vSphere Data Protection 6.0
VDP 6.0

How to backup
VMware environments?

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Goal of the meeting

Where to use new
vSphere Data Protection 6.0?

Agenda

- What is VDP (vSphere Data Protection) 6.0

- Features

- Where to use?

- VDP vs Avamar / NetWorker

- Real life numbers

- Live demo

What is VDP 6.0?

VDP 6.0
What is it?

- vSphere Data Protection is VMware tool for backup / recovery of Vmware Virtual Machines

- VDP 5.5 Advanced is now VDP 6.0 for free
  - As of 3/1/15 VDP Advanced will be EOA

- VDP is delivered as part of vSphere 6.0
  - vSphere Essentials Plus and above
  - No additional charge, yet there is a great way to sell more EMC Data Protection

- You can use VDP 6.0 in VMware 5.5 environments

VDP 6.0
Features

VDP 6.0
Features

- ✓ Best market de-duplication

- ✓ Replication for disaster recovery

- ✓ Agentless image-level backups to disk

- ✓ Application-aware backup and recovery for MS SQL, Exchange & SharePoint

- ✓ Storage-agnostic & Supports vSAN

- ✓ End-to-end integration with vSphere and managed through vSphere UI

- ✓ Powered by EMC Avamar

- ✓ Integrated with Data Domain Systems
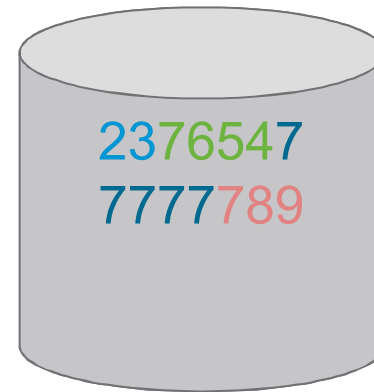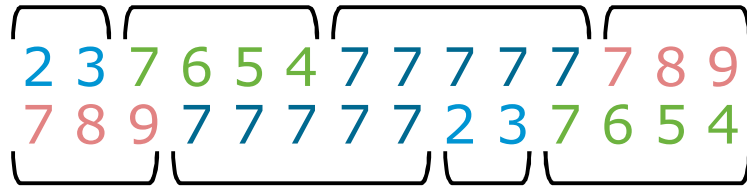
VDP 6.0
Features

- Restore without vCenter

- File Level Recovery

- Regular backup software
  - Calendar
  - Reports

- Scalability up to 1000 VMs
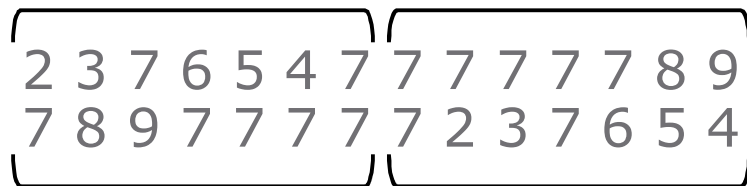
- Backup verification

- No cost (real 0$ license)

VDP 6.0
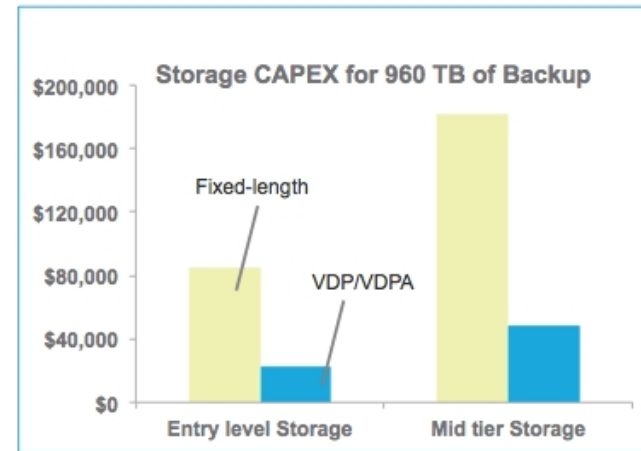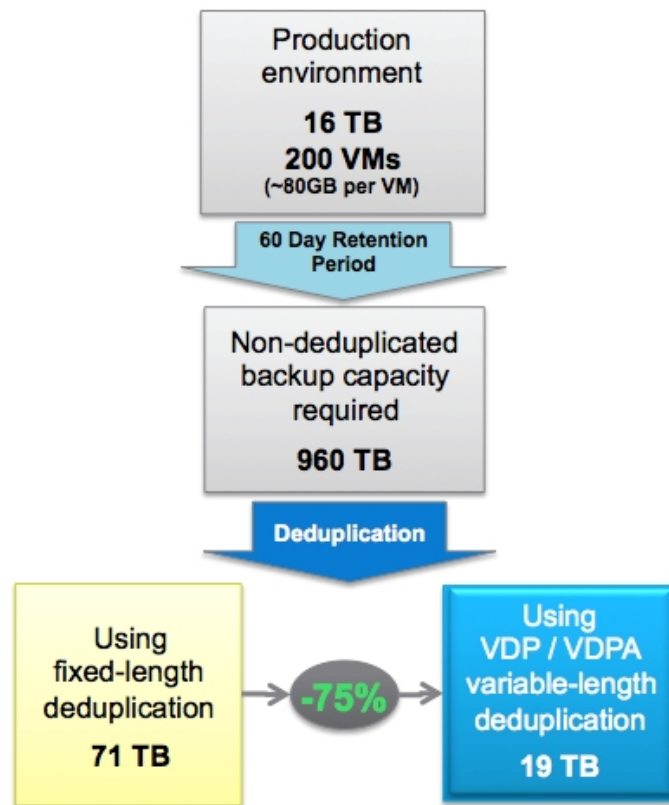## Best market de-duplication for free

