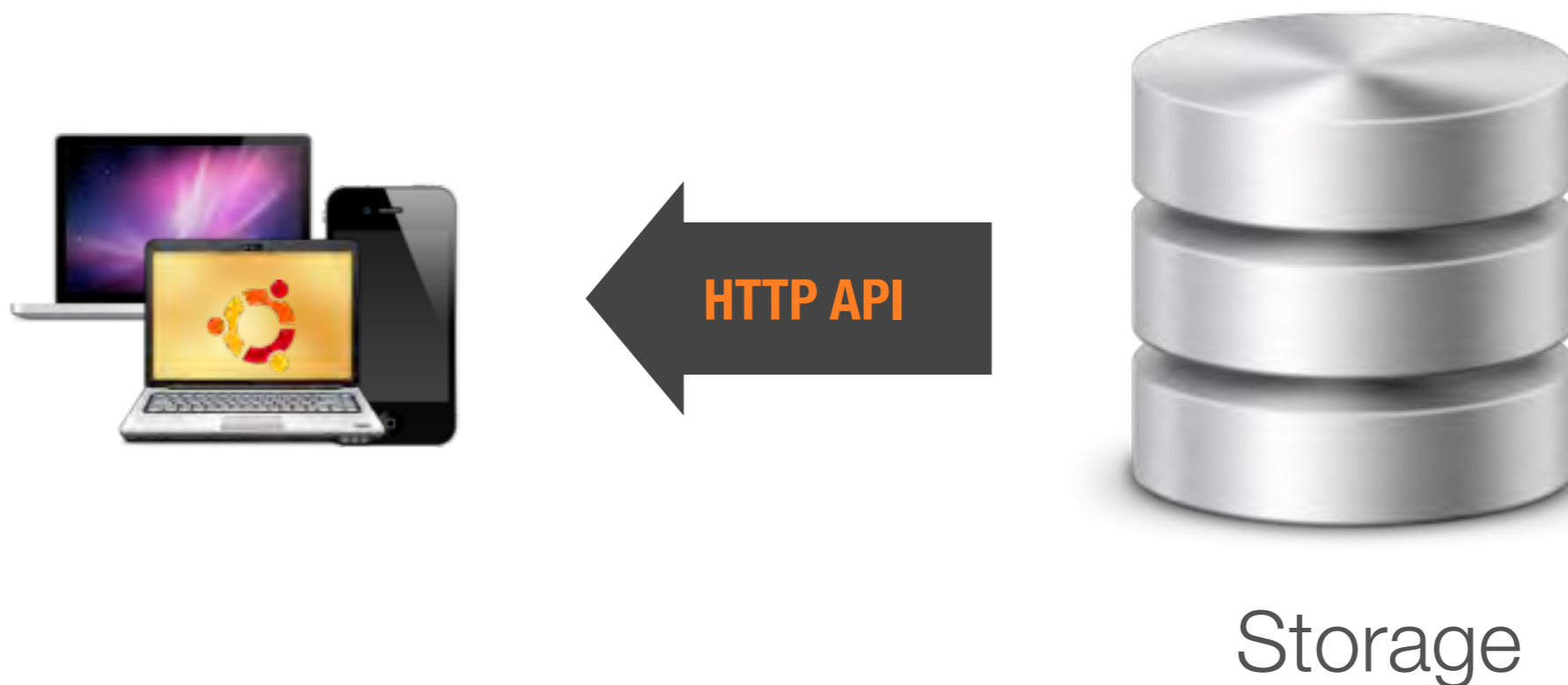
Serve a lot of traffic

# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

### Swift Speaks HTTP



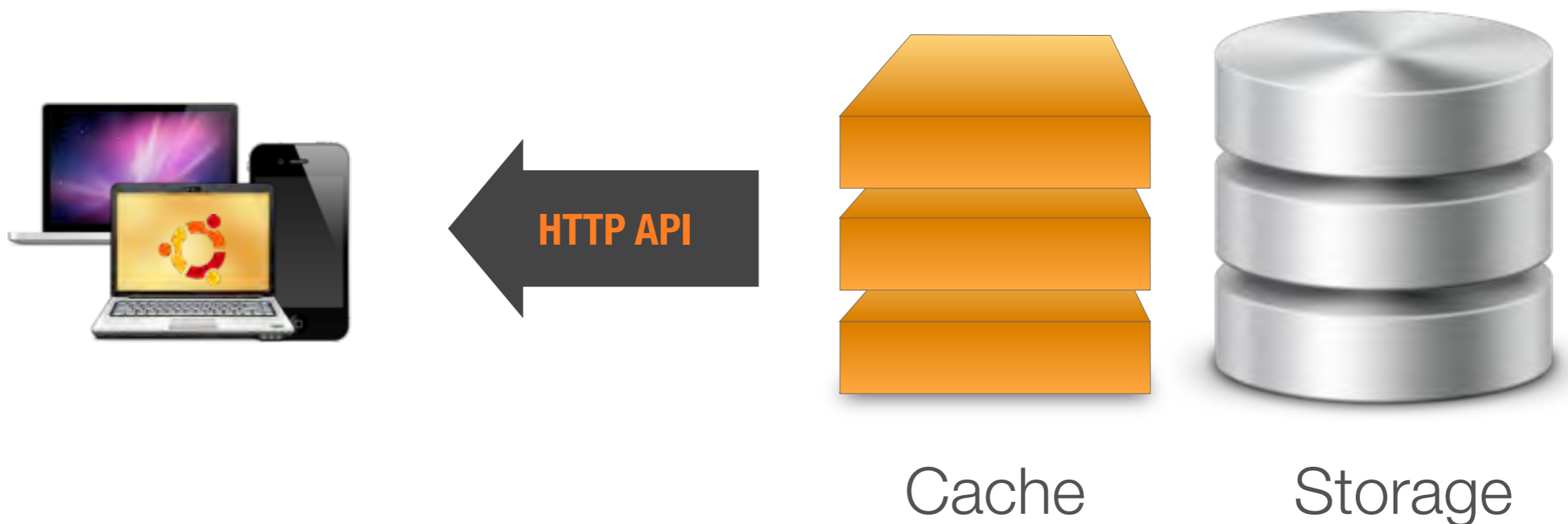
Standards-Based OpenStack API

# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

Cache with HTTP



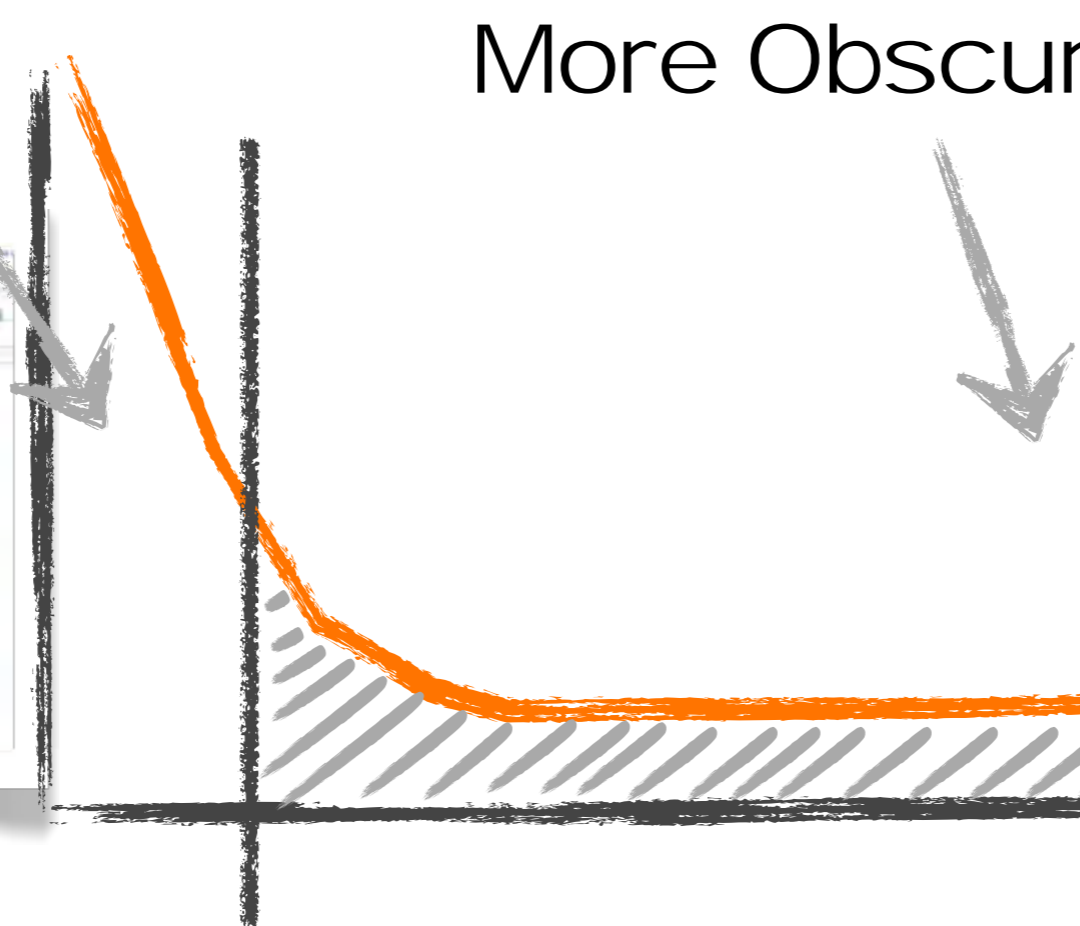
# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

