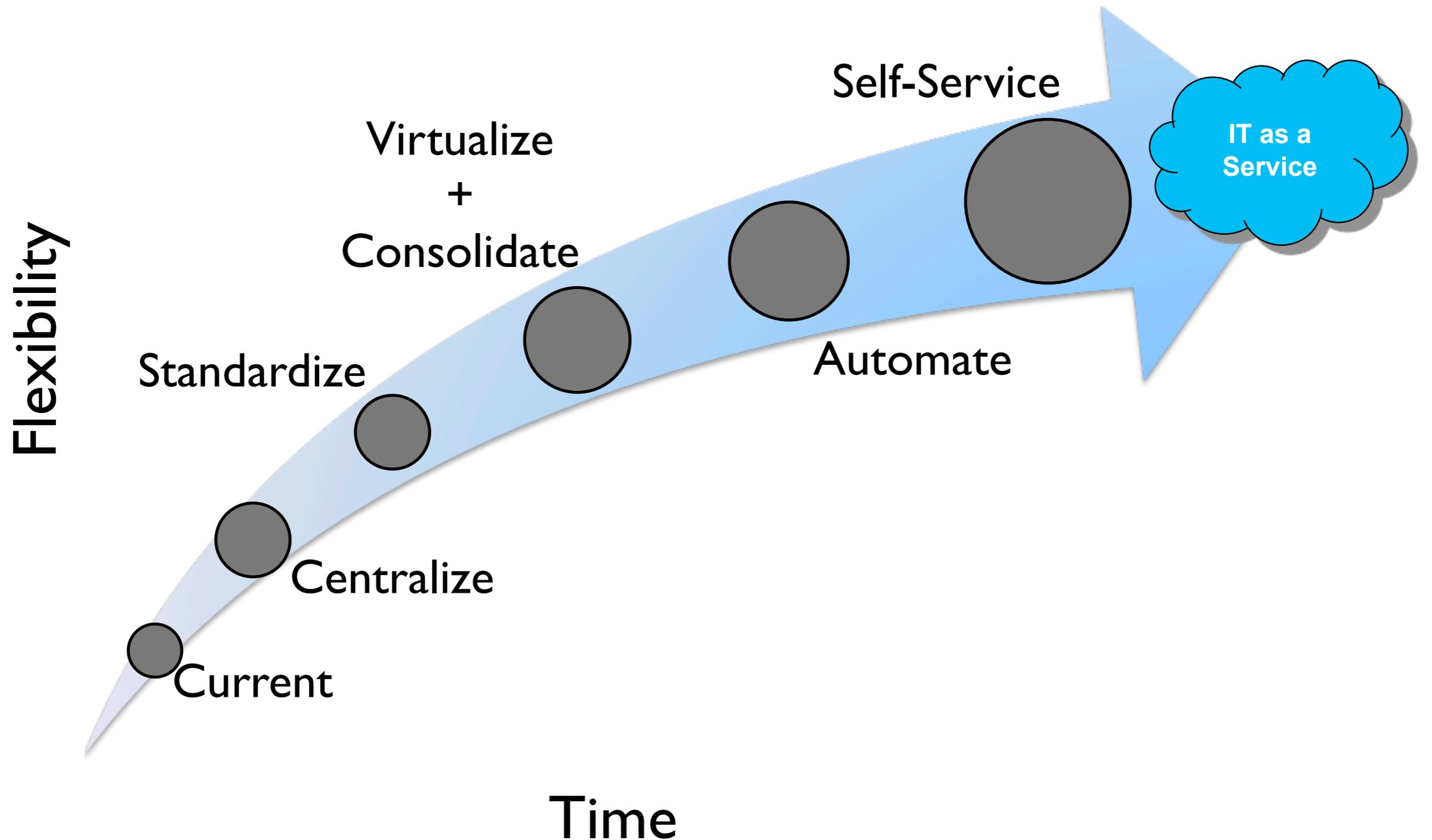


# Next Generation Data Center



# ITaaS

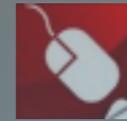
Unified Network



CRM

Applications

SaaS



Virtualized Server Platform



PaaS



Unified and Virtualized  
