Campus Days
14.-16. januar 2010

System Center
Data Protection Manager 2010
Beta
Backup af den fysiske og den virtuelle verden

Lasse Carthberg
Product Technology Specialist
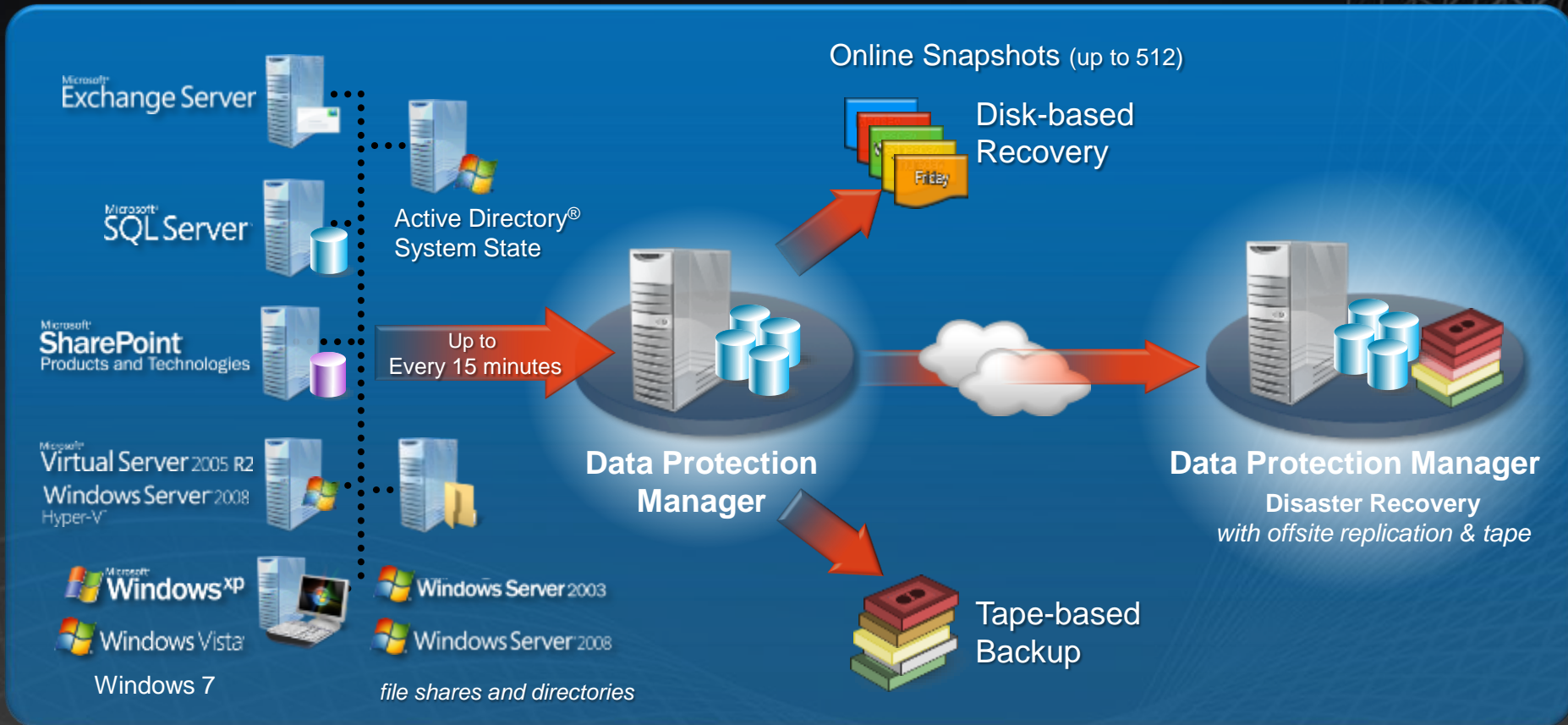Microsoft Danmark

Agenda

Data Protection Manager 2010

- Overview
- How Storage Works – Disk
- How Storage Works – SQL / Exchange
- Server Features
- Client Features
- Other Stuff

Microsoft®
System Center

Data Protection Manager 2010

Online Snapshots (up to 512)

Disk-based Recovery

Active Directory® System State

Up to Every 15 minutes

Data Protection Manager

Data Protection Manager
Disaster Recovery
with offsite replication & tape

Tape-based Backup

file shares and directories

Windows 7

DPM 2010

- Continuous Data Protection (CDP) for Windows application and file servers
- Rapid and reliable recovery from disk instead of tape
- Advanced technology for enterprises of all sizes

Enterprise DPML – "*Application Agent*" – per protected server
Unified support of Microsoft applications SQL, Exchange, SharePoint, & Virtualization – and files
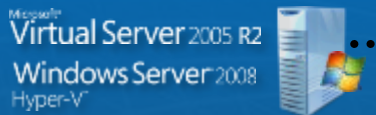Protect DPM 2 DPM 4 DR – disaster recovery
Bare Metal Recovery

