

ExaGrid

Stress-free backup storage



About ExaGrid

ExaGrid

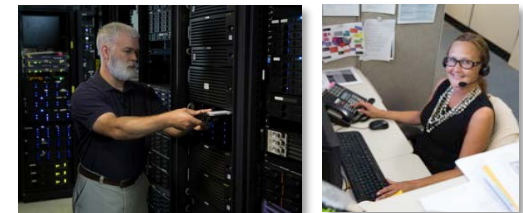
- Largest independent vendor in the space
- Only “Visionary” in the 2015 Gartner Magic Quadrant

100% focused on disk-based backup

- Highly differentiated architecture
- Winner of the most industry awards

Large customer base

- Over 10,000 systems installed — worldwide
- Over 300 published customer success stories



Gartner



INFO~TECH
research group



Gartner Magic Quadrant

Figure 1. Magic Quadrant for Deduplication Backup Target Appliances



Source: Gartner (September 2015)

“Product of the Year – Backup Hardware”



ExaGrid takes top **Gold** award

Judged by *Storage* magazine as best storage appliance across five categories:

- Performance
- Ease of integration and use
- Manageability
- Functionality
- Value

Industry Recognition

2014 - 2016

Gartner

ExaGrid Named "Visionary" in the 2014 Magic Quadrant for Disk Backup with Deduplication



Disk Based Product of the Year: Small/Mid-range



2011 - 2013

Gartner

"Top Emerging Vendor" Cool Vendor in Data Protection



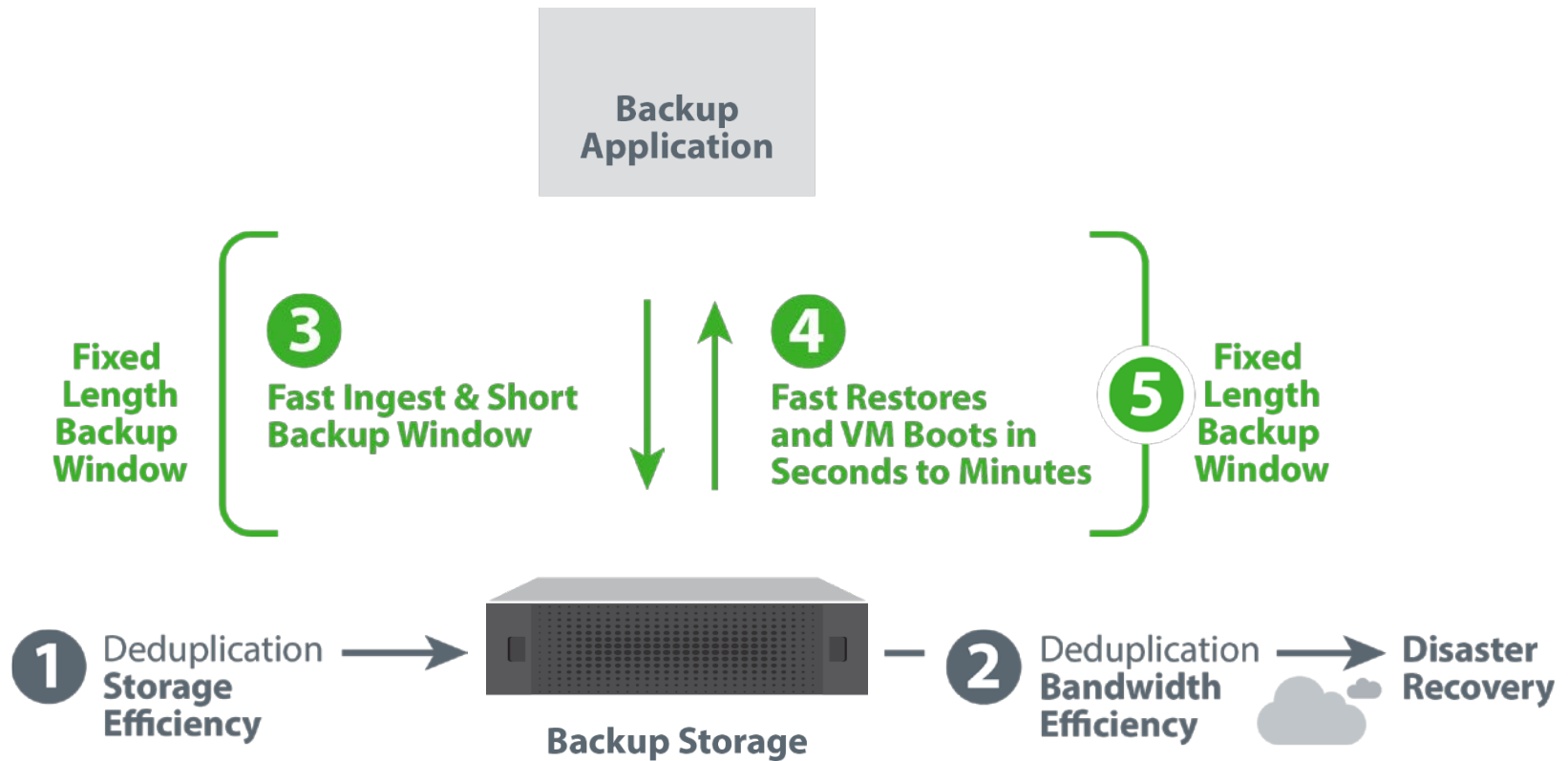
"Best Value for Money" "One to Watch"



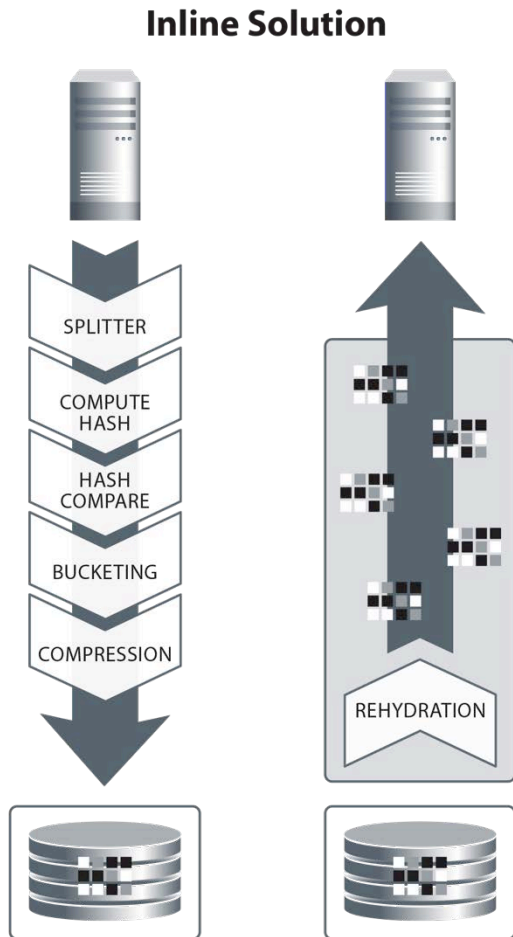
ExaGrid Named 2013 "Disk Backup Champion"



5 Considerations of Data Deduplication



Inline Scale-up Appliances Fall Short



Inline deduplication on the way to disk

- Slower ingest
- Longer backup window

All data is stored in a deduplicated form

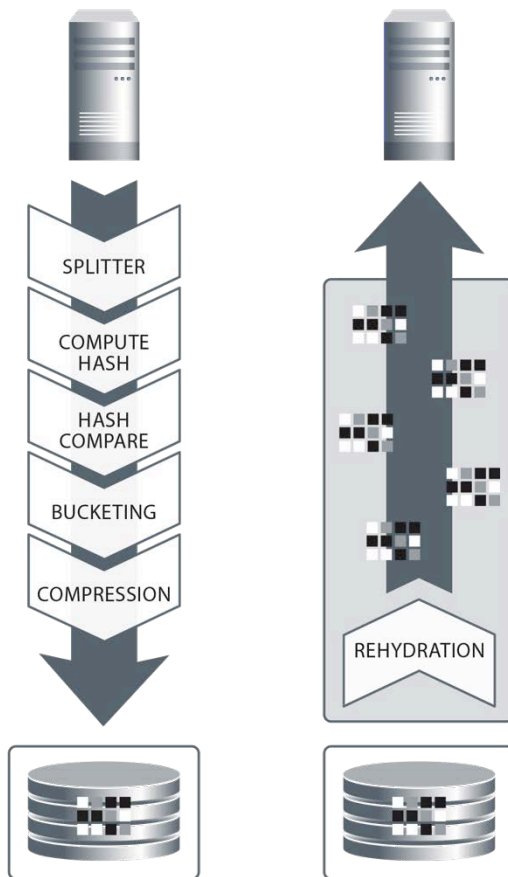
- Slow restores, VM boots & tape copies

As data grows, only disk is added

- Backup window grows as data grows
- Ultimately forces a costly forklift upgrade

