



Imagine Virtually Anything™

Delivering on the Promise of a Virtualized Dynamic Data Center

Shamsul Anuar Yahaya

ITIL Master

Technical Director; Malaysia & Brunei

Agenda

- Partnership
- Virtualization Journey



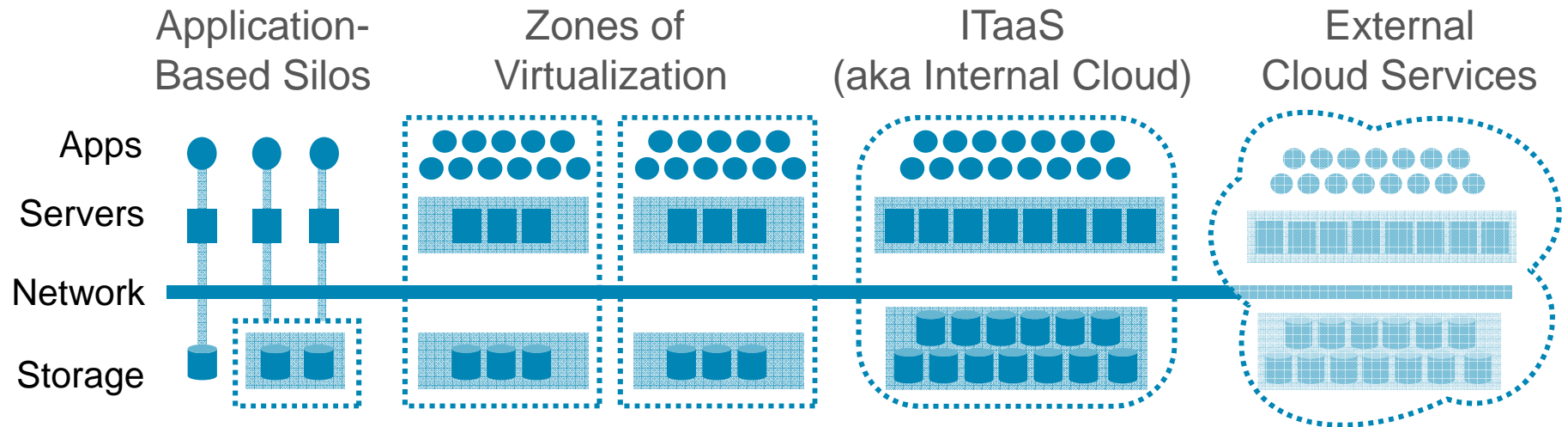
Today's Critical IT Challenges



- Budget pressure to do more with less
 - 70% of IT budgets focus on “keeping the lights on,” limiting funds for innovation
- Need to quickly adapt to business changes
- Lack of future-driven architecture and skills
- Power, cooling, and space constraints
- Slow issue resolution due to poor coordination among multiple vendors

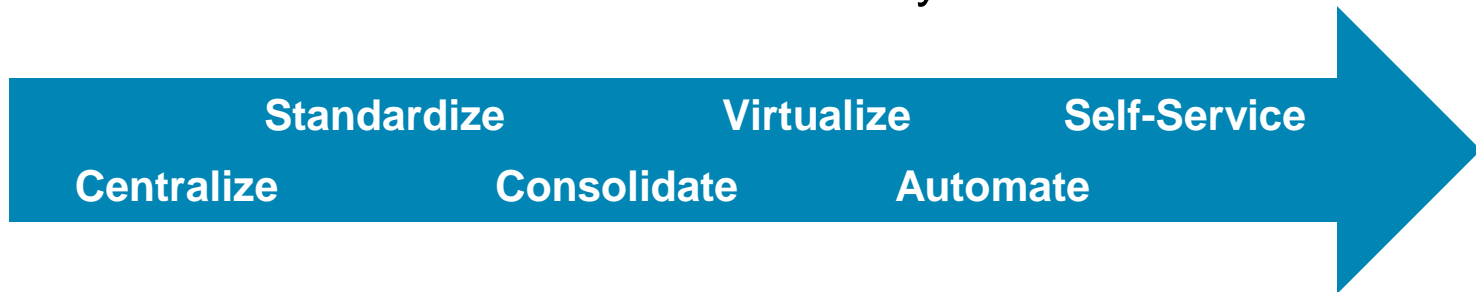


Data Center Evolution Toward IT as a Service



From Silos...

...to Virtualized Dynamic Data Centers



Work with your partner to map out your path when you are ready!



Delivering the Dynamic Data Center Together

Cisco

NetApp

VMware

One Vision for Unified, Virtualized Infrastructure

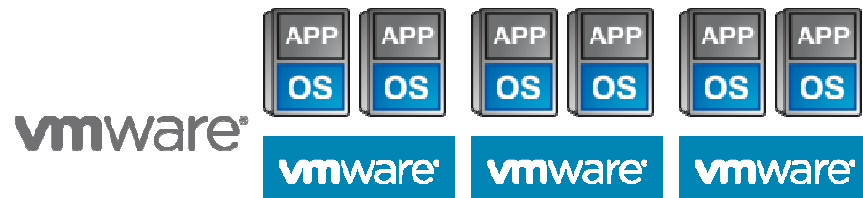
New Validated Secure Multi-Tenancy

New Cooperative Services and Support

Mutual, Open Partner Ecosystem



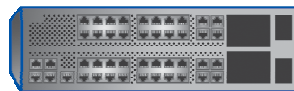
Cisco, NetApp, and VMware Technology



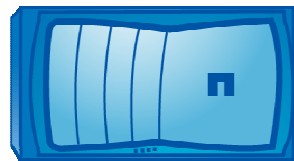
- Virtualize everything with VMware® vSphere® and View