Microsoft
Exchange Server

Microsoft
SQL Server

Microsoft
SharePoint
Products and Technologies

Microsoft
Virtual Server 2005 R2
Windows Server 2008
Hyper-V

**Active Directory®
System State**

Windows Server 2003
Windows Server 2008

file shares and directories

Standard DPML = "*File agent*"
per protected Windows Server
No additional "Open File" or add-on modules

Microsoft
Windowsˣᵖ
Windows Vista

Client DPML
"*Desktop agent*"
XP, Vista & 7

DPM Server

Data Protection Manager
with integrated Disk & Tape

**Also available as a DPM OEM Appliance
running on Windows Storage Server**

Efficient disk-storage using VSS

How Storage Works

DPM Efficient Disk Storage without duplication Day 0

Production Data

A B C D E F G H

DPM Replica

A B C D E F G H

Original Data

DPM Efficient Disk Storage without duplication Day 1 – data changes

Production Data

A B I D E J G H

DPM Replica

A B C D E F G H

Original Data
1st data change

DPM Efficient Disk Storage without duplication
Day 1 – data is protected

Production Data

A B I D E J G H
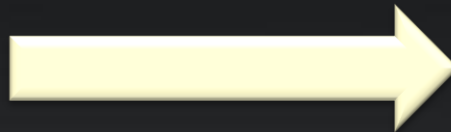
I J →

DPM Replica

A B C D E F G H

Original Data
1st data change

DPM Efficient Disk Storage without duplication Day 1 – data is protected

Production Data

A B I D E J G H

DPM Replica

A B I D E J G H
C F

DPM Recovery Point Area

Original Data
1st data change

DPM Efficient Disk Storage without duplication Day 1

Production Data

A B I D E J G H

DPM Replica

A B I D E J G H

DPM Recovery Point Area

C F

Original Data
1st data change

DPM Efficient Disk Storage without duplication Day 2 – data changes

Production Data

K B I D E J L H

DPM Replica

A B I D E J G H

DPM Recovery Point Area

C F

Original Data
1st data change
2nd data change

DPM Efficient Disk Storage without duplication Day 2 – data is protected

Production Data

K	B	I	D	E	J	L	H

→ K L →

DPM Replica

A	B	I	D	E	J	G	H

DPM Recovery Point Area
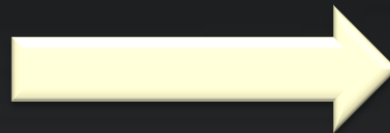
C	F

Original Data
1st data change
2nd data change

DPM Efficient Disk Storage without duplication Day 2 – data is protected

Production Data

K B I D E J L H

DPM Replica

K B I D E J L H
A   G

DPM Recovery Point Area

C F

Original Data
1st data change
2nd data change

DPM Efficient Disk Storage without duplication Day 2

Production Data

K B I D E J L H

DPM Replica

K B I D E J L H

DPM Recovery Point Area
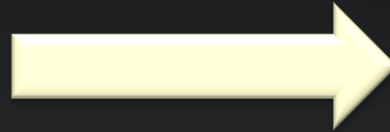
C F A G

Original Data
1st data change
2nd data change

DPM Efficient Disk Storage without duplication Day 3 – data changes

Production Data

K B I D M N O P Q

DPM Replica

K B I D E J L H

DPM Recovery Point Area

C F A G

Original Data
1st data change
2nd data change
3rd data change

DPM Efficient Disk Storage without duplication
Day 3 – data is protected

Production Data

| K | B | I | D | M | N | O | P | Q |

M N O P Q →

