



**NetApp™**

Go further, faster

# Backup & Recovery Solutions

Shahin Yousefi  
Technical Account Manager  
Homeland Security  
NetApp U.S. Public Sector  
410.274.1860  
[yousefi@netapp.com](mailto:yousefi@netapp.com)





# Agenda

- NetApp leadership in backup and recovery
- Backup and recovery challenges
- NetApp backup and recovery solutions
  - Data center backup
  - Remote office backup
- Beyond backup and recovery



# NetApp is a Proven Leader in Backup

- Technology Innovator
  - NetApp Snapshot™ in 1993
  - Snapshot replication since 1997
  - NearStore® VTL in 2006
  - FAS Deduplication in 2007
- Proven Success
  - 2,500+ NetApp D2D backup customers
  - 35,000 Remote and DAS servers backed up
  - 350,000+ TB SATA shipped since 2002



# Backup and Recovery Challenges

## Operational Issues

What are the biggest problems with backup and recovery?

66%: meeting backup windows

49%: recoveries take too long

40%: consumption of time

33%: media management

## Business Issues

- Increasing SLAs
- Scaling to meet growth
- Managing risk
- Controlling costs

“We are going to reach a point where (backups) will no longer be physically possible, we won’t have a window to do it.”

VP and CIO, Insurance Industry

“Disk to Disk Backup and Recovery” Enterprise Strategy Group, 2005 (percent of all users, multiple responses accepted)

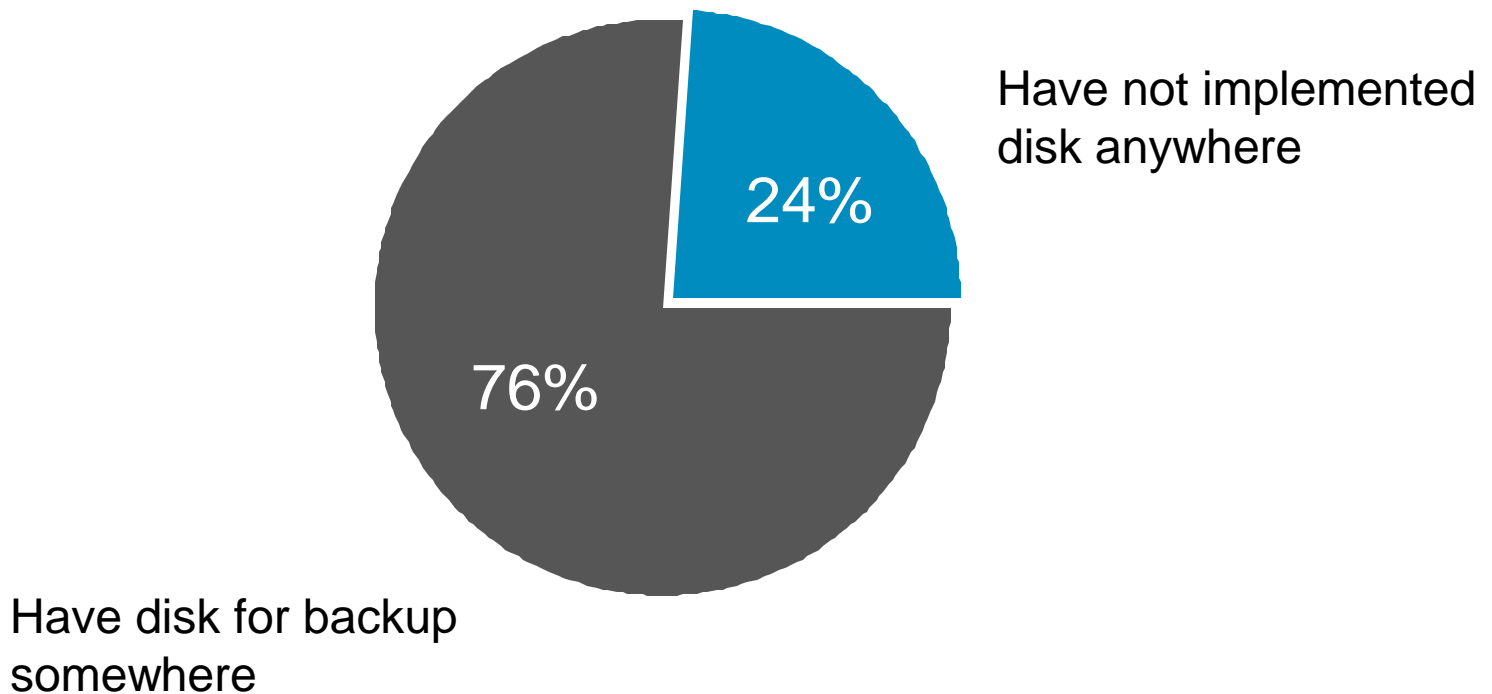


# Backup Alternatives

	Pros	Cons
Traditional tape	Familiar operation and technology	Growing complexity, poor reliability
Traditional disk	Improved reliability and recoverability	Difficult to provision, expensive
Virtual tape	Simple to deploy and scale, disk tuned for high backup performance	Relies on existing tape processes
Replication-based backup	More frequent backups, long distance replication, storage efficient	Different methodology for backup