Backup Application Inline Deduplication to Disk

Inline Solution



Inline deduplication in the media server

- Slower ingest
- Longer backup window
- Can only deduplicate native backup data

All data is stored in a deduplicated form

- Slow restores, VM boots & tape copies

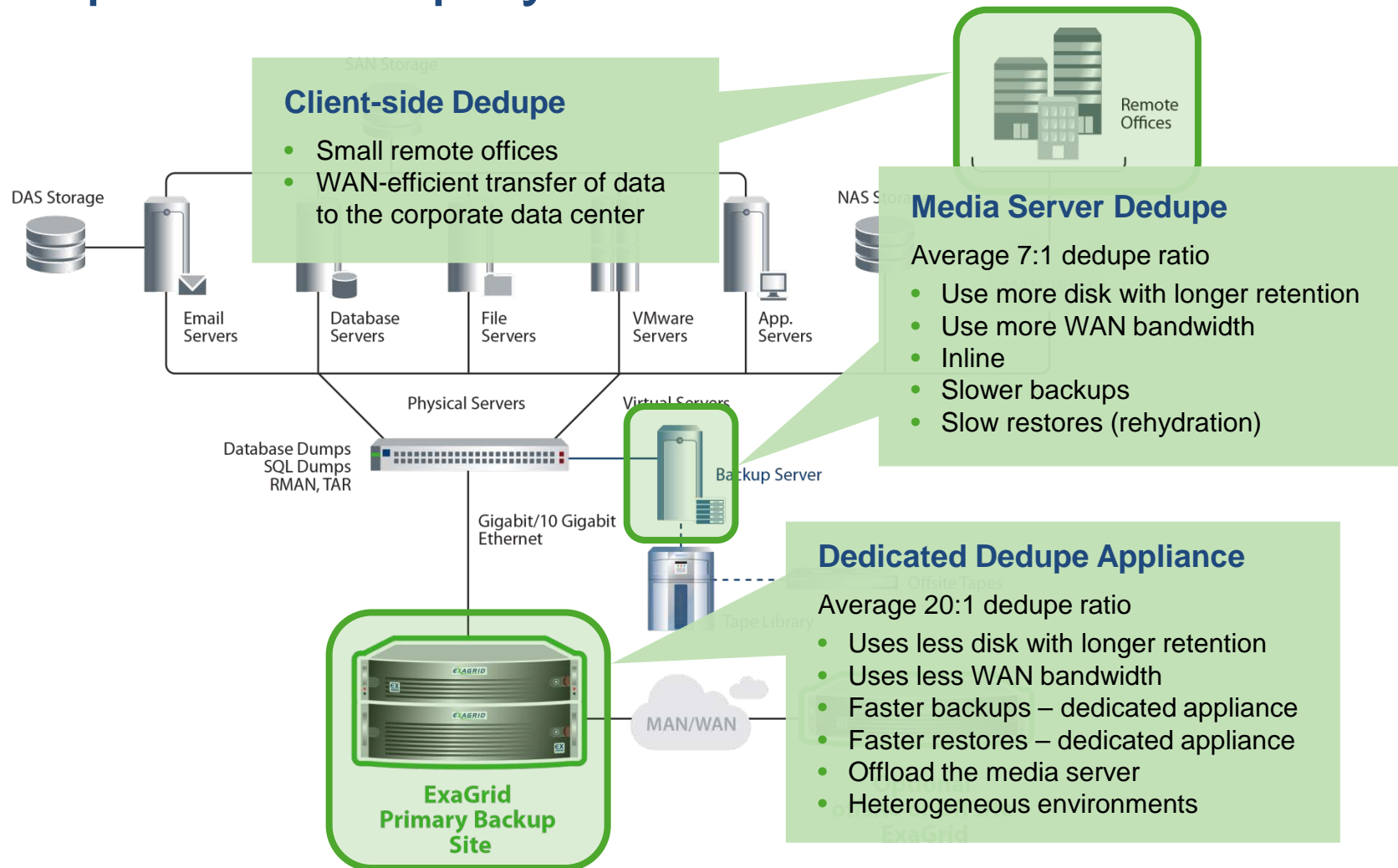
Deduplication ratios are low

- Uses more disk than target appliances
- Uses more bandwidth to replicate

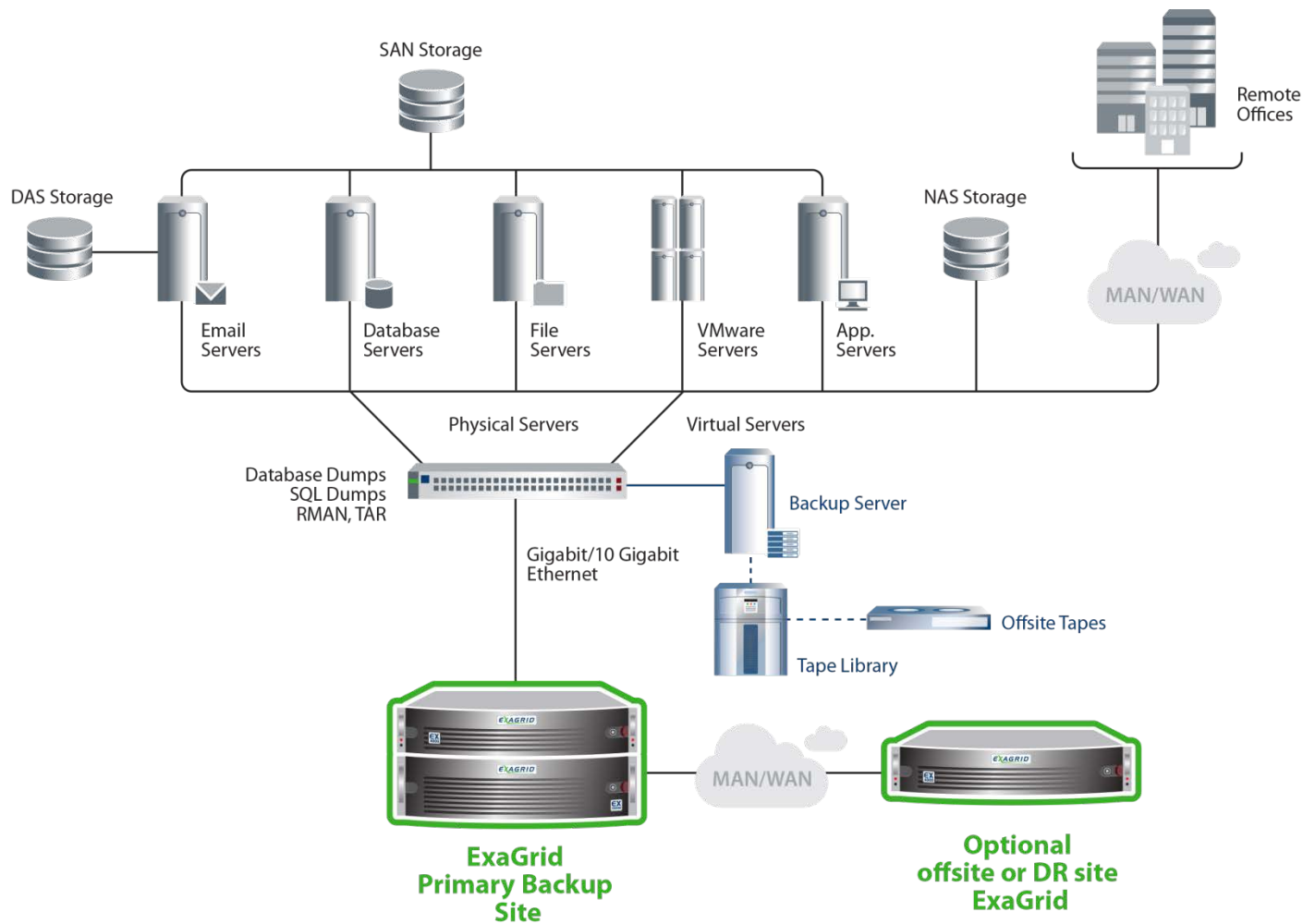
Limited scalability

- Backup window grows as data grows

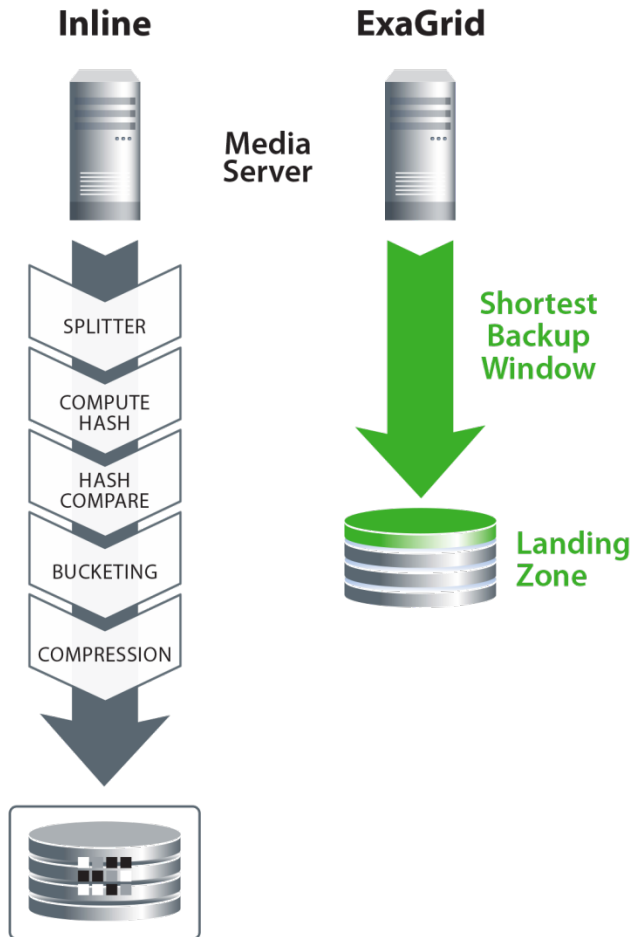
Deduplication Deployment Scenarios



ExaGrid – Simple and Flexible



Fastest Backups and Shortest Backup Window



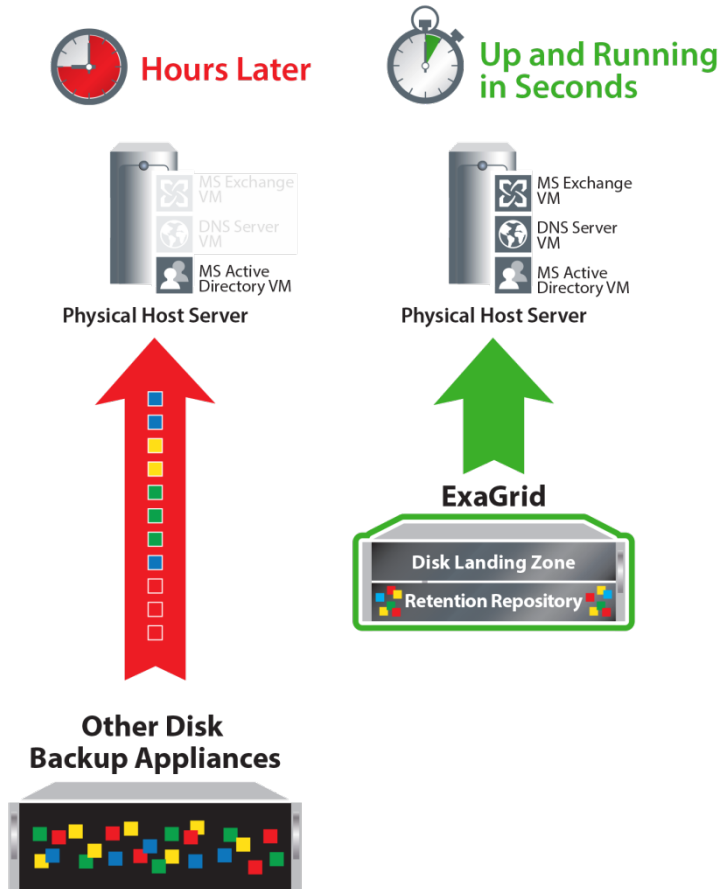
Unique landing zone

- Write backups directly to disk
- Avoid compute-intensive deduplication
- Adaptive deduplication