- Unified server infrastructure with Cisco UCS



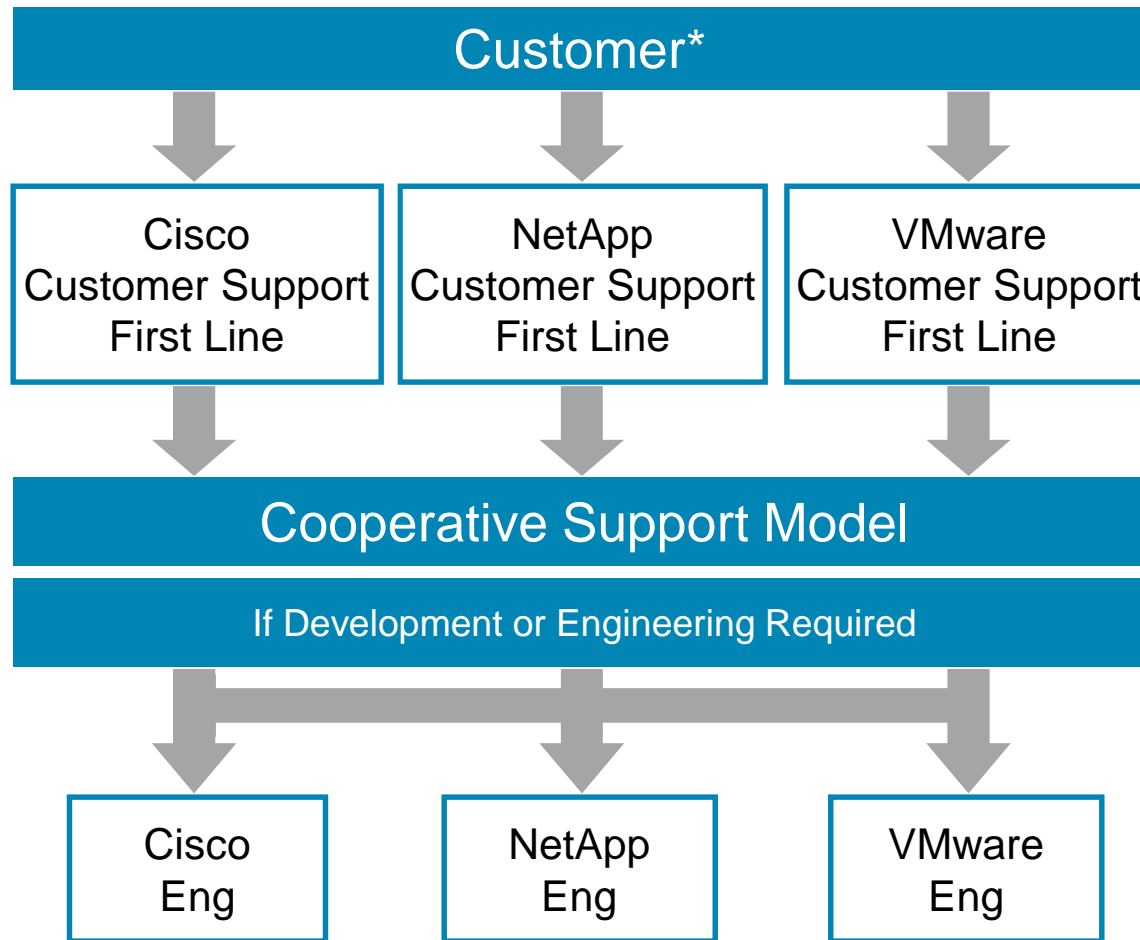
- Unified fabric with Cisco Nexus



- Unified storage with NetApp® FAS storage



Cooperatively Supporting Our Customers

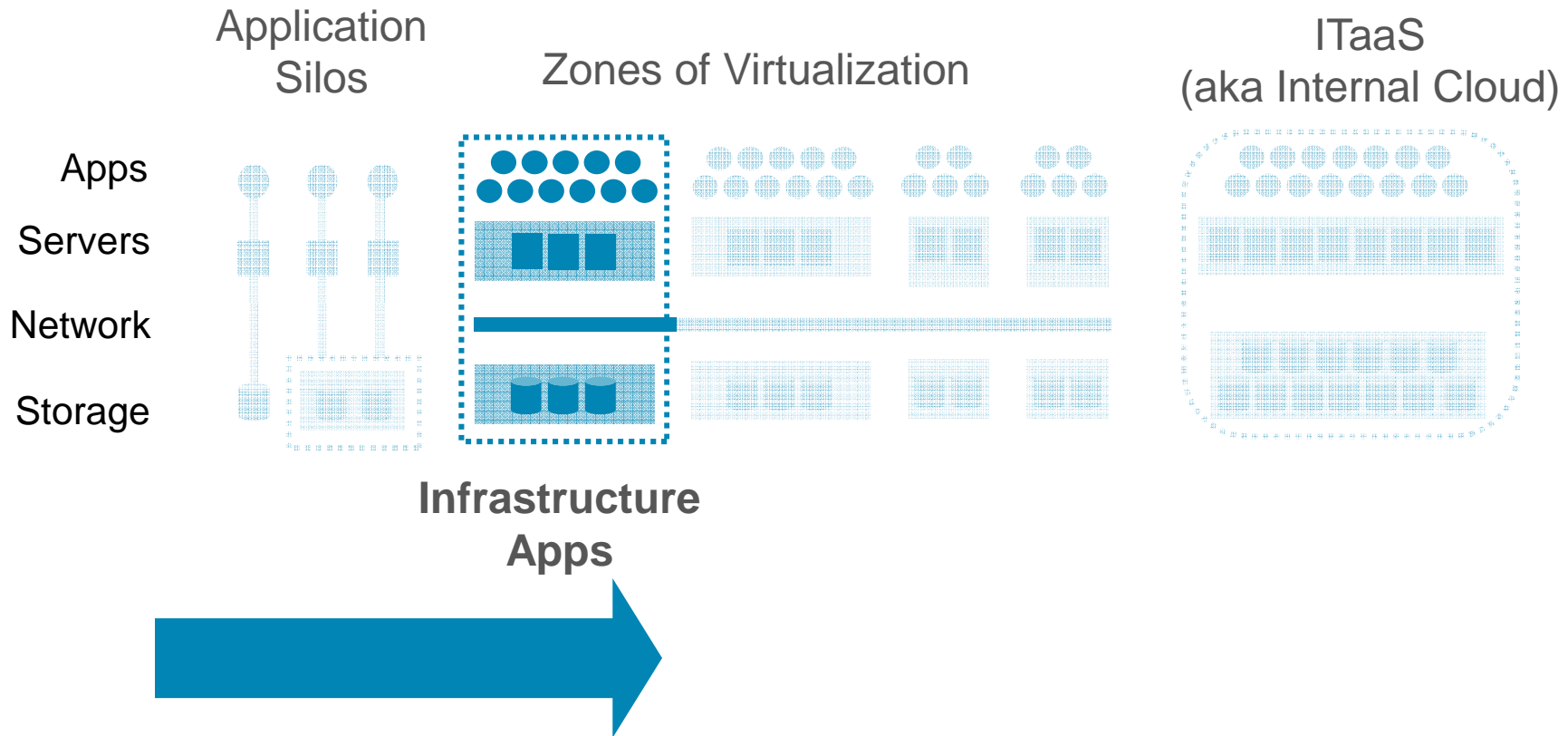


- Chartered to resolve interoperability issues
- Global 24x7 capability
- Process alignment for cooperative support
- Coordinated real-time engagements for customers on supported products