Cache

More Obscure Topics



---

# Swift Use Cases

## Web/Mobile Applications

Top-5 global web property

---

Mobile Gaming

# Swift Use Cases

## Web/Mobile Applications

### Mobile Gaming

Serve game assets

Uploads from devices

Deliver game flash files

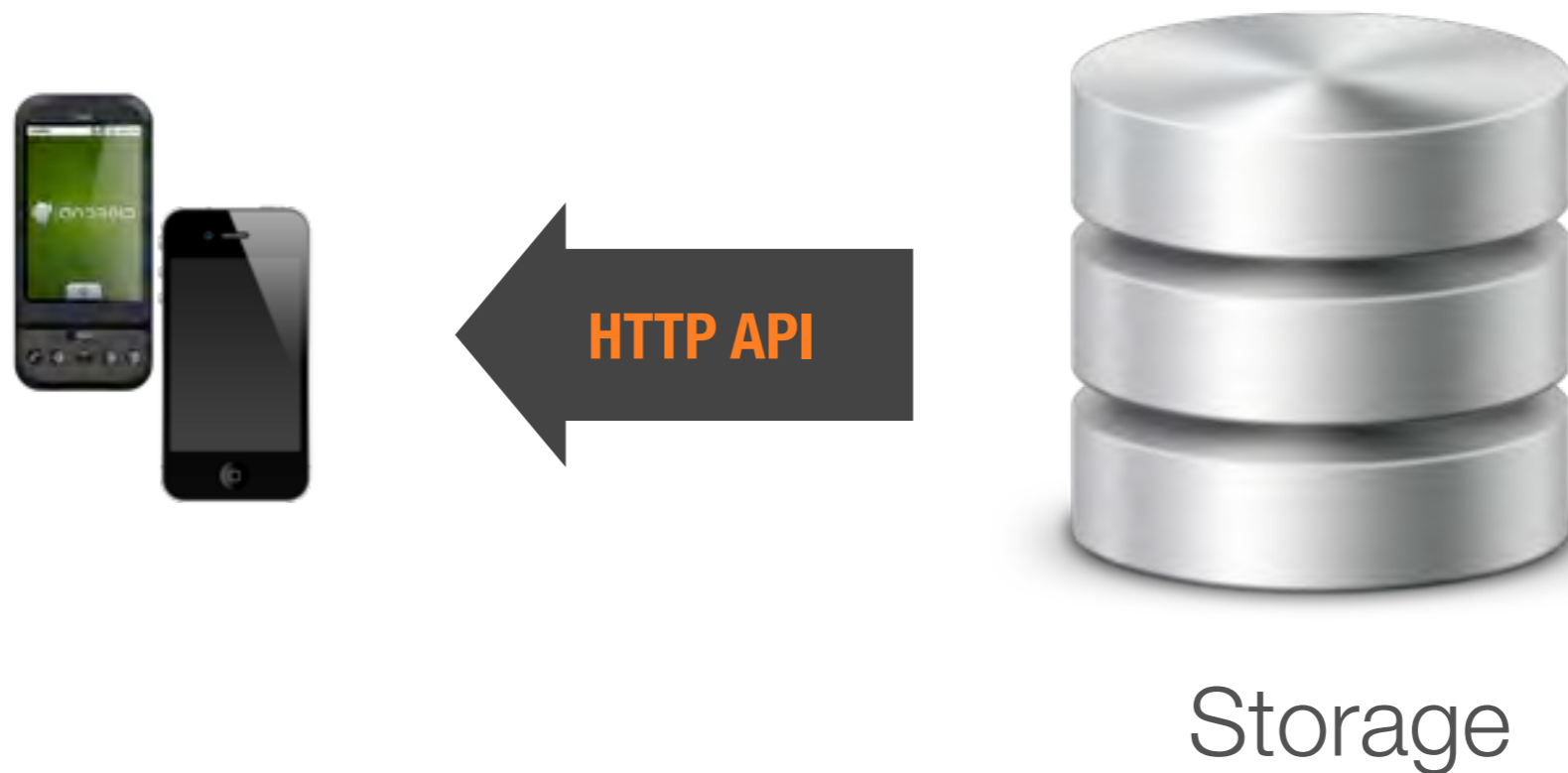
Massive concurrency

# Swift Use Cases

## Web/Mobile Applications

### Mobile Gaming

Send directly to device



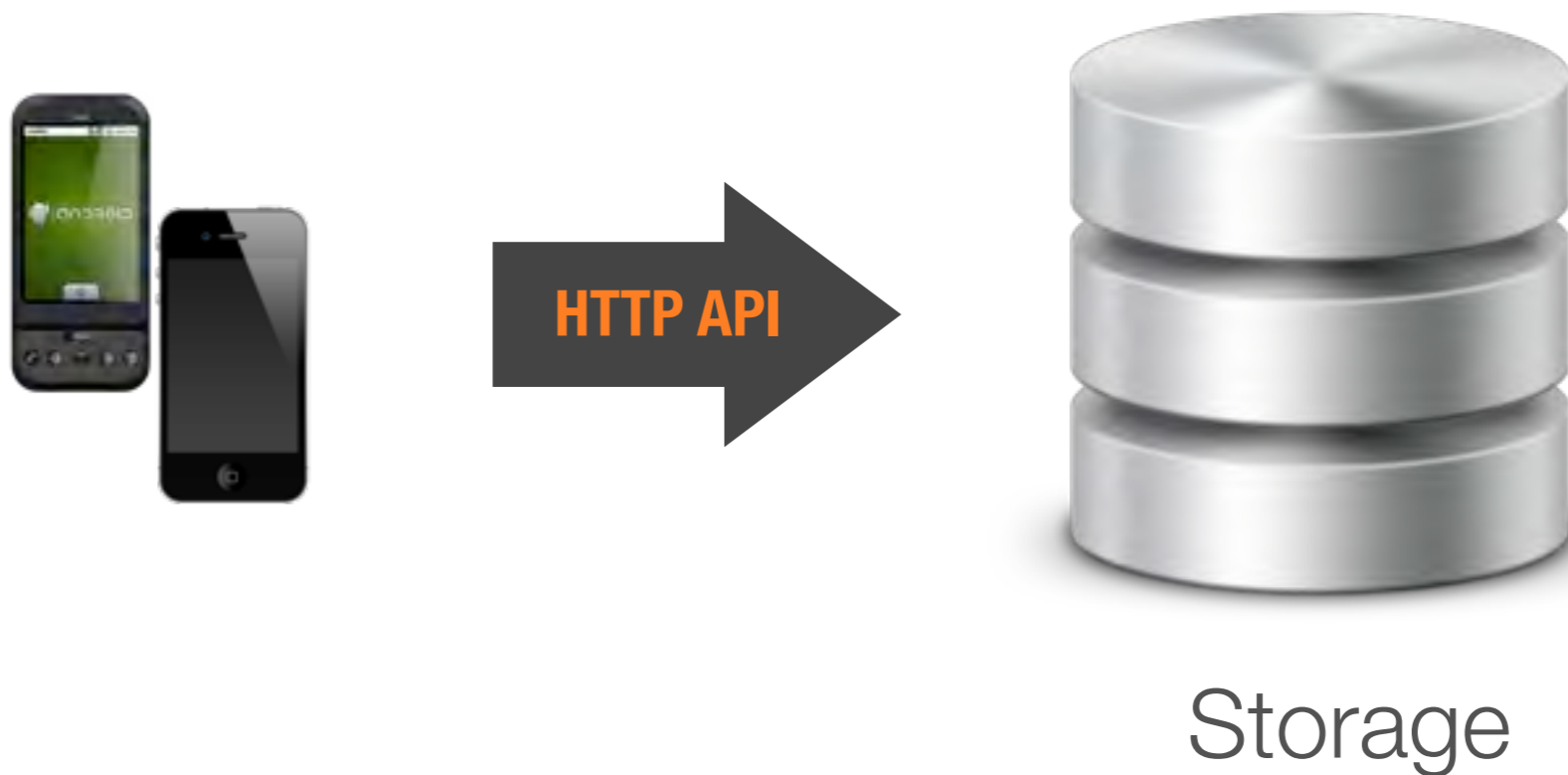


# Swift Use Cases

## Web/Mobile Applications

### Mobile Gaming

Upload direct from device



