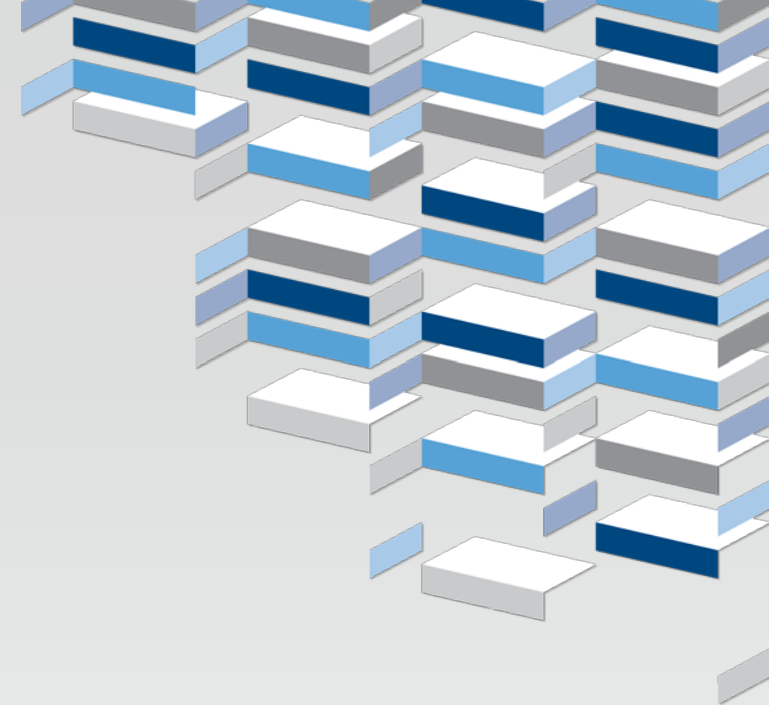




Software Define *This!*

Flash in the Software-Defined Data Center

Kevin Brown
CEO, Coraid
August 2013





DATA CENTER TODAY

Far from Cloud...

Big Iron

Fibre Channel

Rigid Silos

Manual Provisioning

Silos of Storage ≠ Cloud

Backup



iSCSI



SATA

Database



Fibre Channel



SSD

VMware



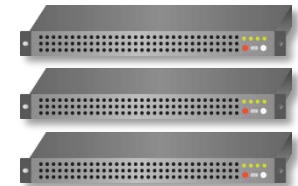
Fibre Channel



SAS

SSD

Web Apps



SAS



SATA

DATA CENTER EVOLUTION

Getting to here...