# Disk-to-Disk Backup Adoption Trends

Current disk adoption for backup is high

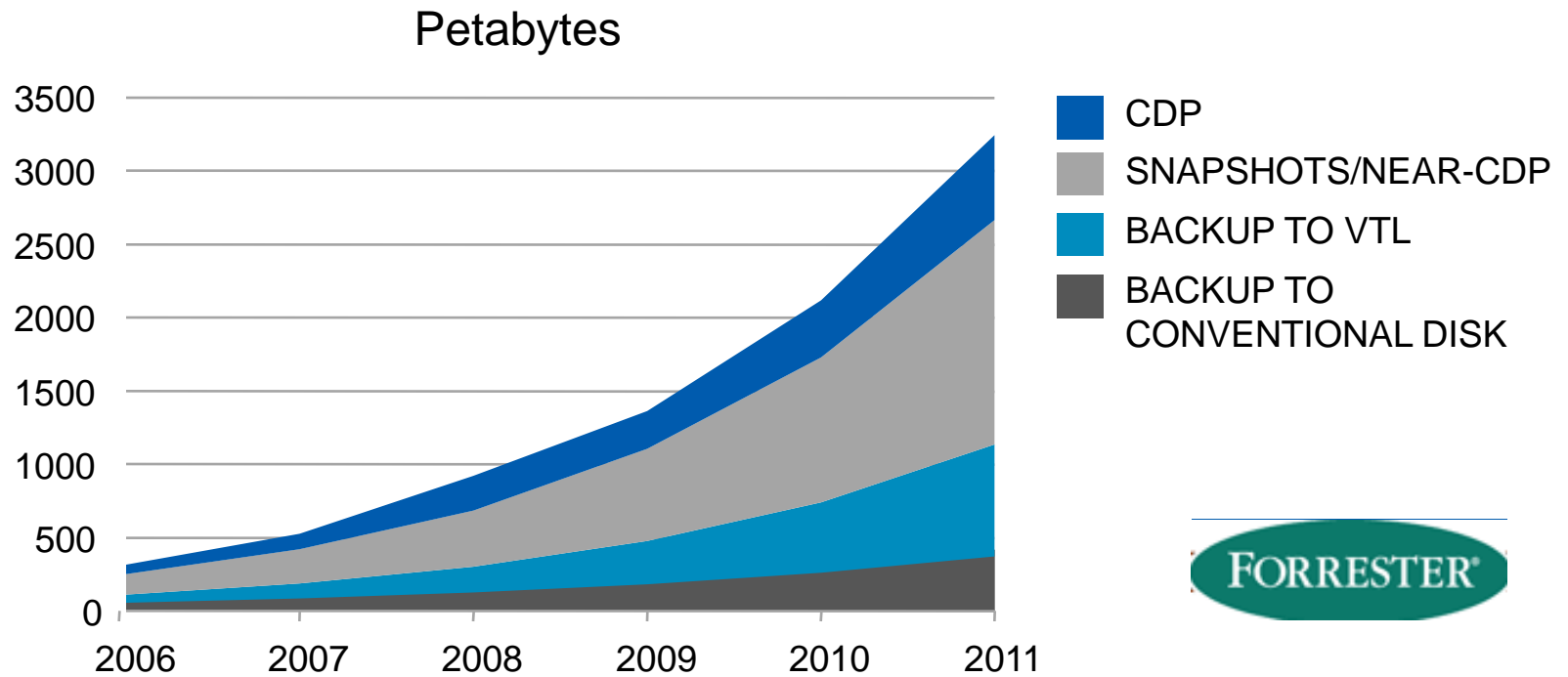


2006 Enterprise Strategy Group



# Disk-to-Disk Backup Adoption Trends (continued)

Rapid growth for many D2D backup technologies



Forrester Consulting: "The Shift to Disk-Based Data Protection," Aug-Nov. 2006

# NetApp for Backup and Recovery



- Faster, more reliable backups
- Recover data in minutes, not hours
- Simple to deploy and manage
- Made affordable with deduplication



# NetApp Backup Portfolio

## For Any Environment and Any Requirement

### Data Center Backup

- Back up any data center environment
  - Virtual Tape
  - Replication-based backup
  - Classification and search
  - Real-time encryption
  - Deduplication

### Remote Office Backup

- Centralize remote office backup
  - Over any WAN connection
  - Software agent or appliance
  - Central management and monitoring
  - Deduplication at source

Common hardware platform

Backup software partners

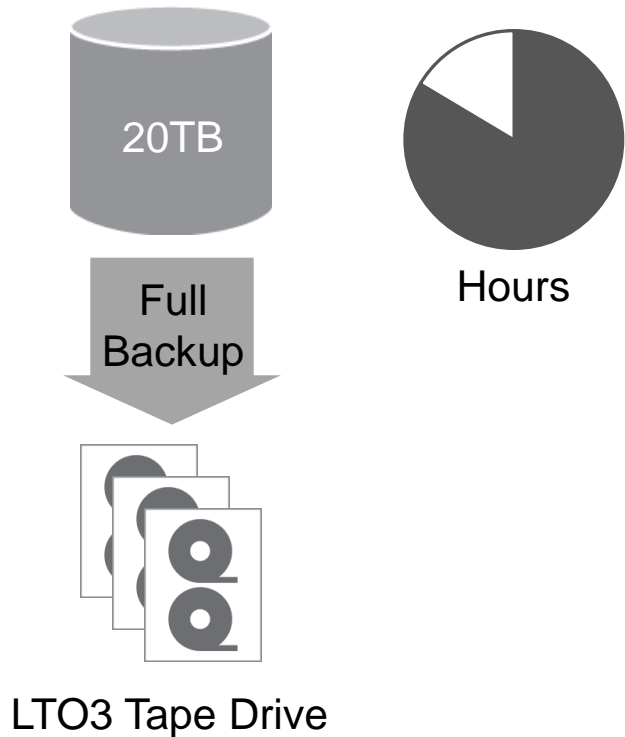
# Data Center Backup and Recovery



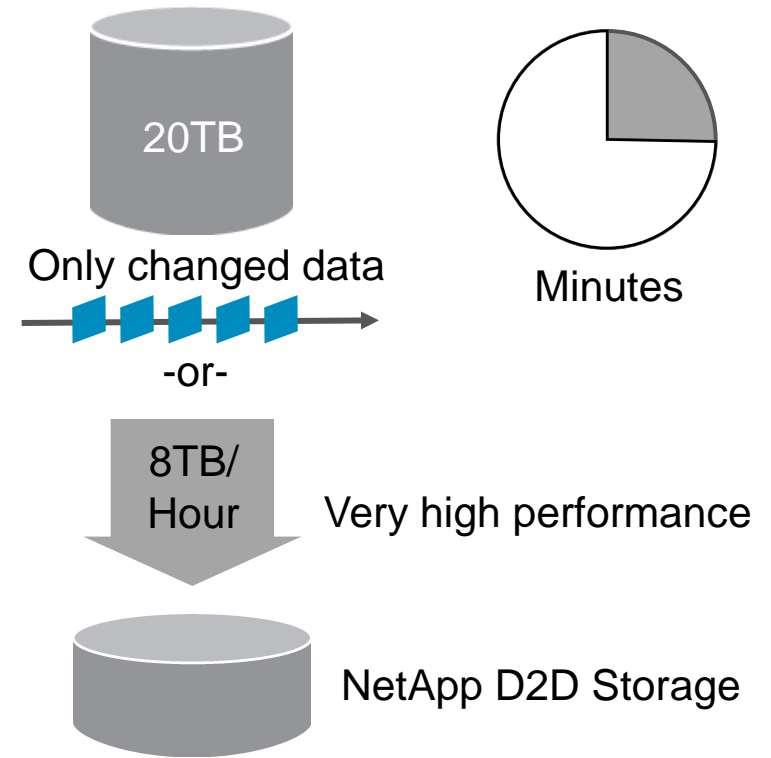


# Faster, More Reliable Backups: Back Up in Minutes, Not Hours

## Traditional Tape Performance



## NetApp = Very Fast Backups



“Backup windows aren’t even a consideration anymore, and we have all the time in the world to archive to tape, if needed...”

Bradley Lauritsen, Team Lead, Apache Corporation



# Faster, More Reliable Backups: Higher Reliability with NearStore



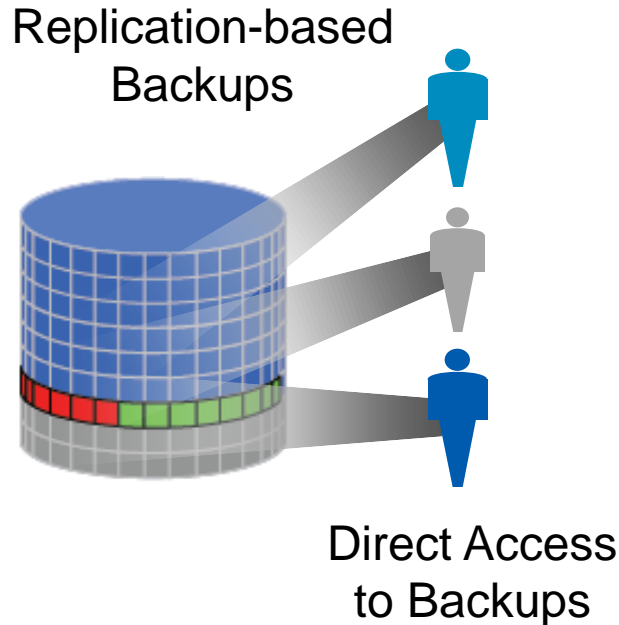
- Enterprise-class storage
  - Same H/W and S/W as primary storage
  - Provision capacity on-the-fly
- Highly available
  - 99.999% reliability (field-measured)
  - Highly redundant, industry's most resilient RAID
- Flexible
  - Scale to 100s of TB
  - Storage system for backup, archive, DR, and more

“Their reliability has been outstanding.”