Benefits

- No inline processes to slow backups
- Fastest backups
- Shortest possible backup window
- Strong offsite RPO

Fast Restores, VM Boots in Seconds to Minutes



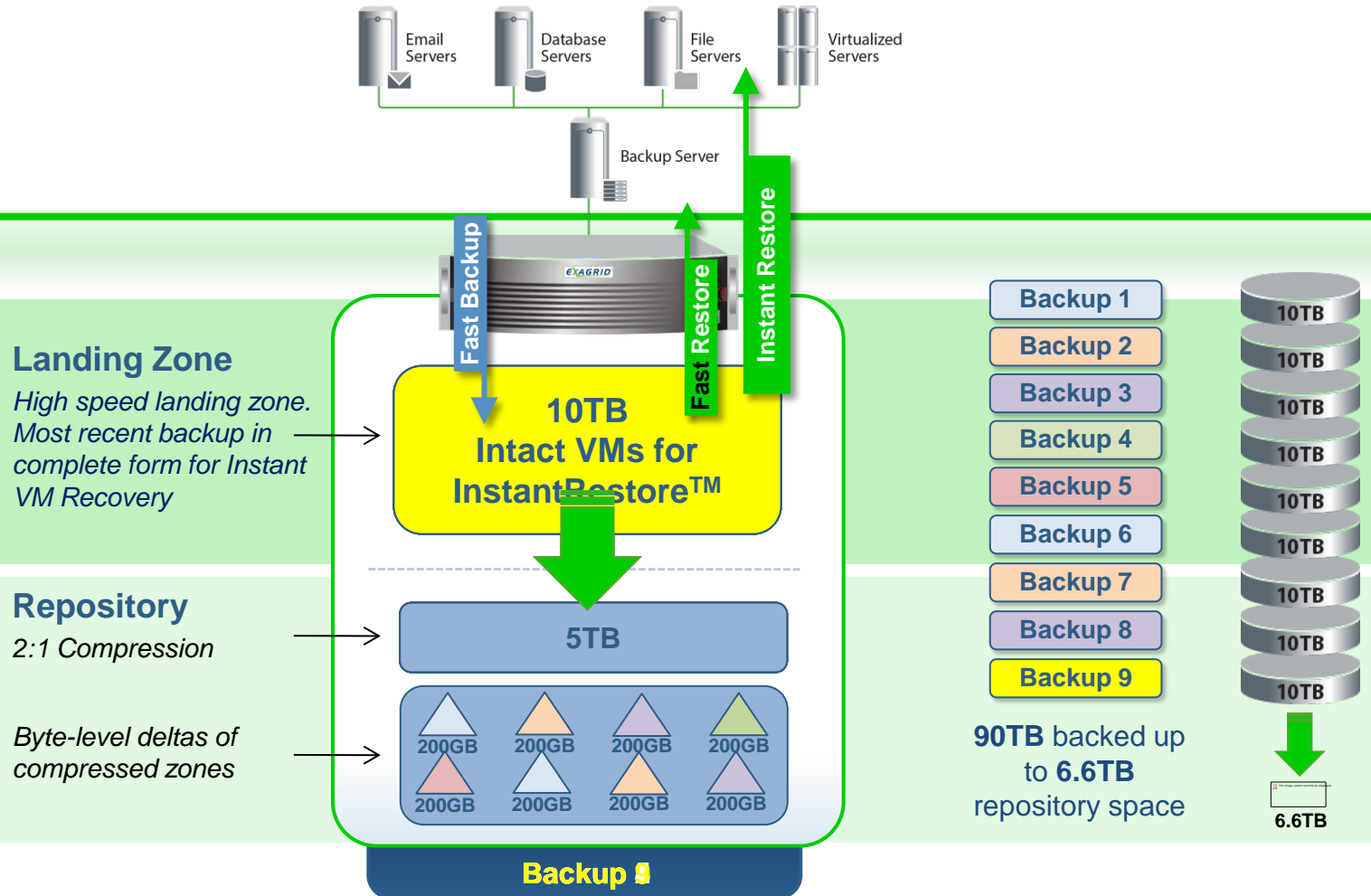
Landing Zone

- Most recent backups are in an undeduplicated form
- Eliminates data rehydration

Benefits

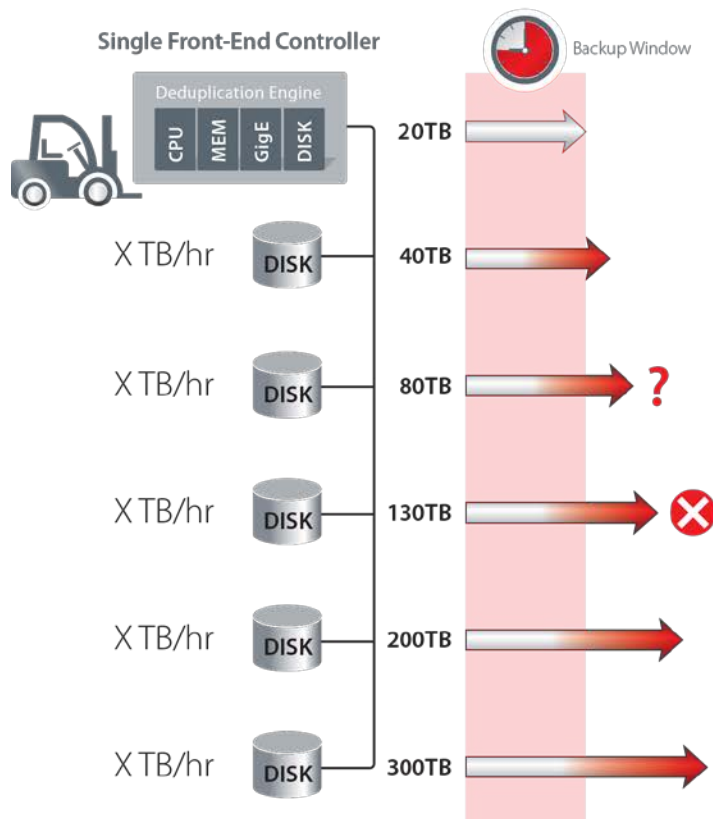
- Restores as fast as disk
- Tape copies as fast as disk
- VM boots in seconds to minutes