Scale-Out

Ethernet

Elastic

1-Click Provisioning

Cloud: One Tier for All, Scale-out, Automated

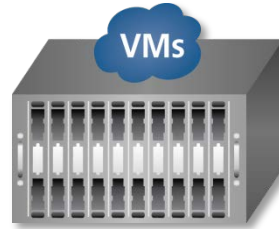
Backup



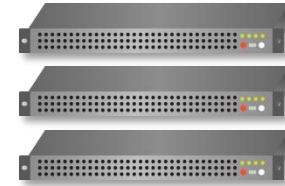
Exchange



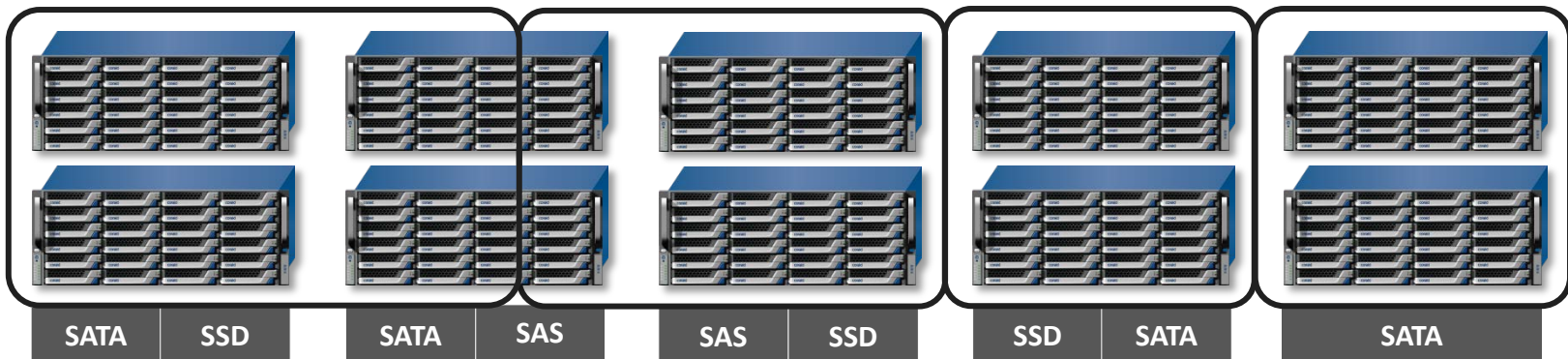
VMware



Web Apps

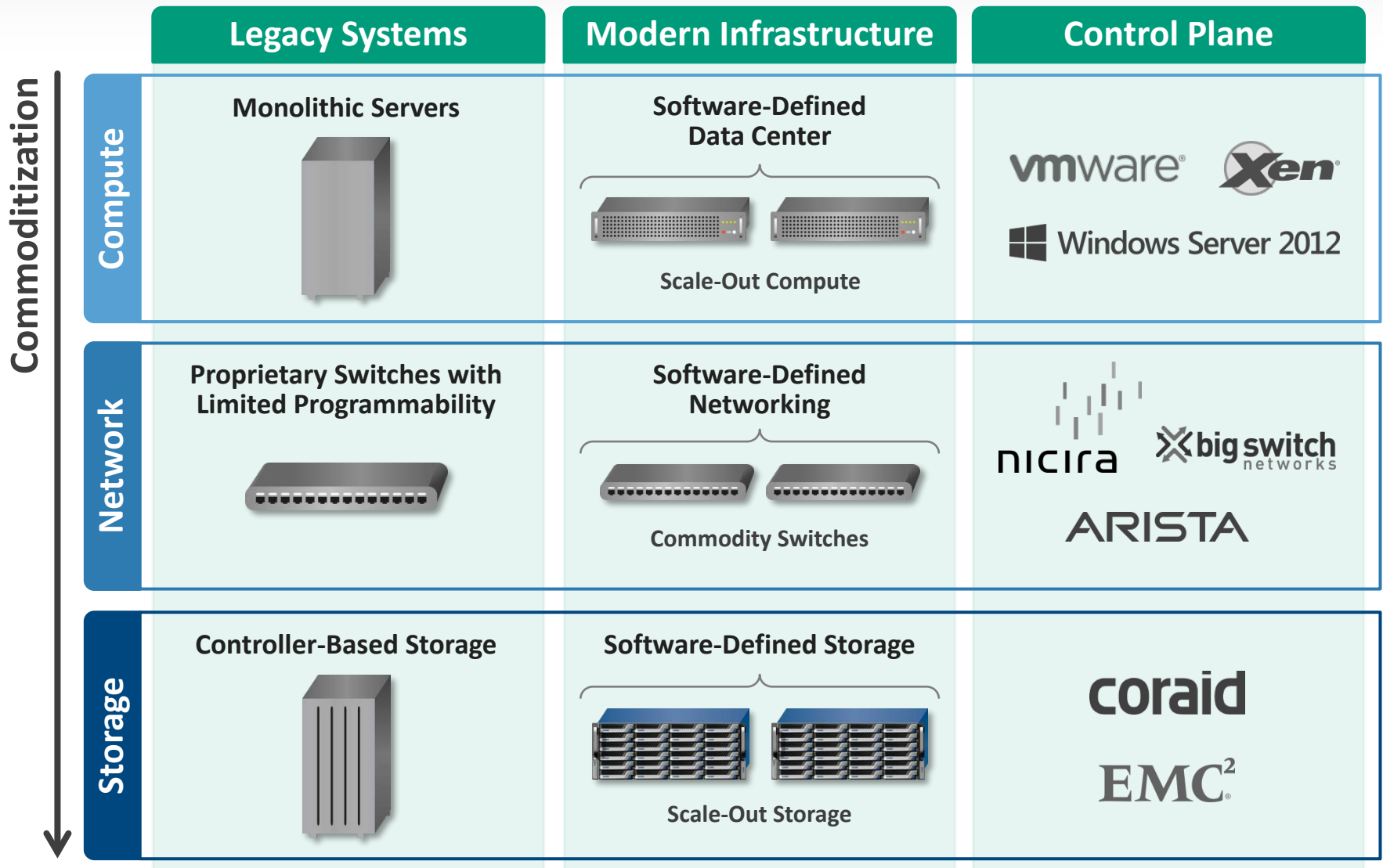


Ethernet Storage Network



