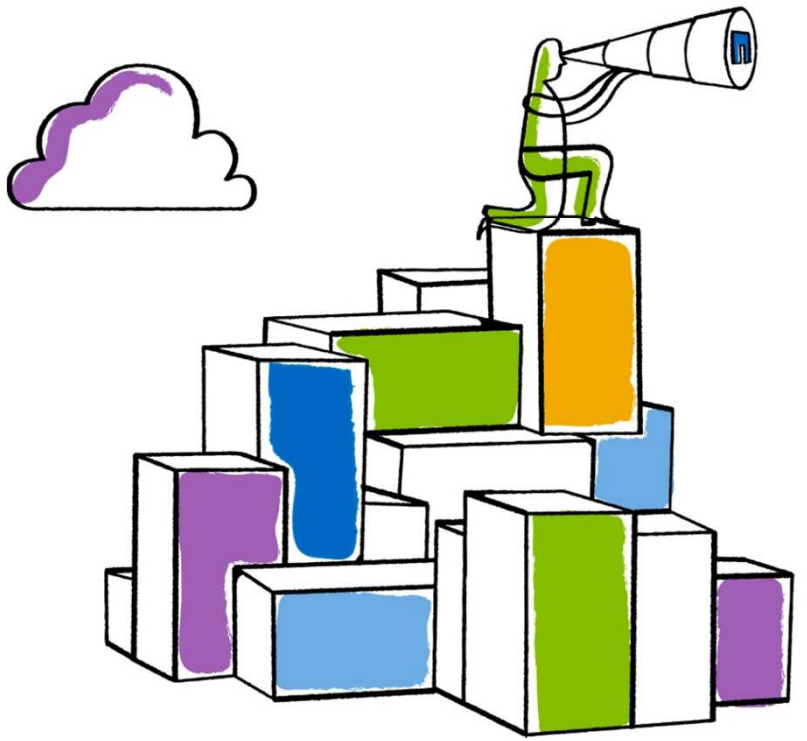
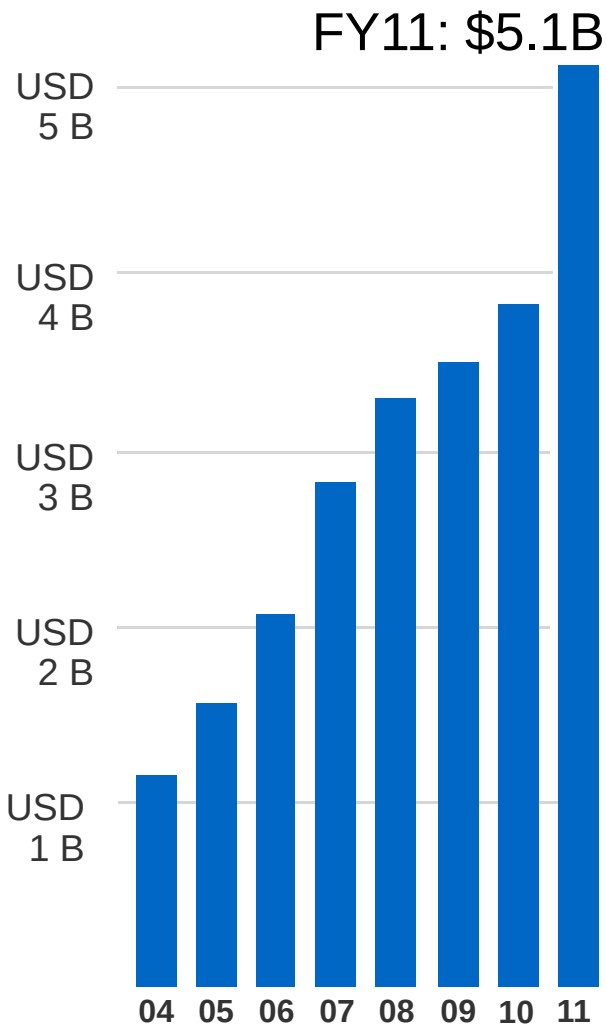
NetApp®

Go further, faster®

NetApp & Citrix Solutions



Global Leadership



- NetApp is a Global Data & Storage Management Company known for innovative technologies that drive customer success
- NetApp is the storage behind many familiar brands
- You are already a NetApp customer if:
  - You have a Yahoo email account
  - You fly Southwest Airlines
  - You use the iTunes Store
- NTAP = publically held since 1995