Storage Grid



STaaS

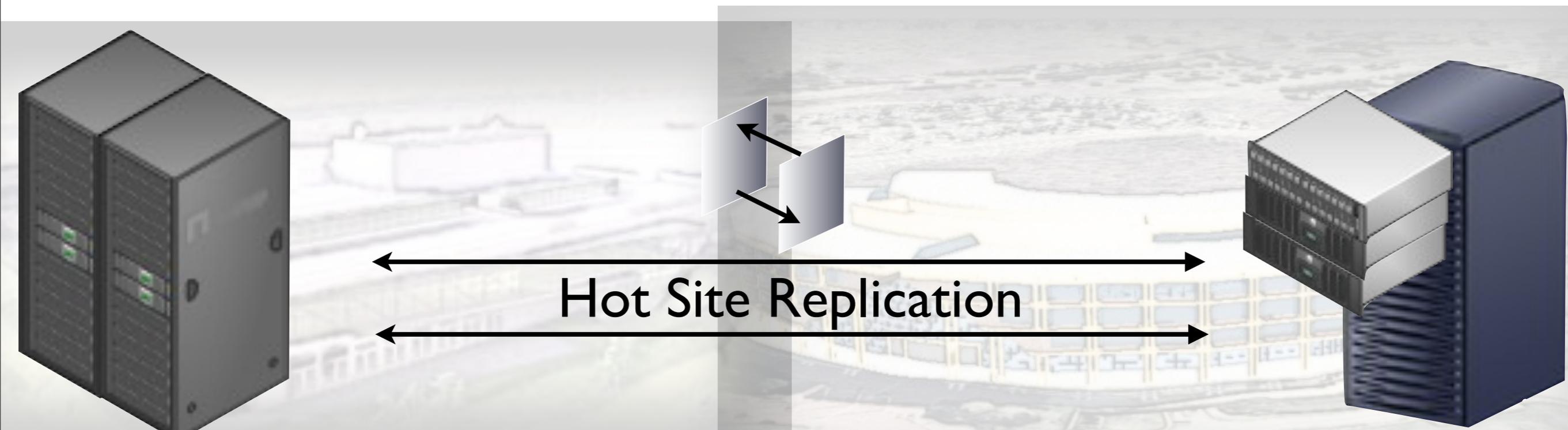


Service Level

STaaS

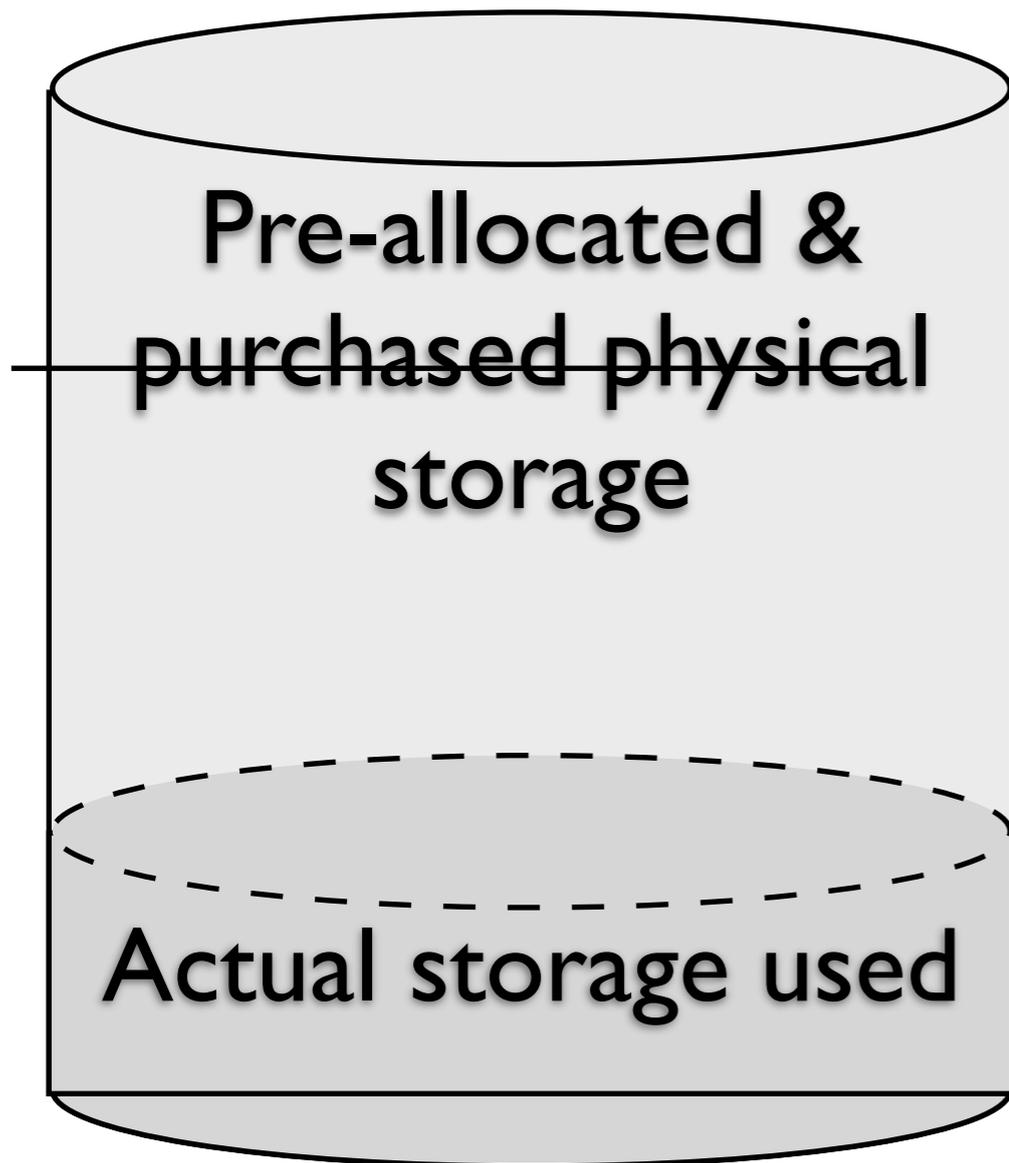
# Unified Storage Grid

- ✓ Single MultiProtocol OS
- ✓ Flexible Provisioning
- ✓ De-duplication
- ✓ Replication
- ✓ FlexClone
