Veeam delleme

Veeam + Data Domain - the perfect combo

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DELTechnologies

\$72B revenue¹

The world's largest privately controlled technology company in numbers: Serving 98% Fortune 500

~145,000 team members

30,000 full time customer services and support team members

180 countries

1 Pro Forma revenue for the fiscal year ended January 29, 2016 as filed in the Form 8-k on Sept. 9, 2016





VEEAM DELLEMC Data Domain

12-15x Average Deduplication

 ~ 3000 Systems

Why Data Domain?



Less disk to resource, less to manage

- CPU-centric deduplication
- Inline deduplication

Simple, mature, and flexible

- Simple, mature appliance
- Any fabric, any software, backup or archive applications

Resilience and disaster recovery

- Storage of last resort
- Fast time-to-disaster recovery (DR) readiness
- Cross-site global compression
 - Data center or remote office

Data Domain Boost



Veeam integration with Data Domain Boost



- Up to 50% faster backup performance
- 10x faster synthetic full backup file creation and transformation for even shorter backup windows
- Fibre Channel connectivity enabling LAN-free backup to Data Domain



Data Domain Boost Ecosystem



Stream Informed Segment Layout

STAY AWAY FROM READING INDEX FROM DISK

• Design was done in 2002

-Small amount of Memory, no SSD's

-Slow Disks

-Reading Index Information from Disk would slow down system

DD answer: SISL

Stream Informed Segment Layout includes:

- **Summary Vector** in RAM says if segment is new
- Segment Localities minimize seeks if answer is on disk

What are Segments?

data stream



Immutable

DELLEM

VARIABLE LENGTH: NOT FIXED SEGMENT SIZE

- Intelligent, self-tuning algorithms automatically adjust to data changes
- Fixed-block won't handle inserts/deletes well:

Call me Ish	mael. Some ye	ars ago - neve	r mind how lor	ng precisely - h	naving			
Call me Ish	. Some years a	<u>go - never min</u>	d how long pre	cisely - having	little			
Call me Izz	y. Some years	ago - never mi	nd how long pr	ecisely - havin	g little			
Variably sized segments maximize redundancy.								

Call me Izzy. Some years ago - never mind how long precisely - having little ...

Advantages:

- Application independent
- Protocol independent
- File pathname independent
- Block address independent



SISL PROCESS

- Check in-memory fingerprint cache (FPC)
 - If hit, we know it is a duplicate, no need to store again
 - If miss, move to next step
- Check uniqueness with in memory summary vector (SV)
 - If unique, then store with local compression
 - If not unique, SV cannot conclude redundancy, move to next step
 - > It can have false positives
 - Look up index on disk and load FPC from disk
 - > Index maps fingerprints to containers
 - > FPC is populated with fingerprints from the mapped container on disk
- Key results
 - System capacity is very scalable
 - > No RAM constraint on index
 - Good performance with few spindles
 - > Very few disk accesses during write

DATA DOMAIN DATA INVULNERABILITY ARCHITECTURE INDUSTRY'S BEST DEFENSE AGAINST DATA INTEGRITY ISSUES

Recovers Correctly Stored Correctly Stays Correct Inline Data Continuous Fault Recovery/Access Detection and Verification Verification Self- Healing

DATA INVULNERABILITY ARCHITECTURE TRUST BUT VERIFY—HOPE IS NOT A STRATEGY



Data Domain 6.0 Support in VeeAM 9.5 update 1



Introducing Flash-Enabled Data Domain Systems

DD6300 Small & Midmarket Enterprise	DD6800 Midmarket Enterprise	DD9300 Large Enterprise	DD9800 High-End Large Enterprise				
1.8X Faster	1.3X Faster	1.4X Faster	1.2x Faster				
Flash-enabled performance and instant access							

Our New Data Domain Family

Data Domain Management Center

DD VE C	Small Enterprise/ROE sable capacity: .5 TB – 96 TI	в	Large Enterprise		
	Small Enter	nterprise	NUM G		
	/ROBO				
Speed (DD Boost)	4.7 TB/hr	24 TB/hr	32 TB/hr	41 TB/hr	68 TB/hr
Speed (other)	3.8 TB/hr	8.5 TB/hr	14 TB/hr	20 TB/hr	31 TB/hr
Logical capacity	40–860 TB	1.8–8.9 PB	2.8–14.4 PB ¹ 8.4–43.2 PB ²	7.2–36 PB ¹ 21.6–108 PB ²	10–50 PB ¹ 30–150 PB ²
Usable capacity	Up to 17.2 TB	Up to 178 TB	Up to 288 TB ¹ Up to 864 TB ²	Up to 720 TB ¹ Up to 2.16 PB ²	Up to 1 PB ¹ Up to 3 PB ²

Instant On Recoveries



Enhanced VM Protection

- Directly boot up to 32 VMs on Data Domain
- Improved Random IO with inclusion of flash SSD for metadata



• Data Domain delivers up to 10k IOPS with less than 20 milliseconds of latency



VM Backup

Granular access improves performance of VM processes **Instant Access**

Boot VMs directly from Data Domain using a protection copy **Instant Restore**

Achieve shorter recovery time objectives for VMs

DD OS 6.0: Instantly Restore VMs 20X faster







 Data Domain system is presented as a VMware Datastore via NFS to Avamar 2. VMs are instantly accessed by booting from NFS Datastore **3.** Storage vMotion VM to production storage while VM is running

Data Domain Virtual Edition



DATA DOMAIN VIRTUAL EDITION: 1 - 96TB

CONSUME DD VE AT A SERVICE PROVIDER, PRIVATE CLOUD, OR PUBLIC CLOUD

- Replication as a Service
- Backup as a Service



Replicate Veeam Protection Environments to the Public Cloud Data Domain Virtual Edition 3.1

Use Cases

Replicate protection data from:

- On-prem to Public Cloud
- Within or Between Cloud Regions

Features

- AWS 16TB usable capacity per instance
- Azure 15TB usable capacity per instance
- Encryption (at rest and over the wire)
- Bandwidth Efficient Replication



or DD VE

Data Domain Cloud Tier



Extending Veeam Long Term Retention in the Cloud with Data Domain Cloud Tier

Private / Public Dell EMC Powered Service Providers DELLEMC **D%LL**EMC DATA DOMAIN virtustream. - POWERED BY -Operational **D**ELLEMC Recovery Microsoft amazon webservices Copies Azure Tier Long Term <u>- -</u> Retention Copies Long Term Retention Copies



Extending Veeam Long Term Retention in the Cloud with Data Domain Cloud Tier

Check for existing data segments on active tier Only unique data retrieved from cloud, saving egress costs Full restore of backup data



DELLEMC

Thank you

VEEAM DELLEMO

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