NetApp: Story

1993 – NAS appliance

1996 – Multiprotocol appliance

1998 – Content delivery appliance

2001 – Nearline storage appliance

2002 – Unified SAN/NAS appliance

2003 – iSCSI Storage System

2004 – Commercial RAID-DP

2005 – Flexible virtualized storage

2006 – Thin provisioning e virtual cloning

2007 – Deduplication

2008 – FCoE storage system

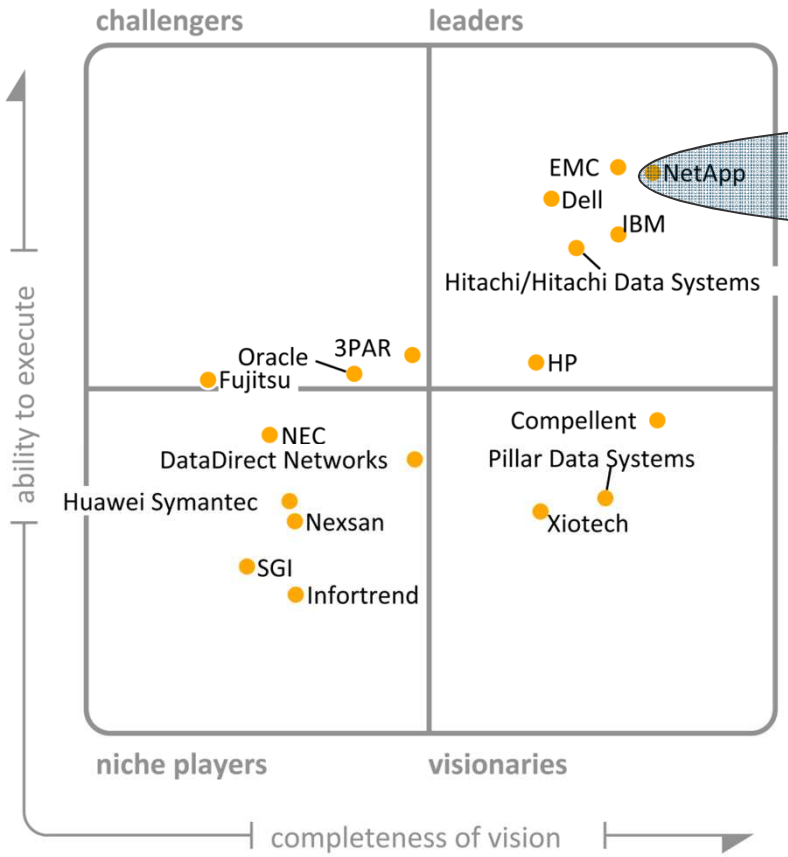
2009 – Storage Efficiency

2010 – Cloud Computing

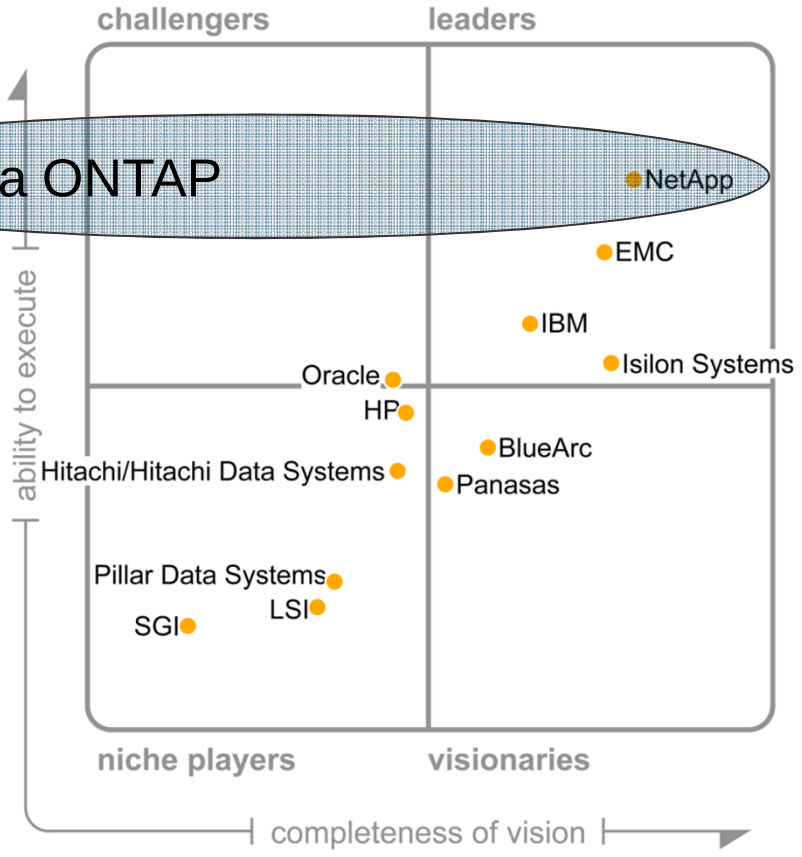
2011 – Cluster Mode

Gartner Magic Quadrant, Industry Leading SAN and NAS Solutions

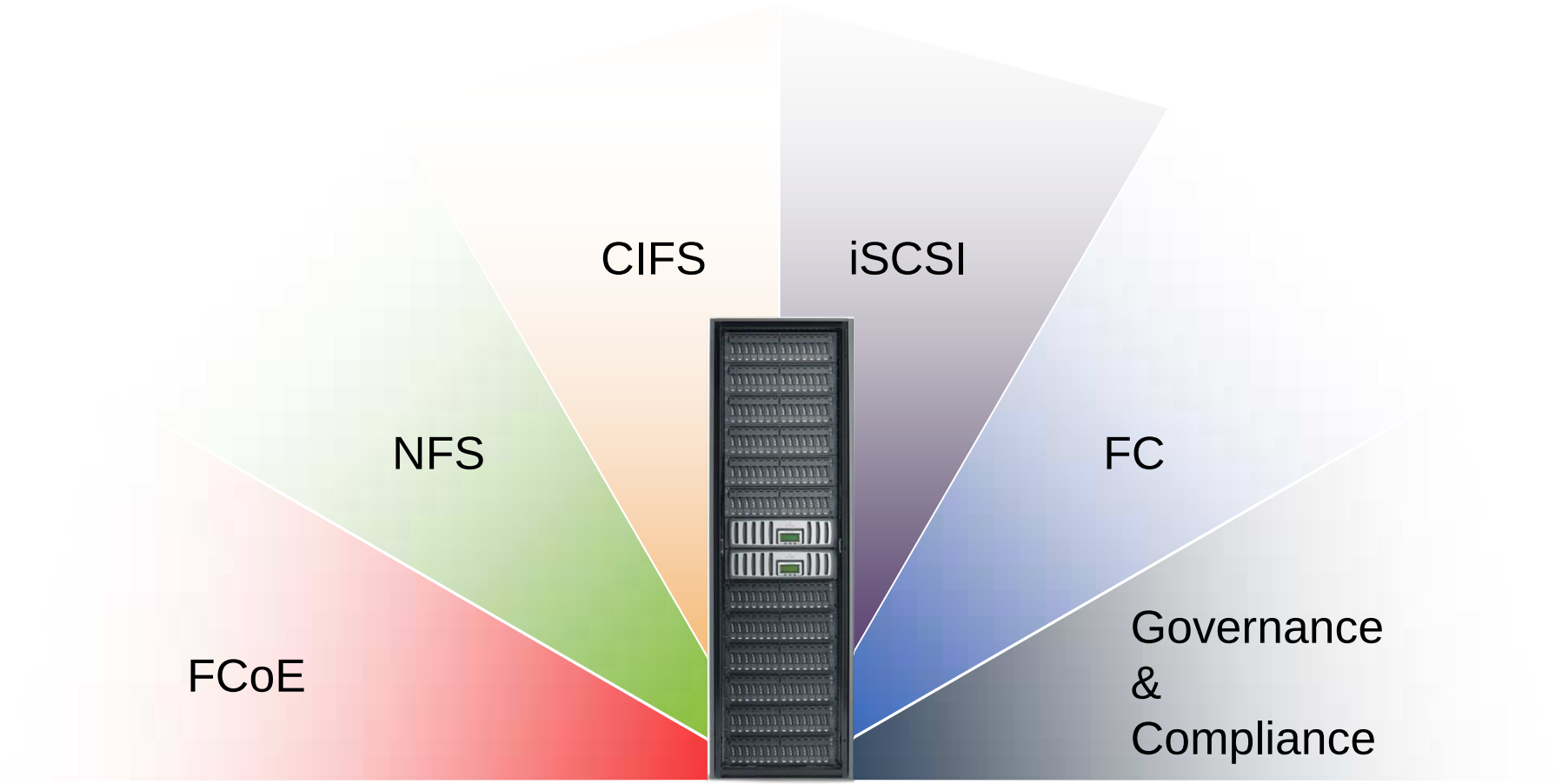
Midrange Enterprise Disk Arrays



Midrange & High End NAS



Unified Storage Simplifies Data Management



Anywhere, any time, any application, from virtually any platform

Netapp: i Benefici dell'Unified Storage

Approccio Classico

- High-End SAN
- Low/Midrange SAN
- NAS
- Backup
- Virtualization
- Disaster Recovery
- Archive & Compliance

Hardware Differetente
Software Differente
Persone Differenti
Processi Differenti

NetApp®

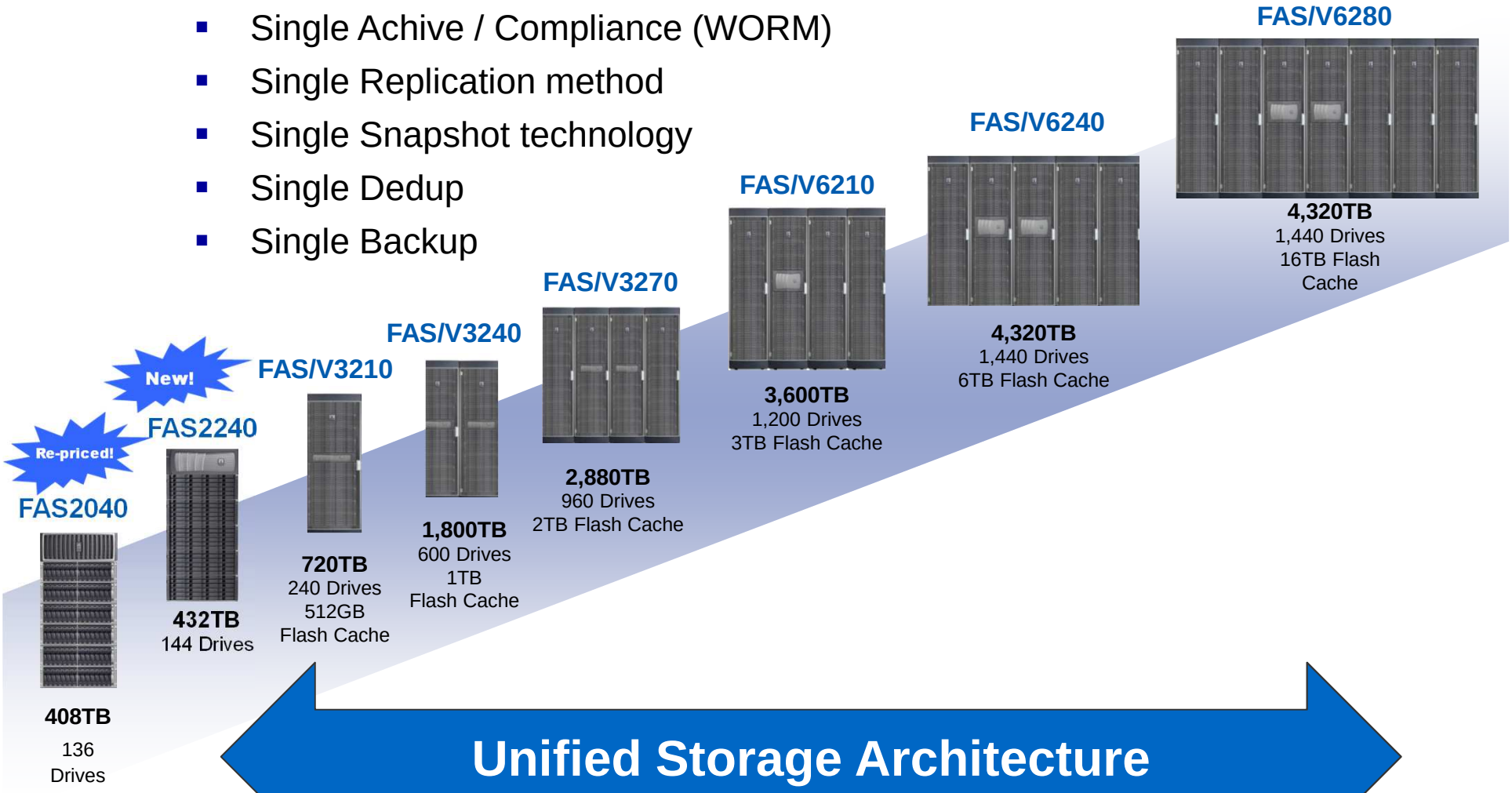
FAS family
Data ONTAP®

Flessibilità
Afficienza
Agilità
Valore

Stesso hardware
Stesso software
Stesse Persone
Stessi Processi

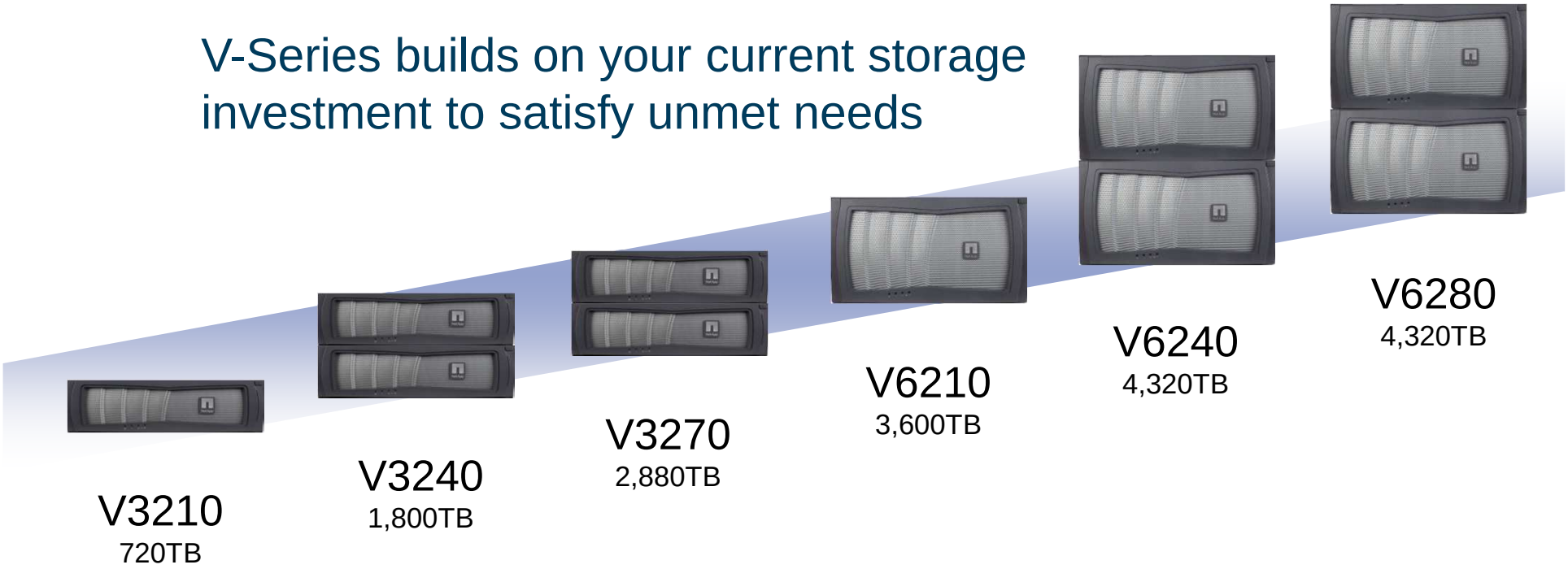
FAS Family of Enterprise Storage Systems

- Single Storage Architecture with FCoE, FC SAN, NAS, and iSCSI connectivity
- Single code base (Data Ontap)
- Single Achive / Compliance (WORM)
- Single Replication method
- Single Snapshot technology
- Single Dedup
- Single Backup



V-Series Open Storage Controllers V6200 and V3200 Models

V-Series builds on your current storage investment to satisfy unmet needs



Supporting Disk Arrays from Major Storage Vendors

NetApp Disk Solutions

DS4243

- 24 drives, 4U
- 3gbit SAS connect
- 15K RPM SAS or 7200 RPM SATA drives

DS2246

- 24 drives, 2U
- 6gbit SAS connect
- 10K RPM SAS drives

DS4243 – now supports 100GB SSD drives!