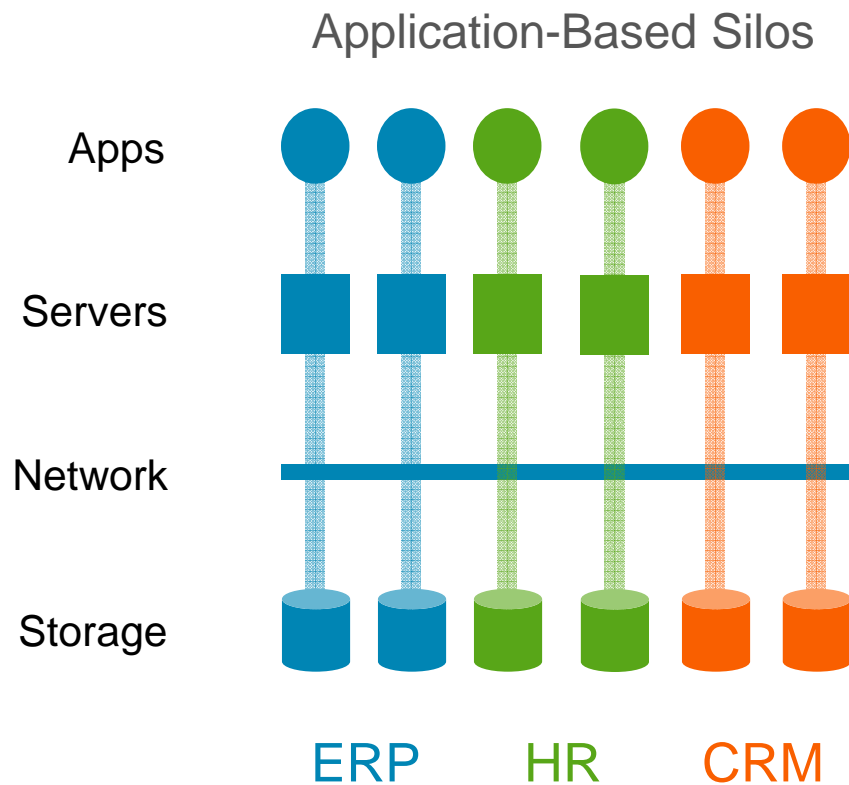
*Valid customer support contracts with all three companies are required.



Virtualization Journey



Challenge



- Dedicated resources:
 - Provide isolation and security
 - Ensure quality of service
- Old silo-based decisions mean
 - Slow response to business needs
 - Inefficient resource utilization
 - Inconsistent availability
 - Result in higher cost

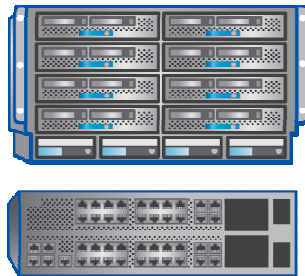


Infrastructure Virtualization

vmware®




CISCO



NetApp™



ERP

HR

CRM

- One virtualization platform
 - Easy scalability for VMs or VM clusters
 - Apply cost savings across your entire data center
- One integrated server platform
 - Delivers unprecedented business agility with server profile mobility
 - Operational efficiency with unified management
- One unified storage
 - Natively supports all protocols
 - Reduces storage capacity

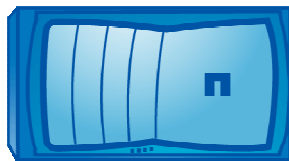
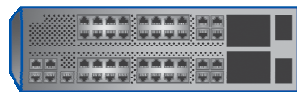
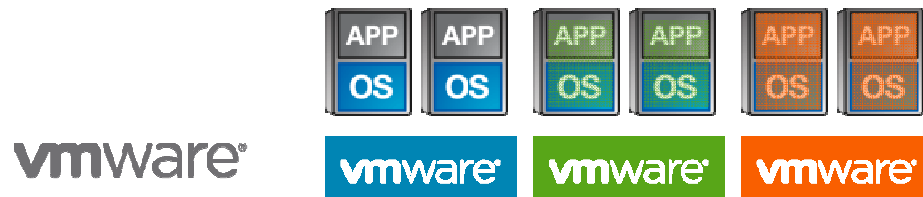

CISCO

 NetApp®

vmware®



Infrastructure Virtualization



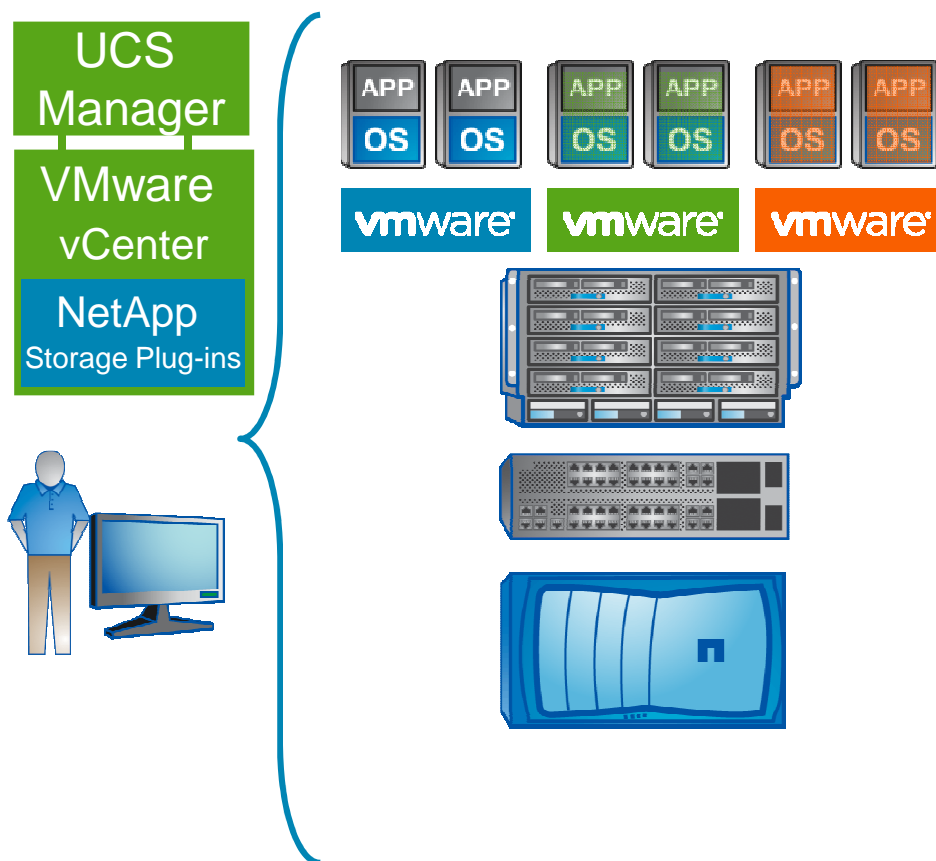
ERP HR CRM

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Cut Data Center Capex and Opex in Half



Centralize and Simplify Management



- VMware® vCenter™
 - Automate workflows
 - Scalable, extensible platform
- Cisco UCS Manager
 - Embedded unified management
 - Integrated with vCenter
- NetApp® Storage Plug-Ins
 - Manage storage from within vCenter
 - Empower server admins to perform storage tasks