Advanced Architecture for Instant Recovery

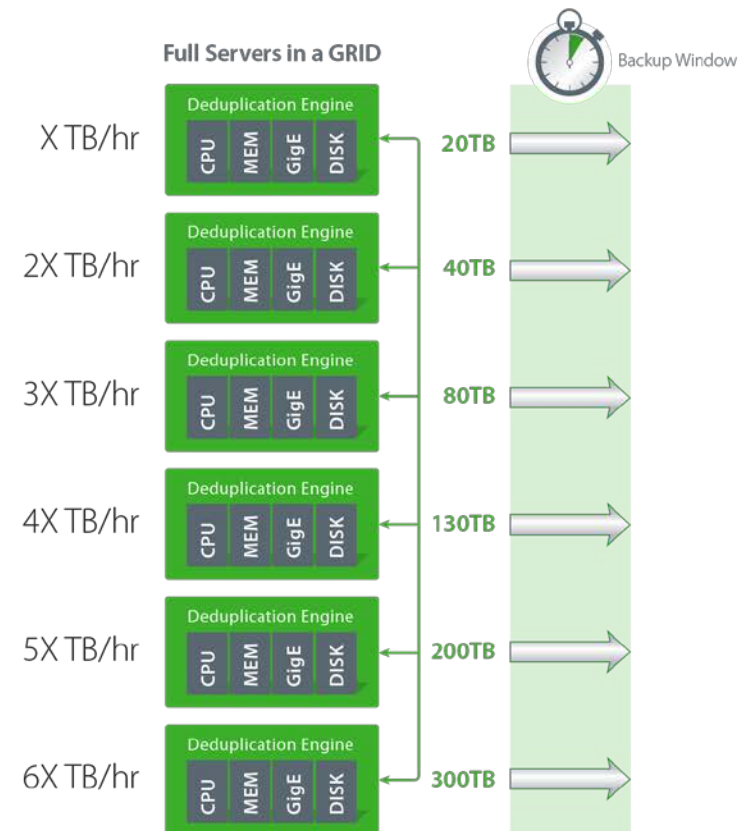


Fixed Length Backup Window

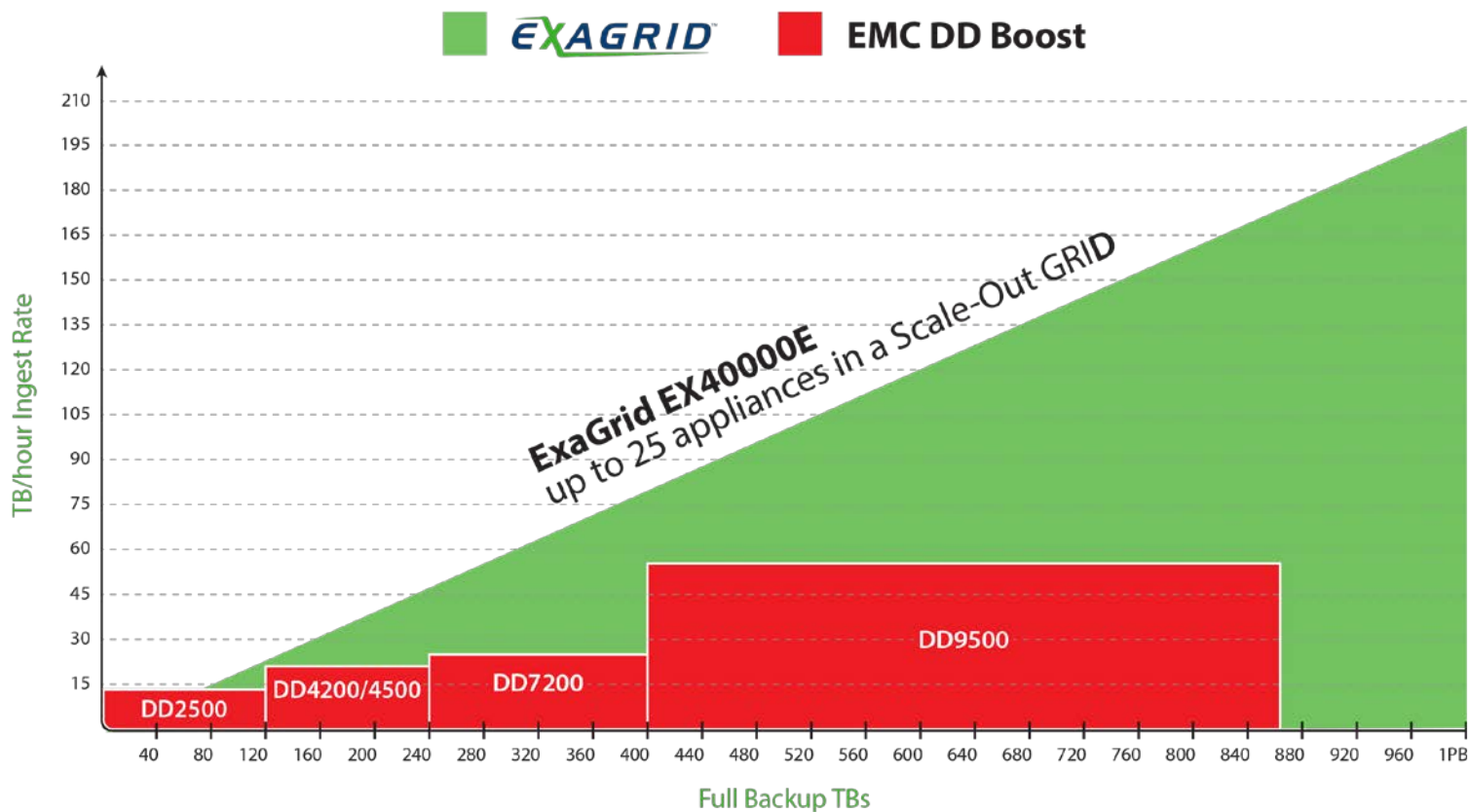
Scale-Up Architecture



ExaGrid Scale-Out GRID Architecture



Ingest Performance of Scale-Out vs Scale-Up



ExaGrid Appliances in a Scalable GRID

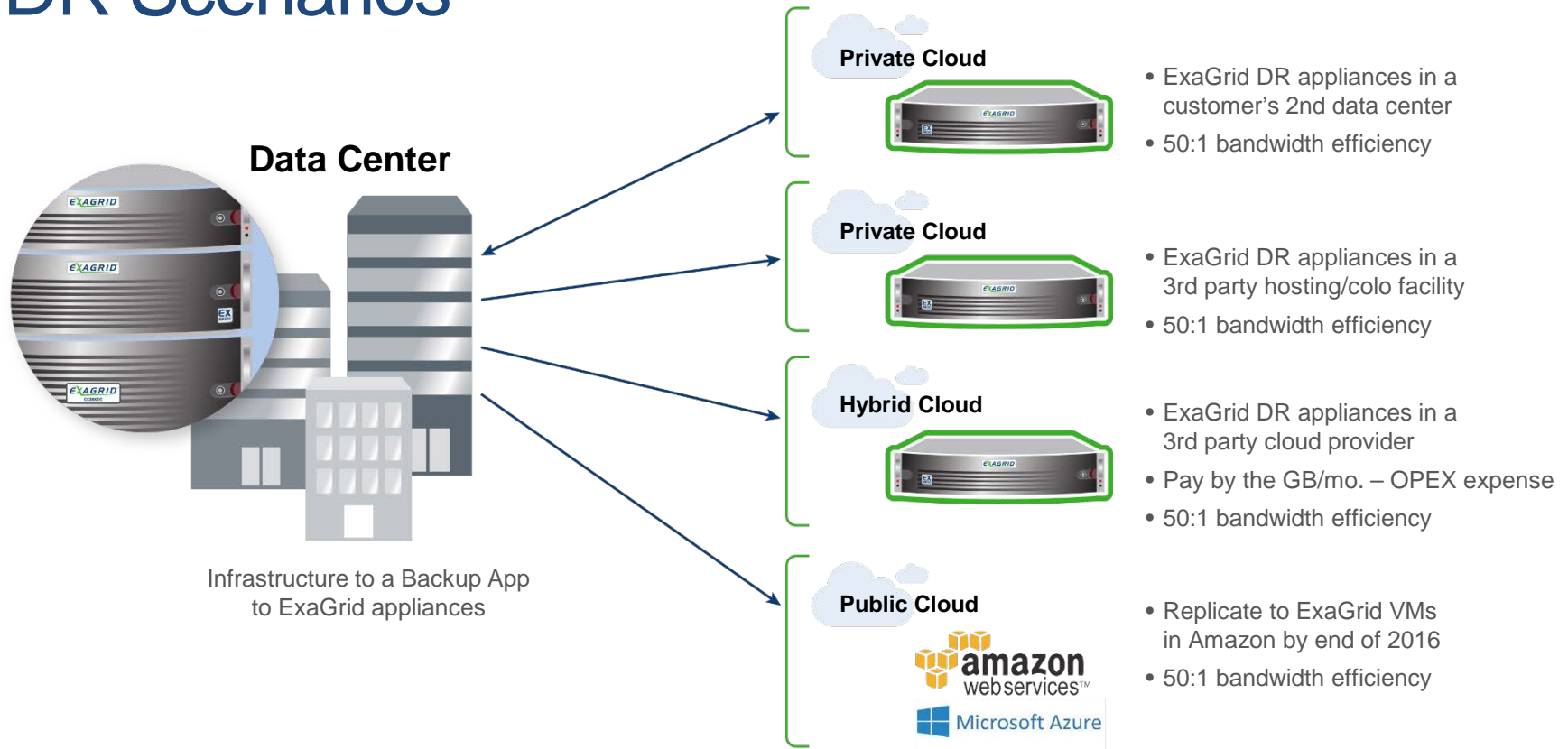
25 Appliances in a Scale-Out GRID (One Petabyte Full Backup)

ExaGrid Model	Usable Capacity (TB)	Capacity for Weekly Fulls (TB)	Max Backup Throughput (TB/hr)
EX2000	4	2	0.36
EX3000	6	3	0.72
EX5000	10	5	1.08
EX7000	14	7	2.40
EX10000E	20	10	2.40
EX13000E	26	13	2.40
EX21000E	44	21	4.32
EX32000E	63	32	7.56
EX40000E	78	40	8.00

Technical Specifications

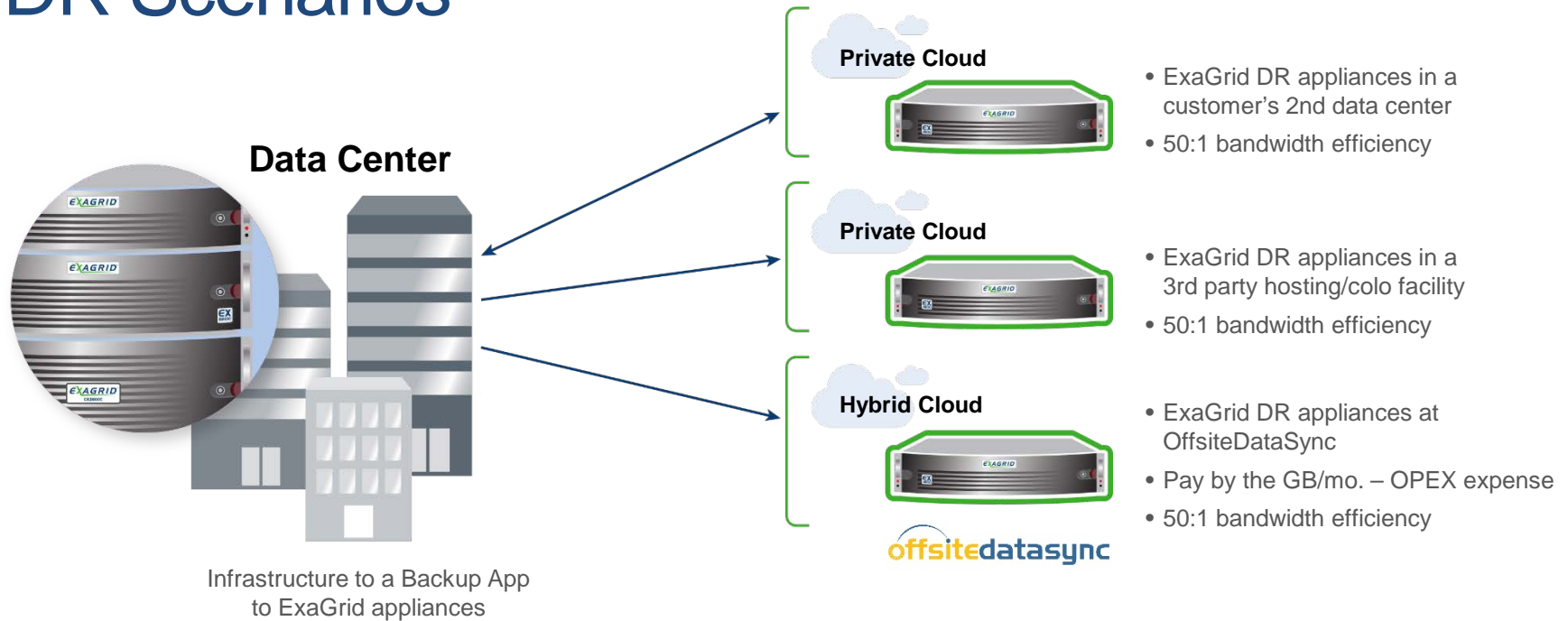
ExaGrid Model	EX2000	EX3000	EX5000	EX7000 / -SEC	EX10000E / - SEC	EX13000E / -SEC	EX21000E / -SEC	EX32000E / -SEC	EX40000E / -SEC
Chassis	2U	2U	2U	2U	3U	3U	3U	4U	3U
Full Backup	2TB	3TB	5TB	7TB	10TB	13TB	21TB	32TB	40TB
Disks	7	9	8	10	13	16	14	24	16
Disk Size	1TB	1TB	2TB	2TB	2TB	2TB	4TB	3TB	6TB
Memory	8 GiB	8 GiB	8 GiB	8 GiB	16 GiB	16 GiB	32 GiB	32 GiB	64 GiB
CPUs / Cores	1 CPU 4 cores	1 CPU 4 cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores	1 CPU 4 hyper-threaded cores
NIC Ports	Two 1GbE	Four 1GbE and two optional 10GbE	Four 1GbE and two optional 10GbE	Four 1GbE and two optional 10GbE	Six 1GbE and optionally replace two 1GbE with two 10GbE	Six 1GbE and optionally replace two 1GbE with two 10GbE	Six 1GbE and optionally replace two 1GbE with two 10GbE	Six 1GbE and optionally replace two 1GbE with two 10GbE	Six 1GbE and optionally replace two 1GbE with two 10GbE or two 40GbE
All Servers: Intel processors / Enterprise SATA drives (SAS drives for EX21000E, EX32000E, and EX40000E; FIPS-2 compliant SAS drives for all -SEC systems) / RAID 6 with hot spare / Redundant fans / Redundant power supplies / ExaGrid software / 19-inch rack-mount chassis									