Mike Irick, Assistant Director of Academic Computing, Cal State San Marcos



# Improved Recoverability: Recover Data in Seconds, Not Hours



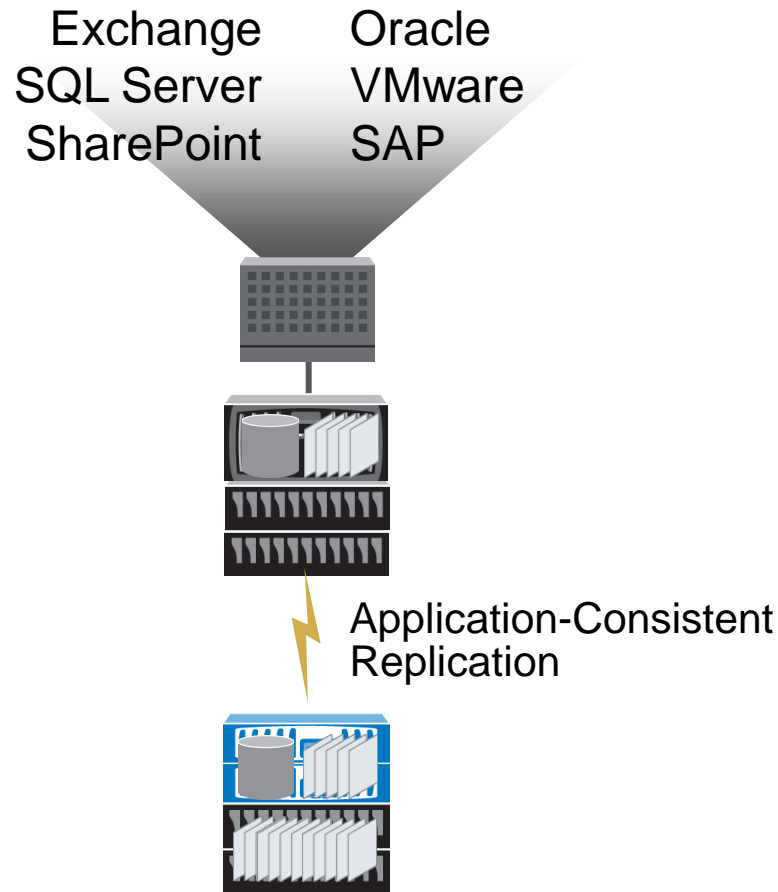
- Drag and drop restores
- Ability to failover data access to backup copy
- Immediate access to backups on disk, up to hundreds of copies
- Revert back to older version of file system in seconds

“A 97% reduction in restore time...”

Dan O’Hare, Noble Energy



# Improved Recoverability: Application-Consistent Recovery



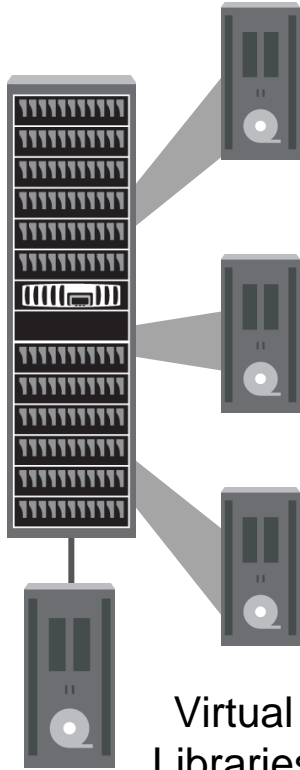
- Application-consistent backups
- Recover databases in minutes
- Frequent backups = Low RPO
- Hundreds of versions from which to recover
- Rapid search and recovery of e-mails

“Taken all together, the NetApp infrastructure lets us guarantee recovery of any application within 1.5 hours.”

Robert Carver, manager of IT Systems at Southcentral Foundation

# Simple to Deploy and Manage: Easy Integration

Virtual Tape



Virtual  
Libraries

- Deploy seamlessly into tape environment
- Optimize existing infrastructure
- Integration with leading backup vendors



“Our IT professionals no longer come in after hours or on weekends.”

Phillip Rightler, Director of IS at Thompson Coburn



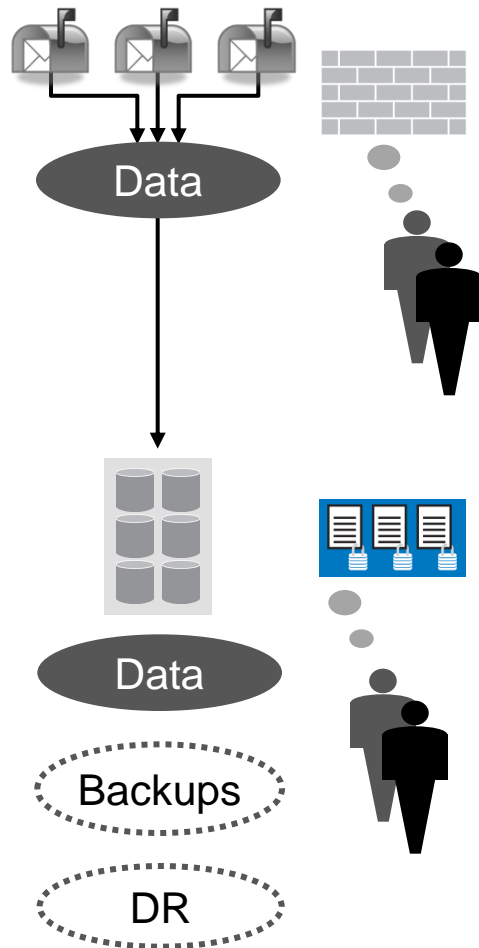
# Simple to Deploy and Manage: Trusted Professional Services & Support

- Assess your current environment
- Expert solution design and planning
- Fast and professional installation
- Proactive monitoring and support

“NetApp provided comprehensive services throughout our implementation process.”

Kook Dong-Ken, IT team manager, Hana Bank

# Simple to Deploy and Manage: Integrated Data Management



## Business owners define property

- Application admins set data properties
- Properties assigned to logical sets of data
- Properties define business requirements for data

## Storage admins create policies

- Storage admins create and manage processes
- Processes deliver on data requirements
- Automation and service delivery become possible

“We’ve grown our disk capacity by some 700% and yet have actually reduced our department size by more than 30%.”