Success Story: Infrastructure Consolidation



A UniSource Energy Company

Provides reliable electric service to 400,000 customers; runs one of world's most productive grid-tied solar-powered systems

Challenge: Address exponential server and storage growth and an incomplete DR plan while under tight budget constraints

Solution: Consolidate 300 servers down to 80 using VMware[®] ESX, Cisco[®] Ethernet switches/routers, and NetApp[®] for all storage, including virtualization and DR

Benefits:

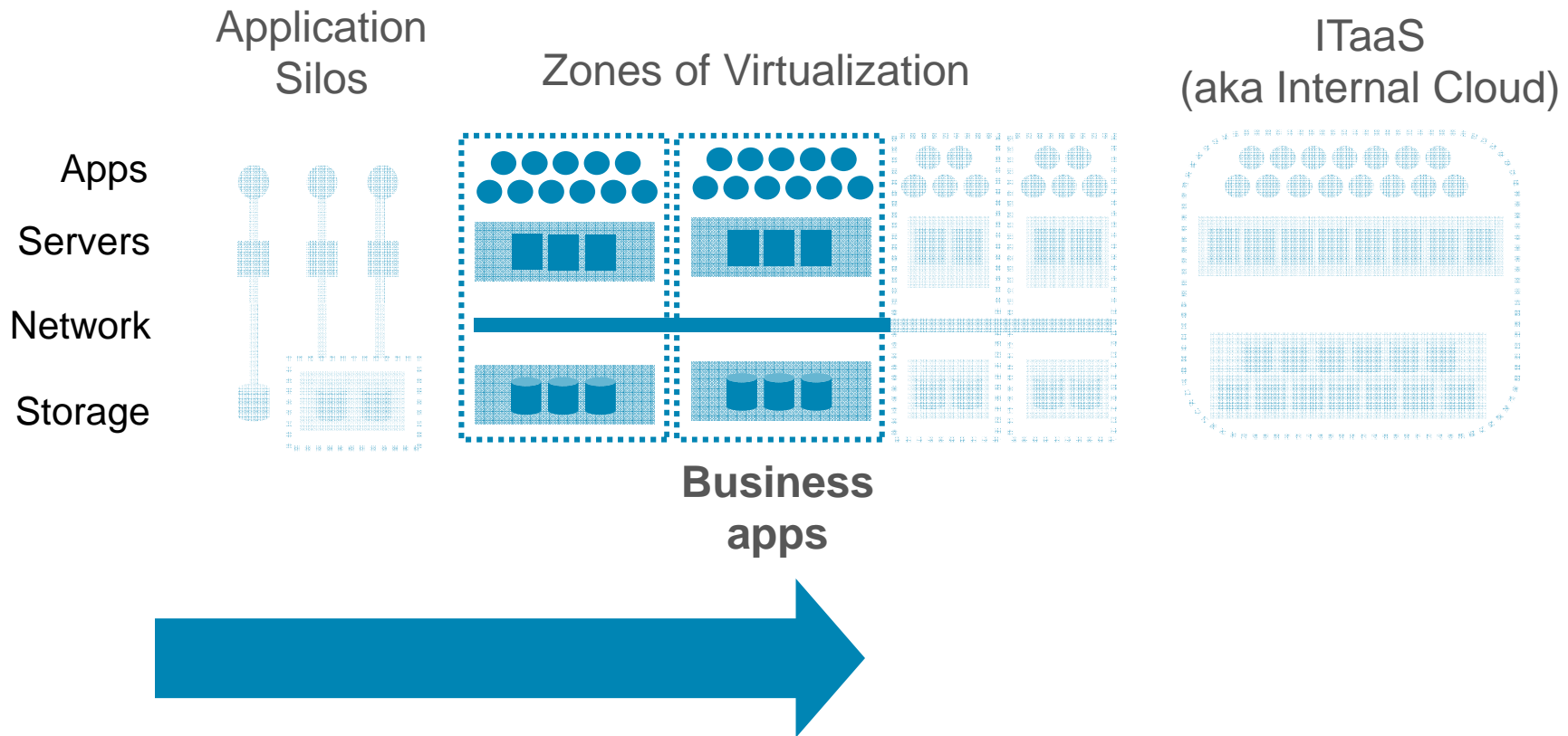
- Saved ~\$3M in server/storage hardware with virtualization
- Quadrupled storage capacity without increasing headcount
- Avoided >\$1.1M in labor costs by simplifying management
- Reduced restore time from 4–48 hours to ~10 minutes

“We’d have 300 physical servers today instead of 80 if not for virtualization. By supporting our virtual infrastructure the NetApp solution is helping us save at least \$2 million over a three- to five-year period.”

– Chris Rima, Supervisor of Infrastructure Systems, Tucson Electric Power



Virtualization Journey



Too Important to Fail

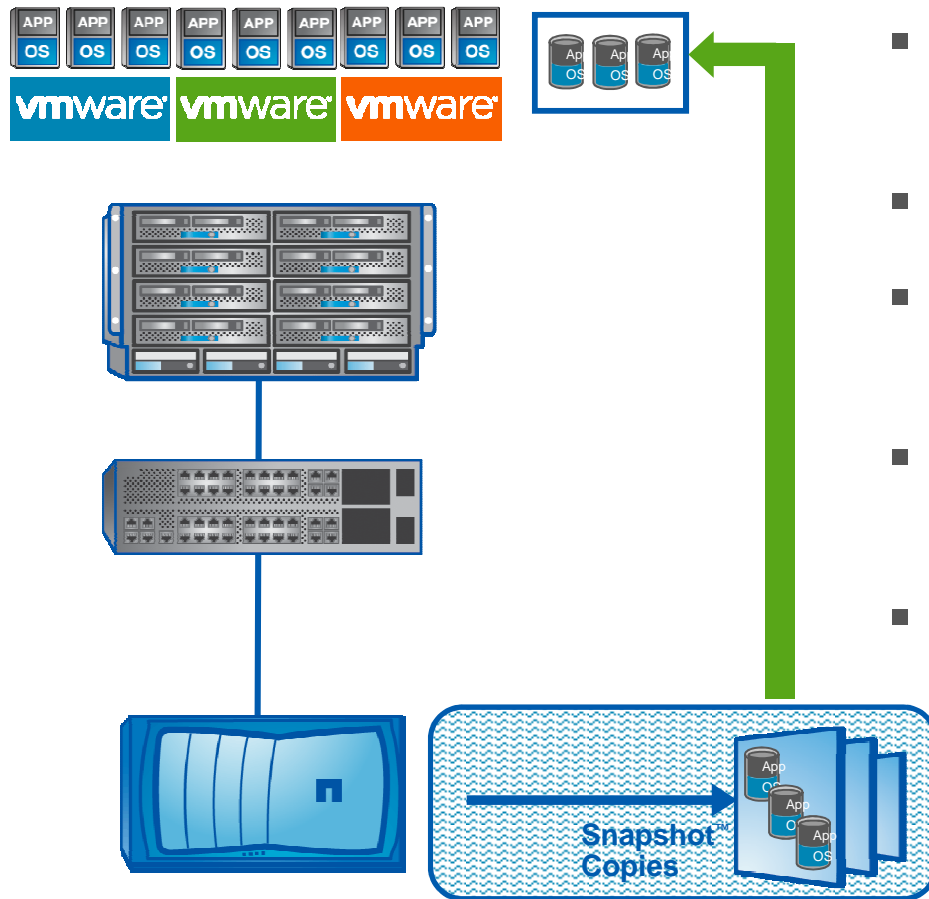


Challenges

- Meet increasingly stringent application SLAs
- Enable consistent application or BU-specific performance, availability, and security
- Quickly recover from any imaginable failure with minimal or zero data loss