# Swift Use Cases

## Web/Mobile Applications

### Mobile Gaming

## Native Content-Delivery Integration

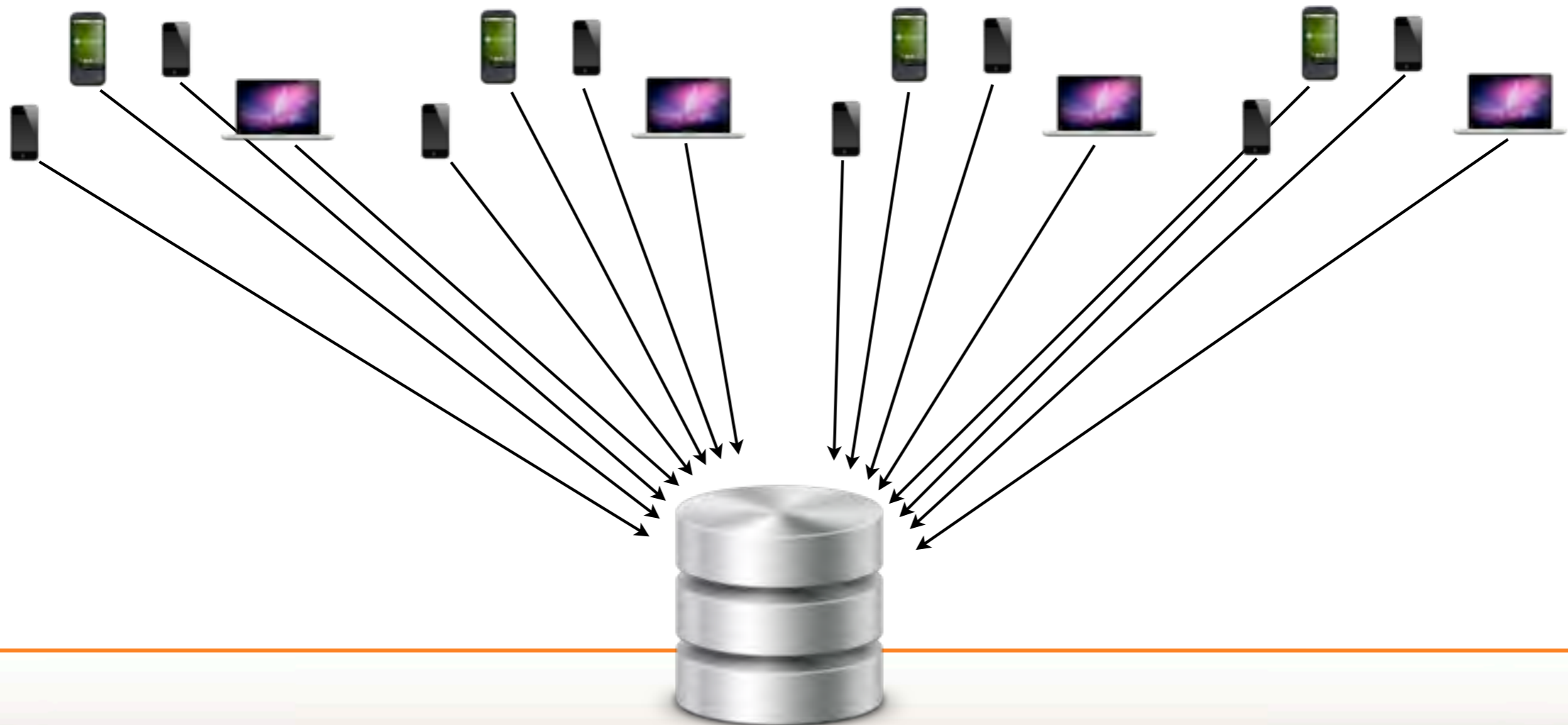


# Swift Use Cases

## Web/Mobile Applications

### Mobile Gaming

Massive concurrency



# Swift Use Cases

---

Web/Mobile Applications

---

**Private Filesharing Applications**

---

Data Analytics

---

Infrastructure as-a-service

---

---

# Swift Use Cases

## Private Filesharing Applications

Fortune 50 consulting company