- ✓ Investment Protection
- ✓ Performance On-Demand
- ✓ Capacity On-Demand



# Flexible Provisioning

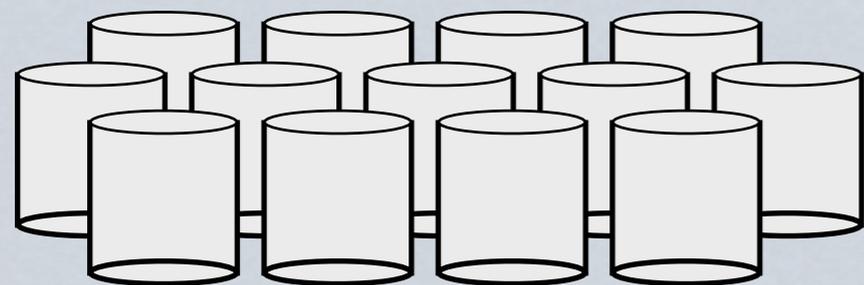
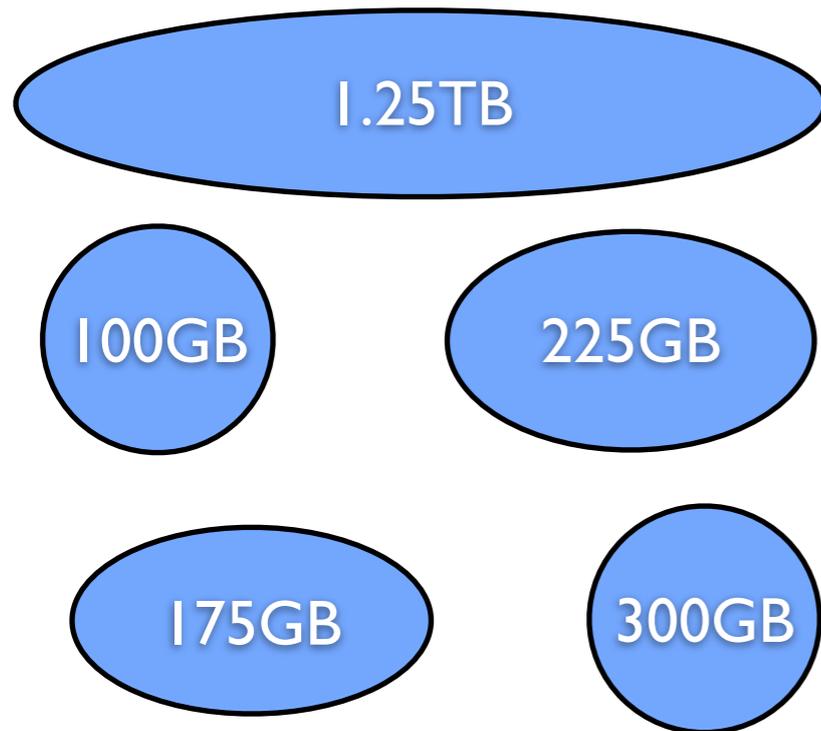
# Challenges of Traditional Storage Provisioning