Variable Length Deduplication

2 3 7 6 5 4 7 7 7 7 7 7 8 9
7 8 9 7 7 7 7 7 2 3 7 6 5 4

2376547
7777789

Fixed Length Deduplication

2 3 7 6 5 4 7 7 7 7 7 7 8 9
7 8 9 7 7 7 7 7 2 3 7 6 5 4

2376547
7777789
7897777
7237654

VDP 6.0
Best market de-duplication for free

Savings on Entry-level Storage

- Over $60K

Savings on Mid-tier Storage

- Over $130K

VDP 6.0
Application protection

- Application consistent backup and recovery for Microsoft SQL Server, Exchange and SharePoint

VDP 6.0
CBT for Backup / Restore

STANDARD RESTORE

VM ← Whole VM ← VM Virtual Appliance

CBT RESTORE

VM ← CBT Blocks ← Virtual Appliance

Recovery time of 300GB VM

4h — 3 min

Others

VDP
NetWorker
Avamar
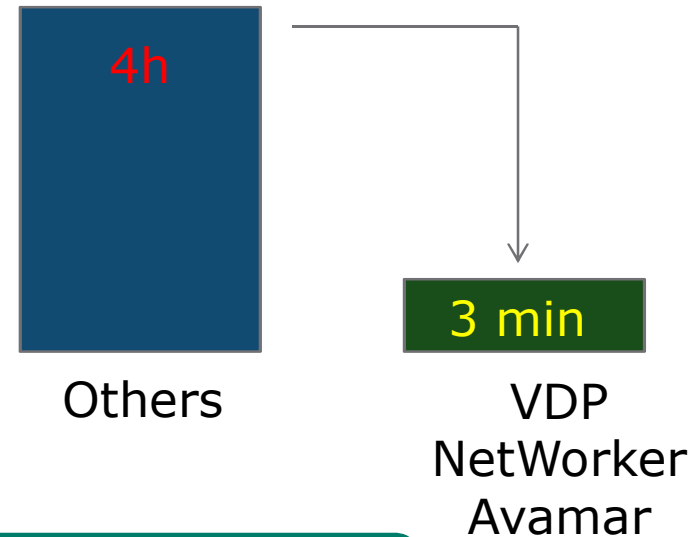
"ESG Lab has validated that with VDP, IT administrators can perform full restores of VMs from Change Block Tracking in minutes"
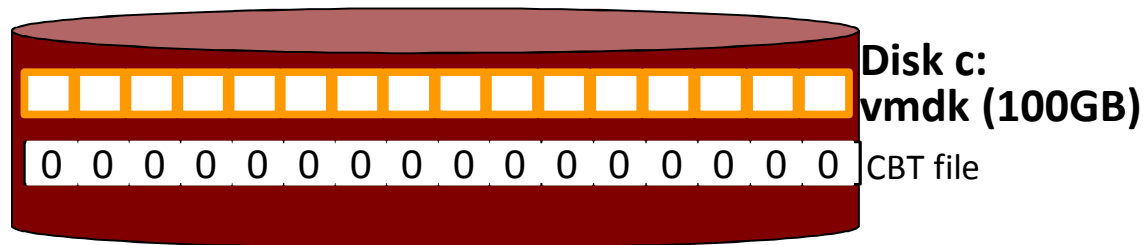
Tony Palmer – Enterprise Strategy Group

Enterprise Strategy Group Report – vSphere Data Protection, February 2013

VDP 6.0
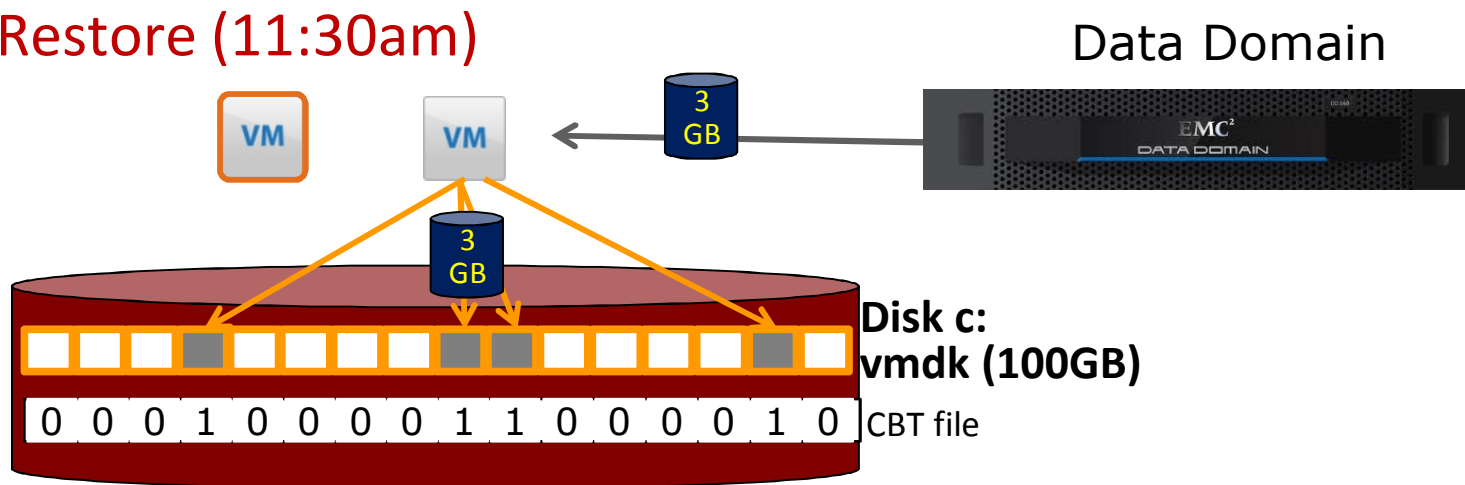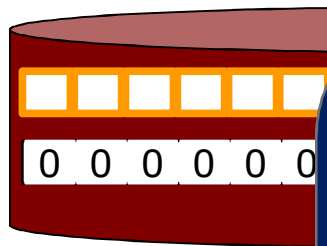## CBT for Backup / Restore