DR Scenarios



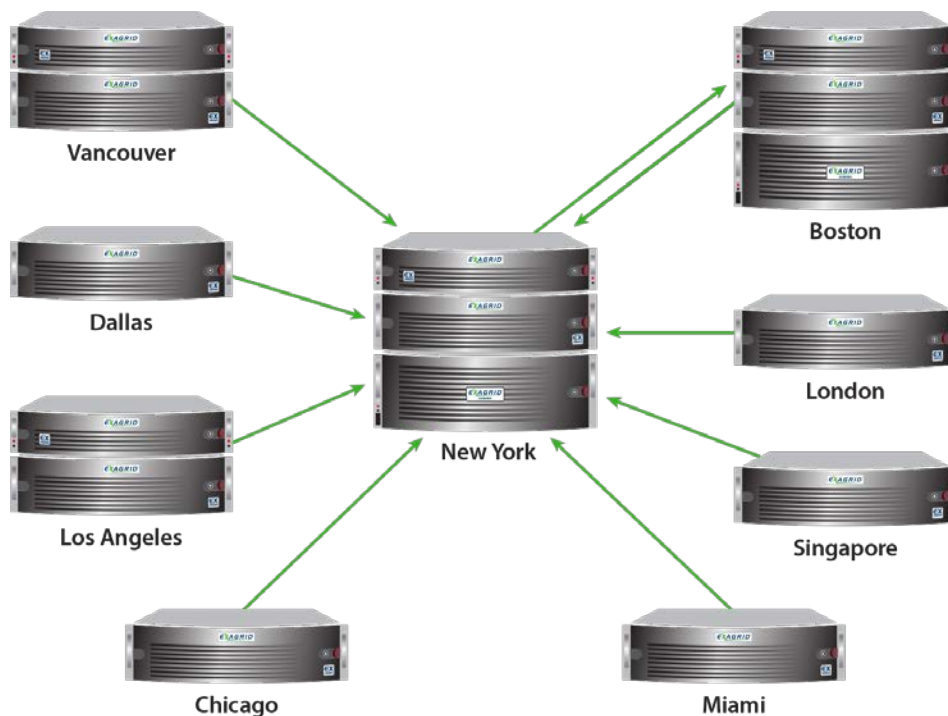
- Adaptive deduplication deduplicates and replicates in parallel
- Configure the disaster recovery site to all repository to save cost
- Bandwidth throttle and WAN encryption for data replication

DR Scenarios



- Adaptive deduplication deduplicates and replicates in parallel
- Configure the disaster recovery site to all repository to save cost
- Bandwidth throttle and WAN encryption for data replication

Multi-site Data Center Disk Backup Topology



Multi-site Architecture

- 16 locations in a single group – spoke and hub
- 50:1 WAN efficiency across all sites
- Management from single UI
- Cross-site protection between sites
- Consolidated DR copies of backup reduces costs

Works in Heterogeneous Environments

Backup Applications



A collection of logos for various backup applications, including Veritas, IBM, Dell, Veeam, Unitrends, Commvault, Arcserve, PHD Virtual, EMC, HP, Zerto, Storagecraft, BridgeHead, and Acronis.

Applications Direct



A collection of logos for applications that can be backed up directly, including Microsoft SQL, Oracle (Oracle Dump, RMAN Dump), Redgate, IBM, and Idera.

Linux/UNIX Direct TAR



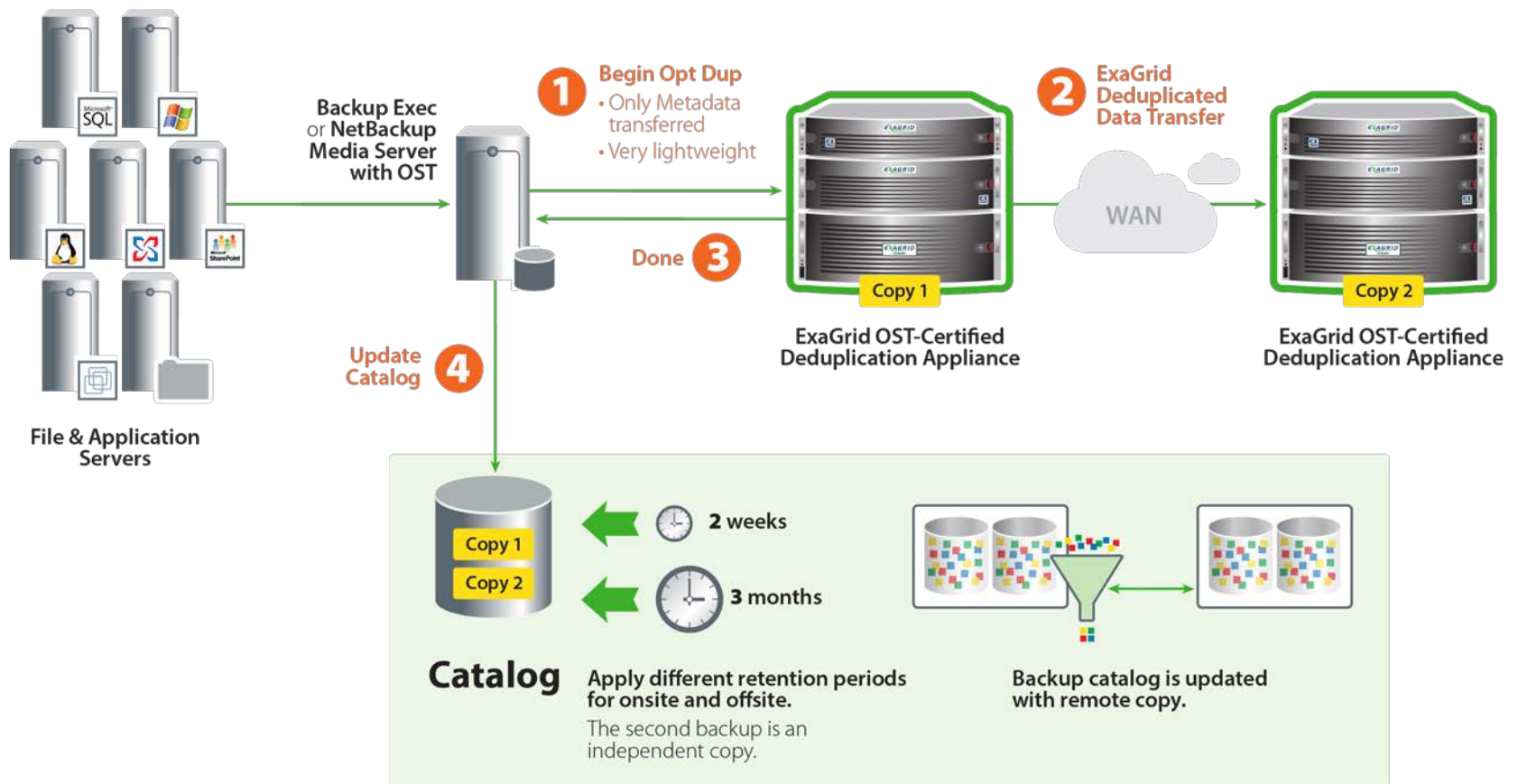
A collection of logos for Linux and UNIX operating systems, including Linux (Tux penguin), Red Hat, and Solaris.