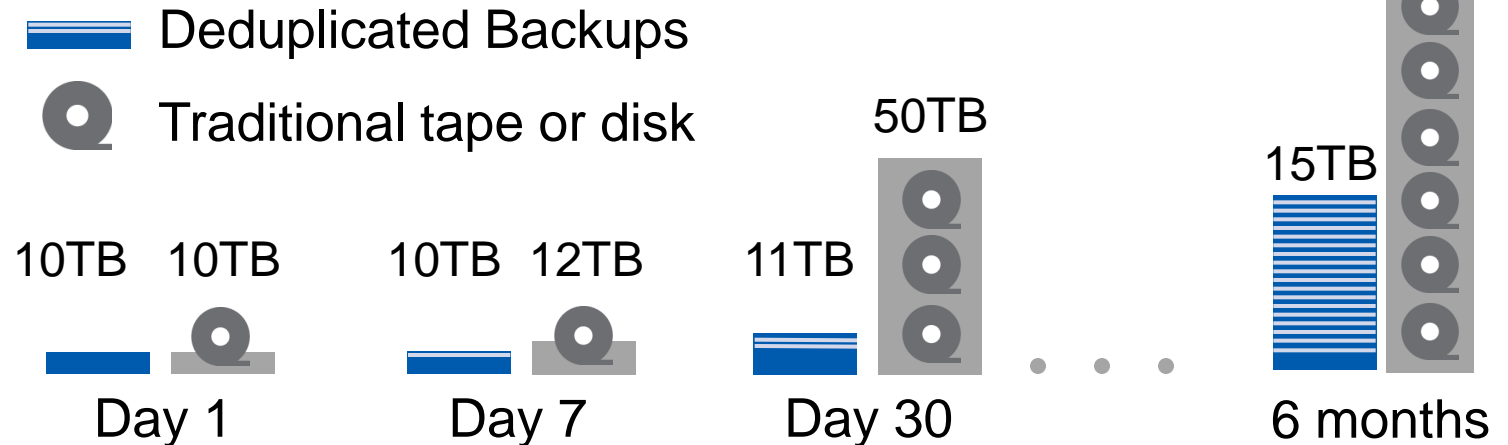
Bradley Lauritsen, Apache Corporation, Team Lead



# D2D Backup Made Affordable: Reduce Costs with Data Deduplication

## Achieve 20:1 Space savings

- Deduplicating backup data
- Comparing to weekly full and daily incremental backups

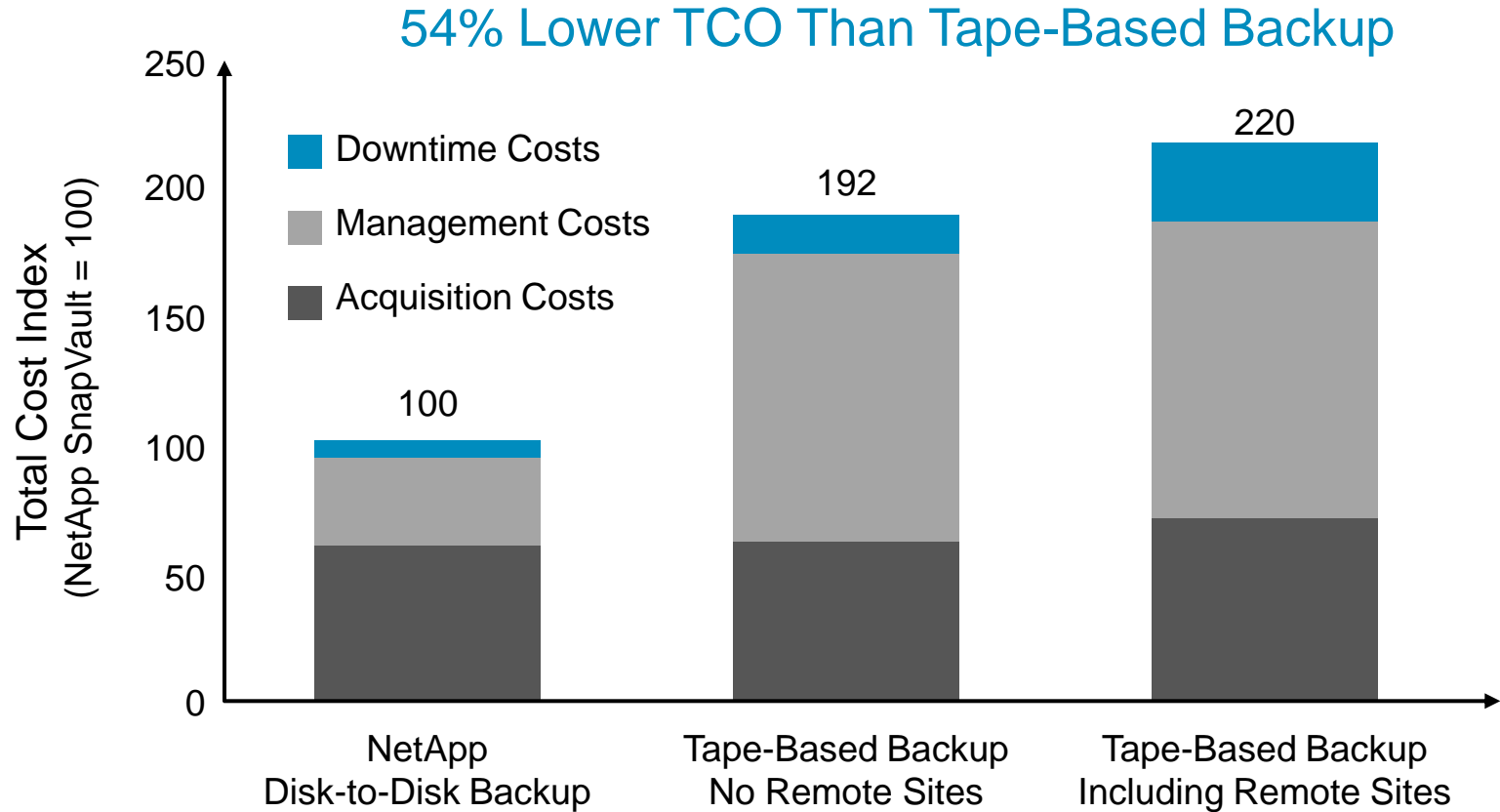


“We’ve realized an 80% space savings over tape.”

Keith Scott, IT Analyst Department of Human Assistance, Sacramento County



# D2D Backup Made Affordable Disk for Less Than the Cost of Tape



Source: Mercer Backup Technologies Total Cost Comparison Interviews - February 2006.

“Considering media costs alone, our two NearStore systems will pay for themselves within 26 months.”