After backup (8:00am)

Disk c:
vmdk (100GB)

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 CBT file

Restore (11:30am)

Data Domain

VM   VM

3 GB

3 GB

Disk c:
vmdk (100GB)

0 0 0 1 0 0 0 0 0 1 1 0 0 0 0 0 1 0 CBT file

VDP 6.0
CBT for Backup / Restore

After backup (8:00am)

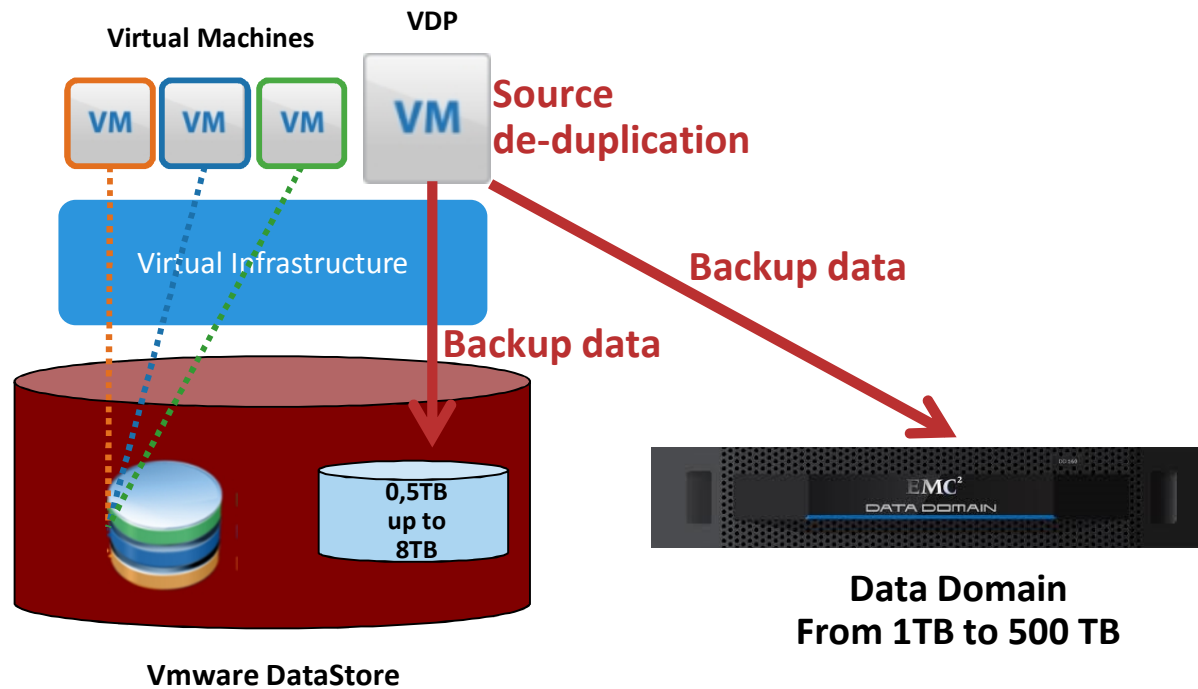0 0 0 0 0 0

Restore (11:

VM

0 0 0 1 0 0
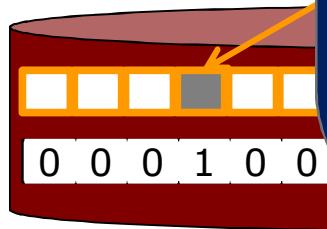
Restore even in 30 seconds

No load for ESX during restore
- for storage
- for processor

VDP 6.0
What storage under VDP?