# Swift Use Cases

## Private Filesharing Applications

Fortune 50 consulting company

Support an Enterprise Authentication

---

# Swift Use Cases

## Private Filesharing Applications

Fortune 50 consulting company

Active Directory / LDAP

# Swift Use Cases

Web/Mobile Applications

---

Private Filesharing Applications

---

**Data Analytics**

---

Infrastructure as-a-service



---

# Swift Use Cases

## Data Analytics

Consumer devices company

# Swift Use Cases

## Data Analytics

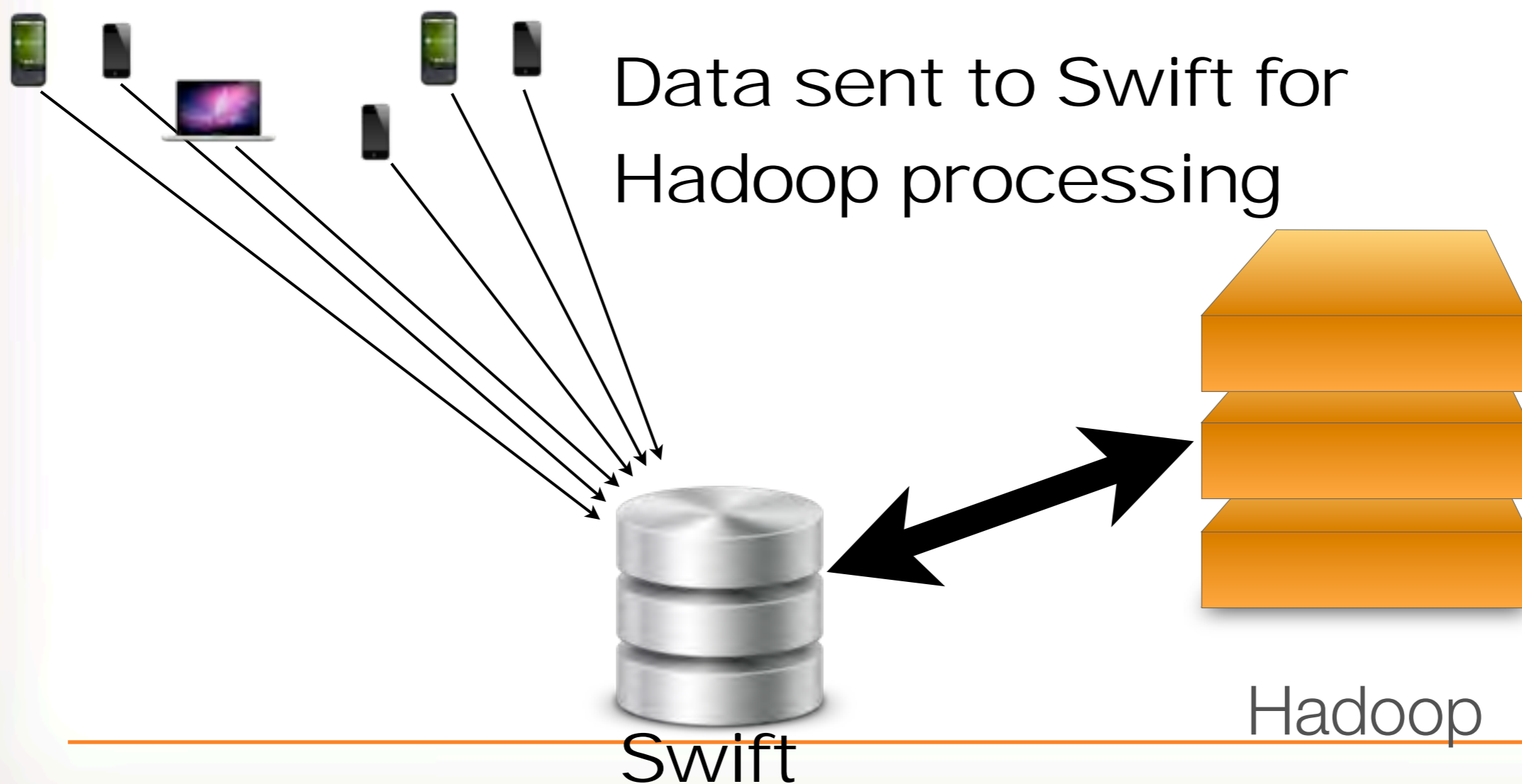