Martin Cooper, Arup Global Operations Manager



Agilent Technologies



## Industry

- Manufacturing

## Business Challenge

- Improve backup and DR capabilities

## Protocols

- NAS CFS
- NAS NFS
- iSCSI SAN

## IT Challenge

- Reduce time required to complete backups Solution
- Consolidated storage management and data protection

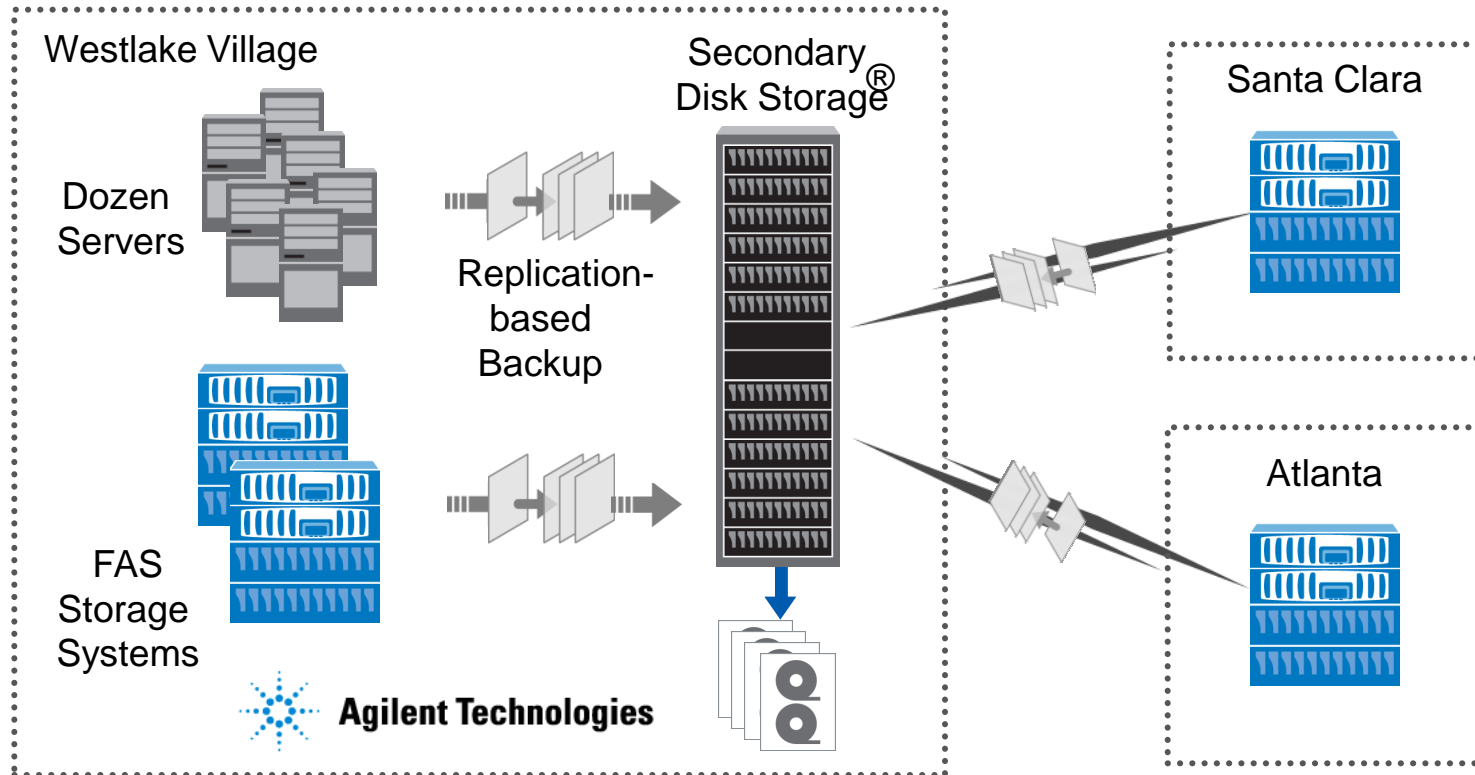
## Solution

- Disk-to-disk backup with NetApp SnapVault®

## Benefits

- 98% reduction in backup time for data on NetApp, 87% reduction for open systems
- Savings of \$400,000 for remote backups
- Savings of 500 person-hours per year

# Agilent Technologies (continued)



“When we were backing up directly to tape, it took up to 16 hours for the backup to run. An update with SnapVault now takes just 10 to 15 minutes, up to a 98% improvement over tape.”

Tim Dietrich, Agilent, Systems Architect



# Virtual Tape with Enterprise-wide Encryption Accelerating Backup and Recovery



U.S. biotech company

## Backup Challenges

- Unable to meet SLAs for data recovery
- Tape systems not keeping pace with data growth
- Privacy laws required increased data protection

## Solution

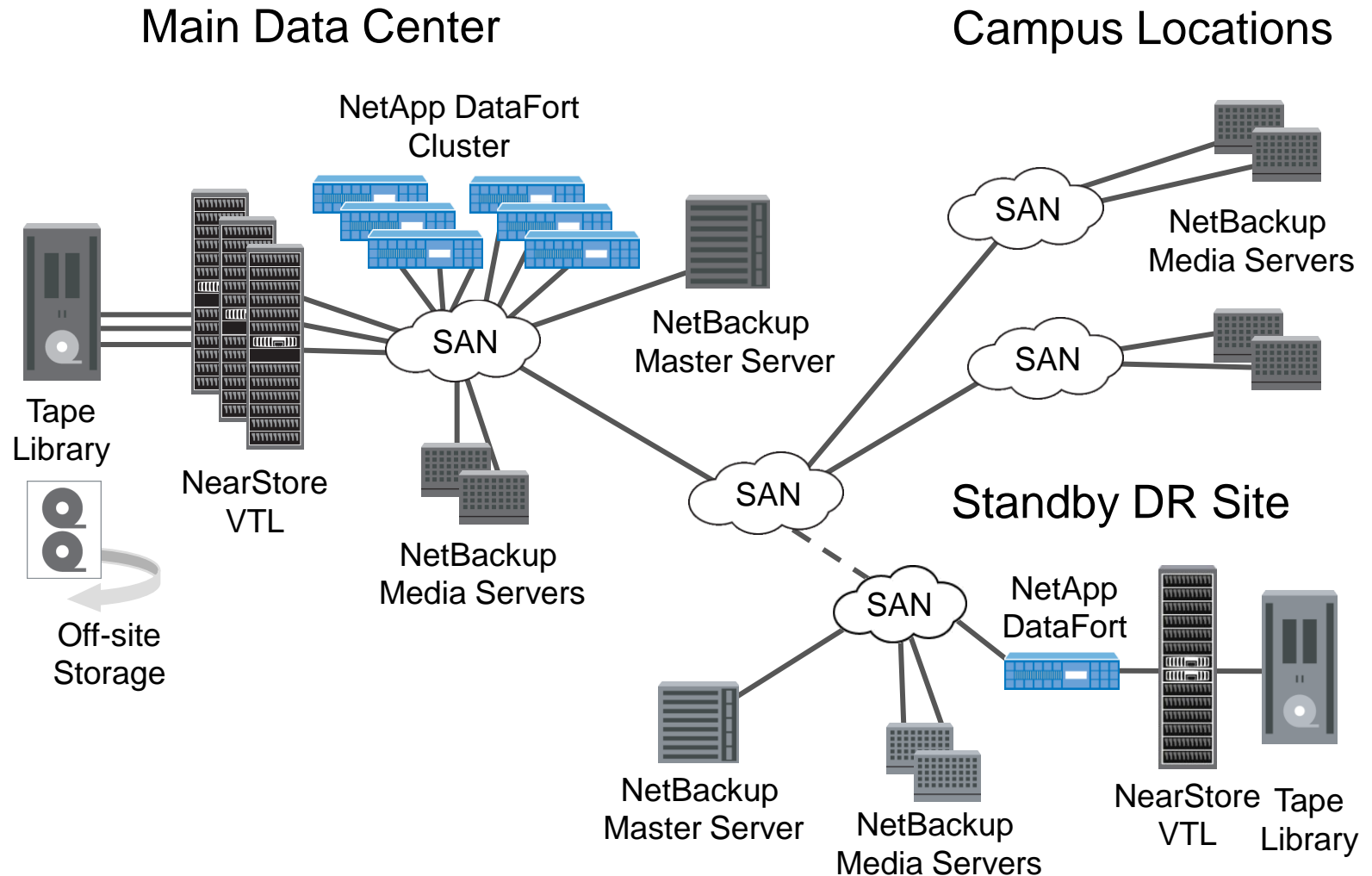
- Implement D2D backup with NearStore VTLs
- Encryption option to protect off-site tapes
- Multi-year plan to encrypt all backups on disk