Virtual Machines

VDP

VM VM VM

VM **Source de-duplication**

Backup data

Virtual Infrastructure

Backup data

0,5TB up to 8TB

EMC² DATA DOMAIN

Data Domain From 1TB to 500 TB

Vmware DataStore

VDP 6.0
Data Domain integration

VM | VM | Virtual Appliance | VM | Virtual Appliance | VM | VM | VM | VM | VM | VM | VM | VM | VM | VM

VMware vSphere

EMC² DATA DOMAIN

BACKUP DATA
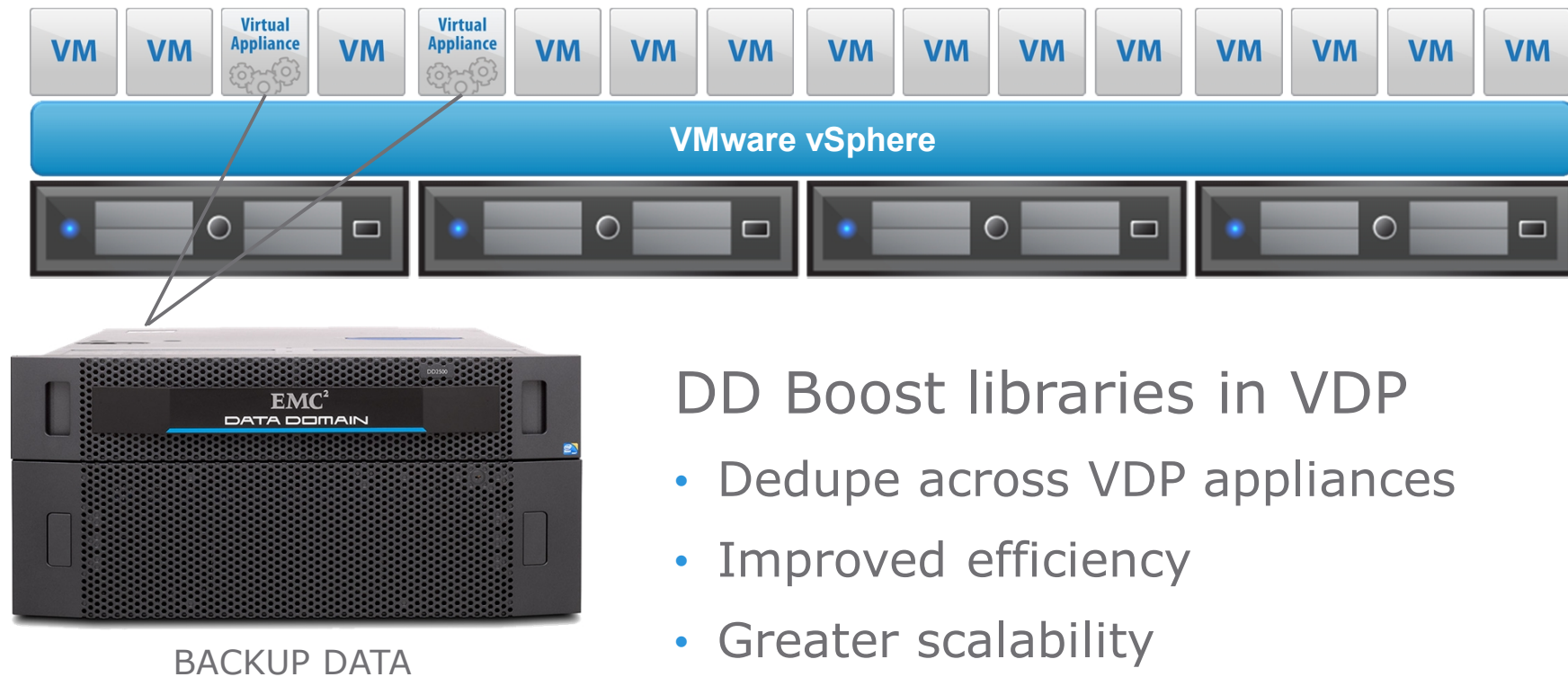
DD Boost libraries in VDP

- Dedupe across VDP appliances
- Improved efficiency
- Greater scalability

Why Data Domain for VDP?

Lower cost

Better performance
Backup 2-4 times
Restore 2-10 times

Security
(guaranteed data
Recovery)