Flash enables flexible performance, eliminates silos

The Software-Defined Data Center



Democratization of IOPS



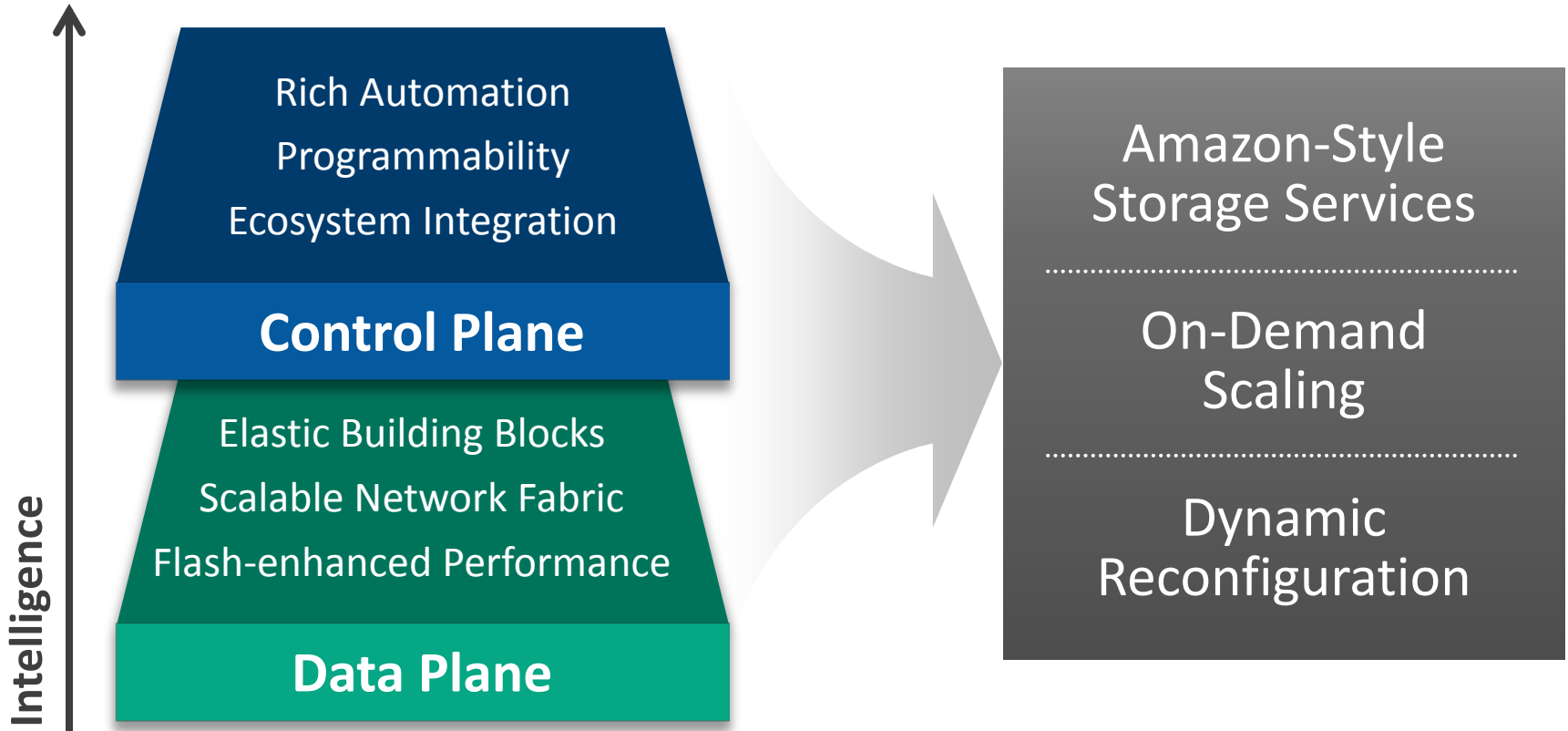
Commodity flash in scale-out arrays can deliver:

- 15 million IOPS/rack
- Up to 768TB capacity
- Flash starting at ~\$5/GB
- Mix and match SATA, SAS, SSD to handle nearly every workload