Flash Cache (PAM II)

2nd Generation Intelligent Caching Modules

Revolutionary Way to Optimize Performance:

- Significantly reduces read latency
- Intelligently places the most in-demand data into high-speed flash tier without the need for file-stubbing or external management appliances.
- Add Flash Cache, not more spindles

Product Details:

- Installs into PCI-E expansion slots
- Enterprise class SLC NAND flash memory
- Available in 256GB, 512GB and 1 TB sizes
- Up to 16TB cache per storage system

Software Efficiencies

RAID 6 Protection (RAID-DP®)

Protects against double disk failure with no performance penalty.

Thin Provisioning (FlexVol®)

Create flexible volumes that appear to be a certain size but are really a much smaller pool.

Thin Replication (SnapVault®/SnapMirror®)

Make data copies for disaster recovery and backup using a minimal amount of space.

Snapshot™ Copies

Point-in-time copies that write only changed blocks. No performance penalty.

Virtual Copies (FlexClone®)

Near-zero space, instant “virtual” copies. Only subsequent changes in cloned data set get stored.

Deduplication

Removes data redundancies in primary and secondary storage.

Compression

Reduces footprint of primary and secondary storage.

Highly Efficient Protection with RAID-DP™

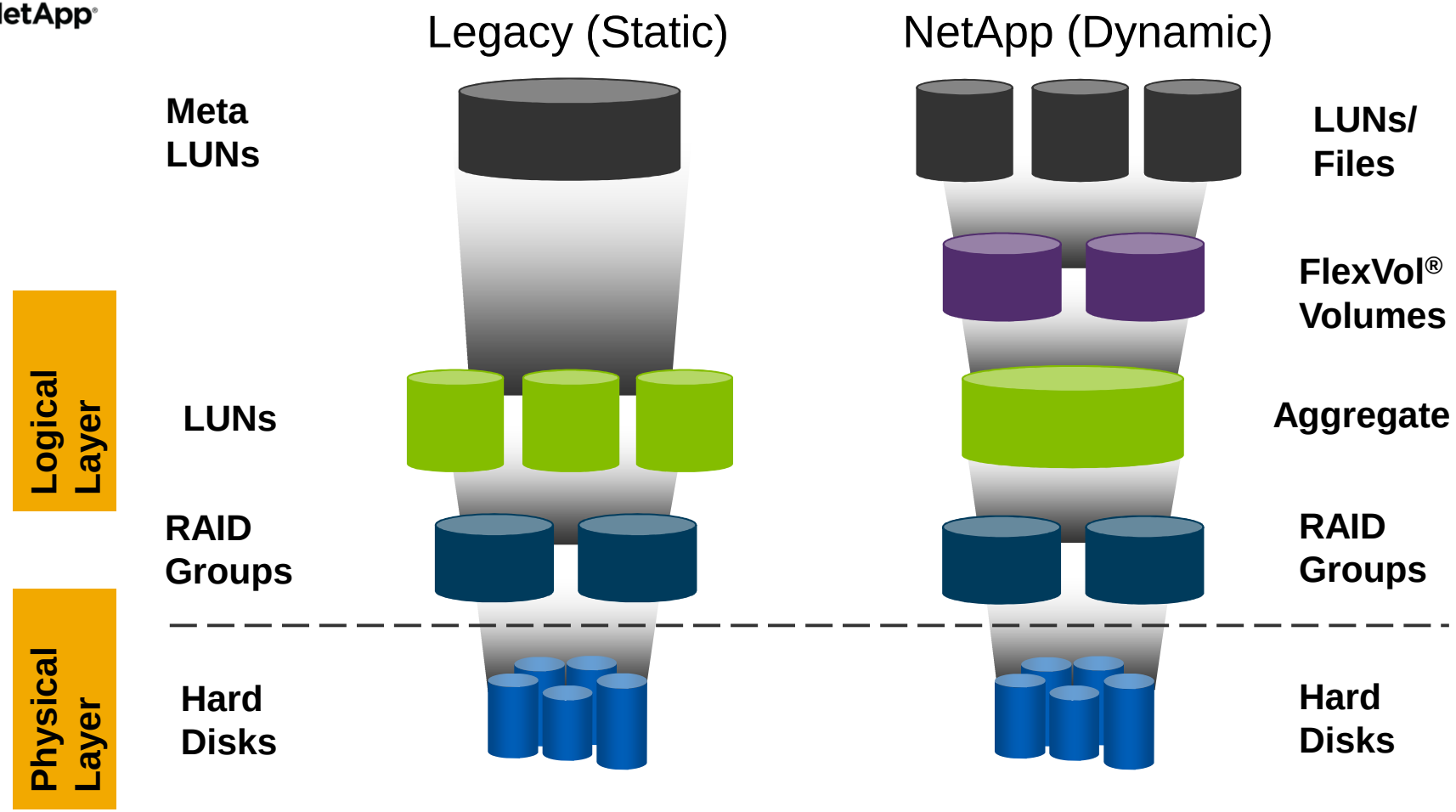
- Much greater usable space vs. typical RAID mirror
- Superior fault tolerance - much better than RAID5, better than RAID10
- Recover from simultaneous failure of 2 drives
- RAID 6 protection with no performance penalty
- Mission critical data protection for your virtualized environments

Typical RAID Protection
50% Efficiency

RAID-DP® Protection
86% Efficiency

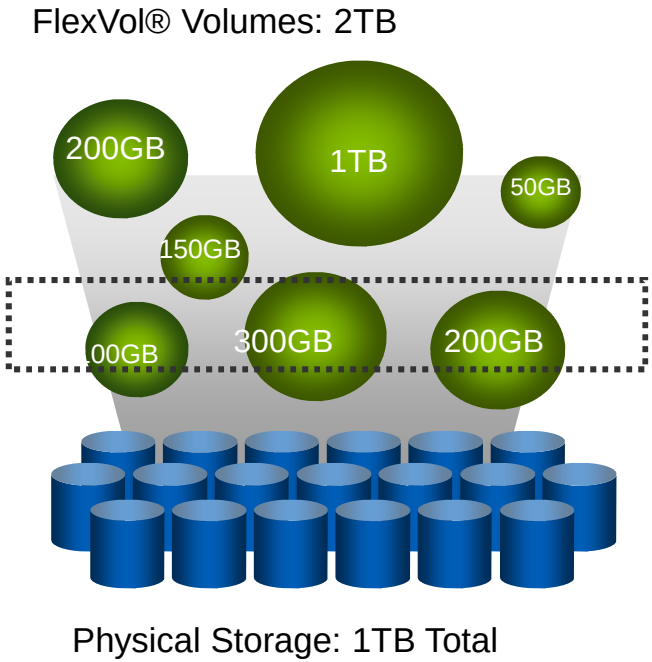
Storage Virtualization Layers

Comparison



- Legacy or write-in-place storage architectures rely on “static” virtualization, where data volumes are preallocated or statically mapped.
- NetApp® architecture leverages a “dynamic” virtualization engine—data volumes are dynamically mapped to physical space.