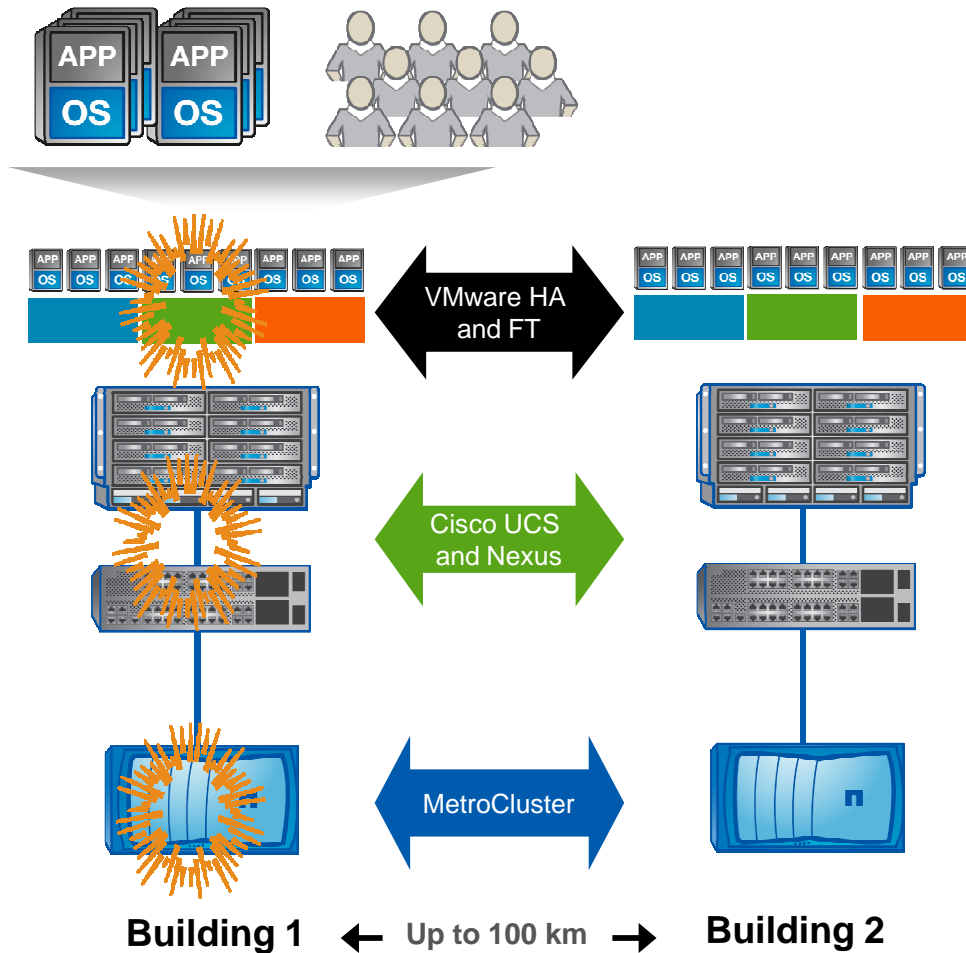


Backups Built for Virtual Environments



- Near-instant backup and recovery with Snapshot copies
- Capacity-efficient backup storage
- Off-load backup operations from host to storage system
- Integration for VM and application-consistent backups
- Replicate and archive to disk

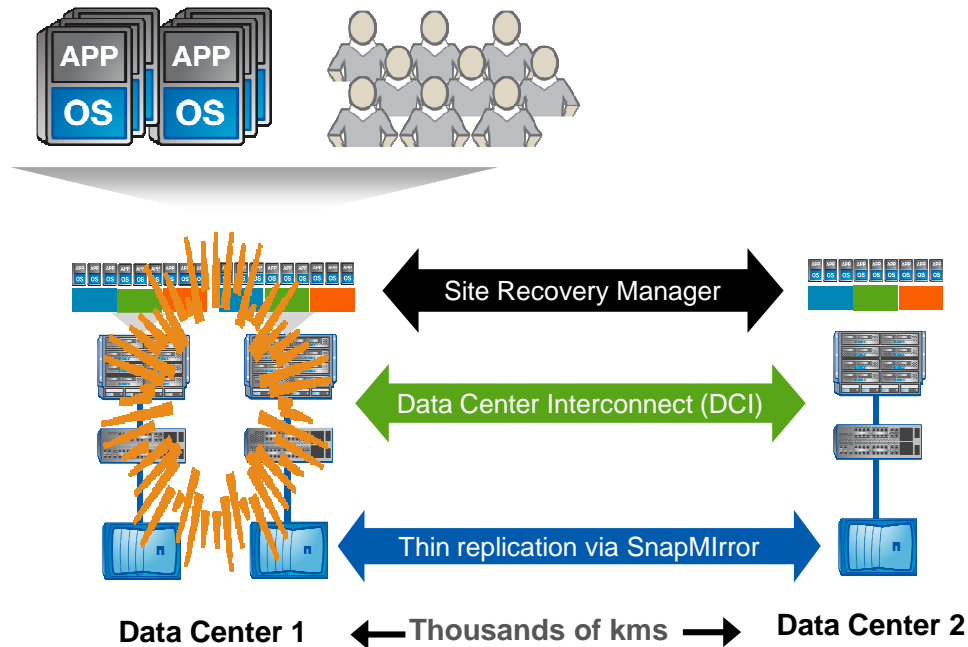
Transparent Failover Eliminates Downtime



- **VMware:**
 - VMware® HA automatically detects server failures, restarts ALL workloads
 - VMware FT enables instant failover between VM instances
- **Cisco:**
 - UCS and Nexus deliver full fabric redundancy
 - Nexus 1000V transparently manages path failover for network
- **NetApp:**
 - Highly redundant array with no single point of failure
 - MetroCluster stretches storage HA up to 100 KM



Recovery from Site Outages in Minutes



- VMware:
 - Site Recovery Manager automates and simplifies DR and DR testing
 - Coordinates failover of server, storage, and network
- Cisco:
 - DCI provides simplified and robust disaster recovery
- NetApp:
 - SnapMirror provides bandwidth-efficient replication
 - SnapMirror integration with SRM enables rapid VM recovery