Backup storage
different than
production storage

Backup outside VDP

Backup databases
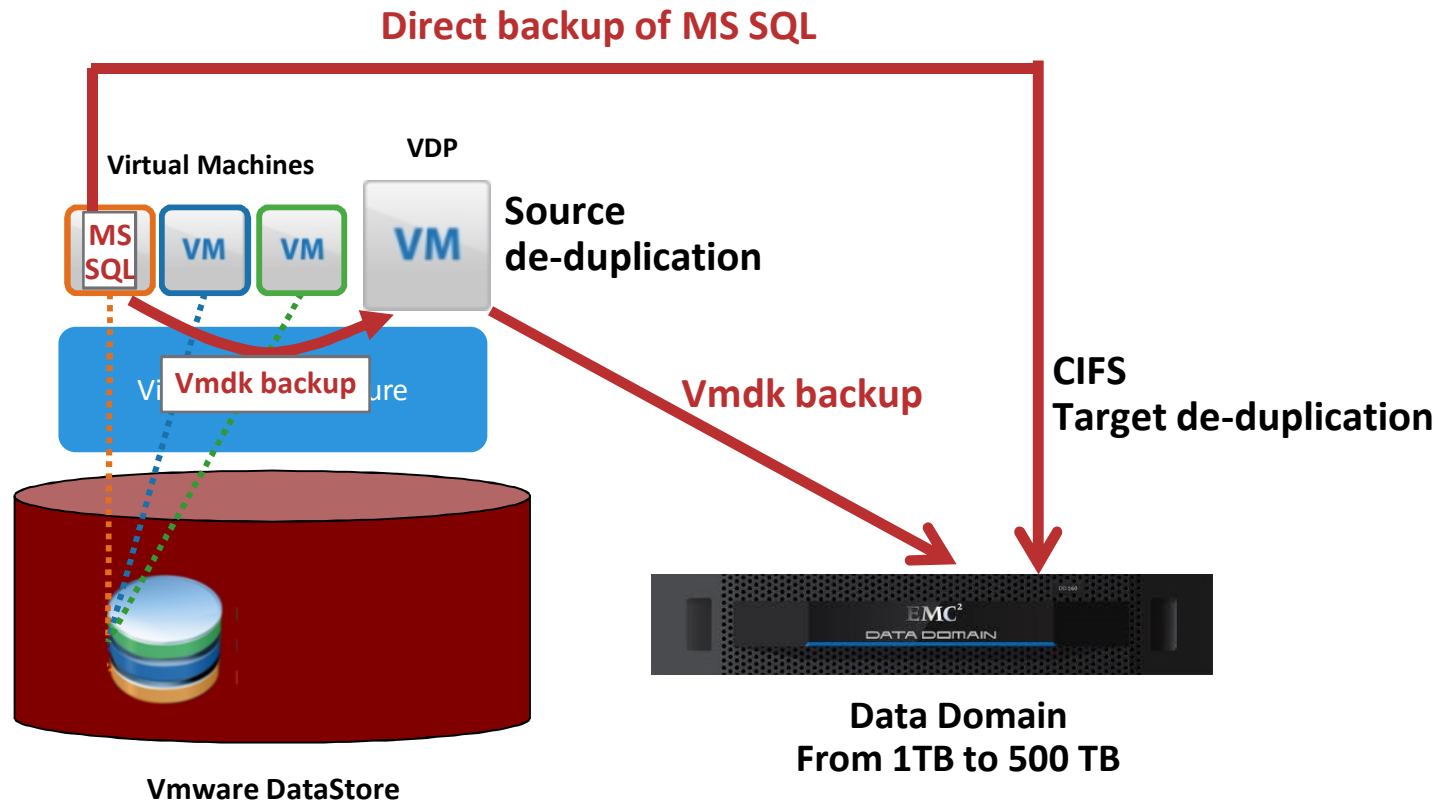Oracle, …

Why Data Domain for VDP?

Scalability

De-duplication between many VDP instances

Cross de-duplication between VDP / rest environment

Protection of
   Backups
   VDP appliances

Cross Data Domain de-duplication
Example of scenario

Direct backup of MS SQL

Virtual Machines

VDP

MS
SQL

VM

VM

VM

**Source
de-duplication**

Vi~~rtual~~ ~~Infrastruct~~ure

Vmdk backup

Vmdk backup

**CIFS
Target de-duplication**

EMC²
DATA DOMAIN

**Data Domain
From 1TB to 500 TB**

Vmware DataStore

Cross Data Domain de-duplication
Example of scenario

Direct backup of MS SQL

VDP

VMDK backup (VDP)
Guest level backup (SQL native)