Consumer devices company

Swift + Hadoop = <3

# Swift Use Cases

## Data Analytics

Consumer devices company



# Swift Use Cases

Web/Mobile Applications

---

Private Filesharing Applications

---

Data Analytics

---

**Infrastructure as-a-service**

# Swift Use Cases

## Infrastructure as-a-service

Public Service  
Providers

Internal IT 'Acting'  
like a  
Public Service  
Providers

- Charge back
- IaaS
- Multi-tenancy
- Larger deployments

# Swift and OpenStack

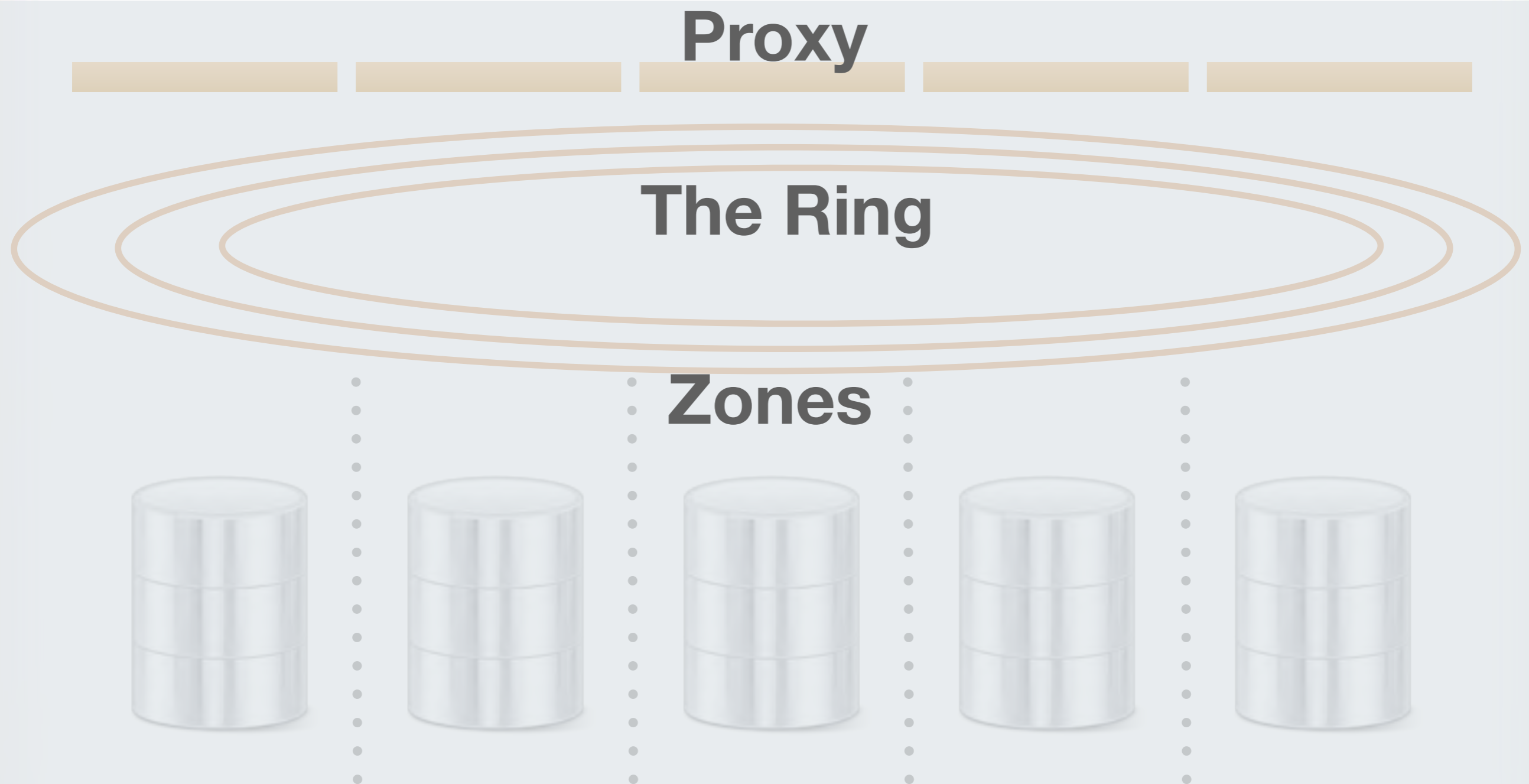