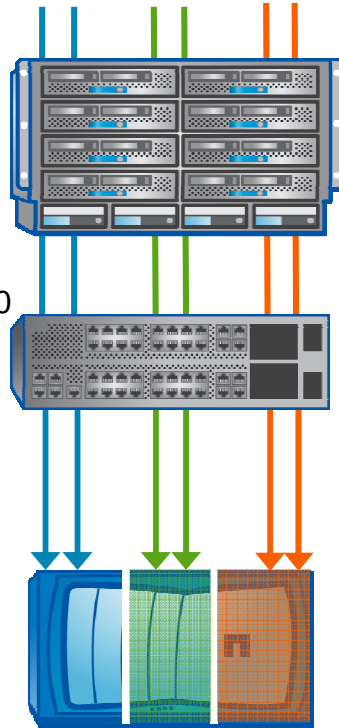
Joint Solution: Secure Multi-Tenancy

vmware®

- vSphere™
- vShield Zones
- vCenter™



- Nexus 1000V
- Nexus 2000/5000/7000
- UCS
- 10GbE



ERP HR CRM



NetApp™

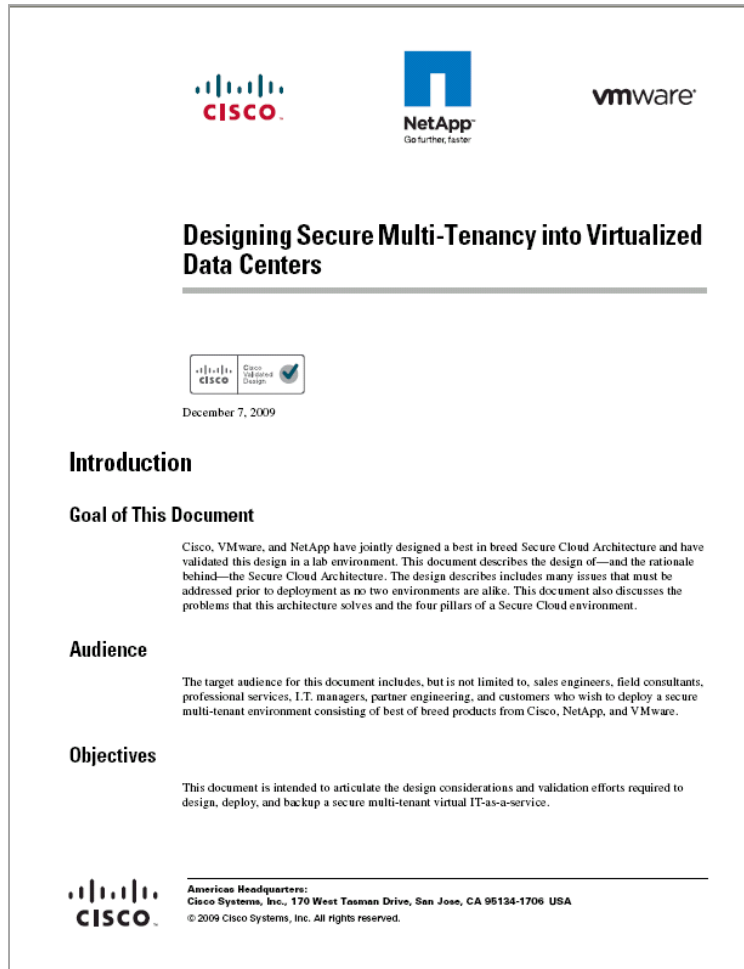
- MultiStore®
- NetApp Data Motion™
- NFS/iSCSI

The industry's only end-to-end secure multi-tenancy solution

- Securely isolate shared virtual server, network, and storage resources
- Consistent QoS at each layer
- Manage each resource pool independently as a dynamic IT asset
- Reduce risk and cost while boosting IT agility
- A Cisco Validated Design



Jointly Validated So You Can Safely Deploy



- The only validated design in the industry
- Designed with end-to-end:
 - Availability
 - Secure Separation
 - Service Assurance
 - Management
- Common methodologies and interoperability
- Tested on-site at NetApp Research Triangle Park, North Carolina, USA

www.imaginevirtuallyanything.com

Success Story: **Secure Multi-Tenancy and DR**



Provides enterprise-level managed services to companies spanning large enterprises to SMBs, offering end-to-end IT management

Challenge: Offer clients DR; affordable, secure storage; and both infrastructure as a service (IaaS) and storage as a service (SaaS)

Solution: Deliver IaaS and SaaS with multi-tenancy on NetApp® FAS3140HA, VMware® vSphere™, and Cisco Nexus 5000 switches

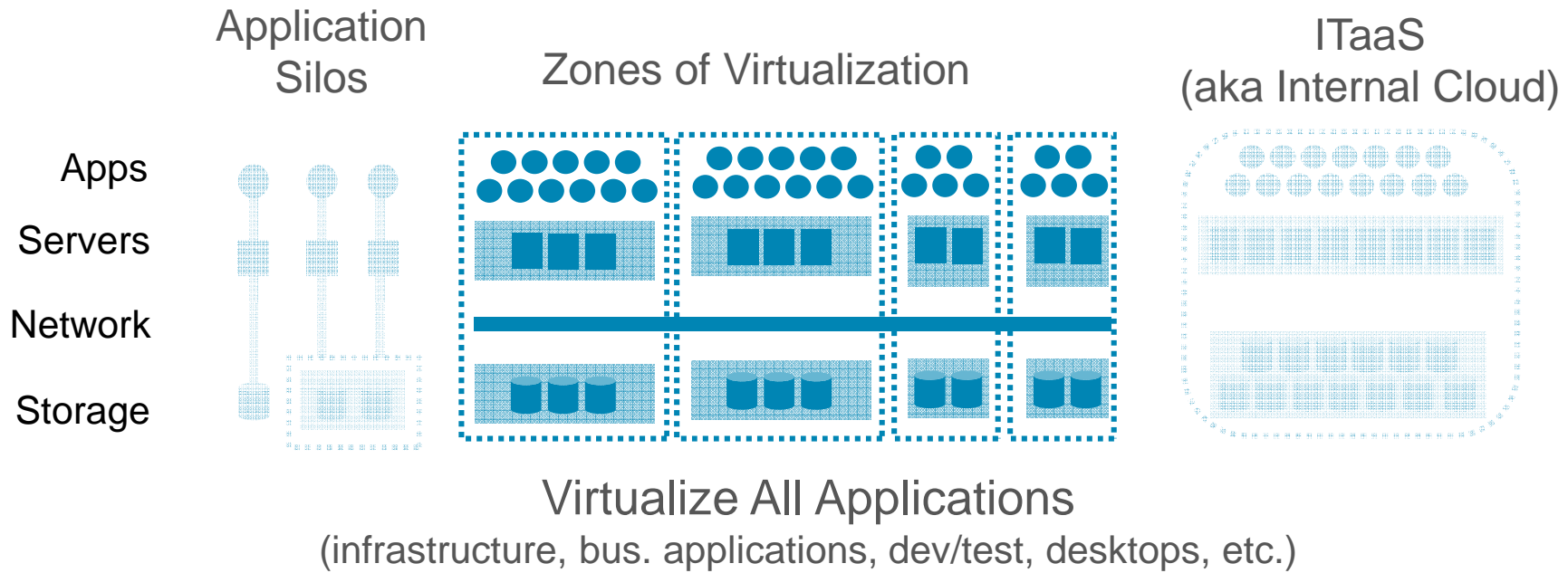
Benefits:

- Reclaimed 67% of storage with virtualized environment
- Reduced backup time for entire data center from 24 hours to 1 hour
- Cut time to restore customer data from 3.5 days to 1 hour

“With NetApp systems, NetApp MultiStore®, and VMware®, we have transformed our data centers into shared yet secure clouds of server, network, and storage resources.” – Jared Wray, Principal, Tier 3



Virtualization Journey



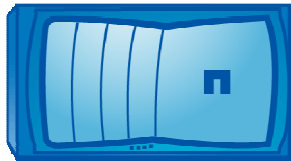
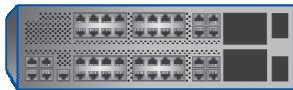
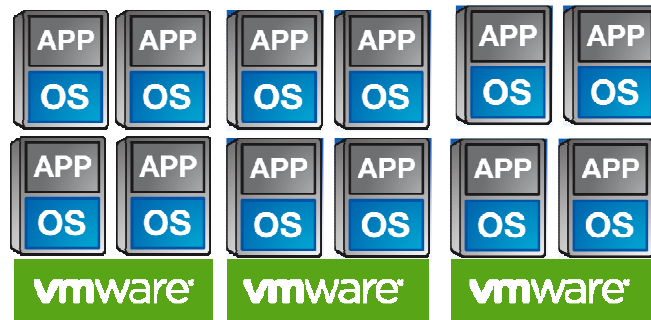
Challenges/Requirements



- Scale environments up and down at a moment's notice
- Nondisruptively move applications to maintain service levels
- Maintain policies, controls, security, and isolation as applications move across resources



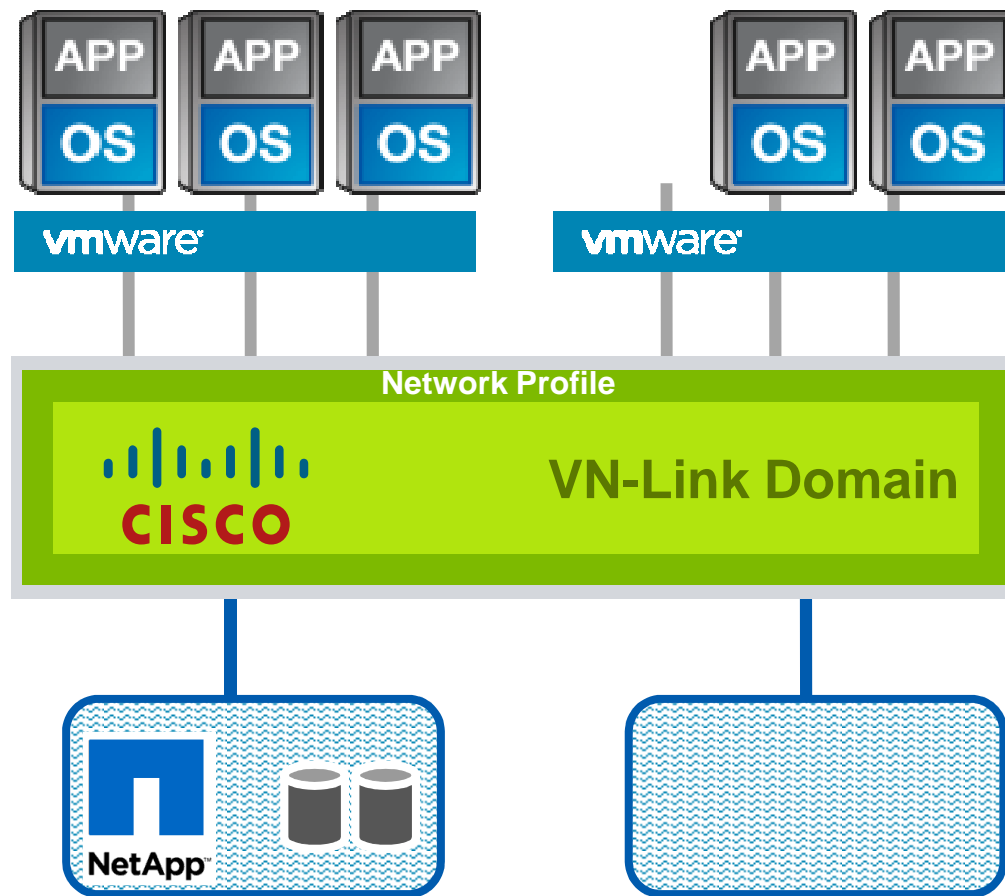
Rapidly Scale Infrastructure



- Rapidly provision servers and storage together
- Clone virtual servers in seconds
- thousands of desktops in minutes
- Dynamically scale infrastructure
 - Quickly create entire application or development environments
 - Repurpose or reallocate capacity as business needs change



Transparent Application Migration



- Cisco:
 - Network virtualization with Cisco VN-Link
 - Network profile of server resides in the switch
- VMware:
 - Transparent VM migration with VMware® VMotion™
 - DRS automates migration
 - Network policies move with VM
- NetApp
 - Storage virtualization
 - Transparent VM migration with VMware Storage VMotion
 - Transparent datastore migration with NetApp® Data Motion™