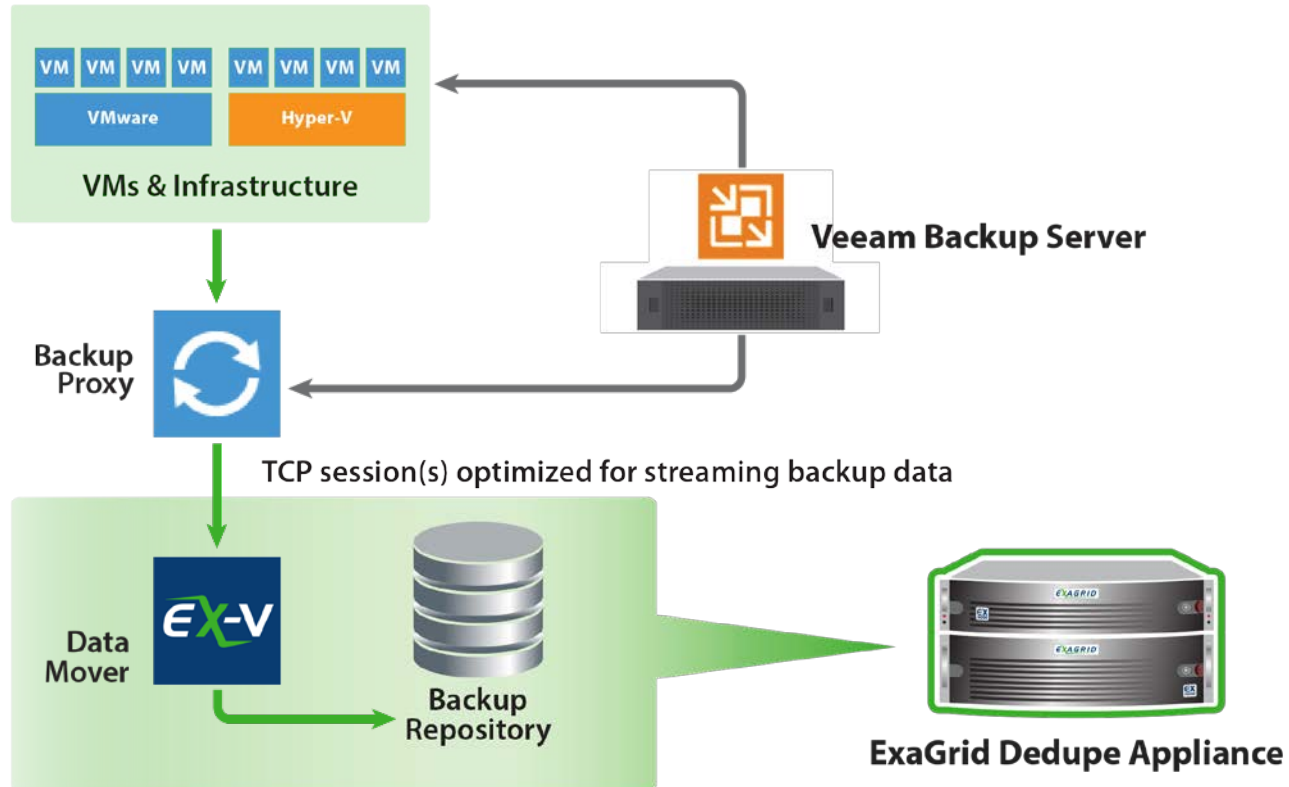
ExaGrid – Ecosystem Partners



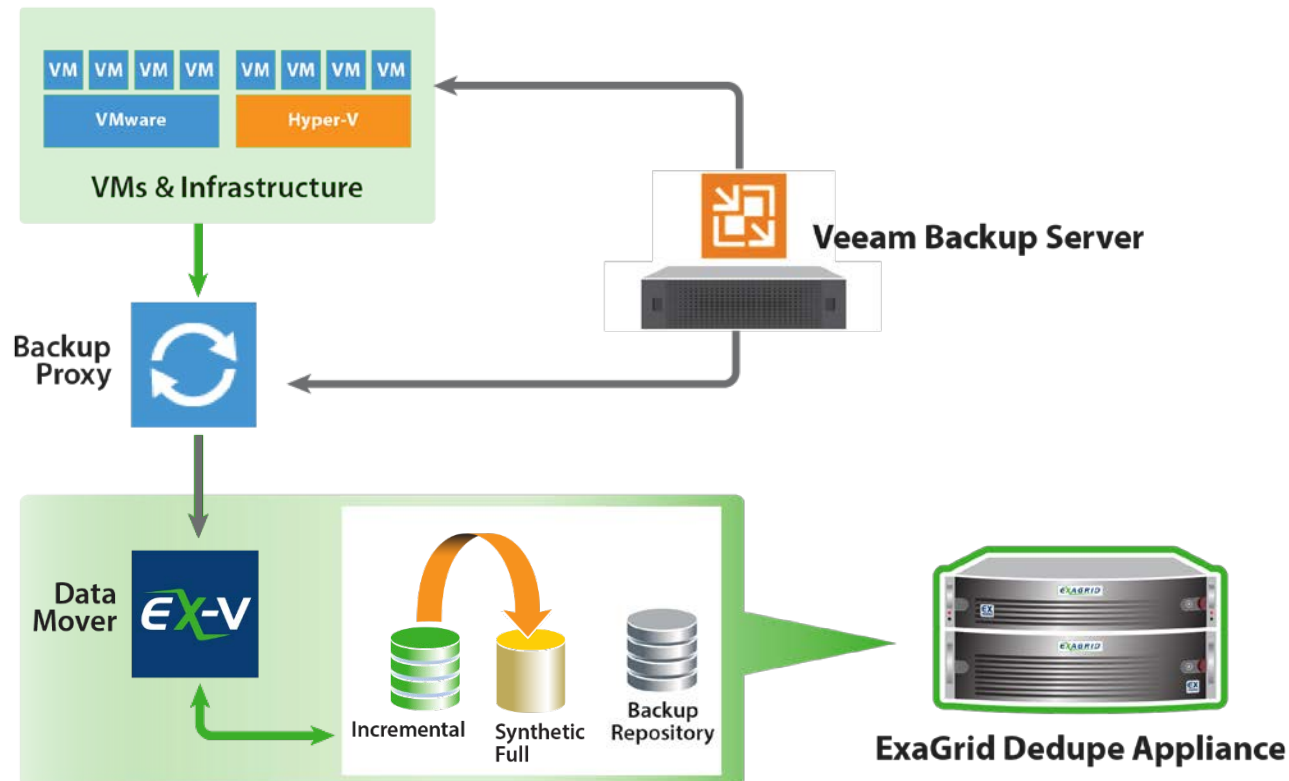
ExaGrid Integration with Symantec OST



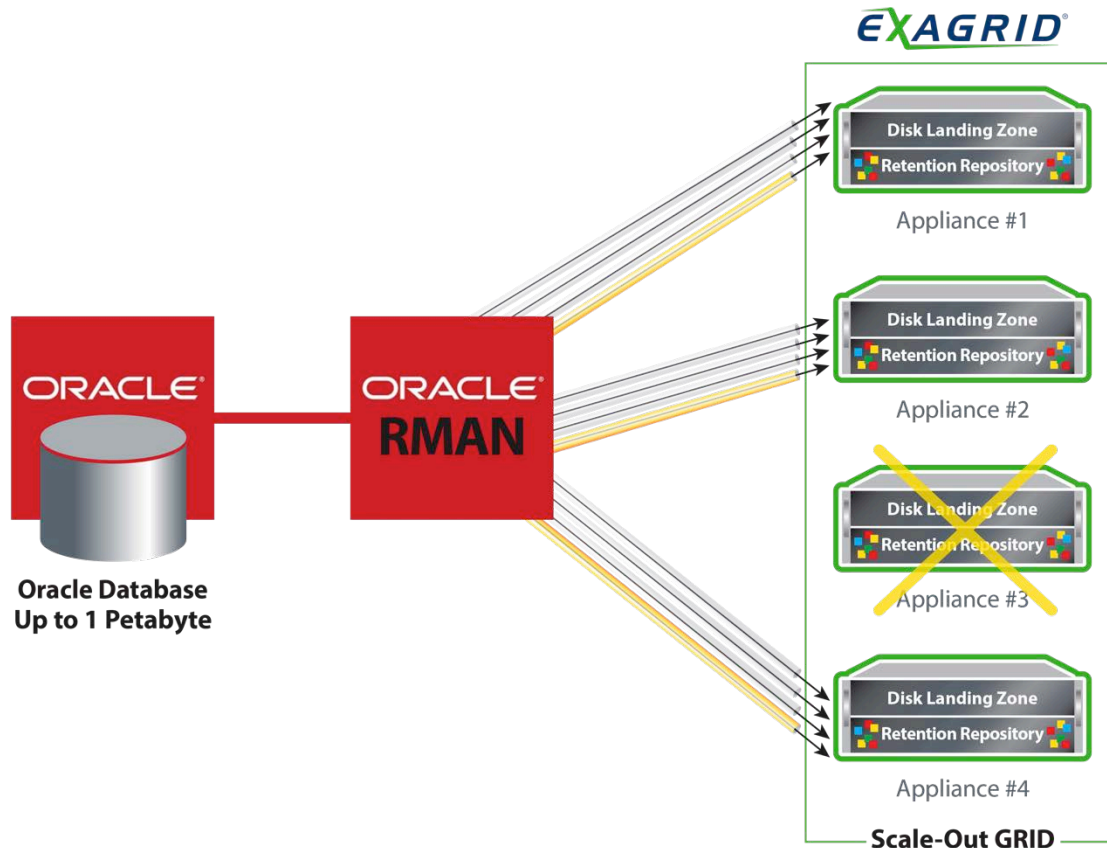
Fastest Veeam Ingest and VM Boots



Fastest Recoveries from Veeam Synthetic Fulls



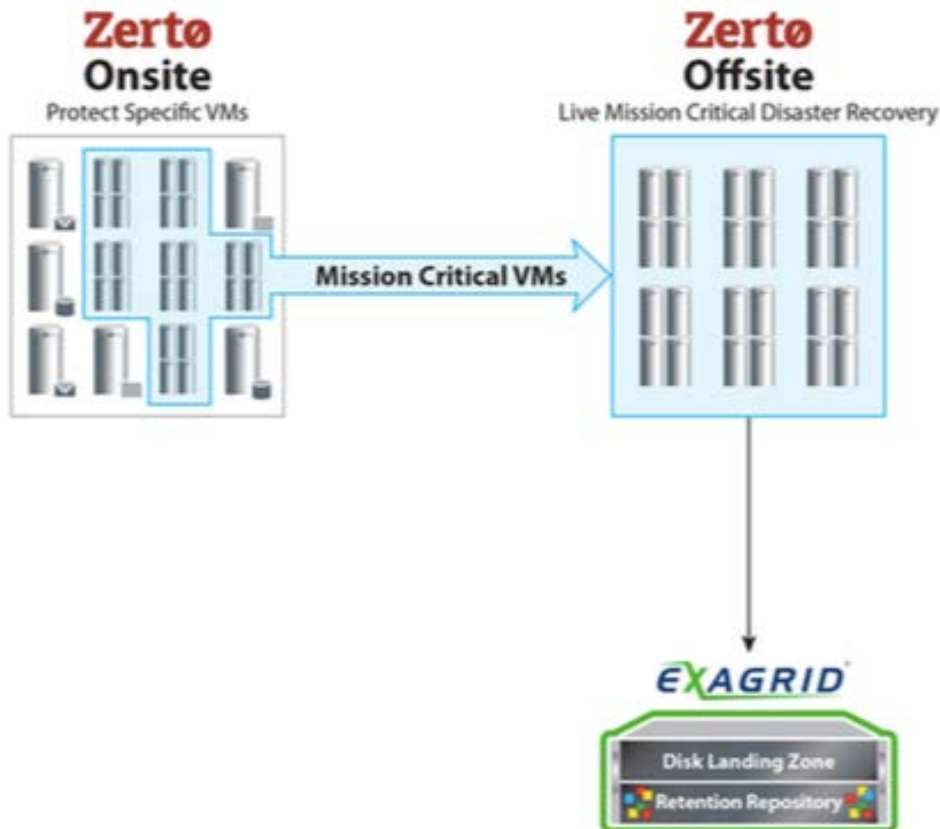
Fastest Oracle RMAN Backups with Failover