**In the commoditized cloud era, flash is not a special tier.
It is pervasive, cheap, and integrated.
Value shifts to the *software* that transforms it into a service.**

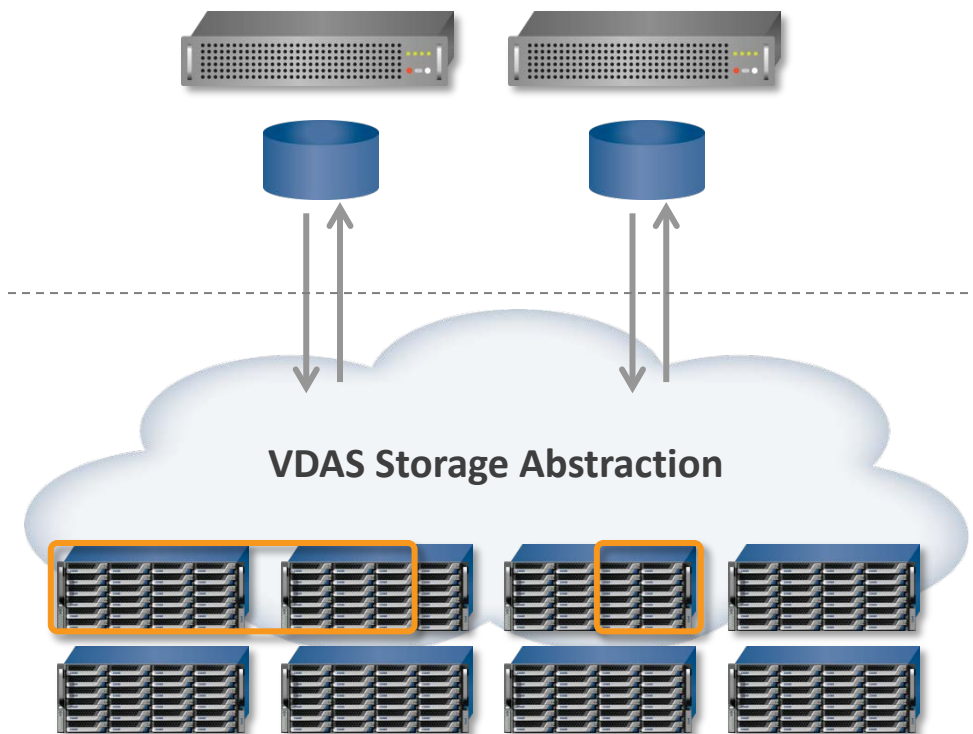


SDS: Data Plane + Control Plane Innovation



Software-Define *This*

Flash-capable arrays and policy-based automation work together to deliver elastic storage performance for multiple workloads



- 1 **Commodity** hardware
- 2 **Scale-out** architecture
- 3 **Resource pooling**
- 4 **Abstraction** of storage infrastructure
- 5 **Monitoring** of end-to-end SLA performance
- 6 **Automation** of converged storage and network
- 7 **Programmability** via REST API

Classes of Service

Flash can be combined with other types of storage to create tailored performance profiles for different workloads.