No license cost scenario

Vmware DataStore

Data Domain
From 1TB to 500 TB

Cross Data Domain de-duplication
Example of scenario

Direct backup of MS SQL

Virtual Machines

VDP

MS SQL

VM

VM

VM

Source de-duplication

Vi~~rtual~~ure

Vmdk backup
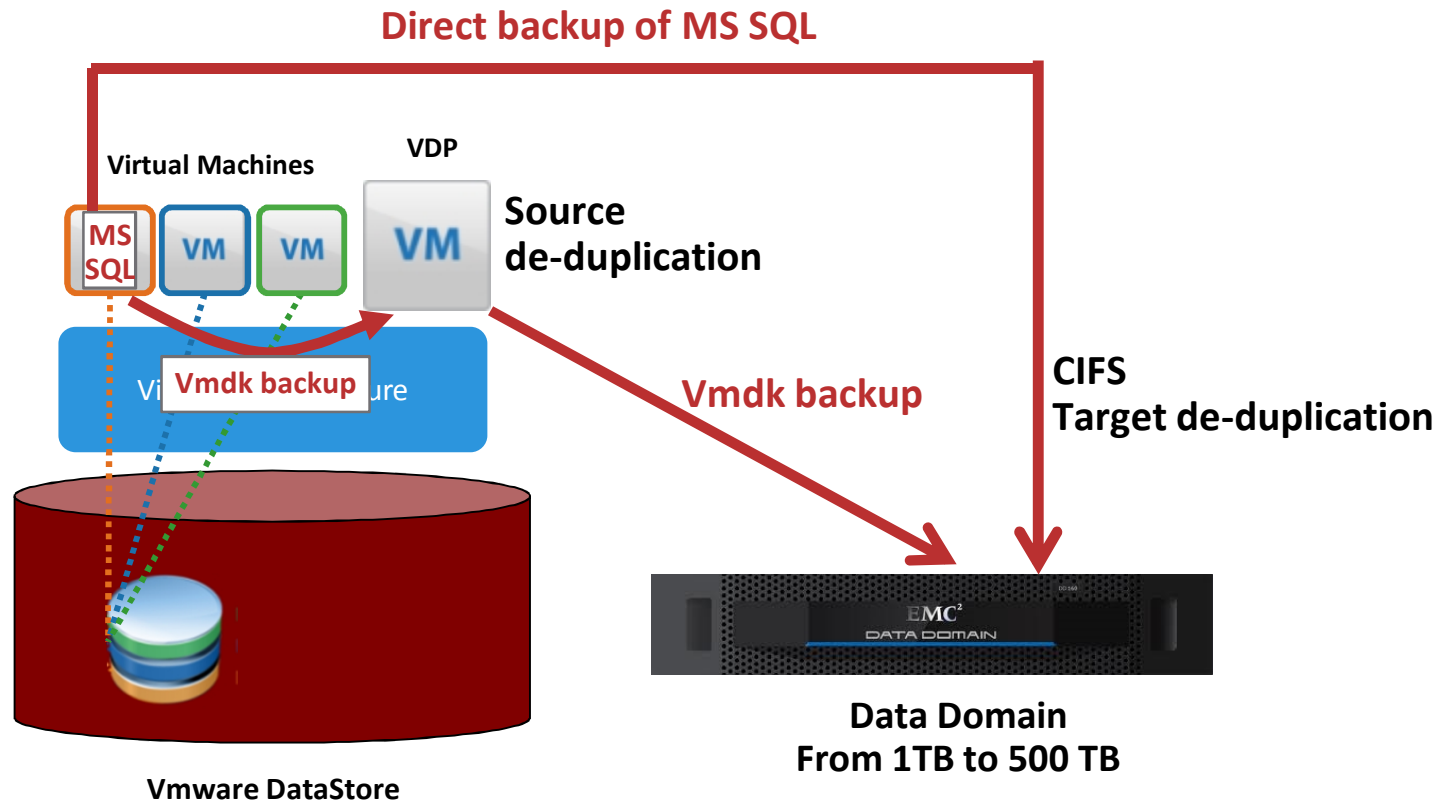
Vmdk backup

CIFS Target de-duplication

Vmware DataStore

Data Domain From 1TB to 500 TB

Cross Data Domain de-duplication
The effect

Cross Data Domain de-duplication
The effect

		E... ...			E...				Progress	New						Client	
Status	...	(...Elapsed	...	...	(...	T...	Server		Bytes	Bytes	Client					Release	Proxy
✓ Completed	...	00h:09m:40s	...	...	DD - d...			11.5 GB		34.7%	w2012r2....	Guest level backup		Windows 2012 R2		v7.1.100-302	N/A
✓ Completed	...	00h:03m:07s	...	...	DD - d...			11.4 GB		<0.05%	w2012r2....					v7.1.100-302	N/A
✓ Completed	...	00h:02m:29s	...	...	DD - d...			11.4 GB		<0.05%	w2012r2....					v7.1.100-302	N/A
✓ Completed	...	00h:02m:40s	...	...	DD - d...			15.0 GB		4.5%	w2012r2	Image level backup				v7.1.100-302	aproxyt1.
✓ Completed	...	00h:00m:51s	...	...	DD - d...			15.0 GB		0.1%	w2012r2					v7.1.100-302	aproxyt1.
✓ Completed	...	00h:00m:50s	...	...	DD - d...			15.0 GB		<0.05%	w2012r2					v7.1.100-302	aproxyt1.
✓ Completed	...	00h:12m:24s	...	...	DD - d...			12.7 GB		9.3%	w81.labd...	Guest level backup		Windows 8.1		v7.1.100-302	N/A
✓ Completed	...	00h:04m:04s	...	...	DD - d...			12.7 GB		<0.05%	w81.labd...					v7.1.100-302	N/A
✓ Completed	...	00h:03m:21s	...	...	DD - d...			12.7 GB		<0.05%	w81.labd...					v7.1.100-302	N/A
✓ Completed	...	00h:02m:43s	...	...	DD - d...			15.0 GB		3.1%	w81	Image level backup				v7.1.100-302	aproxyt1.
✓ Completed	...	00h:00m:52s	...	...	DD - d...			15.0 GB		0.2%	w81					v7.1.100-302	aproxyt1.
✓ Completed	...	00h:00m:49s	...	...	DD - d...			15.0 GB		<0.05%	w81					v7.1.100-302	aproxyt1.

VDP 6.0
Recommended Data Domain for VDP 6.0

1-6 TB
data to backup
(source capacity)

Virtual Appliance

vSphere | DD Boost

DD160

4-20 TB
data to backup
(source capacity)

Virtual Appliance

vSphere | DD Boost

DD2200

16-200 TB
data to backup
(source capacity)