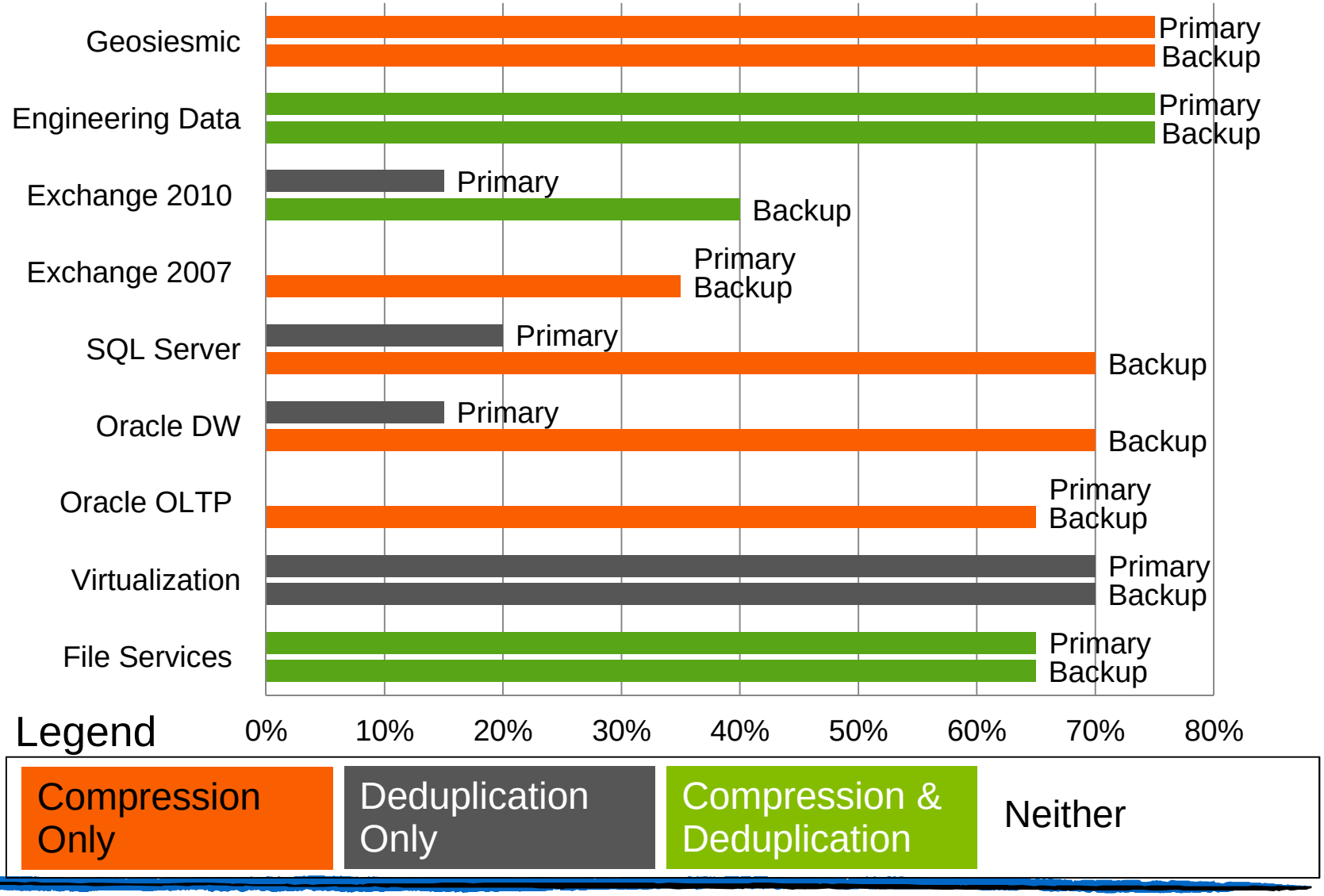
FlexVol Thin Provisioning



- Over 90% of NetApp® systems utilize thin provisioning today
- Enables users to create flexible volumes that virtually allocate storage with a fraction of the physical space
- Streamlines capacity provisioning
- Average increase in utilization of 33% and often over 100%

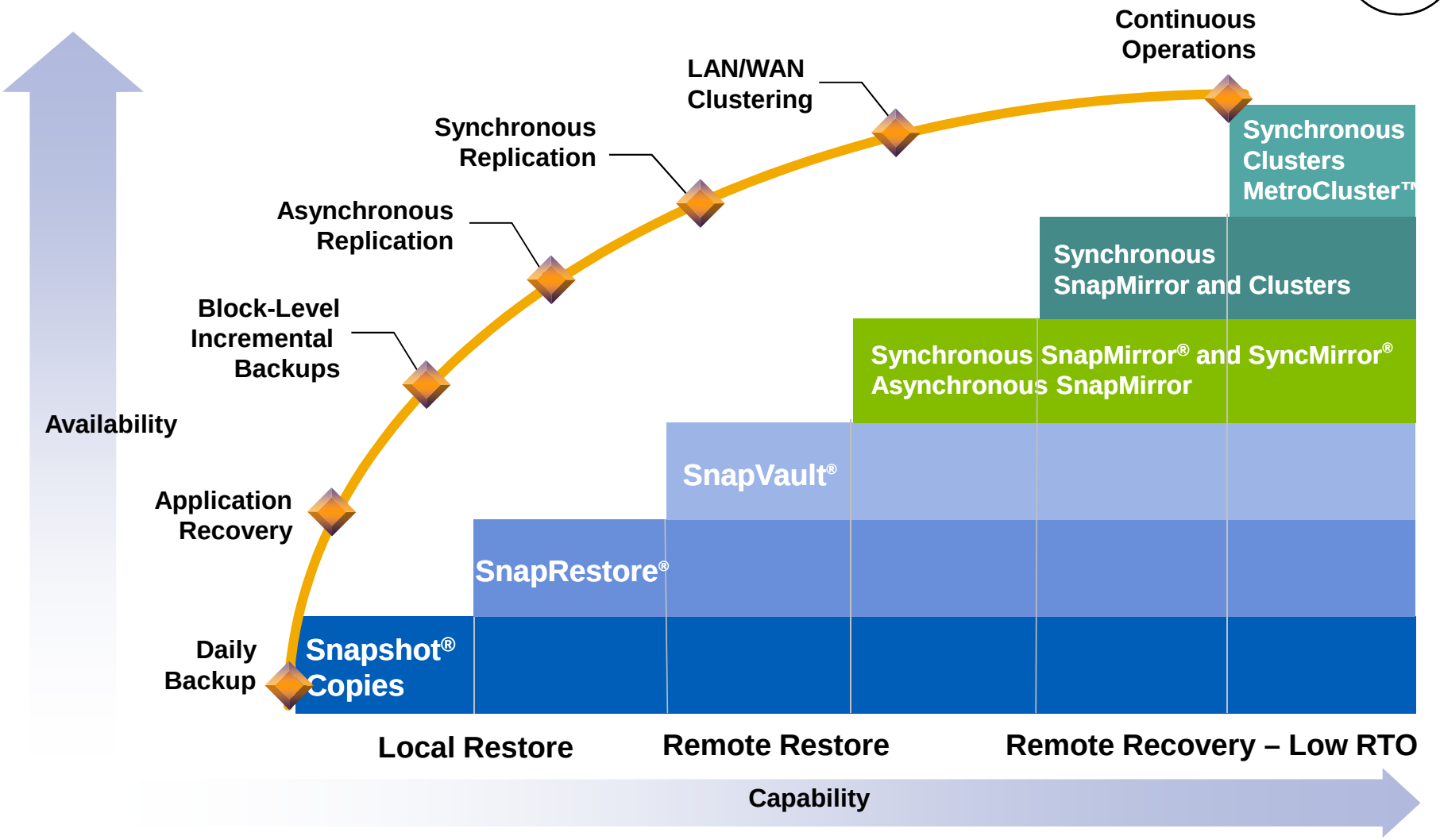
NetApp Deduplication and Data Compression