## Overview of Swift

### Swift Use Cases

## Swift Architecture

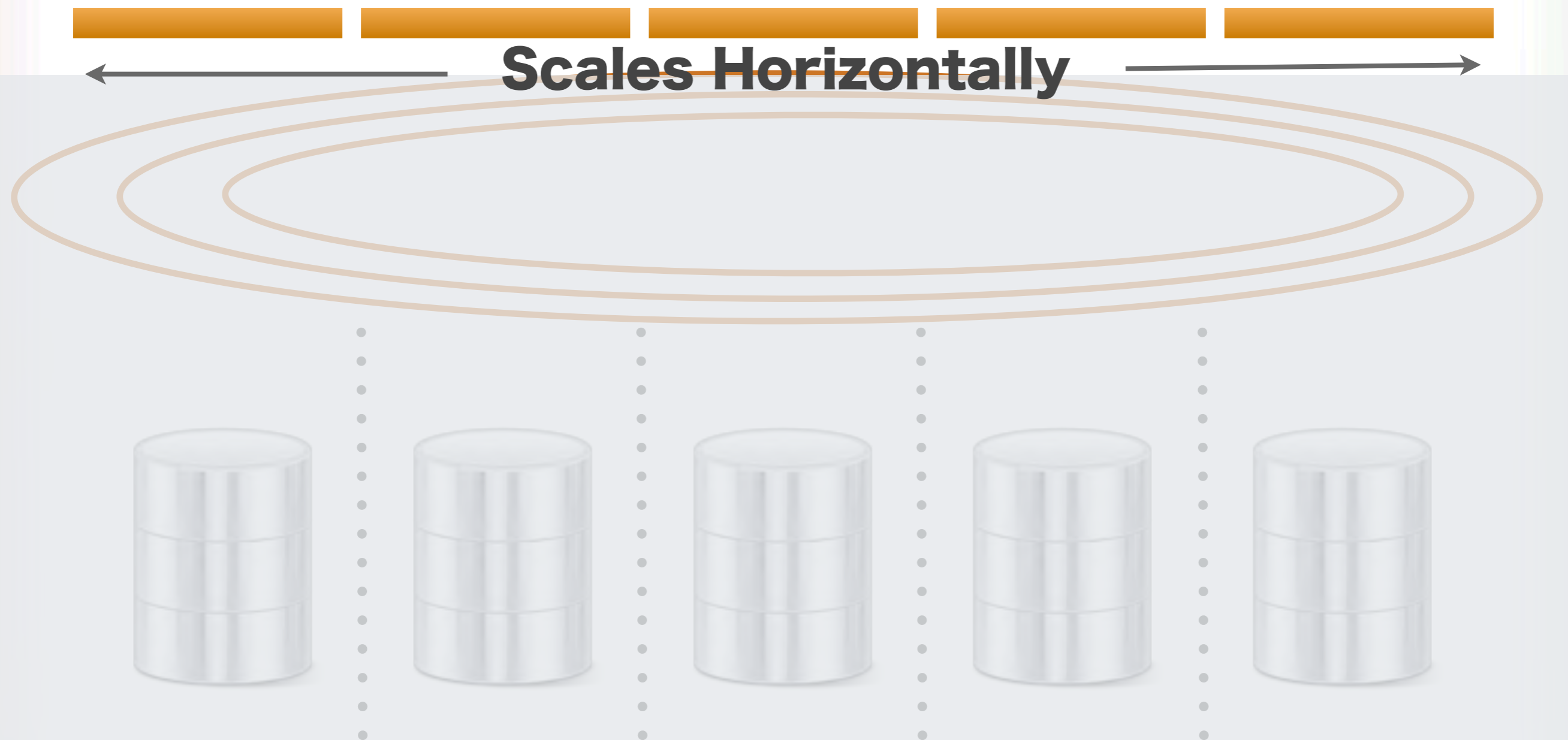
# Swift Architecture

## Overview



# Proxy

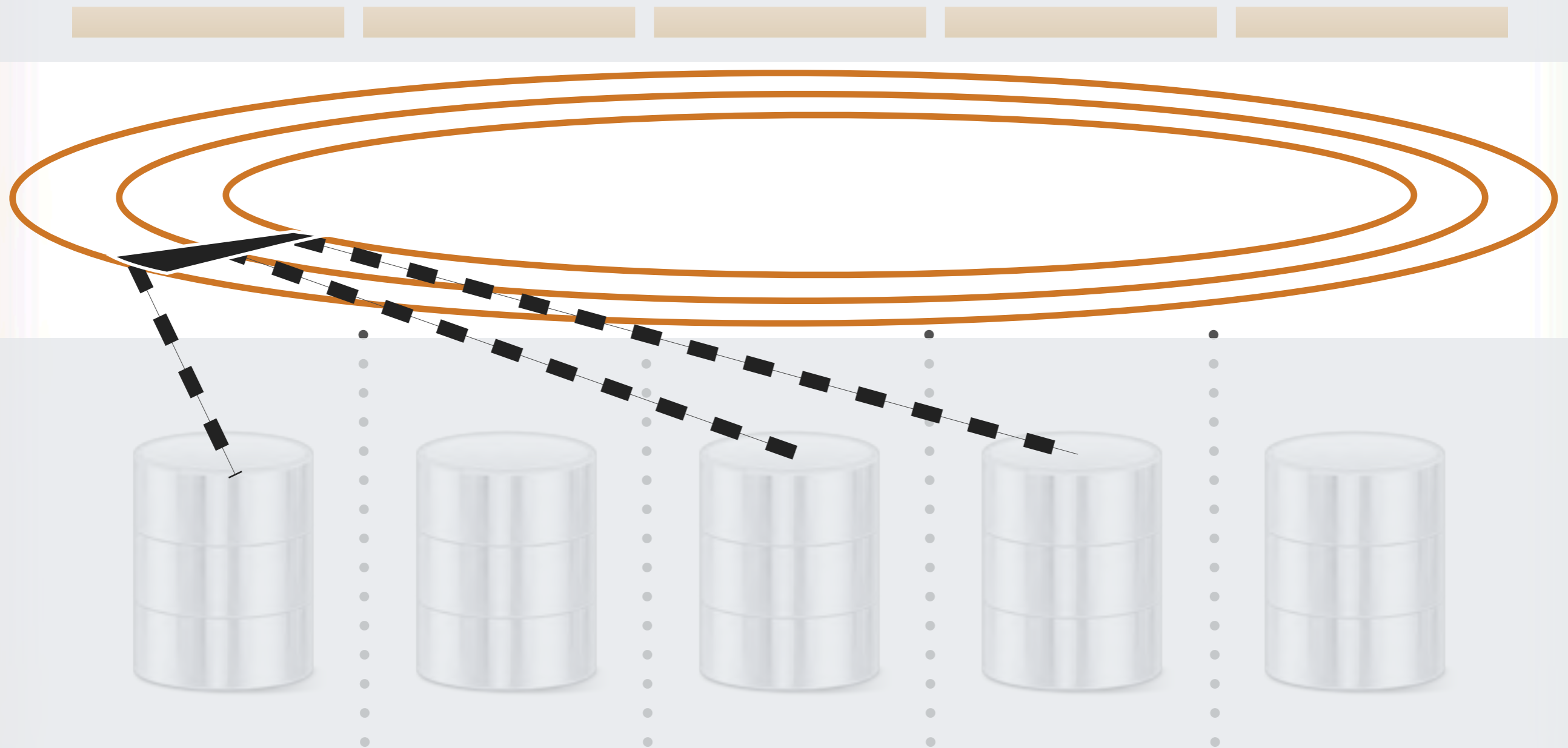
handles incoming requests





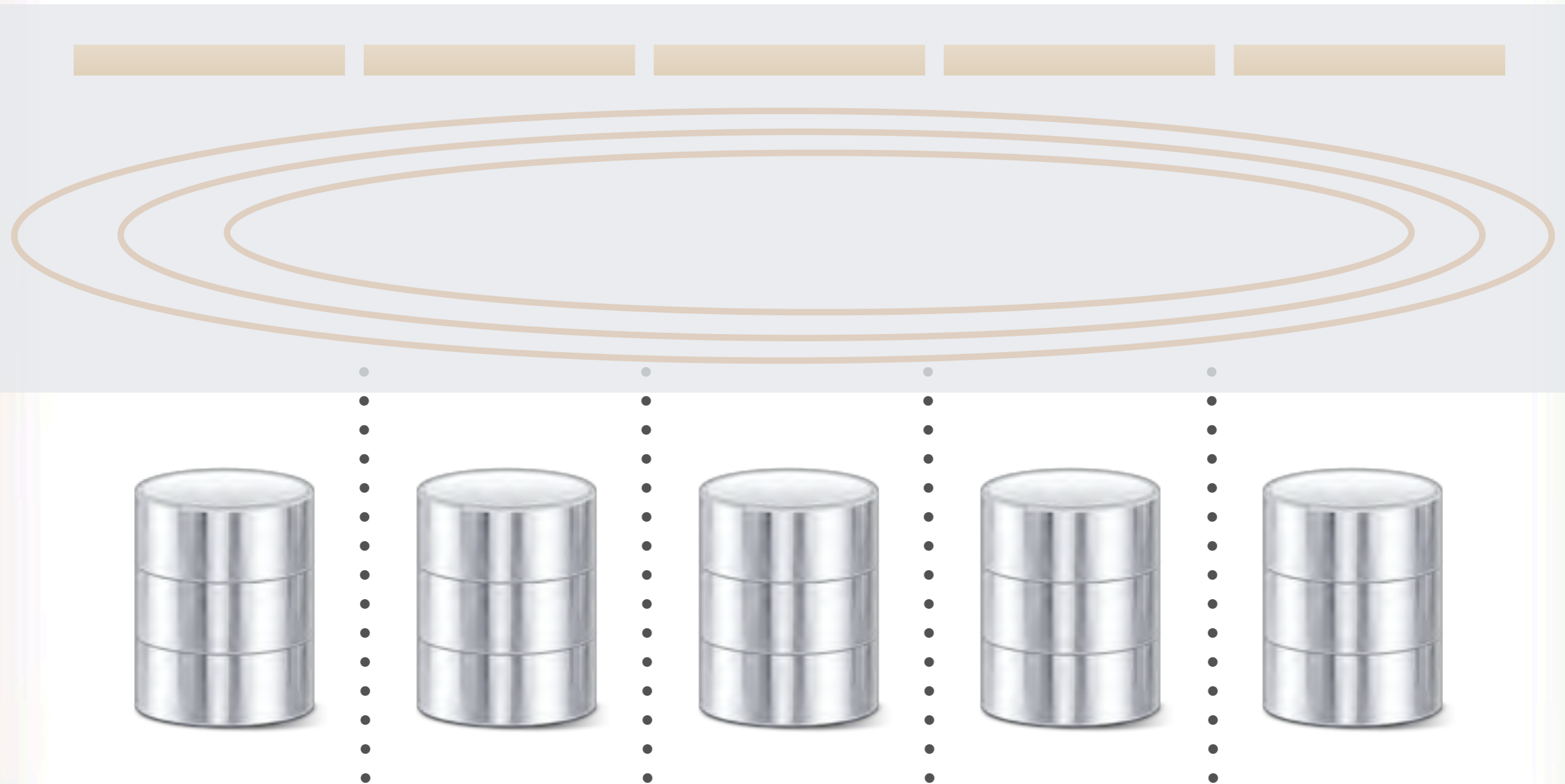
# The Ring

maps data to disk

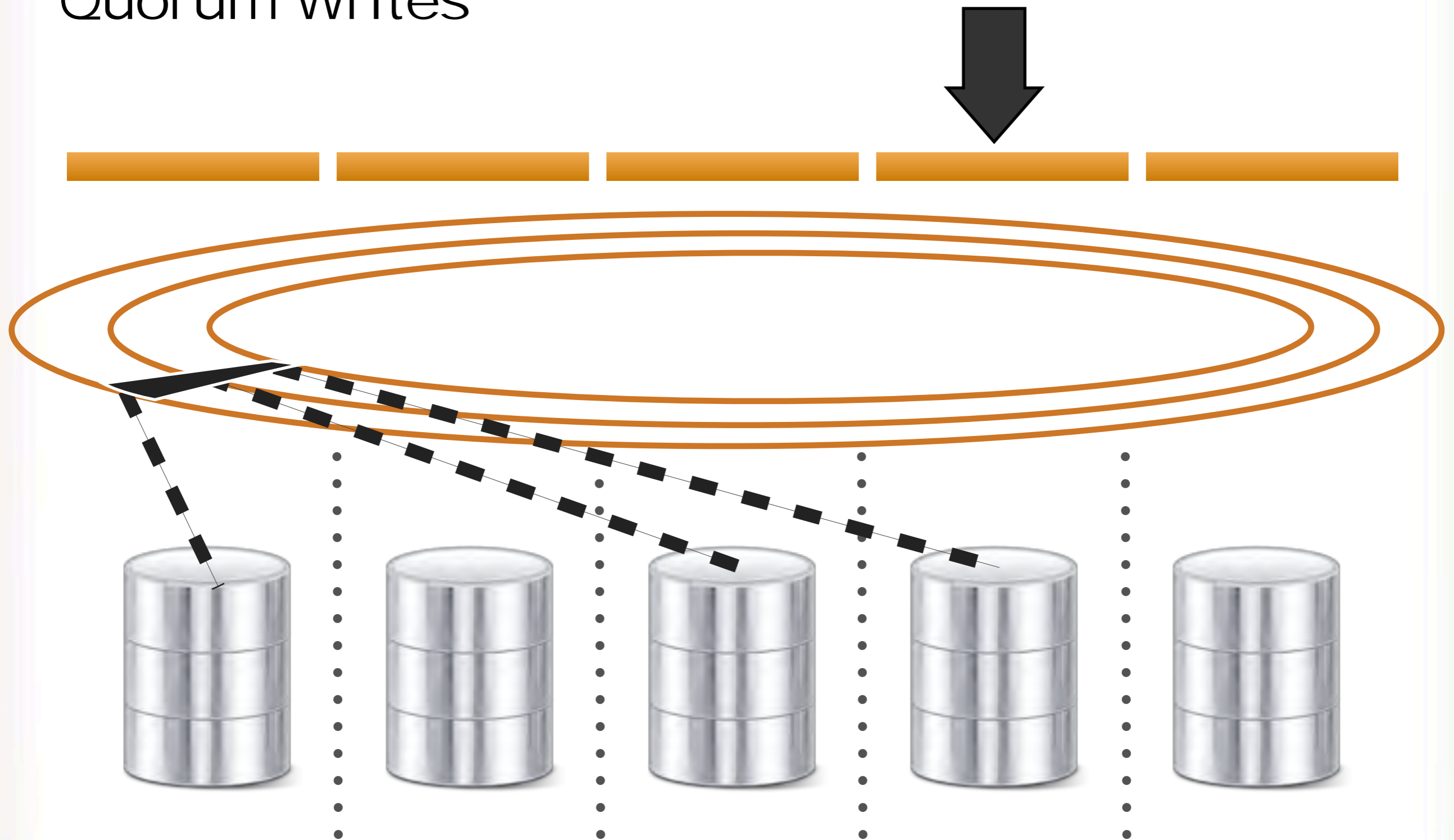


# Storage Zones

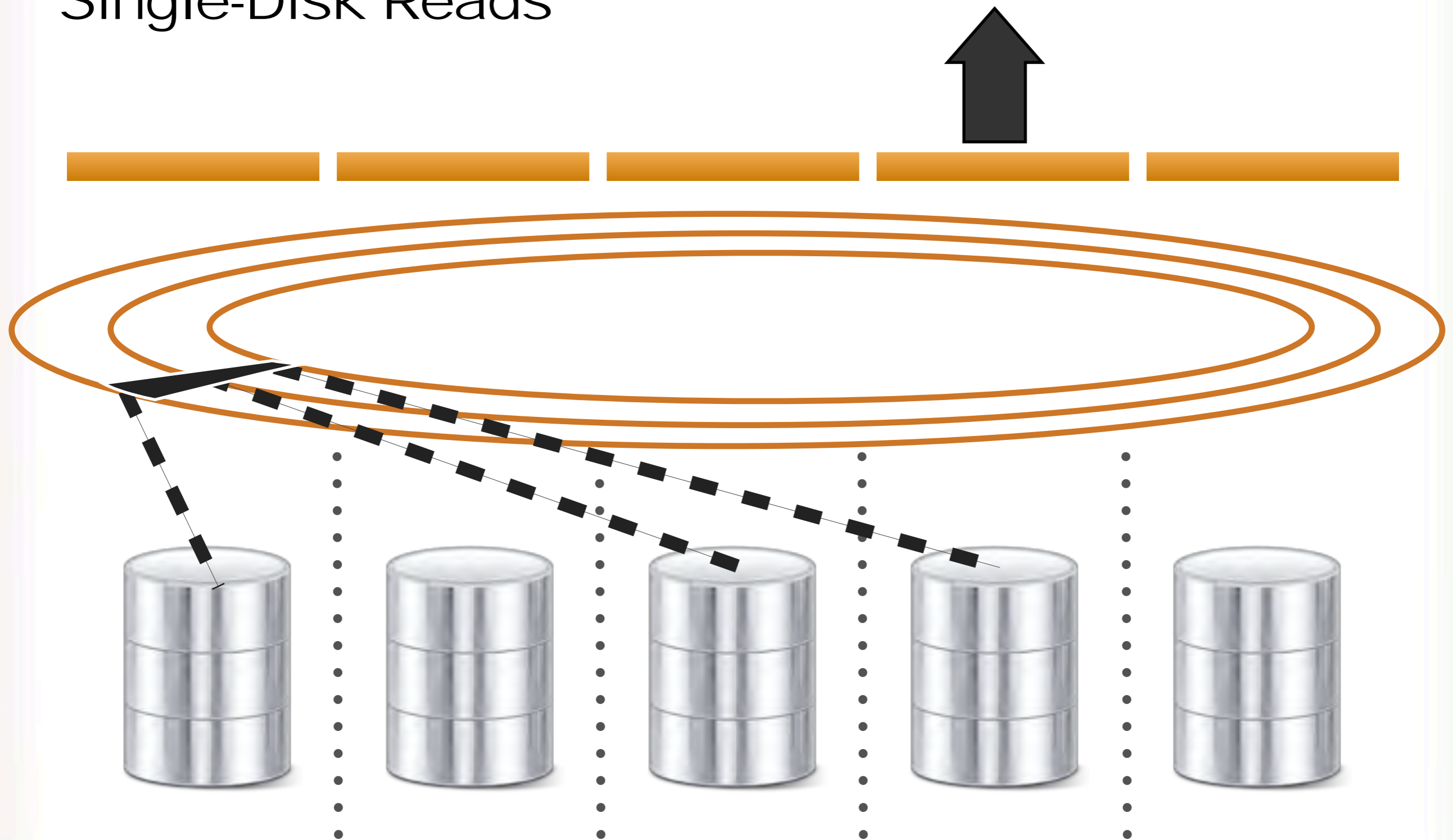
isolate physical failures



# Quorum Writes

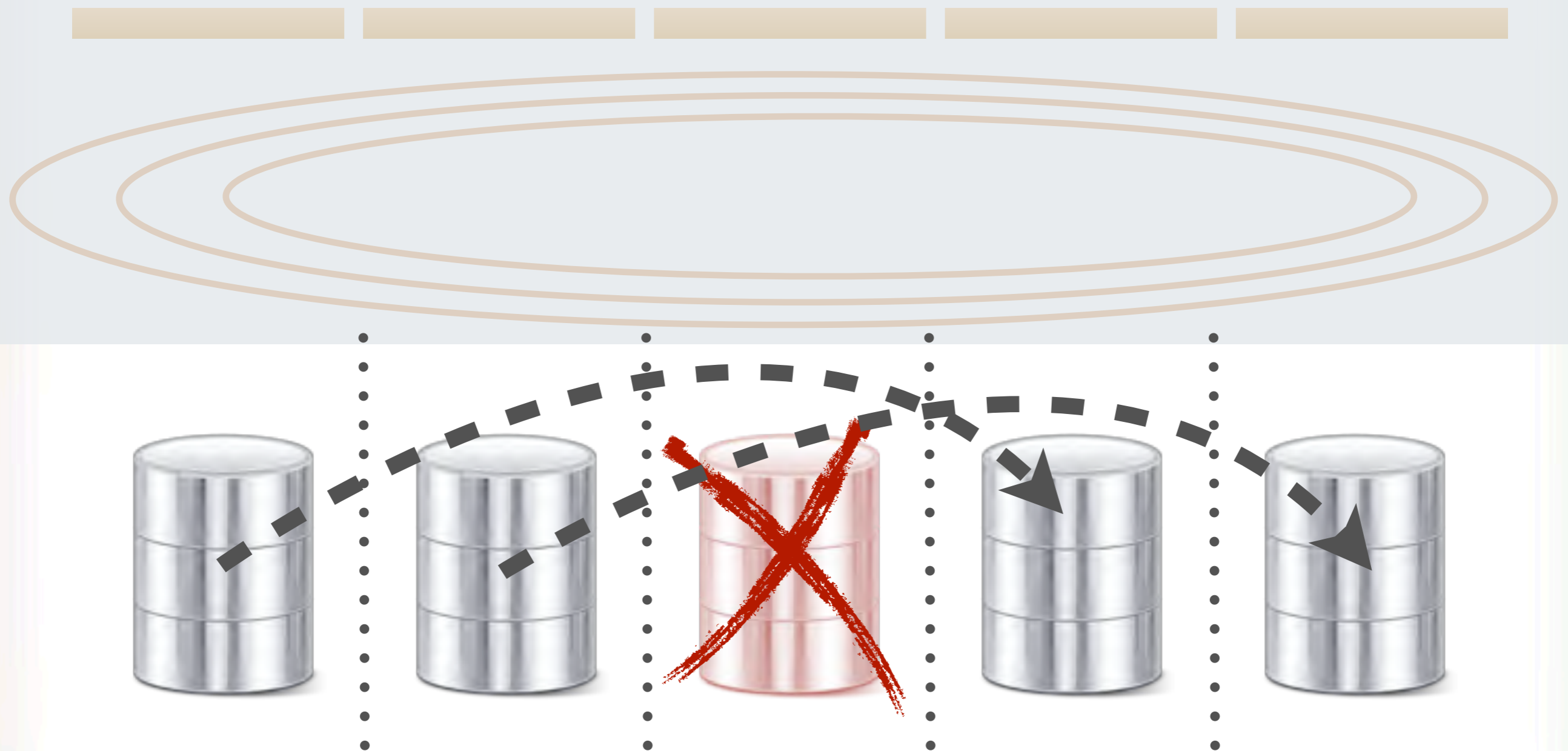