## Benefits

- Backups consolidated to a central site
- Backups complete within the backup window
- Scalable encryption with no impact on performance
- Supports long-term goals for reducing tape usage and encrypting all backup copies

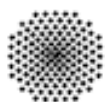


# Virtual Tape with Enterprise-wide Encryption Accelerating Backup and Recovery (continued)



# Data Center Backup and Recovery Examples

*ticketmaster*



Universität Stuttgart



- Ticketmaster
  - 100+ million tickets sold online
  - Non-disruptive backup and DR with NetApp
- University of Stuttgart
  - Completely eliminated tape
  - 600TB+ of disk backup
- Thomson Financial
  - Completely eliminated tape
  - Unified backup and DR
- Renault Formula 1 racing team
  - Capture all race data at each race site
  - Replicate backups to central engineering



# Remote Office Backup and Recovery





# Remote Office Data Protection

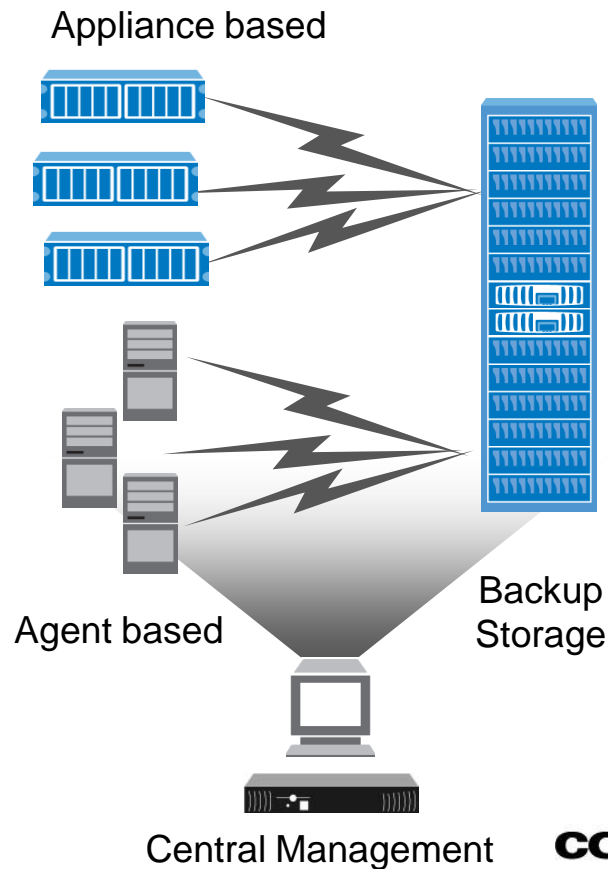
- No local IT staff
- No visibility of remote site processes
- Noncompliance with corporate policies
- Redundant backup infrastructure
- Little or no disaster protection



# Backup Alternatives

	Pros	Cons
WAFS (Wide Area File Services)	Well suited for centralized file sharing	Works only with file data; network dependent
Centralized tape replication	Central management of backups	High bandwidth requirements
Appliance-based backup with replication	Provides local recovery and off-site replication	Appliance required at each site
Software-based replication backup	More frequent backups, long distance replication, eliminate backup hardware	Displaces existing backup application

# Remote Office Backup with NetApp



- Appliance and/or agent based
- Network efficient
- Eliminate remote site infrastructure
- Centralized management
- Scales to thousands of sites



“At the remote sites, we no longer need an administrator to run.”  
Bradley Lauritsen, Team Lead Exploration Computing Department, Apache Corporation



# Centralizing Remote Office Backup: Swinton Insurance



## Description

- Largest main-street insurance chain in UK
  - 3,000 employees
  - 442 locations

## Objectives

- Back up 442 remote offices effectively and efficiently
- Achieve 24x7 availability for Web-based sales applications
- Reduce tape storage and media costs

## Challenges

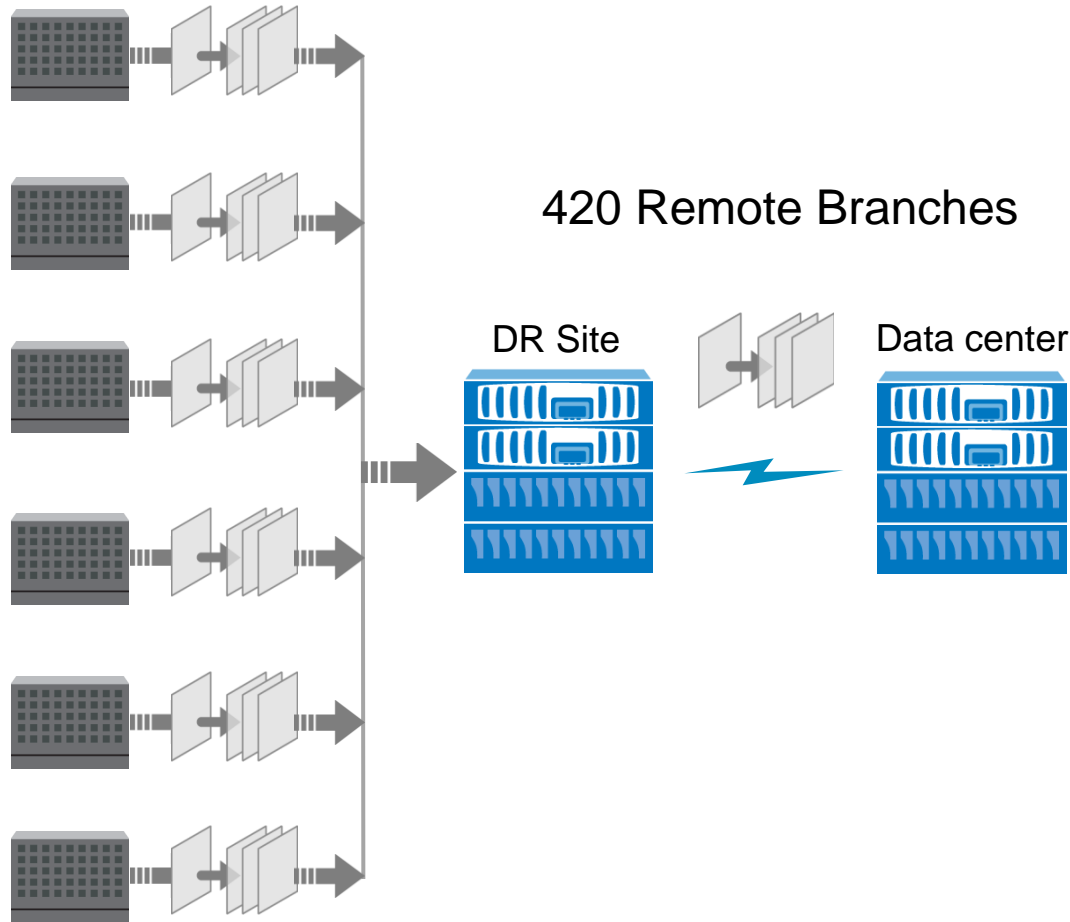
- Server backup at 442 remote sites
- Servers run critical sales/quotation applications
- Non-technical branch office managers responsible for backing up servers
- Customer-facing applications not available during the backups, causing lost sales