Sample Use Cases and Space Savings

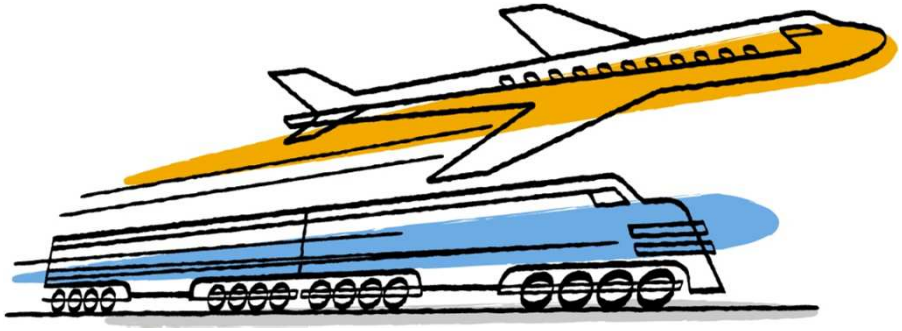


NetApp Data Protection and Business Continuity Solutions

Data Protection

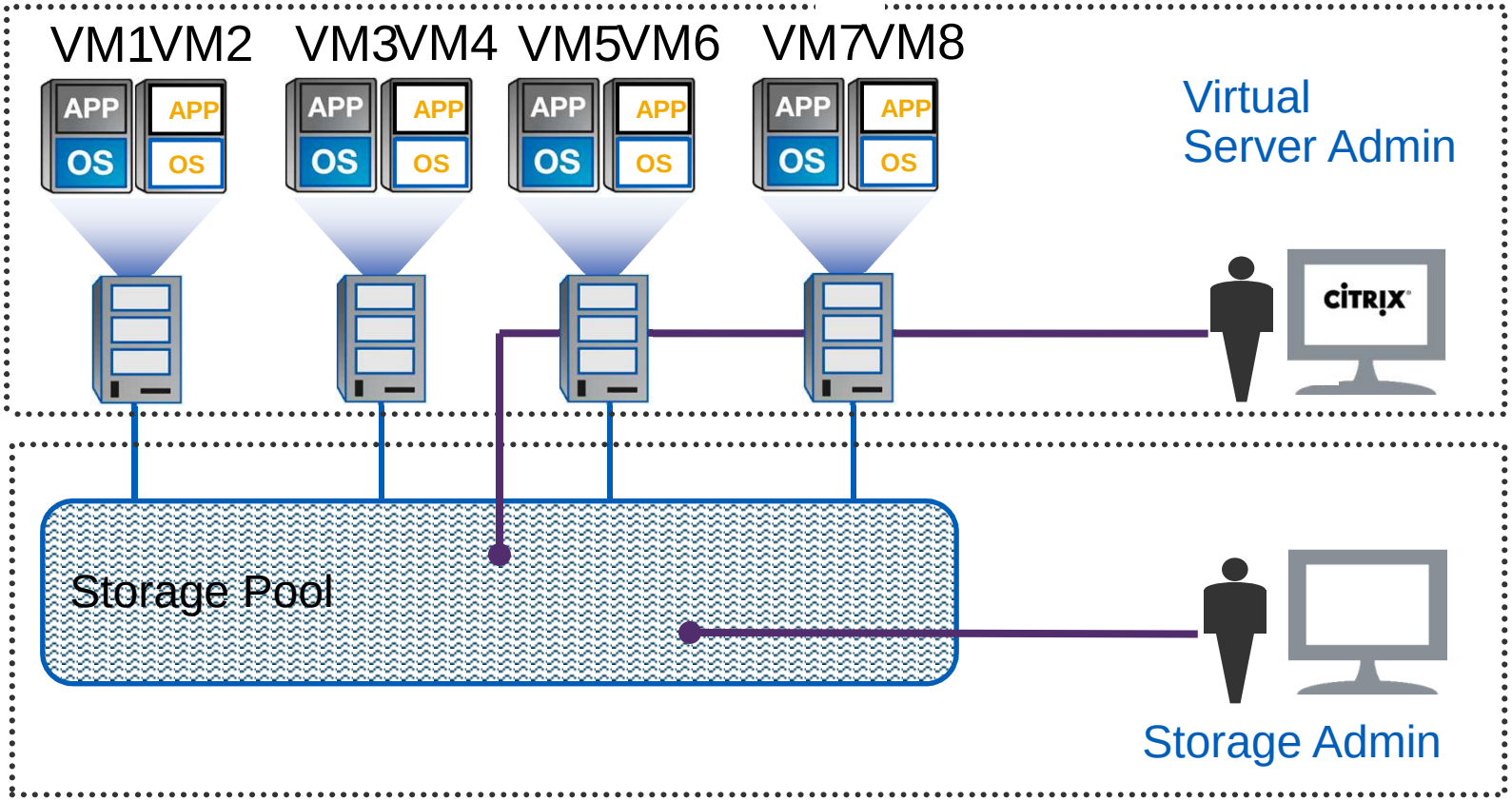


NetApp Storage Integration with Citrix

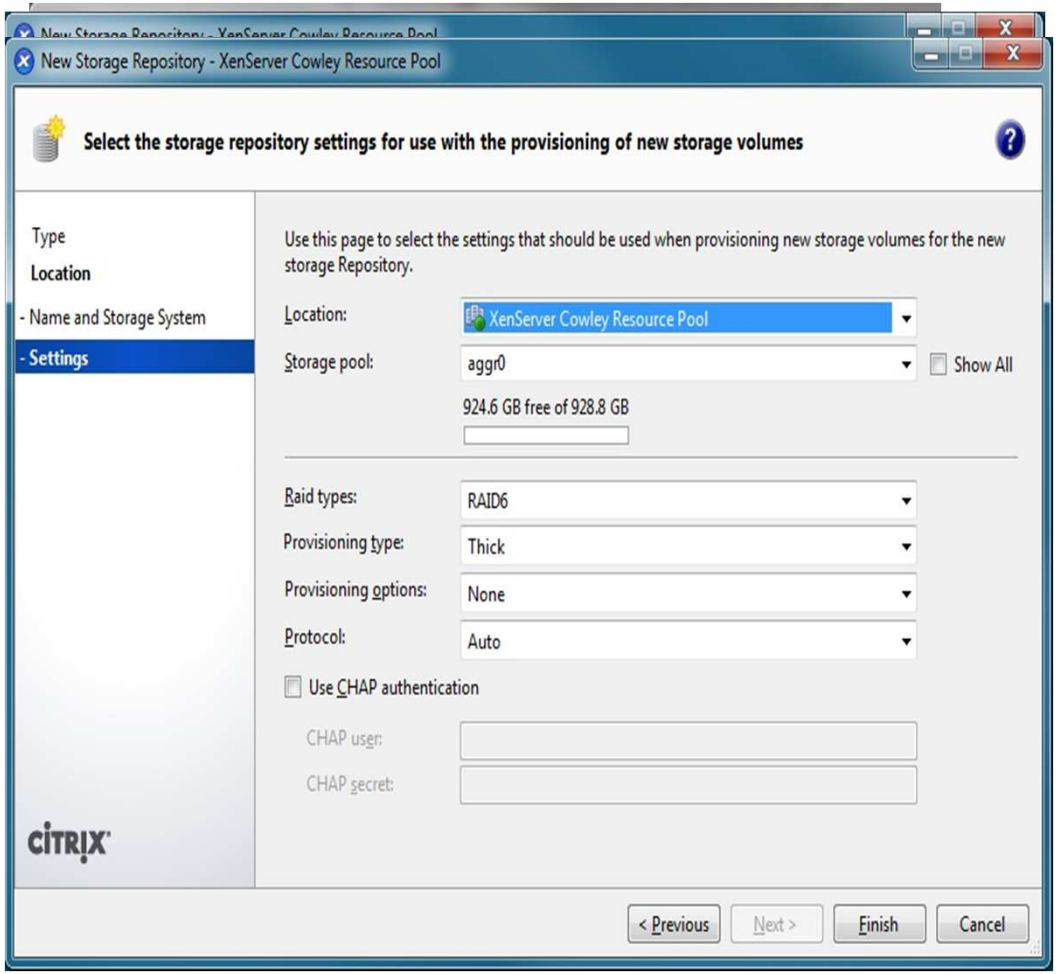


Citrix Essentials for XenServer

The data management capabilities of NetApp® Data ONTAP® are directly integrated in XenServer.

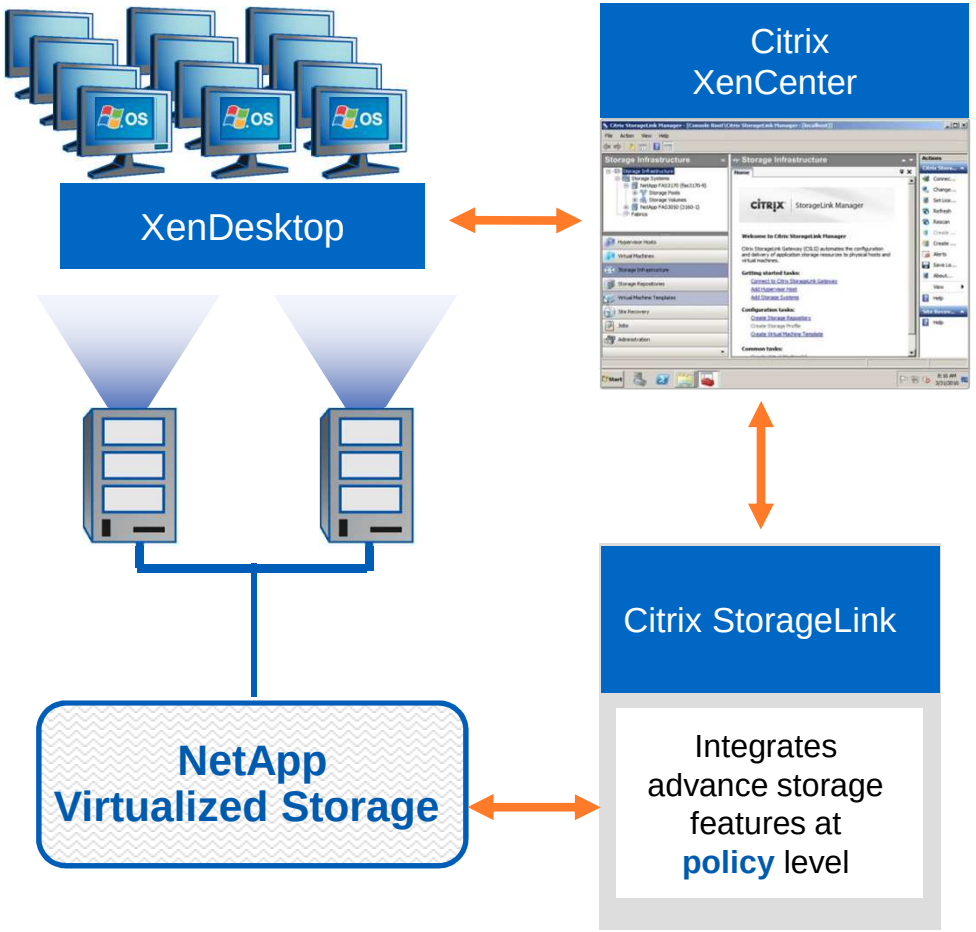


Citrix StorageLink Adapter for NetApp Data ONTAP



- Fully leverage existing Storage Assets
- Reduces Storage Needs
- Accelerates Deployment
- Unifies Storage Management Processes