- low utilization (25%-40%)
- spinning (but unused) disk consumes power, rack space and cooling resources
- over-allocation to compensate for lack of predictability
- “stranded” storage resources
- endangers storage team’s SLAs
- lost revenue in capacity based licensing costs

# Flexible Provisioning

Flexible Volumes = 2TB



Physical Storage = 1TB

Example

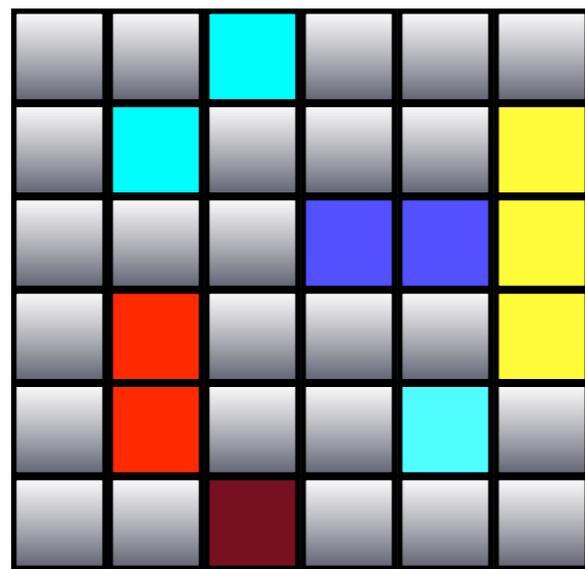
- improved storage utilization
- fast capacity re-distribution
- Simplified provisioning
- easy, automated space reclamation
- reduced capital and operating expenses
- improved SLAs and time-to-deployment

# De-duplication

# Inside De-Duplication

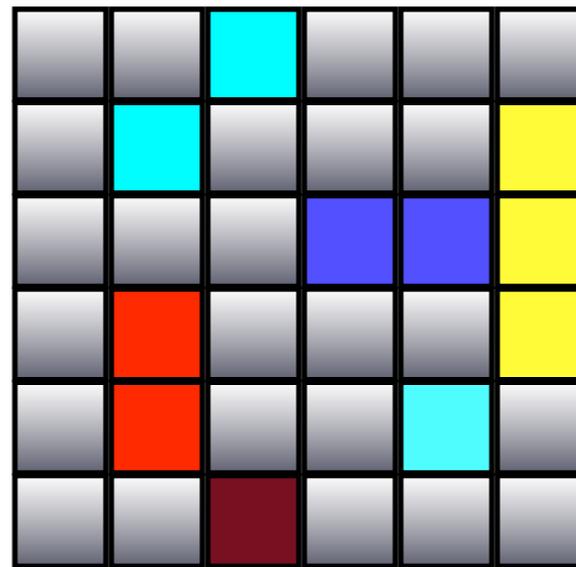
- Removes duplicate “blocks” on the storage system
- Any interface/protocol: NFS, CIFS, iSCSI, FC, NDMP
- Application and Content Agnostic
- Read Performance Overhead: 0%  
Write Performance Overhead: 0-7%