Bronze

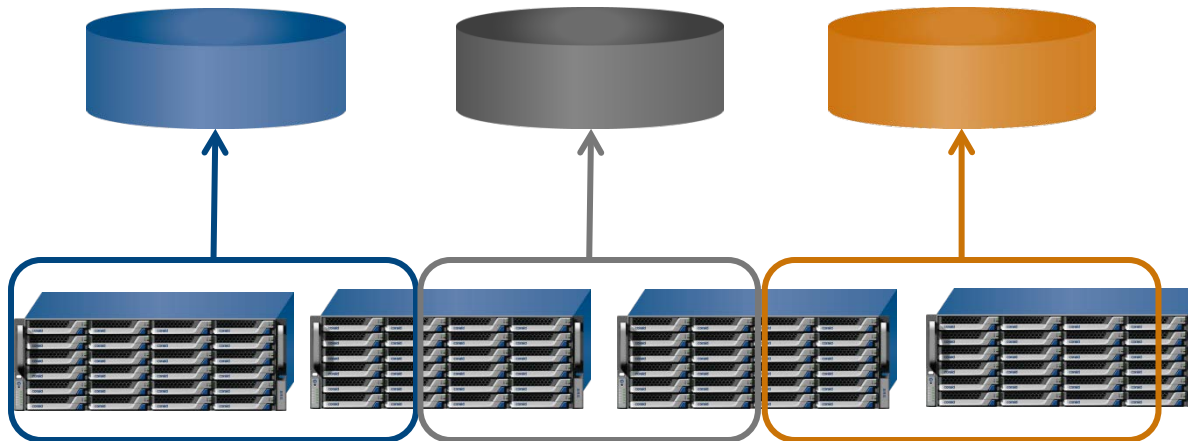
- SATA
- RAID5
- Not protected

Silver

- SATA
- SSD Flash cache
- RAID10
- Snapshots

Gold

- SSD
- RAID10
- Snapshots
- Replicated



Underlying block and file storage



Enabling Simplicity at Scale



- **Ethernet Storage technology: EtherDrive[®]**
 - Price, performance and simplicity vs. legacy storage
 - Elastic scale-out architecture ideal for big data, cloud
- **Radically simplifies networked storage: VDAS**
- **Software-Defined Storage platform: EtherCloud[™]**
 - Launched in 2012

\$85m in funding
(\$10m, \$25m, \$50m)

10x+ bookings
growth in
last 3 years

1,700+ Customers
in 45+ Countries

Coraid: 1,700+ Customers in 45+ Countries

Enterprise

LEGG MASON
GLOBAL ASSET MANAGEMENT

SONY

SAMSUNG

LOCKHEED MARTIN

MOTOROLA

Public Sector



U.S. AIR FORCE



Big Data / Media

BCM
Baylor College of Medicine

RUTGERS

MIT Massachusetts
Institute of
Technology

NORTHROP GRUMMAN

RICE

T3Media
Thought Equity Motion

FamilyTreeDNA

Cloud

shutterstock

yelp

at&t

EVault
A Seagate Company

NTT Communications

coraid

Agora Publishing

Industry: Media and Entertainment

Use Case: VMware & Microsoft SQL

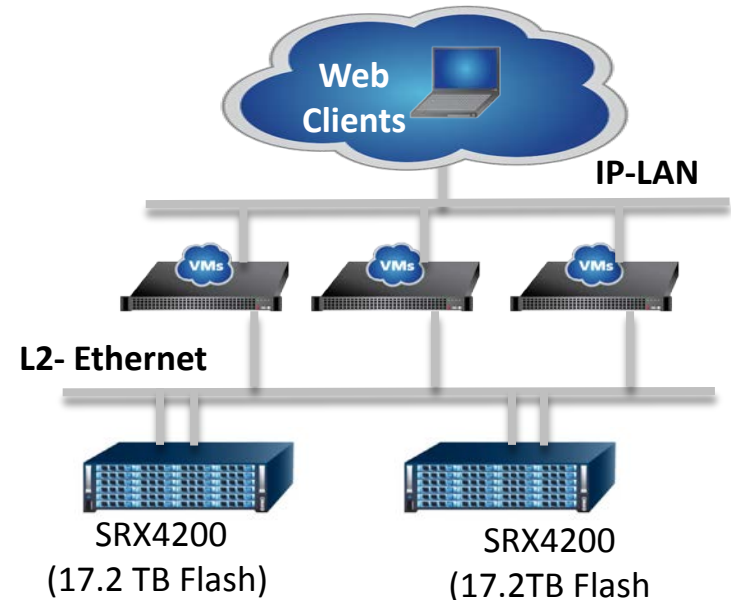
Customer Need

- Wanted to replace NetApp storage with a faster and more cost effective solution
- Growing volume of electronic data created management and cost-of-ownership challenges