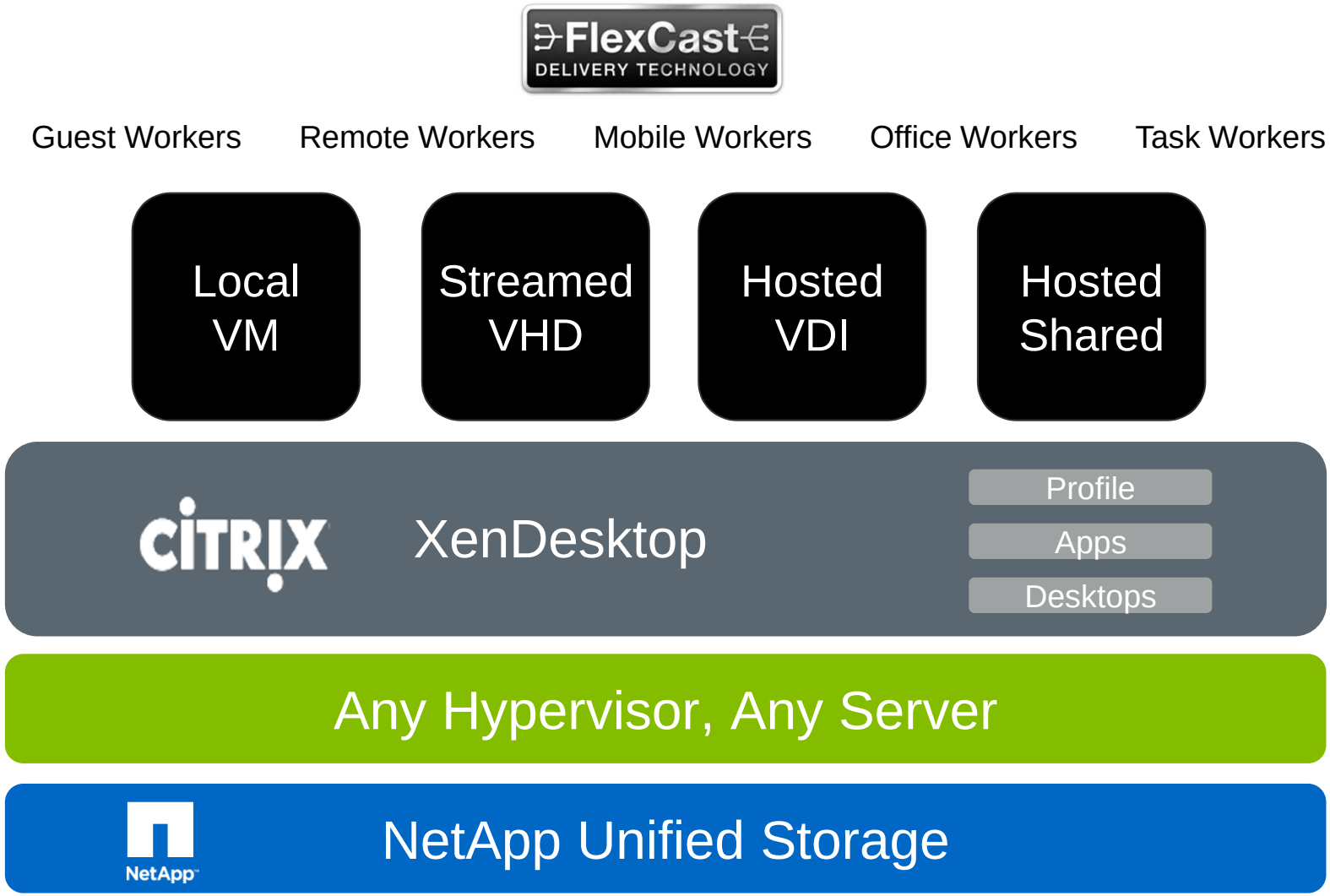
Integrated Storage Management



Desktop Admin

- Provisioning
- Backup
- Recovery
- Deduplication
- Cloning
- DR

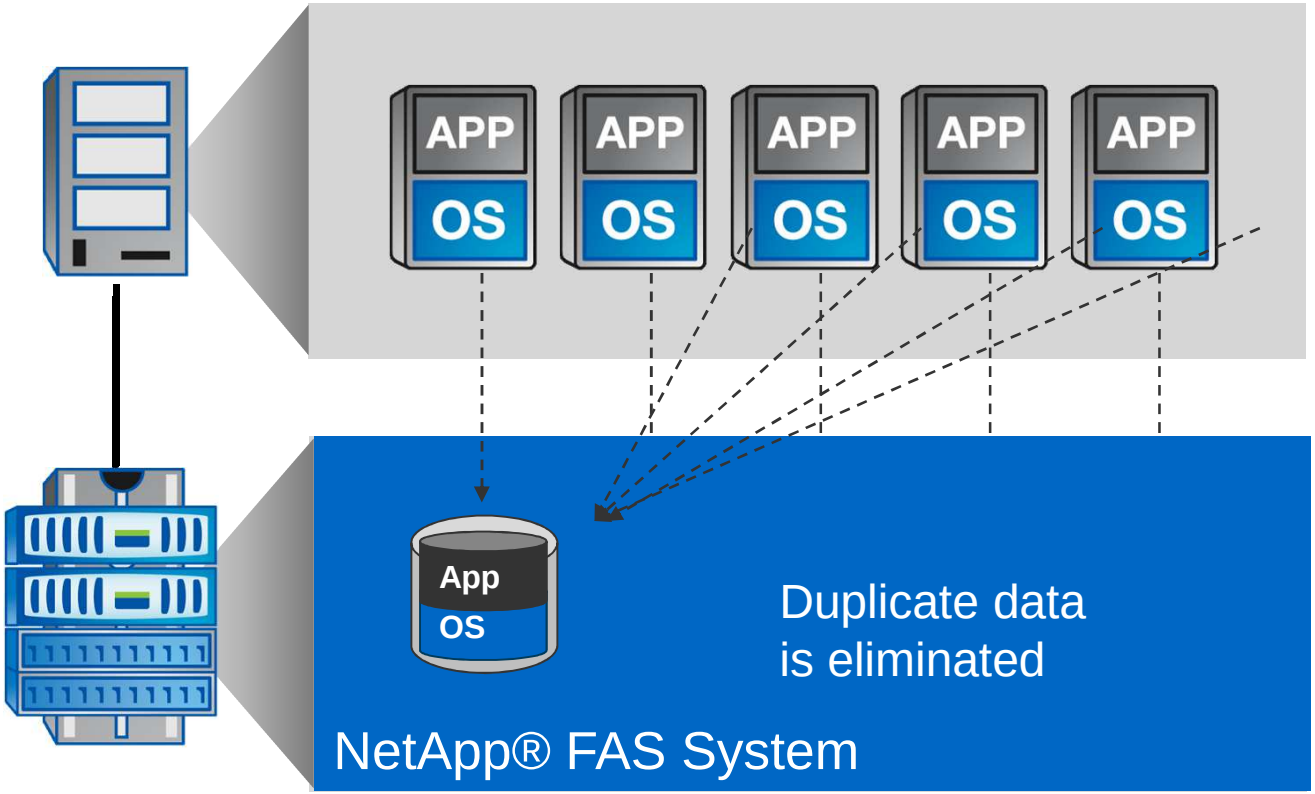
Joint Solution for Desktop Virtualization



On-demand Apps with XenApp

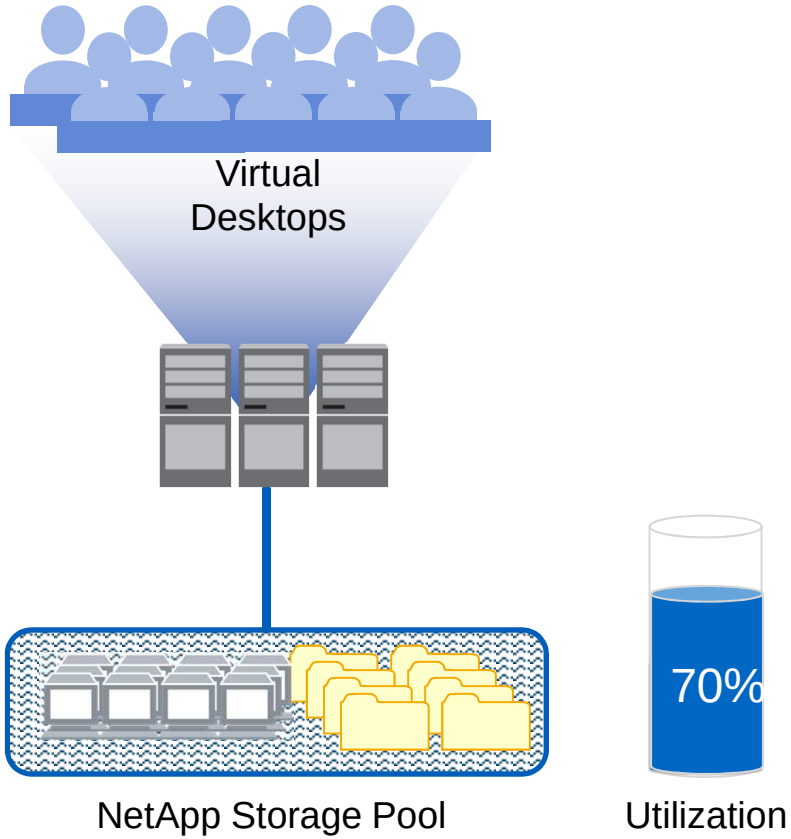
- Any Windows app, self-service, on demand
- Hosted or streamed app delivery
- App-V client plug-in for Citrix Receiver
- Cost effective application delivery