# De-duplication



Original Volume Data

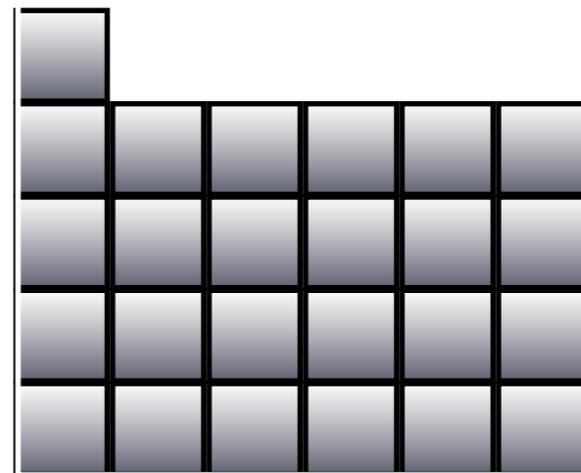
# De-duplication



Duplicates Identified  
& Removed

# Benefits of De-duplication

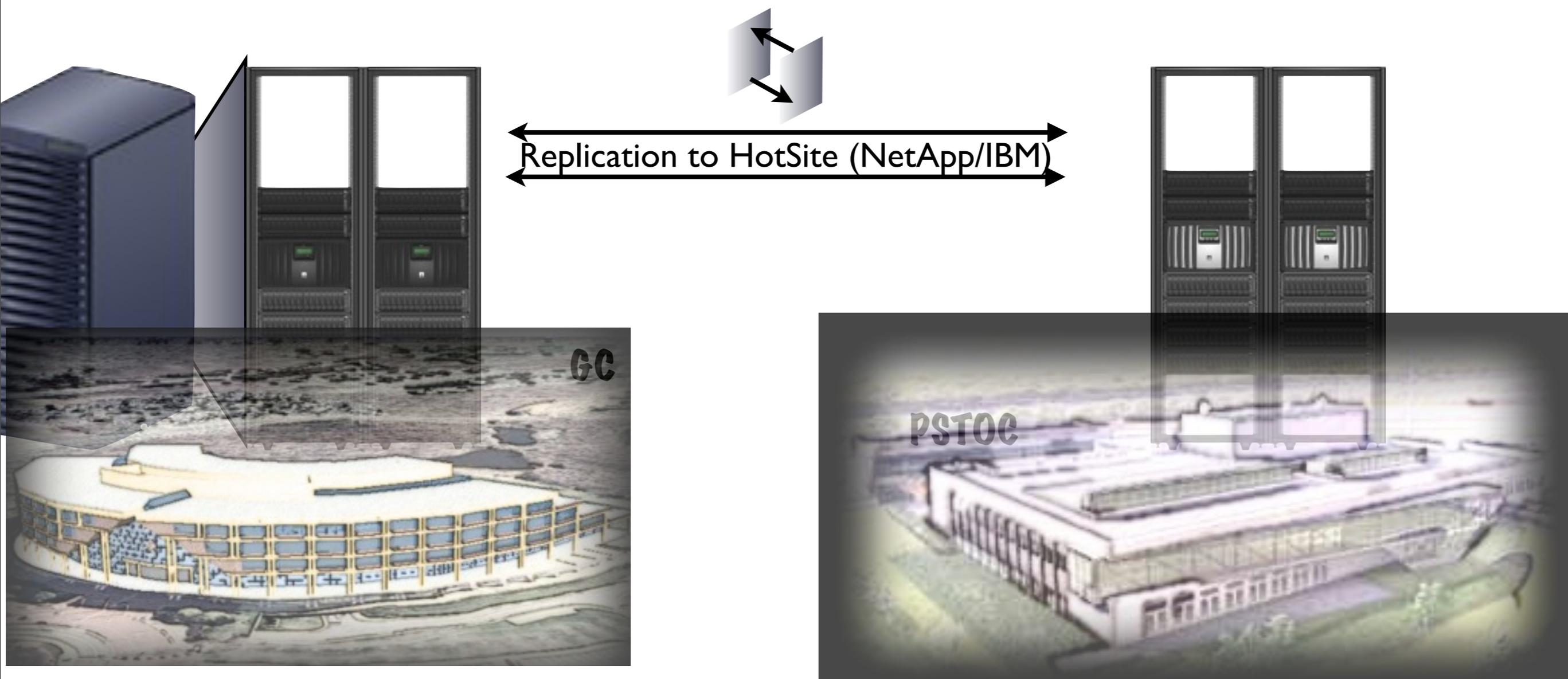
- Space efficiencies
- Reduced replication
- Reduce storage costs
- Less Power & Cooling = **Green IT**



Actual Storage Consumed

# HotSite Replication

- ✓ Block-based Enterprise Storage Replication
- ✓ Application-agnostic
- ✓ Convert Hot Site assets into usable assets
- ✓ Utilize County's existing investments
- ✓ Enables County's current & future visions