Benefits

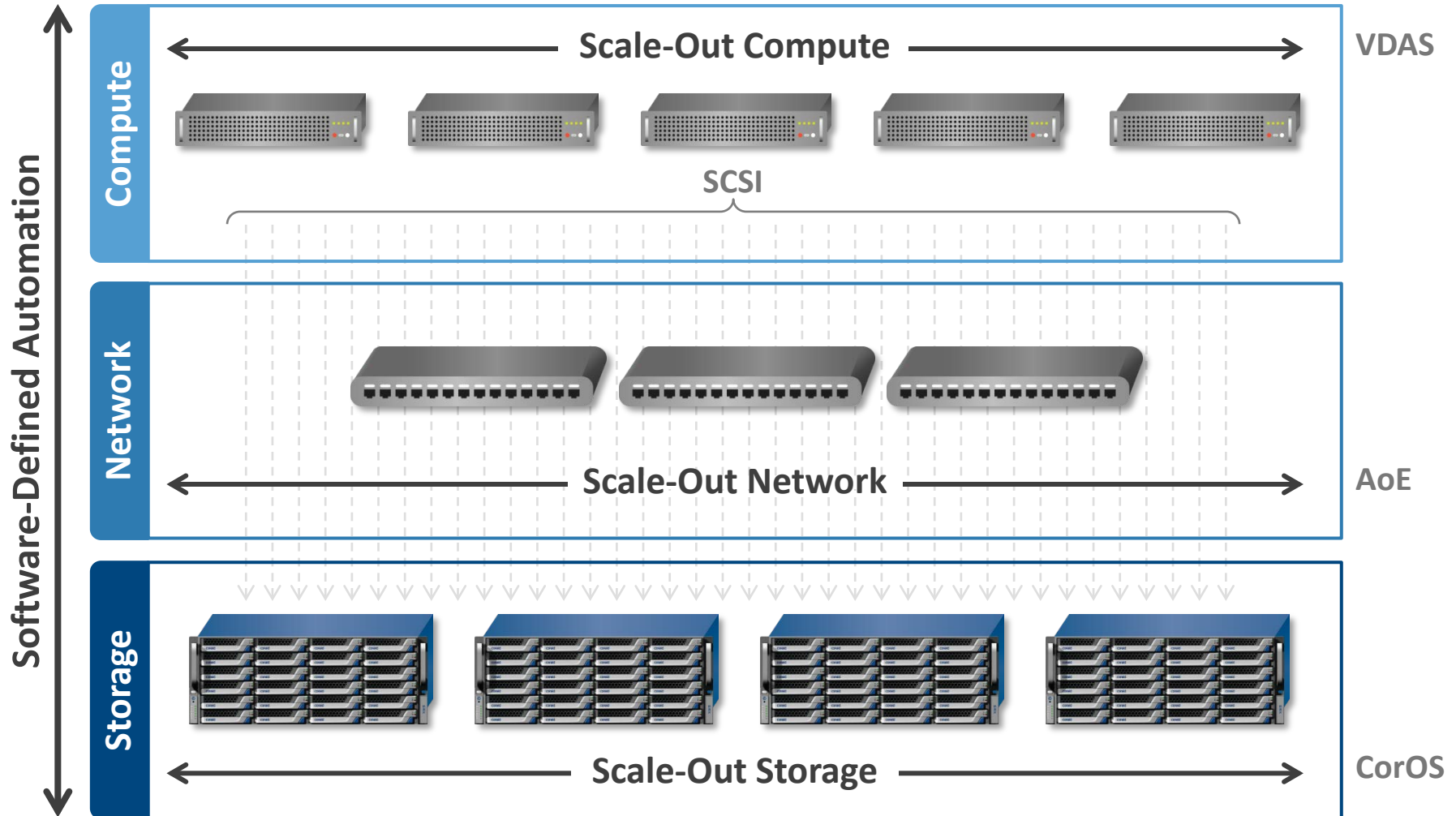
- Out-performed FC and iSCSI alternatives for a fraction of the cost.
- Grow capacity in line with virtual machine growth.
- Deploy & configure new storage in minutes.

Solution Overview



“We needed a better way to manage our data,” said Jason Pell, CIO for Agora Publishing. “Coraid provided us with a solution that better positions my team to meet the company’s evolving and growing storage needs.”

Coraid Ethernet Storage Architecture



Comparing Storage Alternatives



Public Cloud Storage



- Elastic, easy to provision
- Weak control, spotty QoS
- Data transfer fees, latency

- \$0.10/GB/month
- \$6.3M / 5 years for 1 PB

Legacy Controller-based Storage



- Scale-up architecture
- Complex to deploy and scale
- Fragmented silos, high OPEX

- \$0.15/GB/month TCO
- \$9.4M / 5 years for 1 PB

Scale-out Ethernet Storage



- Simple to setup and scale
- Flash-enhanced performance, flexible
- 1-click, self-service, REST API

- \$0.03/GB/month TCO
- \$1.9M / 5 years for 1 PB

Thank You