# Single-Disk Reads



# Replication

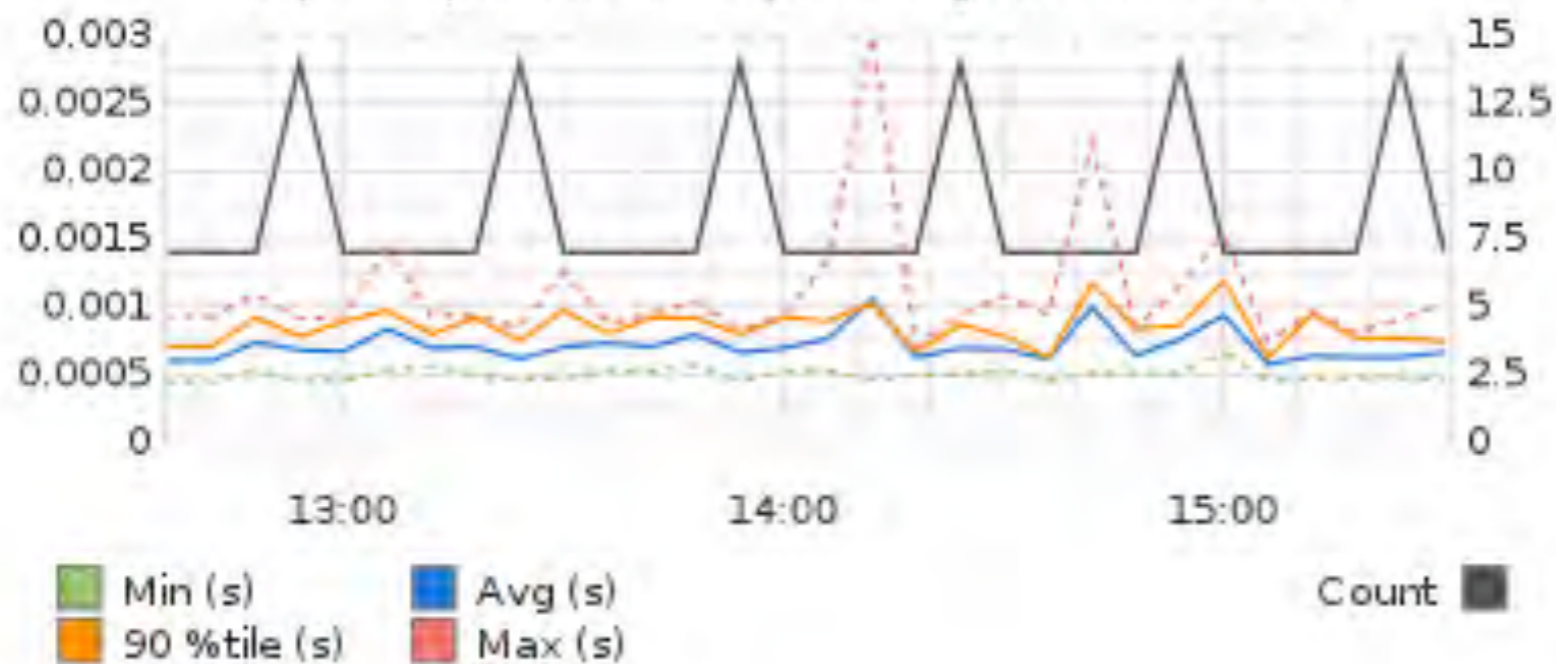
process runs continuously



# Managing Distributed Systems



object-updater Sweep Timing (s) and Count



**People are  
Expensive**



# SwiftStack Architecture

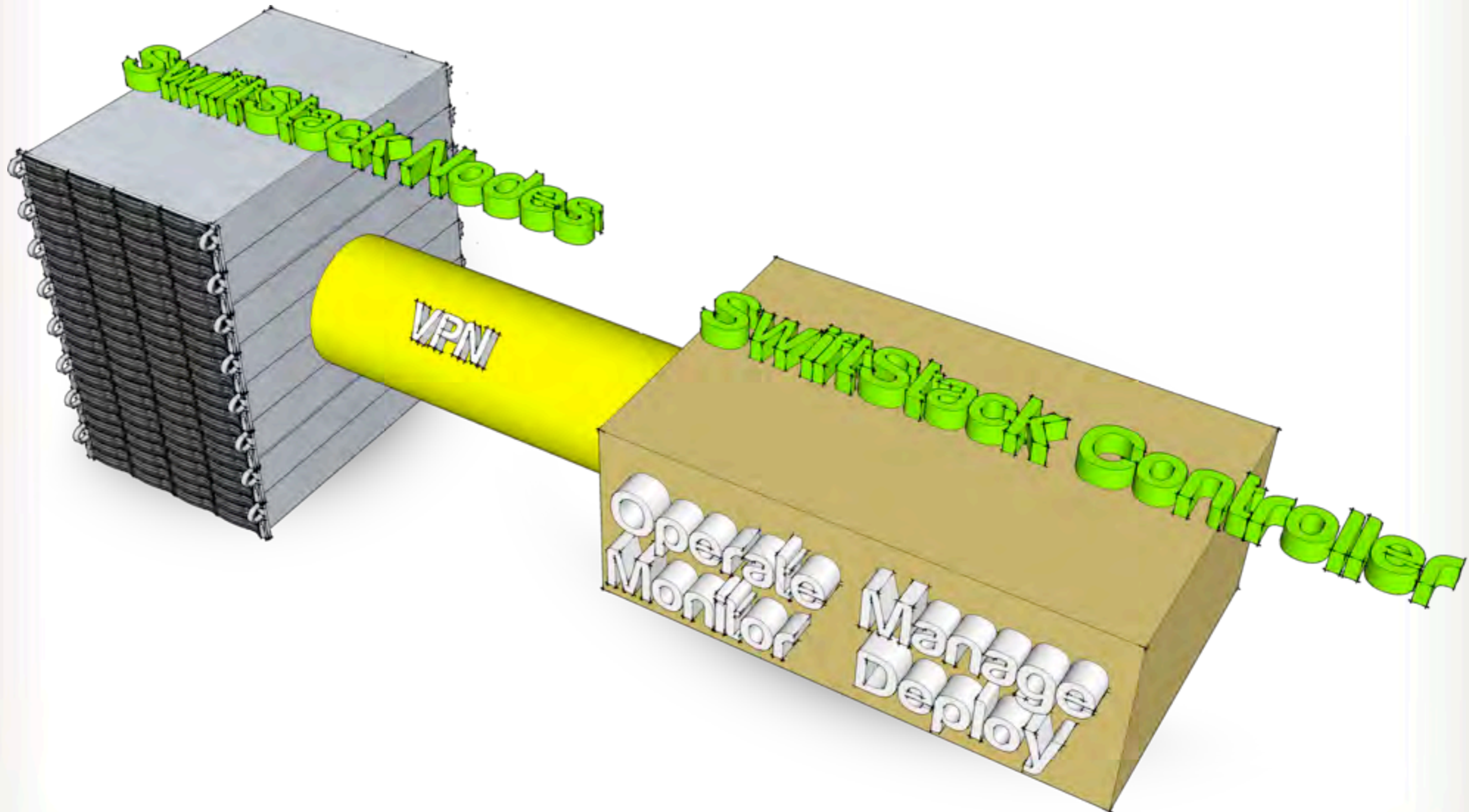




# SwiftStack Controller



# SwiftStack Nodes



# Capacity Planning

View Stats

Edit Drives

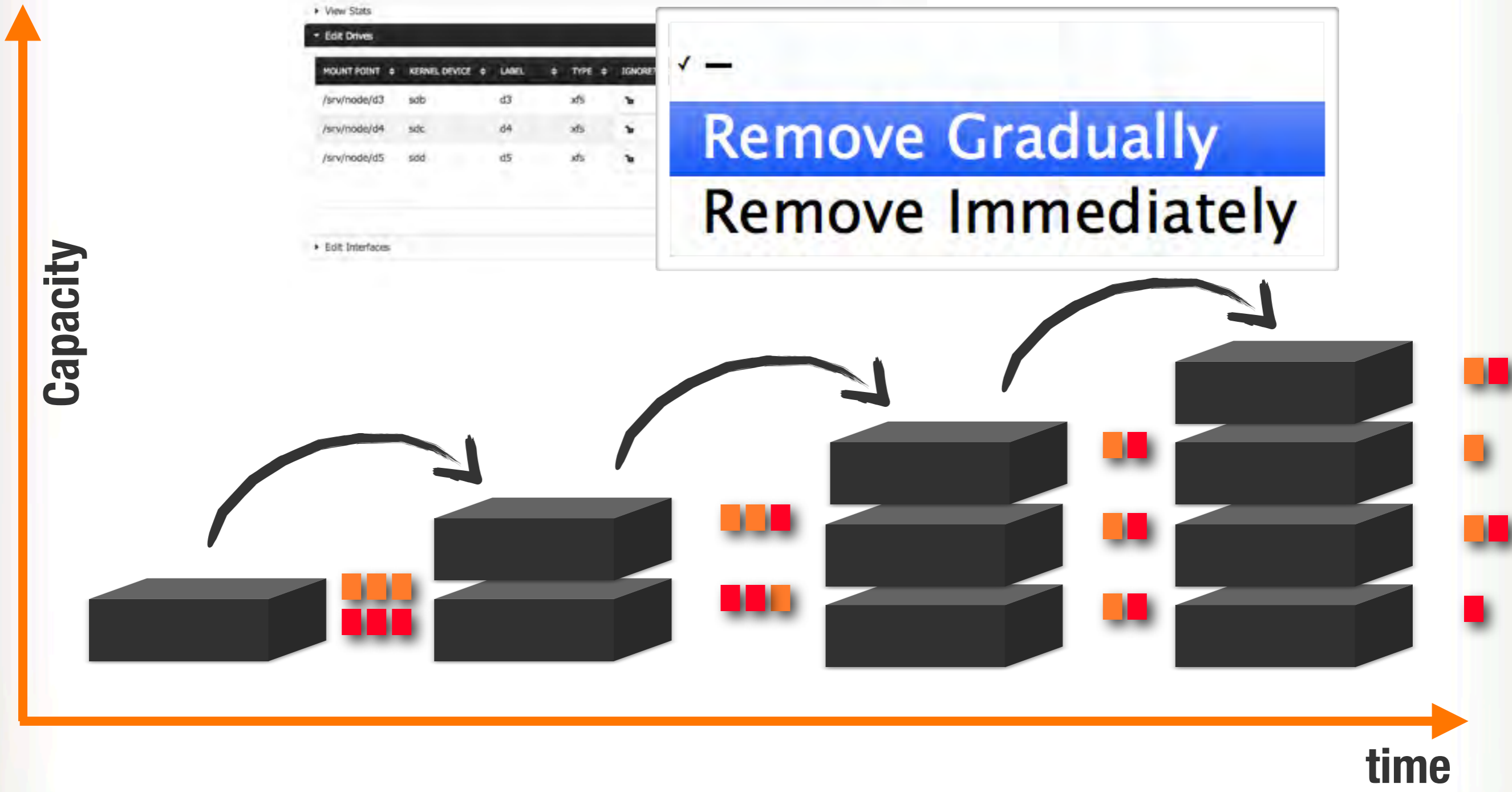
MOUNT POINT	KERNEL DEVICE	LABEL	TYPE	IGNORE
/srv/node/d3	sdb	d3	xfs	
/srv/node/d4	sdc	d4	xfs	
/srv/node/d5	sdd	d5	xfs	