# FlexClones

# FlexClones - Gain Deployment Cycles

SQL/Oracle DB

FlexClone  
SQL/Oracle DB

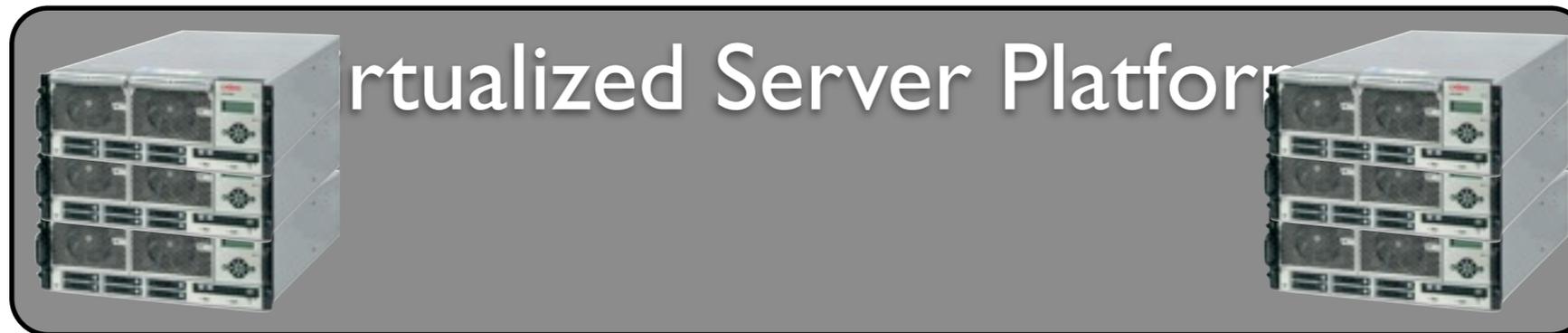
FlexClone  
SQL/Oracle DB

- takes only seconds to create
- no storage overhead at creation
- maintain own snapshots, clones
- automate test/dev copies
- faster provisioning
- reduced footprint, increased cost savings