## Solutions

- Backup 420 locations
- Backups are now non-disruptive
- 88% faster recoveries
- Eliminated tape at remote sites
- Replicating over 256Kb
- 3rd mirrored copy



# Centralizing Remote Office Backup: Swinton Insurance (continued)



“With NetApp, we can back up each office in 15 minutes.”

Rob Davidson, head of IT Infrastructure at Swinton



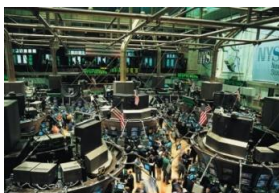
# Remote Office Backup: Customer Examples



- U.S. Marine Corps II Expeditionary Forces
  - 170+ systems forward deployed throughout Iraq
  - Backup replicated across **low bandwidth: 128Kb**



- Fortune 100 Retail Bank
  - Central **backup 1000+ retail branch** locations
  - Agent only - eliminated tape at remote sites



- Fortune 100 Investment Bank
  - Central backup **700 local offices**
  - Remote storage appliance to central data centers



- Fortune 100 Oil and Gas Firm
  - Backup 100s of servers at remote exploration sites
  - **Backup over as little as 56K lines**

# Beyond Backup and Recovery



# Beyond Backup and Recovery: Search and Classification



A magnifying glass is positioned over a table titled 'SCORECARD'. The table has three columns: 'Category', 'Score', and 'Comments'. The 'Score' column is highlighted in black. The 'Comments' column contains text such as 'The navigation is very nice...', 'The site is laid out well...', 'Very legible and easy to read...', 'The forms are a little difficult...', 'The content of the field for increasing...', 'stand out a little more.', 'The design...', 'The vit...', 'I like the services. The legible.', and 'Color use is excellent.' The 'Keyword Assessment Total >>' is shown as 23.

Category	Score	Comments
Keyword Selection	6	The navigation is very nice. I found was the mortgage tab
Keyword Priority	6	The site is laid out well. The consistent. You can tell exa
Keyword Density	6	Very legible and easy to read
Keyword Rankings	5	The forms are a little difficult
Keyword Assessment Total >>	23	The content of the field for increasing
Title Tag	6	stand out a little more.
Meta Tags	7	The design

- Search and classification appliance—IS1200
  - Index and search SnapVault backups
  - Instant single-file recovery
  - Litigation support



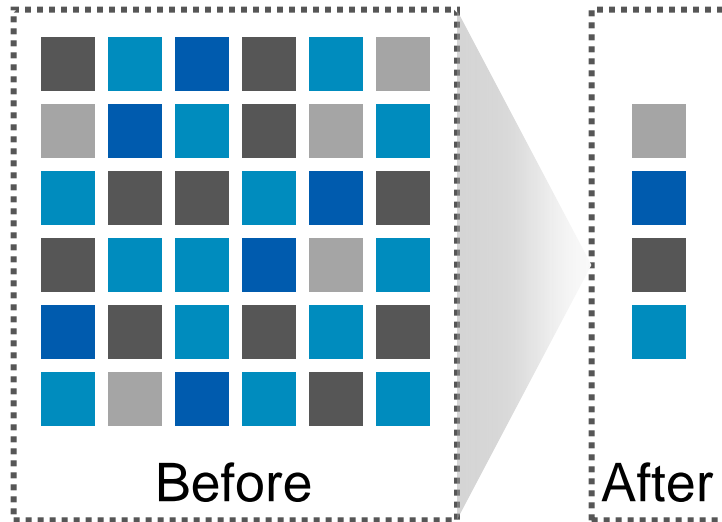
# Beyond Backup and Recovery: Encryption



- NetApp DataFort encryption appliance
  - Real-time encryption of tape or disk
  - Only solution with military certifications
  - Robust enterprise-wide key management



# Beyond Backup and Recovery: Deduplication for More than Backup



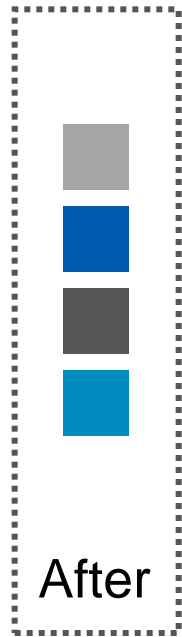
- Available on all NearStore-configured systems
- Application transparent—secondary and primary data
- Low overhead—no complicated hashing tables required

“NetApp deduplication technology enabled us to more efficiently store our data and deduplicate all of our primary user data [with absolutely no performance hit.](#)”