Edit Interfaces

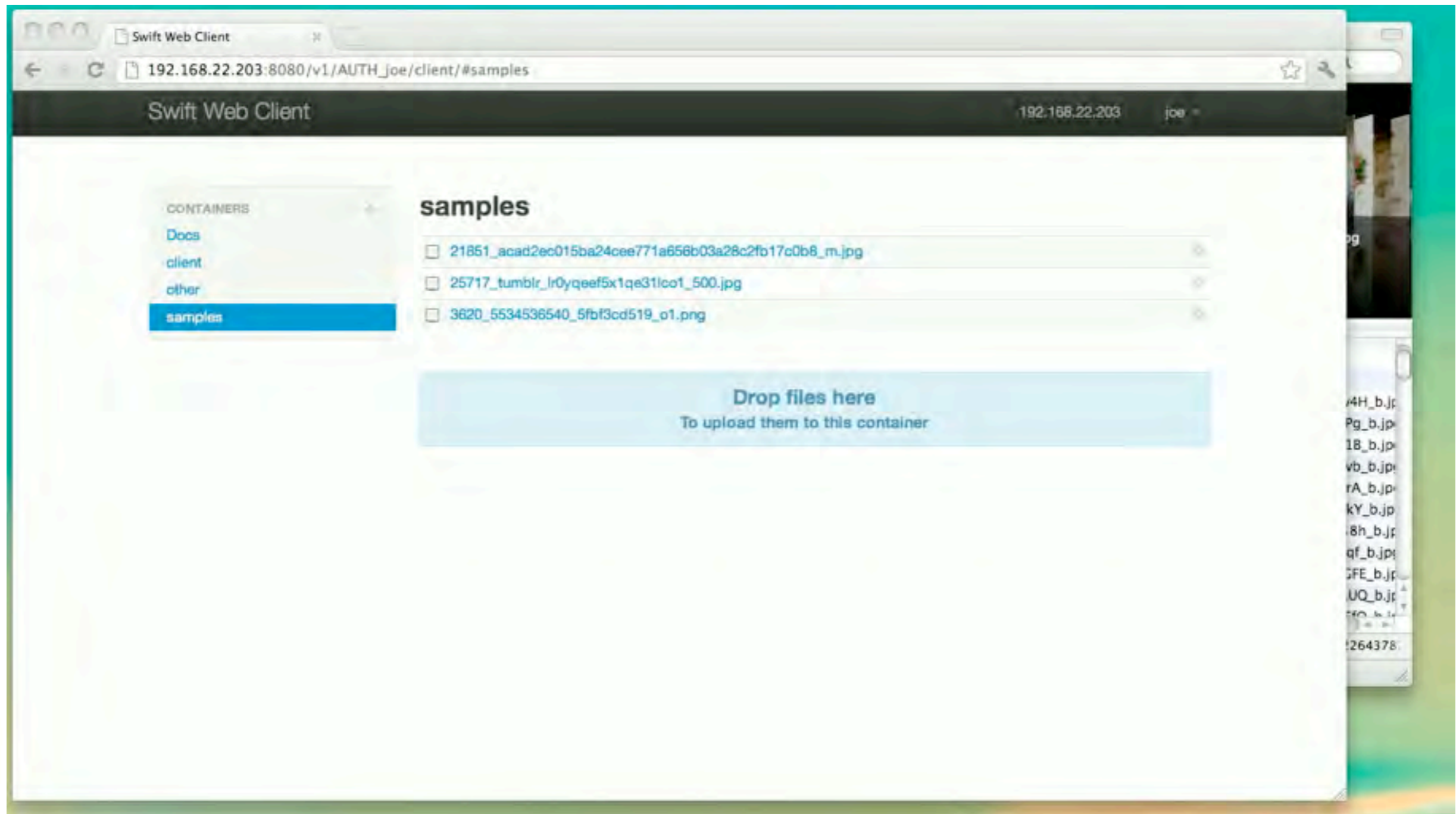
✓ -

**Remove Gradually**

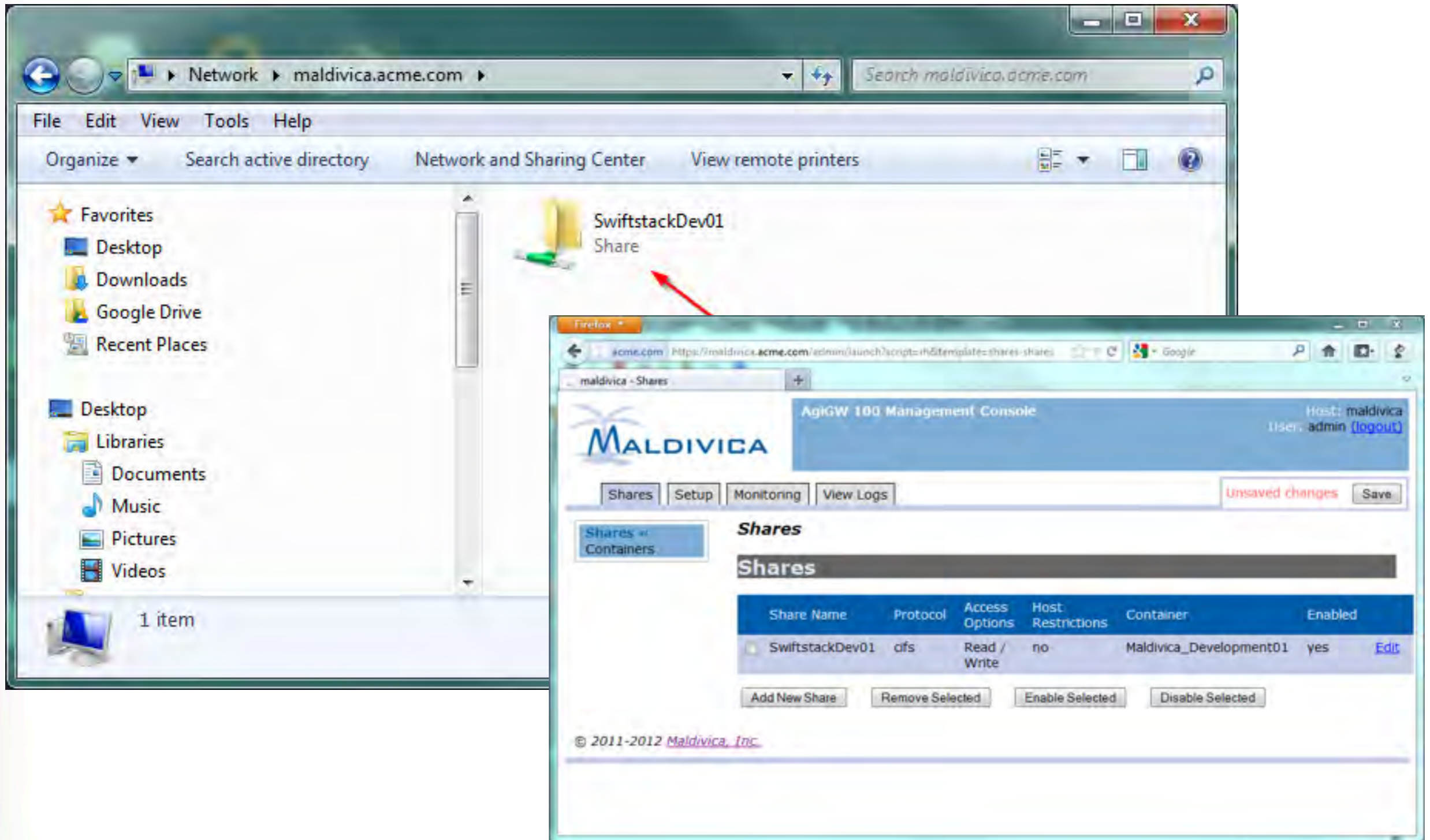
**Remove Immediately**



# Customizable Web-Based Client



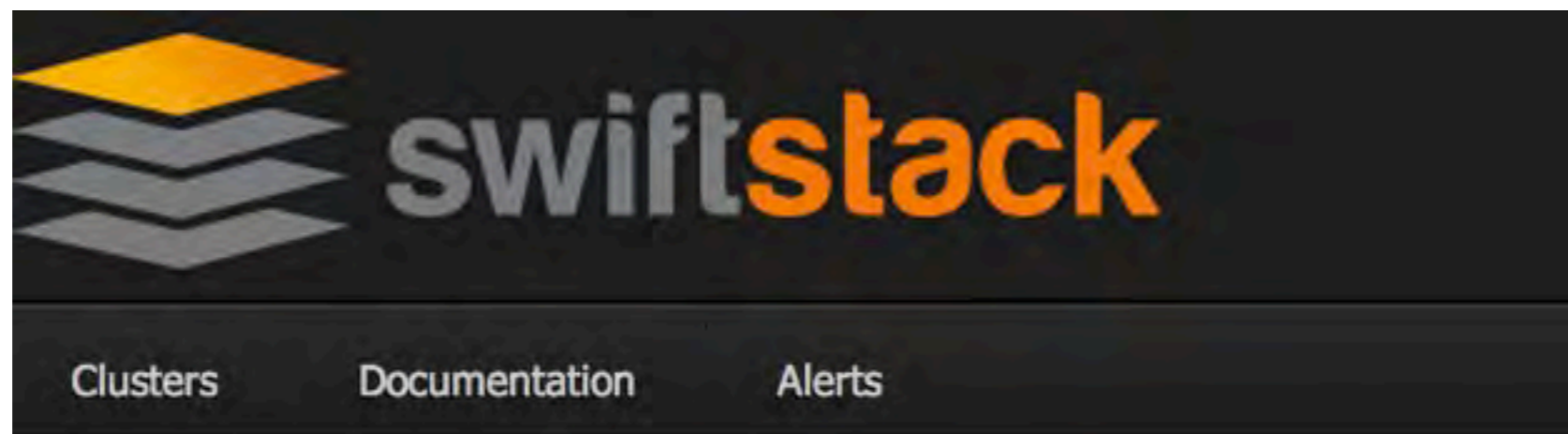
# Filesystem Gateway



The image shows a Windows Explorer window displaying a network share named 'SwiftstackDev01' under the path 'Network > maldivica.acme.com'. A red arrow points from this share to a Firefox browser window. The browser window displays the 'MALDIVICA AgiGW 100 Management Console' for the host 'maldivica' with user 'admin'. The 'Shares' tab is active, showing a table of configured shares.

Share Name	Protocol	Access Options	Host Restrictions	Container	Enabled
SwiftstackDev01	dfs	Read / Write	no	Maldivica_Development01	yes <a href="#">Edit</a>

Below the table are buttons for 'Add New Share', 'Remove Selected', 'Enable Selected', and 'Disable Selected'. The footer of the console shows '© 2011-2012 Maldivica, Inc.'.



## Settings for Active Directory Proxy Authentication

Enabled:

use:

swift\_storage\_url:

domain\_controller:

Update

# SwiftStack Implementation Process

## 1. POC (Small Environment)



- Hardware selection
- Rack & stack
- Configure networking
- SwiftStack install and config
- LB integration
- Functional & load testing

## 2. Integrations



- CDN integration
- Auth integration
- Client development
- End-user portal integration
- OSS/BSS integration
- Dev and operator training

## 3. Production Deployment



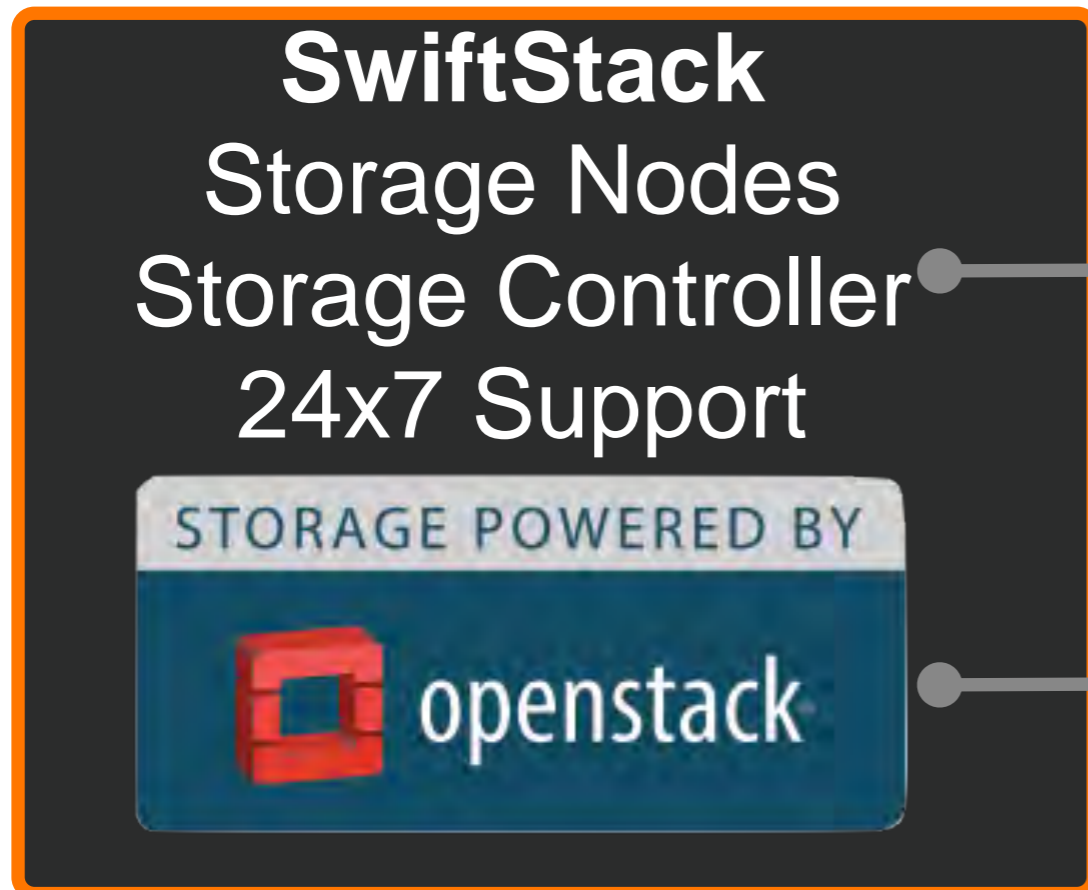
- Production deployment
- Datacenter standup
- Cluster tuning
- Ops & support processes
- Simulate failure scenarios
- Go live

# SwiftStack Products & Services

Installation, Cluster Import,  
Tuning & Enhancements




Professional Services & NRE



**SwiftStack**  
Storage Nodes  
Storage Controller  
24x7 Support

STORAGE POWERED BY



openstack

Monthly Subscription or 3-year  
Term License

Starts at \$10USD / TB / Month

Add Ons:

On-Premise Controller Cluster, 24x7  
Support, Active Directory Module

Perpetual Open Source License  
(Apache 2.0 etc.)



# Thank you!



## Introduction to OpenStack Swift

November 13, 2012

**Joe Arnold**  
**CEO, SwiftStack**

✉ [joe@swiftstack.com](mailto:joe@swiftstack.com)

🐦 @joearnold