# Savings by the numbers

# Savings by the numbers

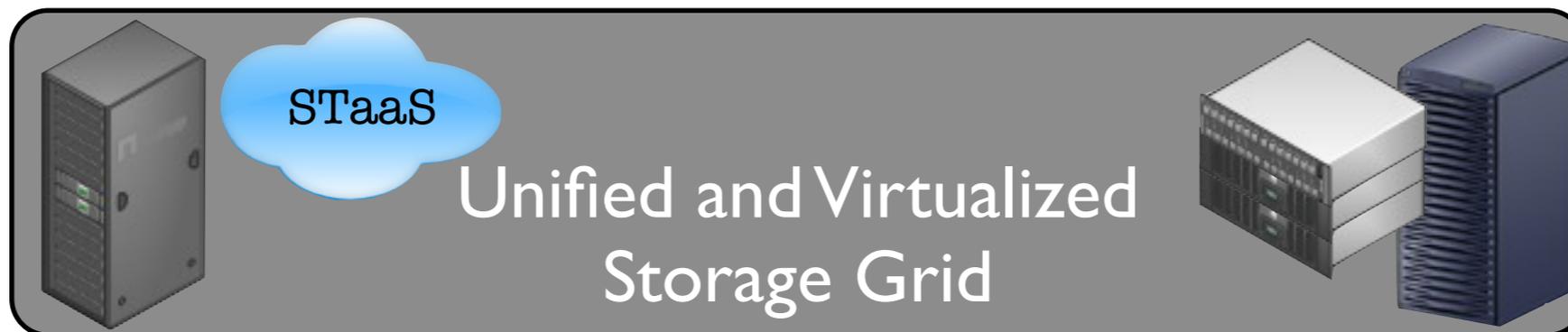
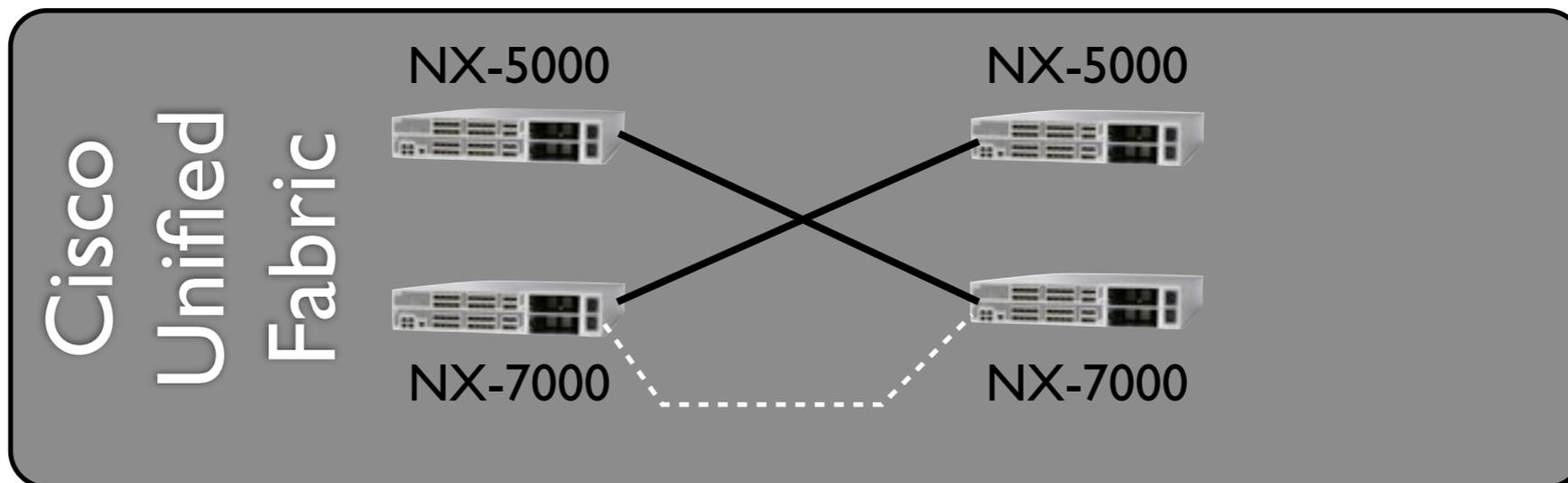
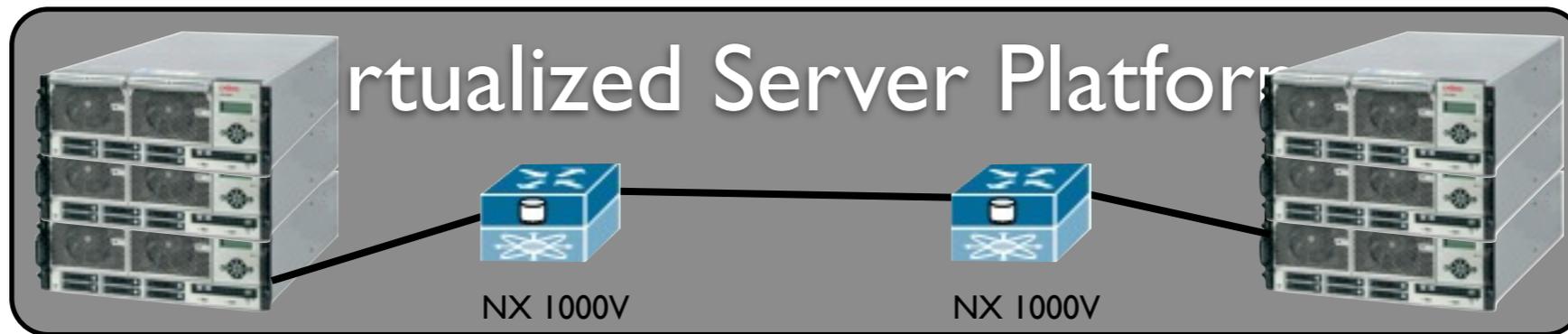
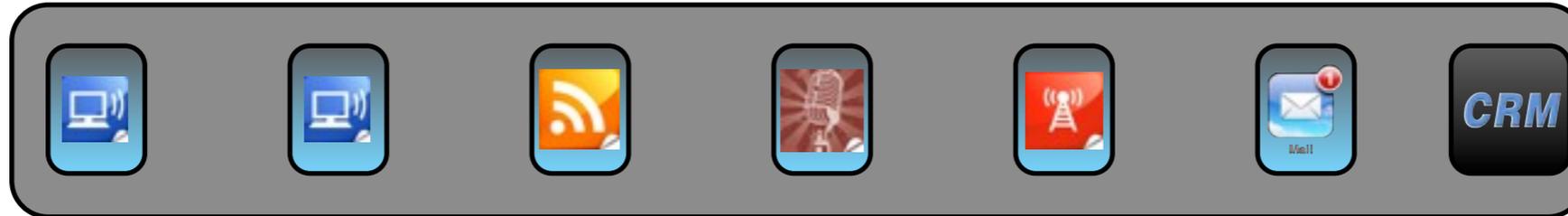
- 35-91% of Deduplication Savings
- Reclaim over 30 Ethernet/FC Ports
- Save 60,000 KiloWatts per year!
- Potential cost avoidance of over \$600K due to consolidation efforts