Fast restores, tape copies and VM boots in seconds to minutes

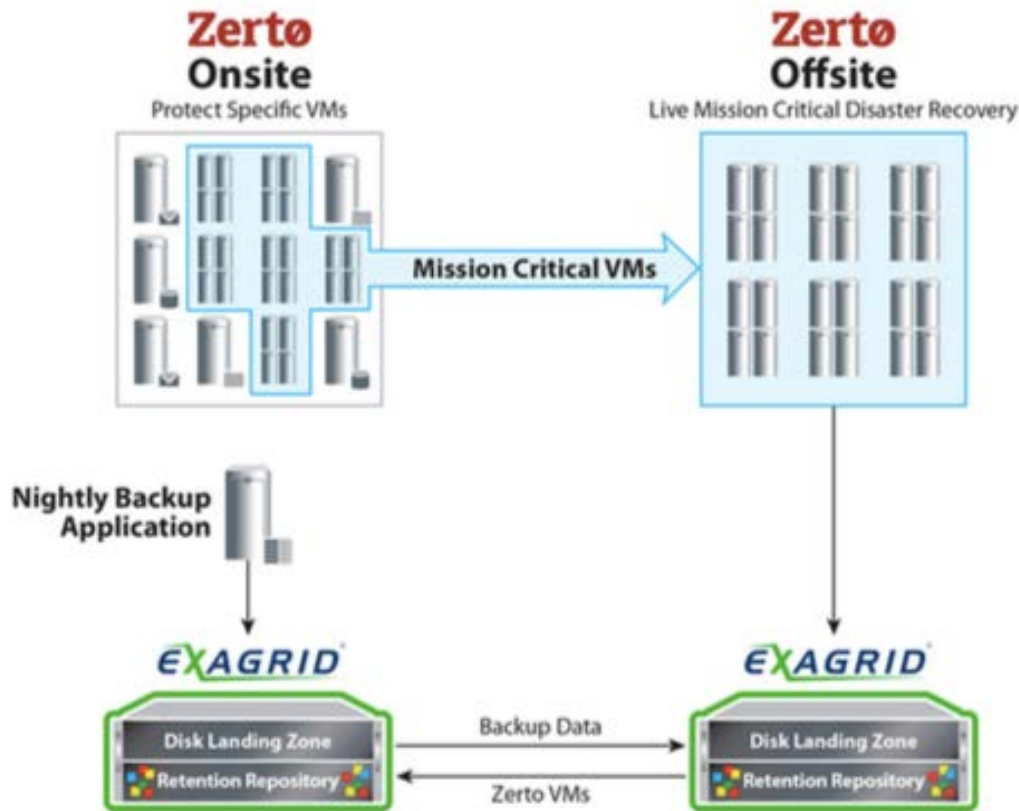
- 1 petabyte database backup in a single system
- Parallel channels for the fastest backups
- RMAN failover if any appliance fails

Zerto Offsite Backup to ExaGrid



- Offsite Tier One VMs are:
 - stored on the ExaGrid system for long-term retention

Zerto Offsite Backup to ExaGrid



- Offsite Tier One VMs are:
 - stored on the ExaGrid system for long-term retention
 - replicated back to the primary site ExaGrid system for a second backup copy
- Nightly backup data is backed up at the primary site to the ExaGrid system and replicated offsite for DR

Unified Management Console: ExaGrid UI

Single interface across all systems

Simple dashboard gives quick view

The screenshot displays the ExaGrid management console interface. On the left is a navigation tree showing a hierarchy of sites and servers. The main area shows a dashboard for 'Site: New York' with several data tables and progress indicators.

Navigation Tree:

- ExaGrid
 - Site: New York
 - NYC1:EX13000E
 - NYC2:EX13000E
 - NYC3:EX13000E
 - NYC4:EX13000E
 - NYC5:EX13000E
 - NYC6:EX13000E
 - Site: Boston
 - BOS1:EX10000E
 - Site: Seattle
 - SEA1:EX5000
 - Site: Trenton
 - TRN1:EX2000
 - Site: Dallas
 - DAL1:EX10000E
 - Site: Omaha
 - OMH1:EX5000
 - Site: Pittsburgh
 - PIT1:EX10000E
 - Site: Tampa
 - TAM1:EX5000
 - Site: Albany
 - ALB1:EX5000

Summary for Site : New York

Landing Space for Site : New York

Server	Available			Deduplication Status
	Actual	% Available for Next Backup	Maximum	
New York	78,000.00 GB	100%	78,000.00 GB	In Progress

Retention Space for Site : New York

Server	Available	Consumed	Retention Space		Total Capacity	Over Capacity	Replication Status
			% Available				
New York	73526.33 GB	4,473.67 GB	92%		78000.00 GB	0.00 GB	In Progress

Duplication Summary for Site : New York

Share	Deduplication Ratio	Total Backup Data	Space Consumed	
New York	33.6 : 1	83,774.44 GB	4,473.67 GB	
NYC1	✓ 16.1 : 1	16,588.17 GB	1,731.51 GB	
SQL1	✓ 7.1 : 1	10,692.79 GB	1,505.61 GB	
SQL2	✓ 26.1 : 1	5,895.38 GB	225.90 GB	
NYC2	✓ 9.01 : 1	9,155.28 GB	1,016.40 GB	
Exchange	✓ 9.01 : 1	9,155.28 GB	1,016.40 GB	
NYC3	⚡ 43.78 : 1	9,265.80 GB	211.66 GB	
VMWare	⚡ 43.78 : 1	9,265.80 GB	211.66 GB	
NYC4	✓ 20.33 : 1	35,766.63 GB	1,759.17 GB	
FileSystem1	✓ 30.44 : 1	21,485.09 GB	705.90 GB	
FileSystem2	✓ 13.56 : 1	14,281.54 GB	1,053.27 GB	

Daily Email Report

System Status

Landing Zone

Repository

Click here to turn on links. To help protect your privacy, links are turned off in this message.
You forwarded this message on 7/23/2009 2:32 PM.

From: gahealth@YourCompany.com
To: IT Dept Manager
Cc:
Subject: Daily Exagrid Site: New York report for Thursday, July 23, 2009, 6:00 PM UTC Status: OK, Completed Jobs: 1

Daily status report for Exagrid Site: New York
for: Thursday, July 23, 2009
from: Thursday, July 23, 2009, 1:00 AM UTC
to: Thursday, July 23, 2009, 6:00 AM UTC
Site Status is: OK

Summary for New York

Server	Status	Deduplication Status	Deduplication Ratio	Total Backup Data	Space Consumed	Replication Status
New York	OK	✓ Complete	37.17 : 1	1726.21 GB	100.03 GB	✓ Complete
NYC1	OK	✓ Complete	37.17 : 1	1726.21 GB	100.03 GB	✓ Complete

Landing Space for New York

Server	Available			Deduplication Status
	Actual	% Available for Next Backup	Maximum	
New York	5,000.00 GB	100%	5,000.00 GB	Complete
NYC1	5,000.00 GB	100%	5,000.00 GB	Complete

Retention Space for New York

Server	Retention Space			Total Capacity	Over Capacity	Replication Status
	Available	Consumed	% Available			
New York	4,899.97 GB	100.03 GB	95%	5,000 GB	0.00 GB	Complete
NYC1	4,899.97 GB	100.03 GB	95%	5,000 GB	0.00 GB	Complete

EXAGRID

Stress-free Redundancy and Security

Redundant Hardware

- RAID6 guards against simultaneous disk drive failures
- Redundant power supplies
- NIC teaming

Security

- Optional data encryption at rest
 - FIPS 140-2 compliant / 256-bit AES
 - Occurs at the drive level in nanoseconds
 - Does not impact backup performance
- WAN encryption for secure data transfer

Personal Touch - Maintenance and Support

Phone and Email Support

- Assigned a level 2 customer support engineer
- Support staff are subject matter experts in backup applications

Customer Installable and Serviceable

- Self-installable with phone support and WebEx
- Self-serviceable hardware replacements, next business day delivery

All Releases Provided

- Point and full releases – includes all new features
- No license fees to track or renew

Health Status Monitoring

- ExaGrid monitors and notifies

No additional charge – All included in support program

Selected ExaGrid Global Customers

Manufacturing Transportation / Retail



Healthcare



Banking Insurance / Law



Business Services



Government



From Customers who Chose ExaGrid over DD

VW CREDIT, INC.



Volkswagon Credit

“We tested solutions from both ExaGrid vs. Data Domain side by side and chose the ExaGrid based on its approach to data deduplication and its overall simplicity. The ExaGrid also had the best price/performance.”

Cross Country Homes

ExaGrid and market leader Data Domain both dedupe at the target but Data Domain does inline deduplication, and Matulik decided that ExaGrid’s data deduplication appliance was better for his needs. “Our backup windows had to be much smaller. We looked at the best method of doing backup in a smaller window.”



Vermont Electric Power

“We compared both systems and chose the ExaGrid based on its price/performance and scalability. Also, ExaGrid’s data deduplication technology seemed like a good fit for us and we liked the fact that we could retain our investment in Backup Exec.”

ASCENDONE

Ascend One *(former customer of DD)*

“From the beginning, the [Data Domain] system wasn’t properly sized, so we couldn’t back up as much data as we would have liked and performance was poor. We chose the ExaGrid over other solutions for a lot of reasons, not the least of which is the uncomplicated scalability as well as the ability to do replication.”



Grow Financial *(former customer of DD)*

“In our business, time is money, and downtime can be calculated in losses of thousands of dollars an hour. Ninety-nine percent of the time, we need to restore data from the most recent backup, but with the Data Domain unit, stored data had to be reconstituted, and the recovery process was long and complicated.”