Virtual Appliance

Virtual Appliance

vSphere | DD Boost

DD2500
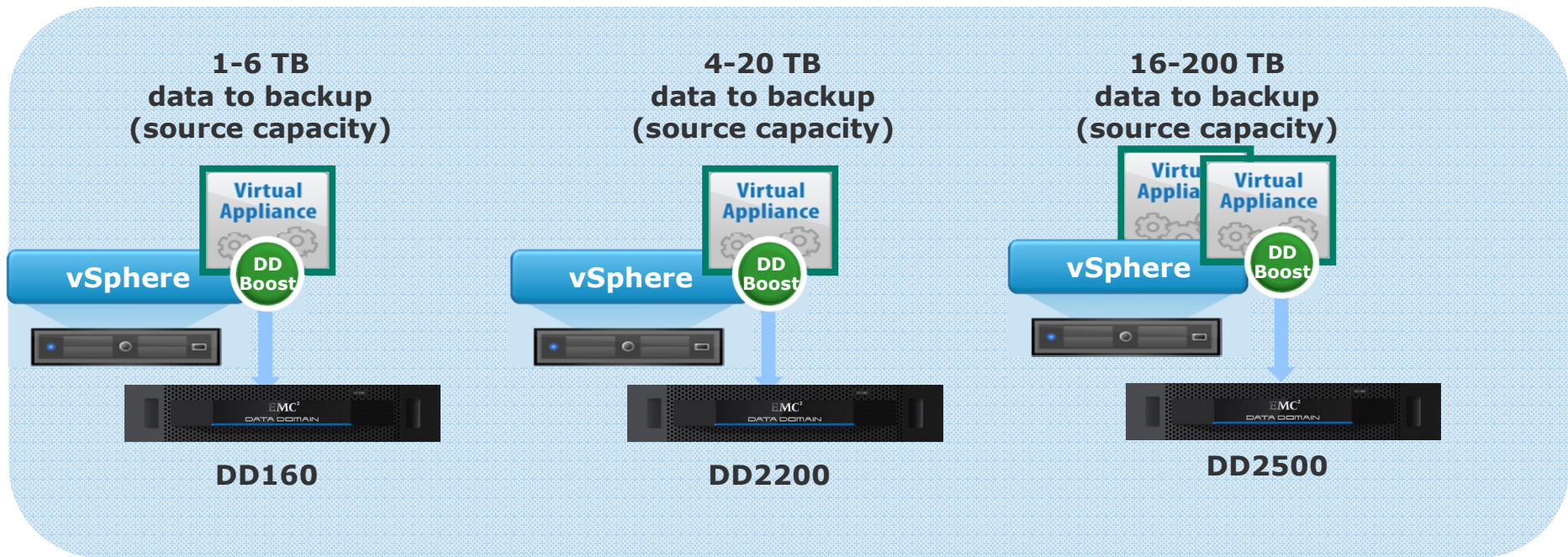
VDP 6.0
Disaster Recovery (secondary site)

Site A

Site B

VDP

VDP or Avamar

Virtual Appliance

VM | VM

VM | VM

VMware vSphere

VMware vSphere

Replication

Data Domain

Data Domain

Data Center

Site B

Site B =>   Customer DR Site
Cloud Service Provider
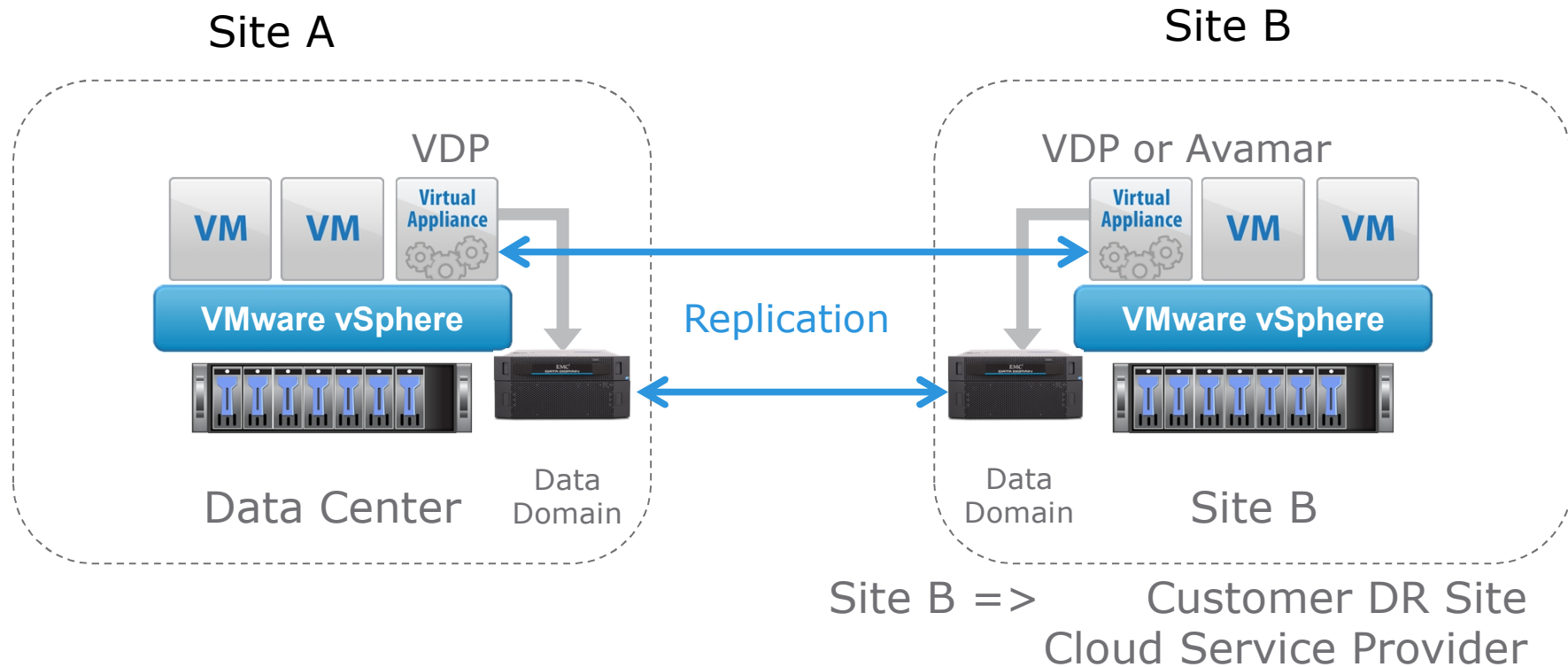
VDP 6.0

Where to use?