- Consolidate ESX Servers & Reduce costs
- Create Storage savings using NetApp De-duplication
- Implement Fully Automated failover to Hot Site
- Enable Tiered Storage for Dev/Pre-Prod environments
- Scale up/down environments as needed using FlexClones
- Manage RPO and RTO using Snapshots

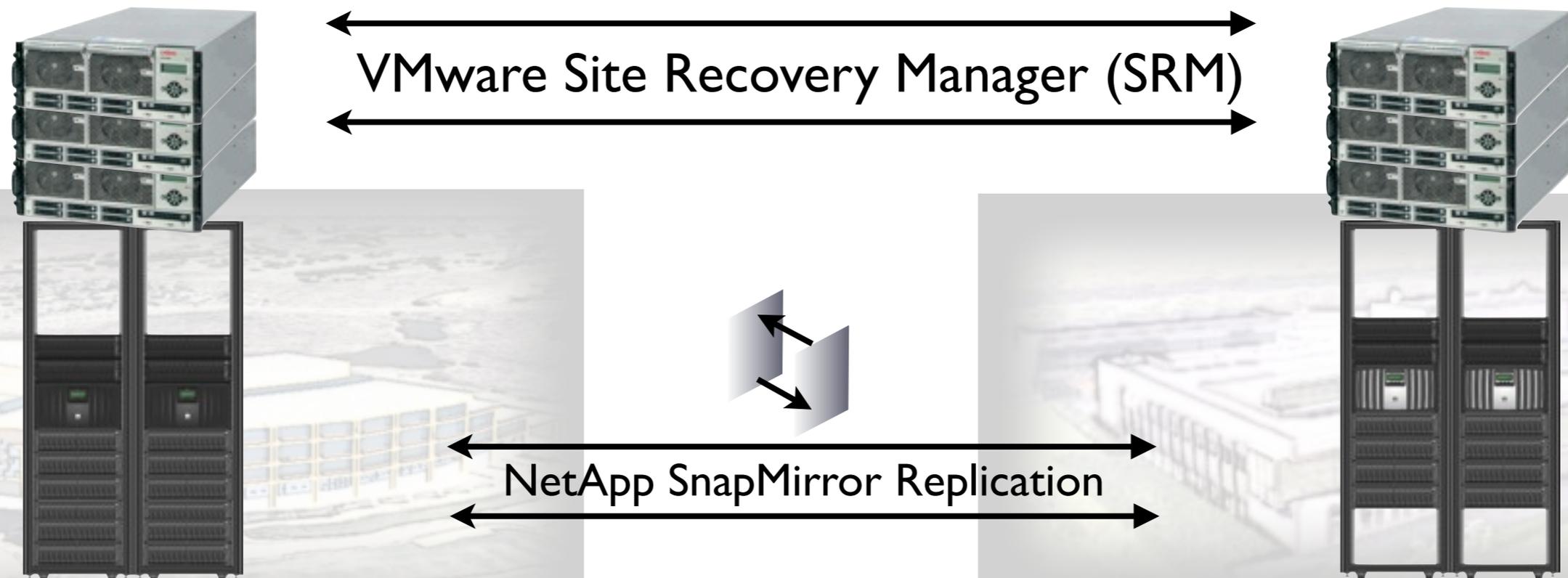
PaaS

# Modernized VI Environment



# Benefits

- ✓ Consolidate hardware and software - **Reduce Costs**
- ✓ Deduplicate Primary Storage - **Create Savings**
- ✓ **Implement Hot Site** Solution using vSphere SRM
- ✓ Enable Fast and Efficient System Provisioning
- ✓ Enables reliable and effective Disaster Recovery Plans



# Virtualized Server Platform

## Before

- 101+ ESX Servers and associated licenses
- 520+ Virtual Machines deployed
- 200+ Network Ports
- 70+ TB of allocated SAN Storage

PaaS

# Virtualized Server Platform

# After

- Over **75%** Deduplication Savings
- Reclaim over **\$0.5m** in storage costs *alone!*
- Reclaim over **240** Ethernet/FC Ports
- Potential Cost Avoidance: **163,000 KiloWatts/yr!**
- Potential Cost Avoidance: **\$1.7m & counting!**



# Fairfax County Internal Cloud