Deduplication: Essential for XenDesktop



Dedupe primary, backup, DR, test clones and archival data

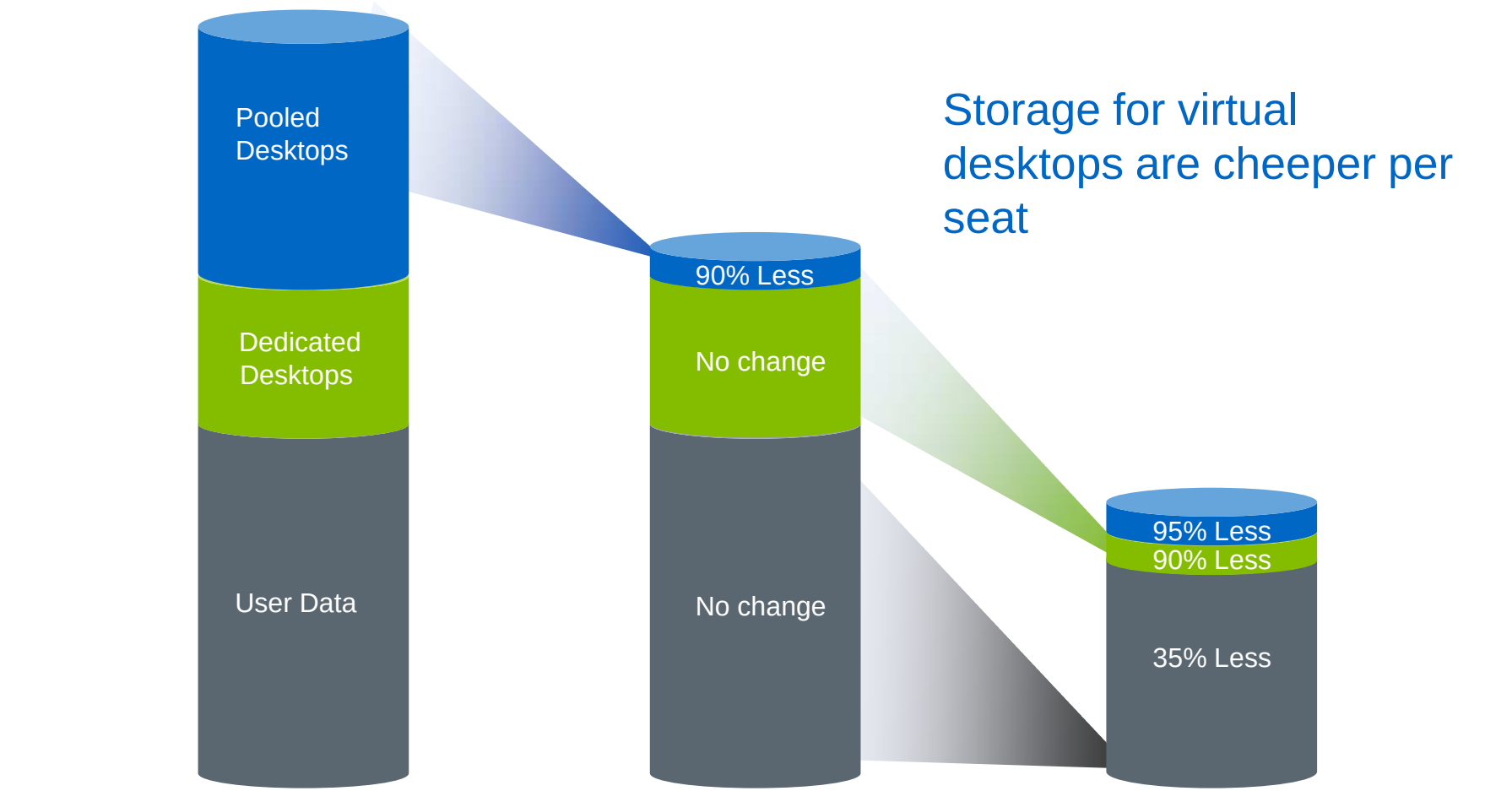
Reducing Capacity for Virtual Desktops



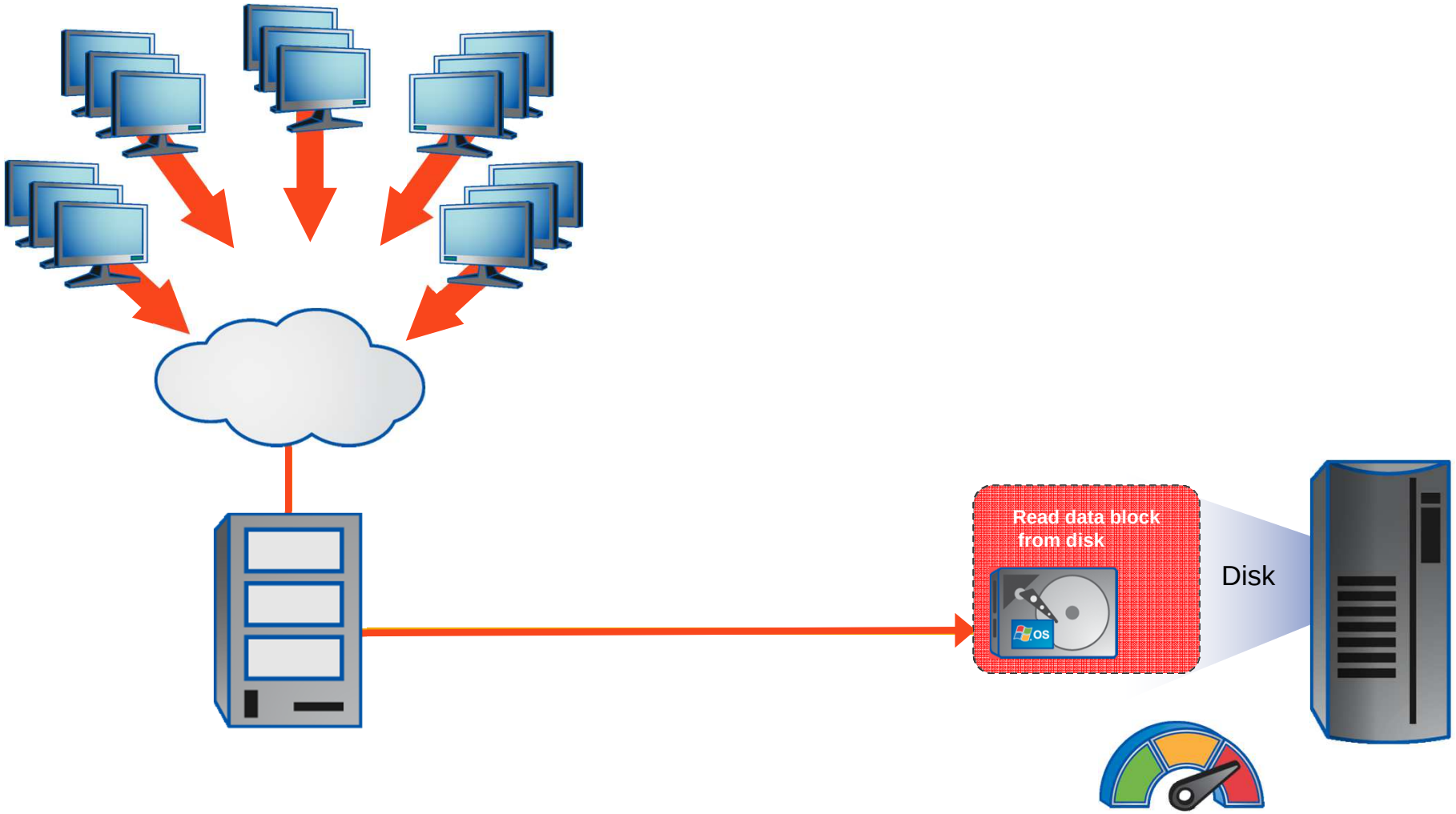
- Deduplicate virtual desktops up to 95%
- Dedupe end-user storage by 30%-40%
- Create desktop copies without using additional capacity
- Thin provisioning increases utilization to over 70%
- RAID10 protection using ½ the number of disks