VDP 6.0 – where to use?
Highly virtualized VMware environments

- Up to 1000 VMs

- SQL / SharePoint / Exchange
  - Virtual
  - Stand alone

VDP 6.0 – where to use?

Additional, no cost tool for VMware scenario

- Up to 1000 VMs

- Up to 6 months retention

- SQL / SharePoint / Exchange
  - Virtual
  - Stand alone

VDP 6.0 – where to use?

Remote office

- VMware environment in remote office

Scenario:

- Local backup
  - to internal VDP disks

  or

  - to Data Domain

- Replication to Data Center

VDP 6.0 – where to use?

Test / Development enviroments

- Leverage VDP for Development, Test and Q environments.

- Most developers want the last copy of data or a copy to do test from.

- Sometimes this environment can be 30% or 40% of total backup infrastructure.

- Utilizing VDP to protect this environment, you provide huge savings.

Compatybility

VDP 6.0
Deployment

- Easy to deploy, license, and manage

Why VDP 6.0
for VMware backup / recovery?

- Performance

- Easy
  - Install
  - Manage

- Unique features
  - Immediate restore with CBT
  - Restore without vCenter
  - ...

Why VDP 6.0
for VMware backup / recovery?

- Replication

- Data Domain
  - Cost
  - Global de-duplication
  - Data security
  - Performance

- Lowest cost among all solution
  - No license cost
  - The least amount of storage thanks to best de-duplication

VDP 6.0

VDP vs Avamar vs NetWorker

	VDP	Avamar	NetWorker
De-duplication	Market best	Market best	Market best
Performance	Market best	Market best	Market best
VMware backup	Top features	Top features	Top features
Server backup	No	Yes	Yes
Laptop backup	No	Yes	No
Tape backup	No	Additional cost	Internal
CBT restore	Yes	Yes	Yes
Start VM from DD	No	Yes	Yes
Replication	Yes	Yes	Yes

	VDP	Avamar	NetWorker
Data Domain	Yes	Yes	Yes
Advance reporting	No	Yes	Yes
Parallel backups	1-8	No limit (30)	No limit (30)
Backup verification	Yes	Yes	No
License	Free (0$)	Target capacity	per source cap or per processor
Environment	Up to 1000 VMs	Up to 5 000 VMs	Up to 5 000 VMs

VDP 6.0 / Avamar

Real life numbers

VDP/Avamar vs competition
Case 1

Opis	Wynik	Uwagi
Średni czas backupu maszyny wirtualnej uwzględniając wszystkie backupy (w tym pierwszy backup)	15 min.	Nie wszystkie maszyny korzystały z funkcjonalności CBT
Średni czas backupu maszyn wirtualnych z opcją CBT, bez uwzględniania pierwszego backupu	5 min.	Backup w cyklu dziennym
Średni czas odtwarzania maszyny wirtualnej w nowe miejsce (nowa maszyna VM)	19 min.	Wielkość maszyny około 60GB
Średni czas odtwarzania maszyny wirtualnej w to samo miejsce z opcją CBT	3 min.	Wielkość maszyny 90GB
Sumaryczna wielkość zabezpieczonych danych (logiczna suma wszystkich backupów)	32 TB	Rozmiar logiczny pojedynczego backupu równy wielkości maszyny VM (wielkość plików VMDK)
Sumaryczna wielkość zabezpieczanych maszyn VM (suma zaalokowanych plików VMDK)	1 TB	Wielkość plików źródłowych VMDK
Ilość miejsca zajętego na systemie Avamar uwzględniając wszystkie kopie backupu maszyn wirtualnych	0.7TB	Zajętość systemu plików Avamar

VDP/Avamar vs competition
Case 2

- Initial Full Backup
  - Avamar 11 minutes 54
  - Competition 17 minutes 26 seconds

- Following backup
  - Avamar 2 minutes per VM (CBT)
  - Competition 5 minutes per VM (CBT)

VDP/Avamar vs competition
Case 2

- Snapshot creation time
  - Avamar immediate
  - Competition 11 minutes

- Recovery
  - Avamar 1 minte 19 seconds
  - Competition failed

VDP/Avamar vs competition
Case 2

- De-duplication
  - Avamar 99,8% (0,4% new)
  - Competition 97% (3% new)
    - 7 times more storage

Materials

Materiały

- Film o VDP po polsku:

https://youtu.be/lSs_94qoNcw

- Lista cech VDP – materiał po polsku:

http://backuprecoveryman.blogspot.com/2015/04/vsphere-data-protection-60-czyli.html

Questions?

Avamar 7.1   NetWorker 8.2   VDP 6.0

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