CASE STUDY:

First National Bank of Hutchinson



*“It seems that ExaGrid is
really on top of new
technology...”*

— Tim Miller Senior VP and Manager,
IT FNBH

Before ExaGrid

Environment

- Backup media: disk & tape
- Software: Backup Exec with software data deduplication

Challenges

- Backups ran 20 hours
 - Desired backup window 12 hours
- Unable to run full backups within window; some servers not backed up at all
- 5:1 deduplication ratio consumed too much disk
- Retention limited to 20 days

After ExaGrid

Environment

- Two-site ExaGrid system
- Veritas Backup Exec

Advantages

- Backup window reduced to 11 hours, even with increased data volumes
- Deduplication ratio increased to 27:1 resulting in longer retention of 30 days

CASE STUDY:

Strategic Hotels and Resorts



STRATEGIC
Hotels & Resorts

***“ExaGrid’s support is,
in my opinion,
the best in the
business!”***

— Bryce White, Director of IS,
Strategic Hotels & Resorts

Before ExaGrid

Environment

- Backing up to cloud solution

Challenges

- Cloud’s unfriendly interface very cumbersome and time consuming
- Required granular detail to locate and restore data
- Cloud costs \$14,000 per month and escalating

After ExaGrid

Environment

- Single-site ExaGrid with Veritas Backup Exec

Advantages

- Instant restores with “flawless, very fast” performance
- Retention period met with 70% of the storage still available
- Savings of \$150,000 per year; three-month ROI

CASE STUDY:

St. John's Riverside Hospital



“We didn’t want a situation where the backup software was waiting on the appliance.”

— Niall Pariag,
Senior Network Administrator

Before ExaGrid

Environment

- D2D2T solution using Veritas NetBackup

Challenges

- Nightly backups ran 12 hours
 - Needed to be shorter to avoid impact to users
- Out of capacity on disk and tape
 - Not all data backed up
- Solution limited to just one week of retention

After ExaGrid

Environment

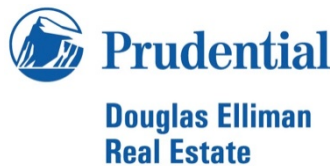
- Two-site ExaGrid system with Veritas NetBackup

Advantages

- Backup times reduced by 50% to less than 6 hours
- Vast improvement in restore times
- All data backed up regularly
- Three months of retention

CASE STUDY:

Prudential Douglas Elliman



*“I have peace
of mind that I didn’t
have before.”*

— Tony Pahuja, Network Manager,
Prudential Douglas Elliman

Before ExaGrid

Environment

- Veritas Backup Exec to tape

Challenges

- Backup window exceeded 24 hours
- Backups required up to 15 tapes for daily backups and up to 40 for full backups
- Restores took one to five days

After ExaGrid

Environment

- Single-site ExaGrid with Veritas Backup Exec

Advantages

- Backup window reduced
- Reliable backups and restores
- Backups are now self-running
- Restores complete in just a few hours

CASE STUDY:

Lawndale Christian Health Center



*“ExaGrid has done
everything we wanted
and more.”*

— Michael Strong, Systems Administrator,
Boston Private Bank & Trust

Before ExaGrid

Environment

- Veritas Backup Exec to tape

Challenges

- Unable to complete full backups within backup window
- File server alone took 12+ hours to back up
- Tape-based DR strategy was cause for concern

After ExaGrid

Environment

- Two-site ExaGrid with Veritas Backup Exec

Advantages

- Reliable backups and restores
- Backups completed in less than 8 hours
- Restores fast and painless compared to tape

CASE STUDY:

Hitachi Consulting



*“ExaGrid’s
customer support has
been stellar.”*

— Brad Leonard, Network
Engineer, Hitachi Consulting

Before ExaGrid

Environment

- Veritas NetBackup to tape

Challenges

- Tape library problems required daily management
- Restores required recalling tapes from offsite storage
- Differential backups ran for over 12 hours
- Full backups took more than 48 hours
 - Only able to back up 7TB of 12TB nightly

After ExaGrid

Environment

- Veritas NetBackup with three ExaGrid 2-site systems (including offsite)

Advantages

- Able to protect all data
- Nightly backup time reduced by 75% to 3 hours
- Saved thousands of dollars in license/maintenance fees vs. tape

CASE STUDY:

NPS Pharmaceuticals



“The return on investment for the ExaGrid system is tremendous.”

— Jason Ostrowski, Manager of I.T., NPS Pharmaceuticals

Before ExaGrid

Environment

- ARCserve Backup to tape

Challenges

- Weekly full backup took 38 hours
- Meeting SOX requirements was costly and time consuming
- Tape media, transportation, and storage costs excessive
- No DR plan

After ExaGrid

Environment

- Two-site ExaGrid system with ARCserve Backup

Advantages

- Achieved goal of 24-hour recovery from disaster
- Retention increased to 3 months
- Weekly backup window reduced by 60%
- Nightly backup window reduced by 50%
- Saved \$1,500/month in tape costs and storage fees

CASE STUDY:

MOTO (UK)



*“...with ExaGrid,
we no longer have to
worry about our
backups.”*

— Simon Austin,
Systems Architect Moto

Before ExaGrid

Environment

- 44 locations operating 24/7 using ARCserve

Challenges

- Full backups nightly to tape exceeded 12 hours
- Tape backups and restores were unreliable
- Growing database volumes from new ERP system
- Too risky to perform incremental backups during the week using tape

After ExaGrid

Environment

- Two-site ExaGrid system with ARCserve
- Citrix software at each of 43 locations with central backups at datacenter; second site for DR

Advantages

- Deduplication ratios as high as 34:1
- Able to perform incrementals nightly and full backups each weekend
- Retention increased to one year

CASE STUDY:

Concur



“We have been extremely pleased with the product, customer support, and the company as a whole.”

— Sean Graver,
Storage Architect, Concur

Before ExaGrid

Environment

- Disk-to-disk backup with inline deduplication, backing up over 10,000 databases daily

Challenges

- Maxed out number of disk trays; single controller
- Couldn't scale: took 2-1/2 days with D2D system to deduplicate one day's worth of data
- IT reverted back to tape backups
- Restores slow, difficult, and expensive

After ExaGrid

Environment

- ExaGrid 80TB system backs up 1PB of data

Advantages

- Deduplication ratios average 27:1
- Backups meet goals, scale using GRID
- Restore speeds are fast; full copy of most recent backup in high-speed landing zone
- Add capacity in modular increments to pay as they grow

CASE STUDY:

Dot Foods



*“The time that we
spend managing our
backups has been cut
considerably...”*

— Les Hultquist, UNIX
Administrator, Dot Foods

Before ExaGrid

Environment

- Commvault Simpana to tape

Challenges

- Backup window continued to grow to unacceptable proportions
- Limited by number of tape drives, which didn't provide sufficient throughput or volume
- Amount of tapes required and related physical storage were problematic

After ExaGrid

Environment

- Two-site ExaGrid cross-replicating system

Advantages

- Approach to deduplication optimizes disk space
- Seamless integration with Commvault Simpana
- Two-site system provides DR protection
- Much less time spent managing backups

CASE STUDY:

American Standard

*American
Standard*

***“ExaGrid has taken
all of the worry
and hassle out of our
backups.”***

— Steve Pudimott,
Manager of IT Services

Before ExaGrid

Environment

- Veritas NetBackup to tape

Challenges

- Ability to replicate data safely offsite
- Tapeless backups
- Multiple locations
- Safety and security

After ExaGrid

Environment

- 8 appliances in 2 locations – NJ and Midwest

Advantages

- Backup times significantly reduced
- Seamless integration with Veritas NetBackup
- Able to protect all data

CASE STUDY:

**Miami
Marlins**



*“We can scale
the system in terms of
capacity and performance
just by adding units
to the GRID”*

— Ozzy Macias,
Manager of Information

Before ExaGrid

Environment

- Tape library

Challenges

- Fast data growth from 20TB to nearly 80TB
- Long backup window of 80+ hours
- Driving back and forth to datacenter to change tapes
- Multiple sites

After ExaGrid

Environment

- Two-site ExaGrid system, one in datacenter and one offsite for DR

Advantages

- Backup window reduced from 80 hours to 40 despite 4X data increase
- ExaGrid customer support scores an “A” grade
- Saves time and headaches for system admin
- System scales to support 100% annual data growth rate

CASE STUDY:

VW Credit

VW CREDIT, INC.

*“...we chose the
ExaGrid based on its
post-process
approach to data
deduplication and its
overall simplicity”*

— Dean Bolton,
Network Systems Engineer

Before ExaGrid

Environment

- Veritas NetBackup to tape

Challenges

- Long backup times in excess of 72 hours
- Lengthy restores
- Tape hassles
- Multiple locations

After ExaGrid

Environment

- ExaGrid systems in each of five locations – IL, OR, VA, MI, and Montreal

Advantages

- Best price/performance
- 75% improvement in backup window
- Restores are “lightning fast”
- Dedupe ratios average 10:1
- Greater confidence for future

CASE STUDY:

Toyota Puerto Rico



*“...the user was amazed
at how fast we were
able to respond to his file
restore request —
it took us just 15 minutes!”*

— Jose Sola, IT Manager

Before ExaGrid

Environment

- Veritas Backup Exec tape backups

Challenges

- Performing incremental tape backups during weeknights with full tape backup on weekends
- Backups would run 44+ hours or not complete by Monday morning
- Needed to pre-schedule tape deliveries from backup storage vendor, which took two days

After ExaGrid

Environment

- ExaGrid in conjunction with Veritas Backup Exec

Advantages

- Full backup times reduced from 44 hours to under 8
- Restore times reduced from days to minutes
- Works seamlessly with Veritas Backup Exec
- Weekend full backup completion rate increased to 100%

CASE STUDY:

The Salvation Army



***“The ExaGrid really has
taken a lot of the pain out
of our backups.”***

*— Michael Levine, Technology
Research & Assessment Manager*

Before ExaGrid

Environment

- Tape library

Challenges

- Long backup times
- Tape management and reliance
- Fast data growth
- System maintenance was increasingly difficult

After ExaGrid

Environment

- Two-site ExaGrid solution

Advantages

- Backup window reduced from 13 to 5 hours
- Able to keep 4-week retention for weeklies and 6-month retention of monthlies
- Scalability is seamless, just add appliances to the GRID
- Integrated with Veritas Backup Exec



ExaGrid / Stress-Free Backup Storage



Thank You!

exagrid.com