Use at least 50% less storage with NetApp

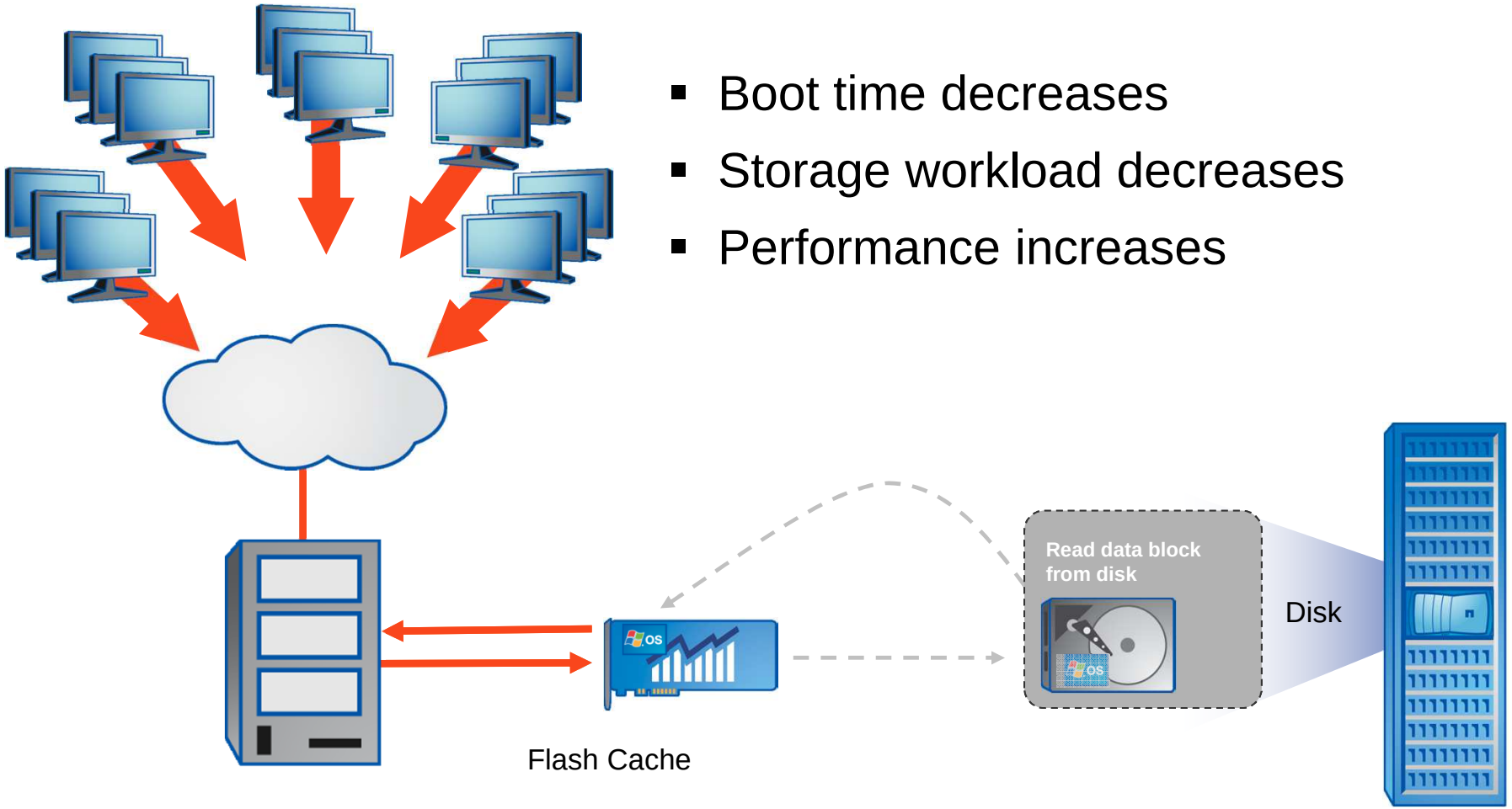
Lower Costs with XenDesktop and NetApp



Storage Impact on Desktop Performance



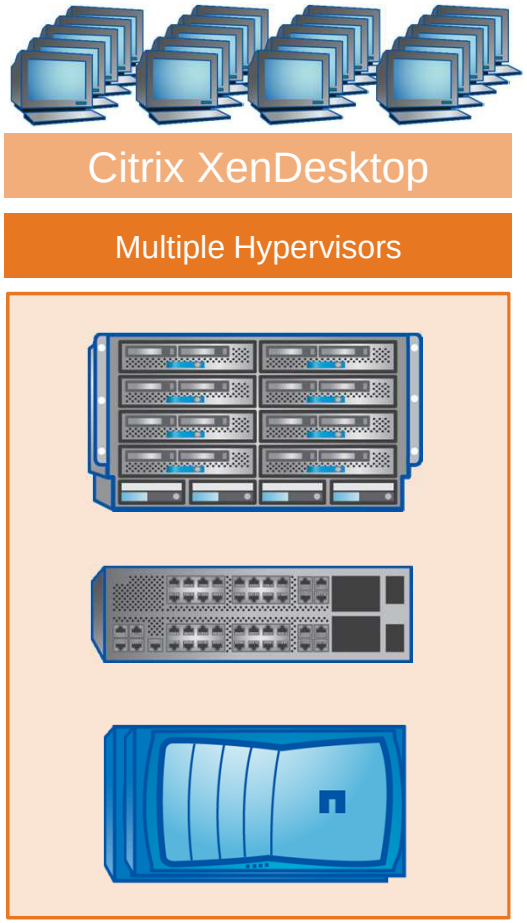
NetApp Handles Boot and Login Storms



- Boot time decreases
- Storage workload decreases
- Performance increases

Users aren't affected during simultaneous boot or log on

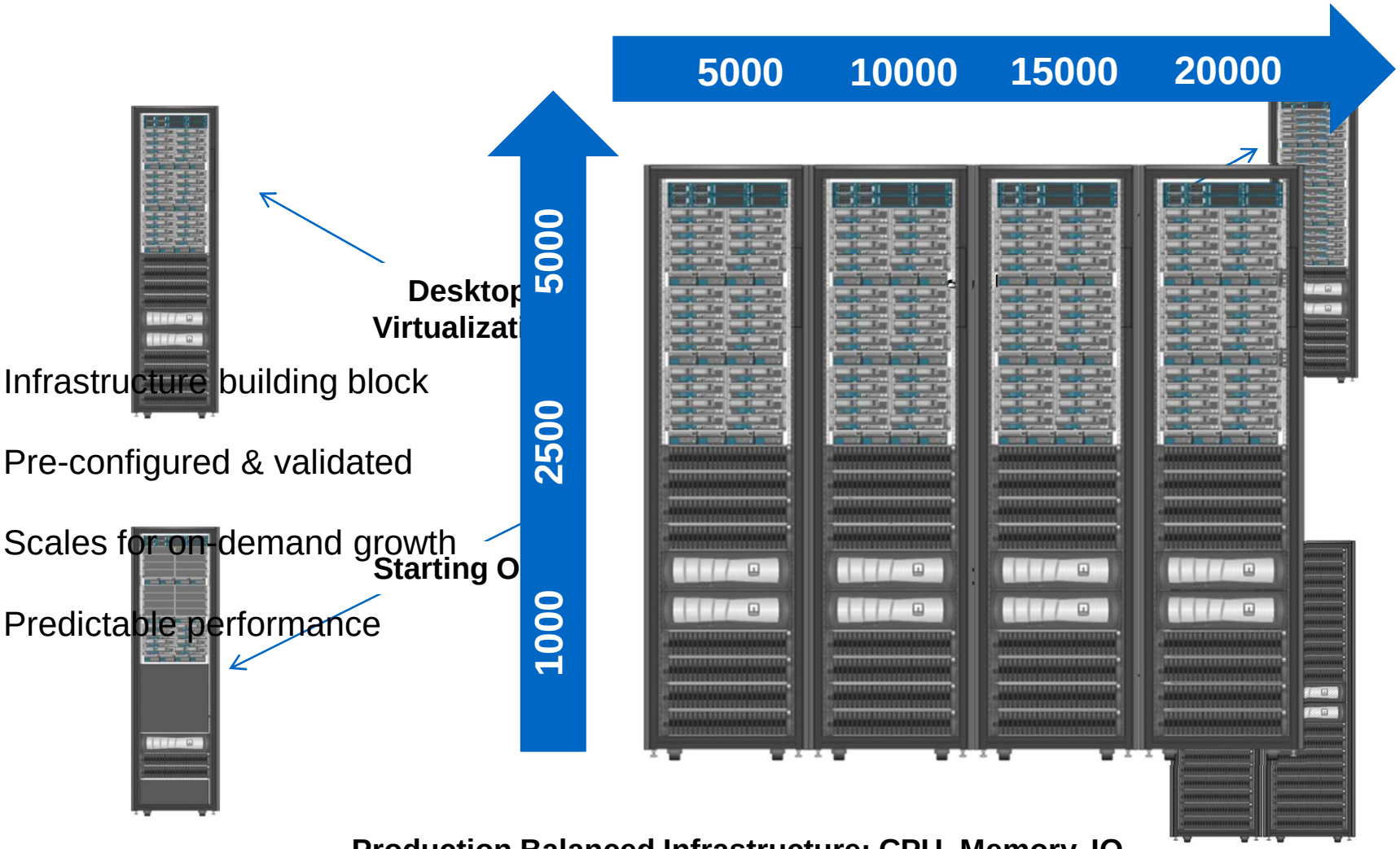
Citrix XenDesktop Built on FlexPod™



Citrix XenDesktop built on FlexPod™ can leverage any hypervisor:

- Optimized for XenDesktop
- Unmatched price/performance
- Fast deployment, easy to expand
- Design and sizing guides
- Cooperative support agreement

NetApp and Cisco FlexPod Solution



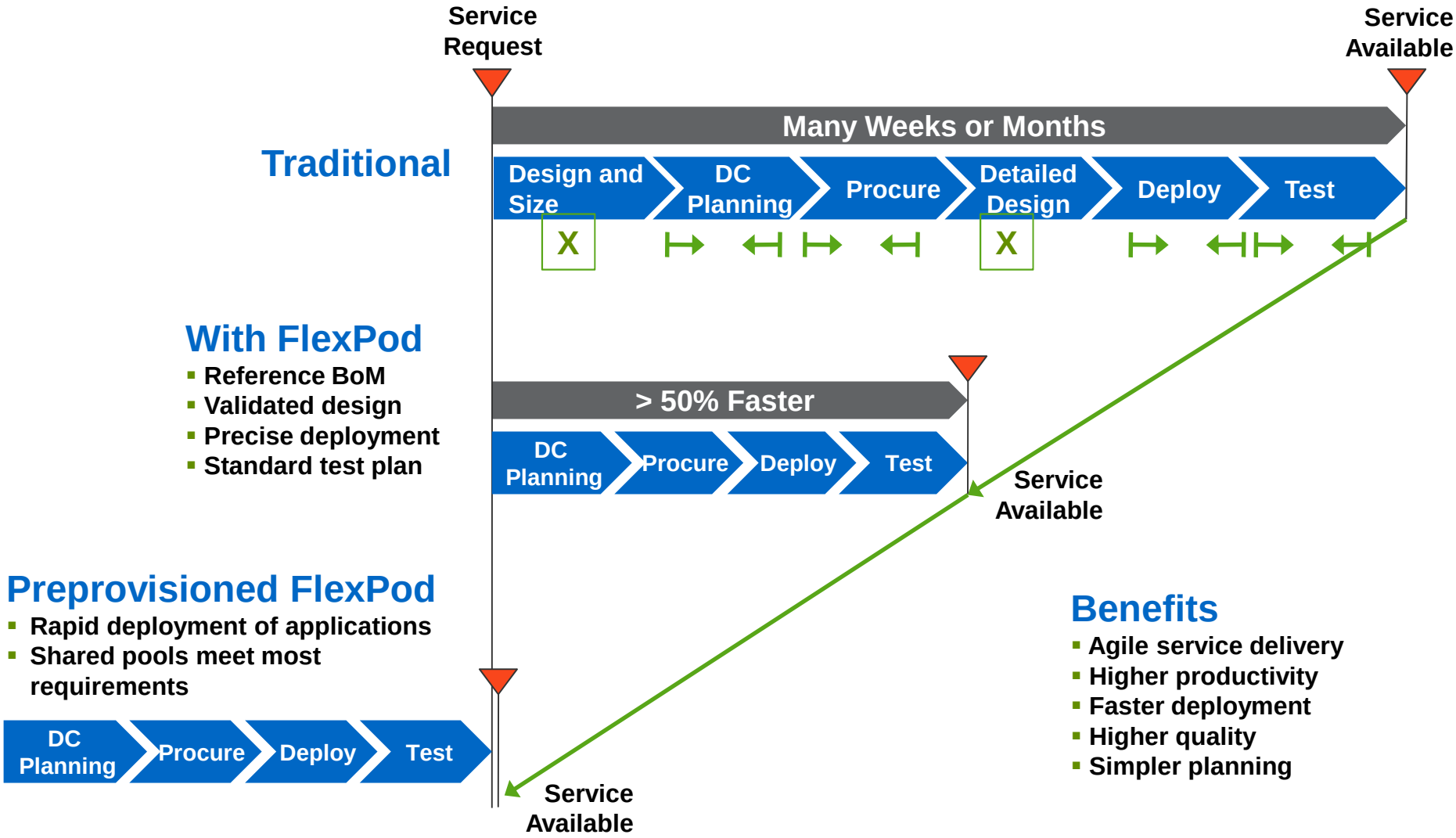
Production Balanced Infrastructure: CPU, Memory, IO

Based on a Cisco Validated Design

- Design guide for XenDesktop
- Linear scalability
- Rapid provisioning
- Unified fabric
- High performance under load

XenDesktop Built on FlexPod

Accelerating Desktop Deployment



Start your Journey to the Cloud Today with XenDesktop Built on FlexPod

Cisco	NetApp	Citrix

Lower risk with simplified, prevalidated, shared architecture

Flexible IT scalable to meet both today's needs and tomorrow's

Reduced TCO and better efficiency

Certified data center specialty partners and cooperative support

For more information, visit www.netapp.com/us/technology/flexpod/

FlexCast Desktops Use Cases

Use Case	NetApp Support	Technology	Benefit
Hosted VDI	**YES**	•WAFL coalesces write I/Os •Dedupe VM and user/profile data •Unified network storage architecture •Self-service user data recovery •SnapMirror, FlexClone integration	•Reduce write I/O traffic and disks by 50% •Reduce VM data by 95%, user data 35% •Minimize network bandwidth for DR •Simplified management, higher utilization •Reduce help desk calls •Auto backup, recovery, DR, HA
Hosted Shared	**YES**	•Dedupe VM and user/profile data •Unified network storage architecture •Self-service user data recovery •SnapMirror, FlexClone integration	•Reduce VM data by 95%, user data 35% •Minimize network bandwidth •Simplified management, higher utilization •Reduce help desk calls •Auto backup, recovery, DR, HA
Streamed VHD	**YES**	•WAFL Coalesces write I/Os •Dedupe VM and user/profile data •Unified network storage architecture •Self-service user data recovery •SnapMirror integration	•Reduce write I/O traffic and disks by 50% •Reduce VM data by 95%, user data 35% •Minimize network bandwidth for DR •Simplified management, higher utilization •Reduce help desk calls •Auto backup, recovery, DR, HA
Local VM	**YES**	•WAFL coalesces write I/Os •Dedupe VM and user/profile data •Unified network storage architecture •SnapMirror integration	•Better write performance for desktop sync •Reduce VM data by 95%, user data 35% •Simplified management, higher utilization •Auto backup, recovery, DR, HA

Thank you