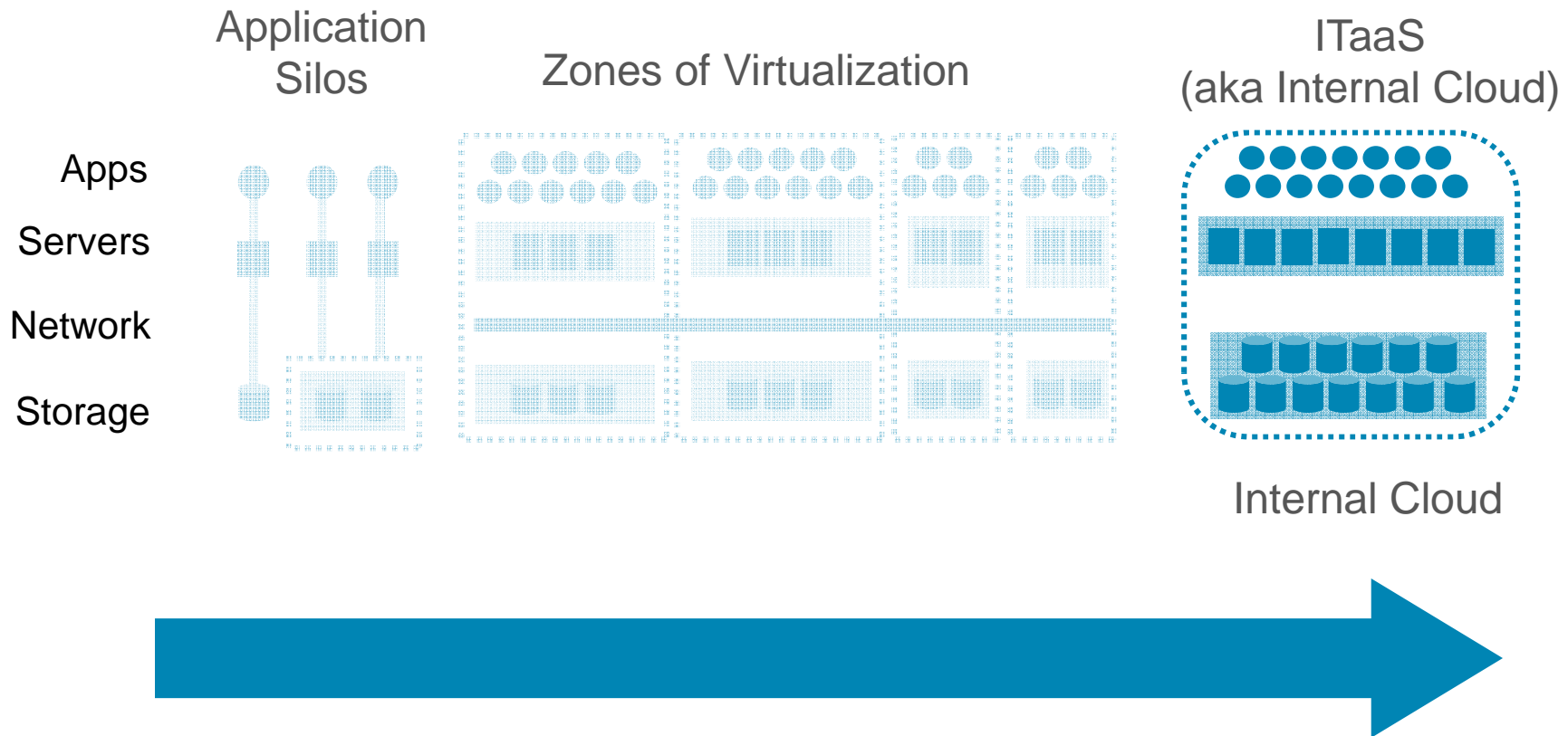
Additional Reference Architectures

Tri-branded Technical Reports

- 2000 Seat Virtual Desktop Design (TR-3770)
 - Optimal VDI design
 - Scales to thousands of mixed desktop seats
- Virtualizing MS Exchange, SQL Server and SharePoint (TR-3785)
 - Comprehensive architecture for mixed workloads – without performance tradeoffs
 - Delivers virtualization cost-efficiencies and advanced backup, HA and DR
- DR of MS Exchange, SQL Server and SharePoint (TR-3822)
 - DR with VMware Site Recovery Manager
 - Validated methods and best practices
 - Flexible RPO times



Virtualization Journey



ITaaS Challenges/Requirements



- Infrastructure metering/chargeback
- Service automation and management
- Self-service
- Instant delivery and capacity elasticity



Success Story: Dynamic Data Center



Delivers IT on demand to 400 global corporations; customers pay for infrastructure and applications as they grow

Challenge: Provide cloud-based services that deliver lower costs, greater flexibility, and higher service levels than internal IT

Solution: Automate and virtualize data center infrastructure by standardizing on VMware®, Cisco®, and NetApp®

Benefits:

- Up to 30% lower overall costs than on-premises IT
- Can now scale servers and storage up or down in 1 day versus 15
- More than doubled administrator productivity
- Recoverability in minutes, not hours

“The big enablers of [T-Systems] Dynamic Services are VMware on the server side and NetApp on the storage side. NetApp technology contributes to each of our competitive advantages: lower cost, greater flexibility, and higher SLAs.”

– Dr. Stefan Bucher, Global Delivery Manager, T-Systems



Success Story: End-to-End Virtualization



A fast-growing medical examination and review (IME) company; building a national network via expansion, mergers, and acquisitions

Challenge: Implement cloud infrastructure to address tripling growth, deliver application availability, and slash IT costs

Solution: Fully virtualize local apps and desktops of acquired companies using VMware® vSphere™ /View on Cisco UCS with NetApp® storage

Benefits:

- Incorporate new acquisitions in days instead of months
- Avoided >\$1M IT staffing costs and saved ~\$500K in capex/opex
- Support for more than 2,000 employees with 3 racks/4 FTEs versus 15 racks/25 FTEs

“The Cisco/NetApp/VMware infrastructure is a game-changer. We can run our entire business on an integrated and verified platform that we deployed in our data center in just a matter of hours. This infrastructure is where everybody’s going to be in 2012, but we’re already here.”

– Brian Denton, CTO, ExamWorks



Success Story: Terremark Worldwide



A leading global provider of IT infrastructure services delivered on the industry's most robust and advanced operations platform.

- **Business Challenge**
 - Provide robust, secure cloud-based disaster recovery (DR) services that are cost effective for customers and for Terremark
- **Solution**
 - UCS Servers, Cisco switches
 - Deliver cloud-based DR solutions built on a NetApp® storage infrastructure including NetApp FAS6040 and NetApp FAS3020 storage systems running Data ONTAP®
- **Benefits**
 - Reduced data storage capacity needed for virtual machines by at least 50%
 - Reduced administrative time and costs two-to threefold
 - Reduced customer RPO and RTO from days to hours or minutes

“NetApp, Cisco, and VMware provide some of the best technologies the industry has to offer. Together, they offer unique synergies that greatly simplify the deployment and management of multi-tenant cloud infrastructures like Terremark’s.”

– Mike Fink, Director of Cloud DR Solutions, Terremark



Results you Can Measure

Typical Gains from a Virtualized Dynamic Data Center

Area	Dynamic Data Center
Infrastructure Efficiency	Compute: Consolidate servers 10:1 Storage: Use 50% less storage Network: 90% fewer cables and ports
Power and cooling	25%-50% less
Management	Manage 10x-20x more per FTE
Provisioning new infrastructure	Minutes
Backup and Recovery, Disaster Recovery	Minutes
TCO	25% to 50% savings



Realize Virtually Anything

Respond faster to changing business requirements

Reduce your overall data center costs by up to 50%

Three Industry Leaders One Architecture