James Krochmal, Polysius, IT Manager



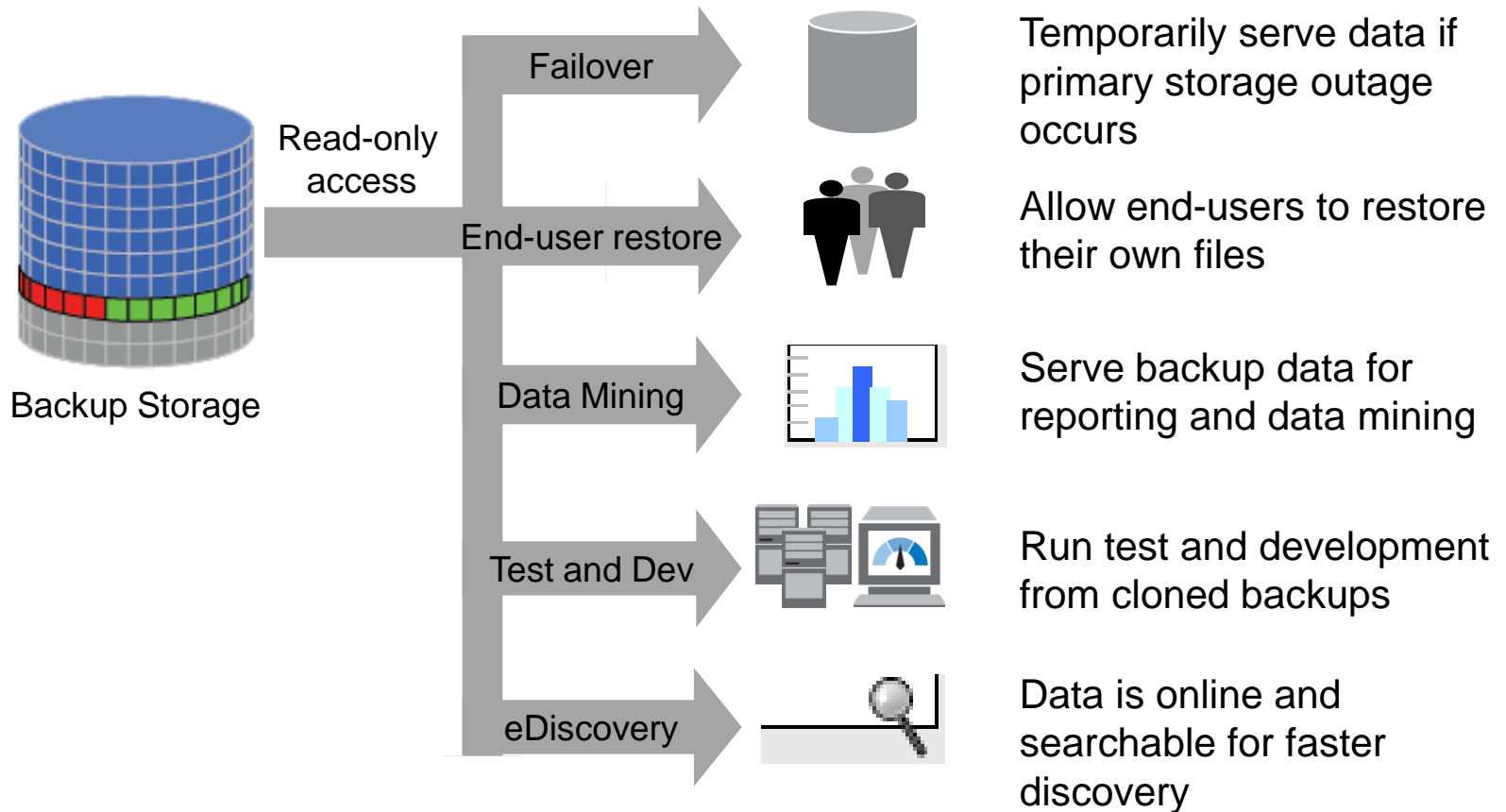
# Beyond Backup and Recovery: Deduplication Customer Examples



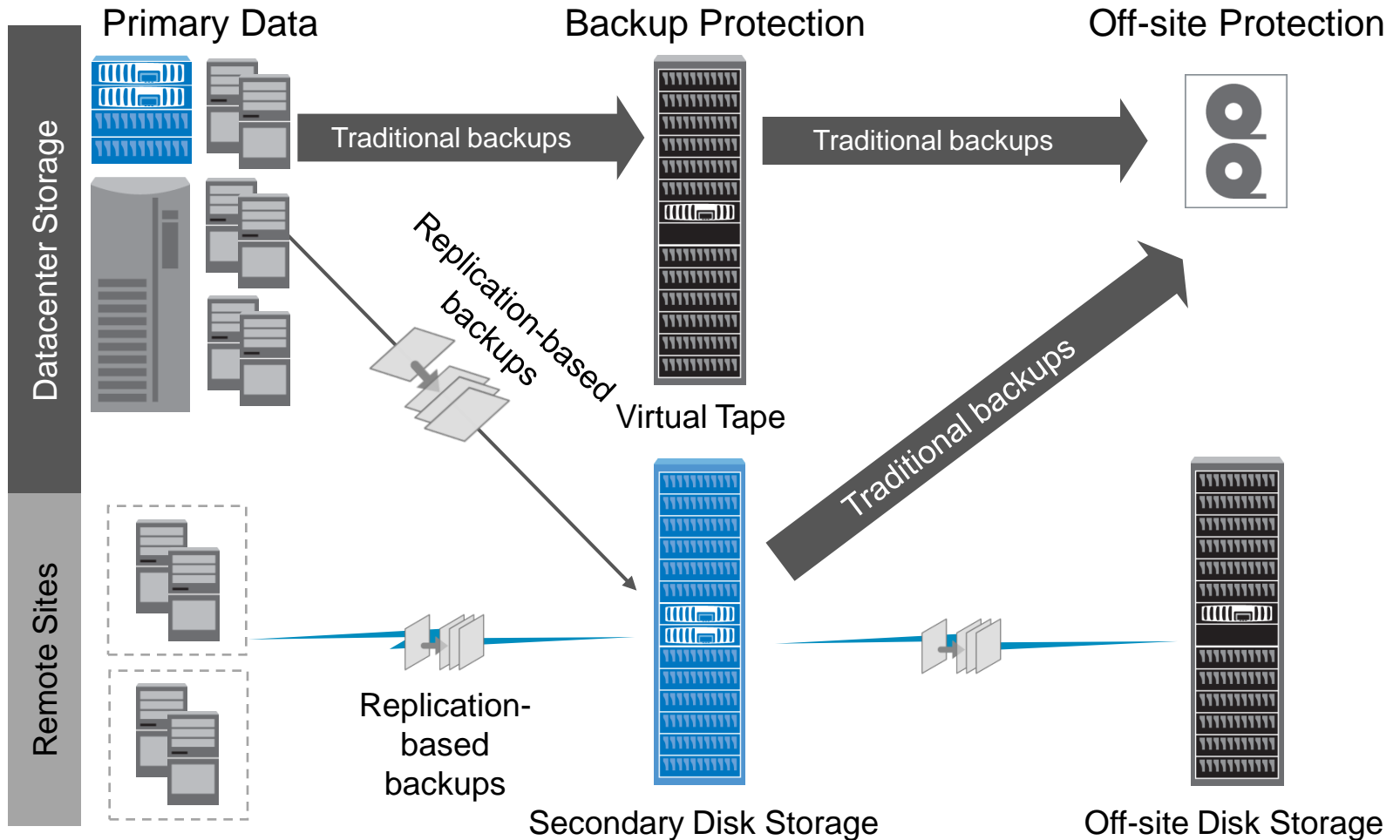
- European multimedia corporation
  - Deduplication of nightly SQL Backups
  - 40% to 50% Space Savings
- \$500B global investment manager
  - Replicated VMware images
  - 88% space savings
- Global oil and gas company
  - User home directories
  - 35% space savings
- Global software corporation
  - Deduplication of hosted software services
  - Up to 90% space savings on 30+ systems

# Benefits: Smart Copies for Multiple-Use Replicas

- Access backups as full file system or LUN images
- Serve backup data directly from disk for multiple uses



# Any Environment, Any Requirement



“Today, the R&D department no longer does tape backup. Everything is stored on NearStore systems.”

Jacques Berro, Senior IT Manager, Infineon Asia Pacific Pte Ltd.



# NetApp Solutions for D2D Backup

- Faster, more reliable backups
- Recover data in minutes
- Simple to deploy and manage
- Affordable as tape

“The structure takes **fewer resources** to manage, and our administrators **don’t spend hours waiting for backups to complete**. Eliminating the use of tape at headquarters **saves over \$100,000 a year.**”

Eli Levy, Vice President of Mercury Interactive



# Go further, faster



Increase your business  
flexibility and efficiency

Accelerate and transform  
your business

Count on a partnership  
dedicated to your success



**Thank You**



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