DPM Replica

| K | B | I | D | E | J | L | H |

DPM Recovery Point Area

| C | F | A | G |

Original Data
1st data change
2nd data change
3rd data change

DPM Efficient Disk Storage without duplication Day 3 – data is protected

Production Data

K B I D M N O P Q

DPM Replica

K B I D M N O P Q
E J L H

DPM Recovery Point Area

C F A G

Original Data
1st data change
2nd data change
3rd data change

DPM Efficient Disk Storage without duplication Day 3

Production Data

K B I D M N O P Q

DPM Replica

K B I D M N O P Q

DPM Recovery Point Area

C F A G E J L H

Original Data
1st data change
2nd data change
3rd data change

DPM Efficient Disk Storage without duplication To Recovery Day 2

Production Data

K B I D E J L H

DPM Replica

K B I D M N O P Q

DPM Recovery Point Area

C F A G E J L H

Original Data
1st data change
2nd data change
3rd data change

8 blocks restored

DPM Efficient Disk Storage without duplication To Recovery Day 0

Production Data

A B C D E F G H

DPM Replica

K B I D M N O P Q

DPM Recovery Point Area

C F A G E J L H

Original Data
1st data change
2nd data change
3rd data change

8 blocks restored

Transaction Protection for Exchange and SQL Server

How it Works

Efficient Protection beyond De-duplication

Production Server

Database

0:00

DPM Replica

Database
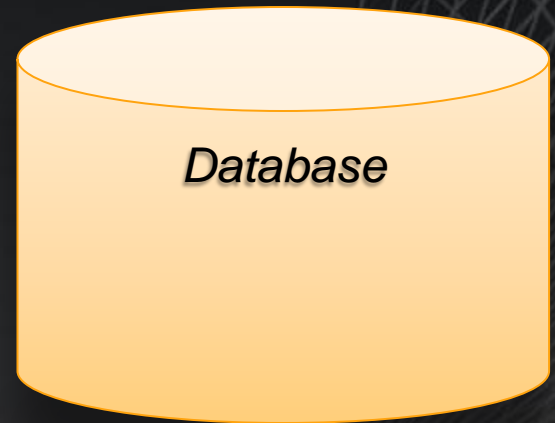
Efficient Protection beyond De-duplication
Baseline Initial Mirror

Production Server

DPM Replica

Database

0:00

Baseline Initial Mirror

Database

0:00

Efficient Protection beyond De-duplication
Day 0 : Transaction Logs

Production Server

DPM Replica

Database

0:XX

15 minute Syncs

Database

0:00

Every 15 minutes, closed transaction logs are sent to the DPM server

Efficient Protection beyond De-duplication
Day 0 : Transaction Logs

Production Server

DPM Replica

Database
0:XX

15 minute Syncs

Database
0:00

Every 15 minutes, closed transaction logs are sent to the DPM server

Efficient Protection beyond De-duplication
Day 0 : Transaction Logs

Production Server

DPM Replica

Database
0:XX

15 minute Syncs

Database
0:00

Every 15 minutes, closed transaction logs are sent to the DPM server

Efficient Protection beyond De-duplication
Day 0 : Transaction Logs

Production Server

DPM Replica

Database
0:XX

Restore

Database
0:00
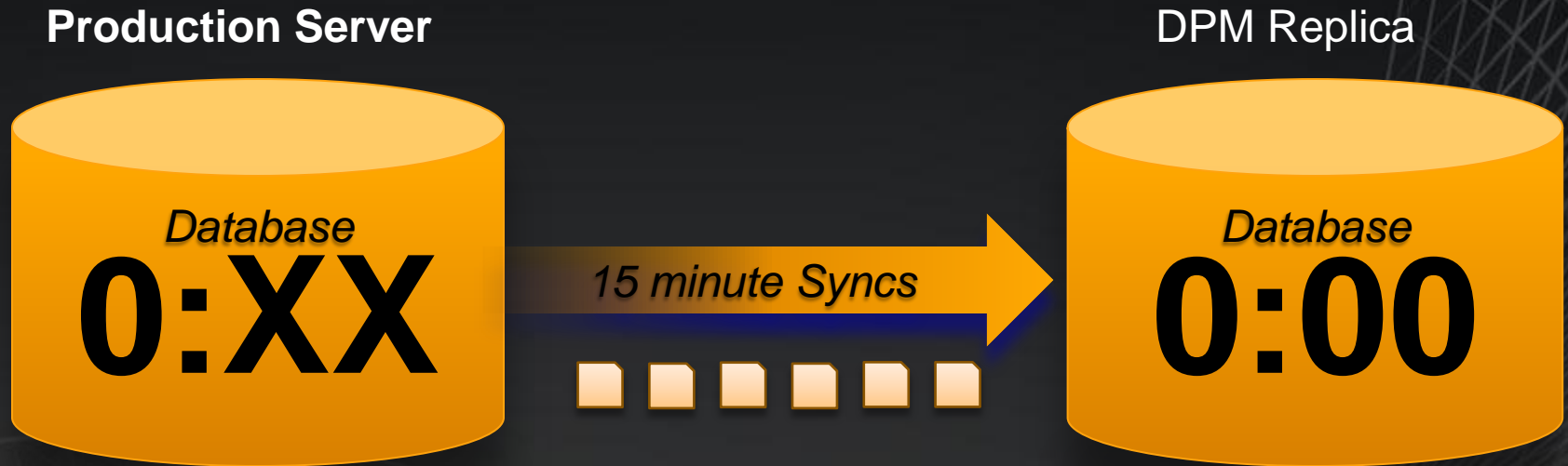
DPM can restore server to any 15 minute point in time
- Database 0:00
- Roll forward to 0:XX with transaction logs

Efficient Protection beyond De-duplication
Day 1 : DPM Express Full

Production Server

DPM Replica

Database
1:00

Express full

Database
1:00

*Shadow Copy
of 0:00 to 1:00*

+

*Transaction logs
Day 0*

0:00
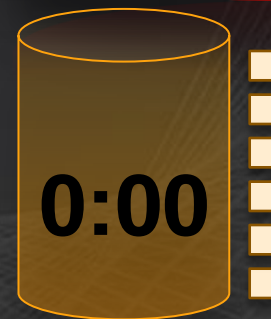
At least weekly but usually daily,
a DPM Express Full re-synchronizes the DPM Replica

Efficient Protection beyond De-duplication
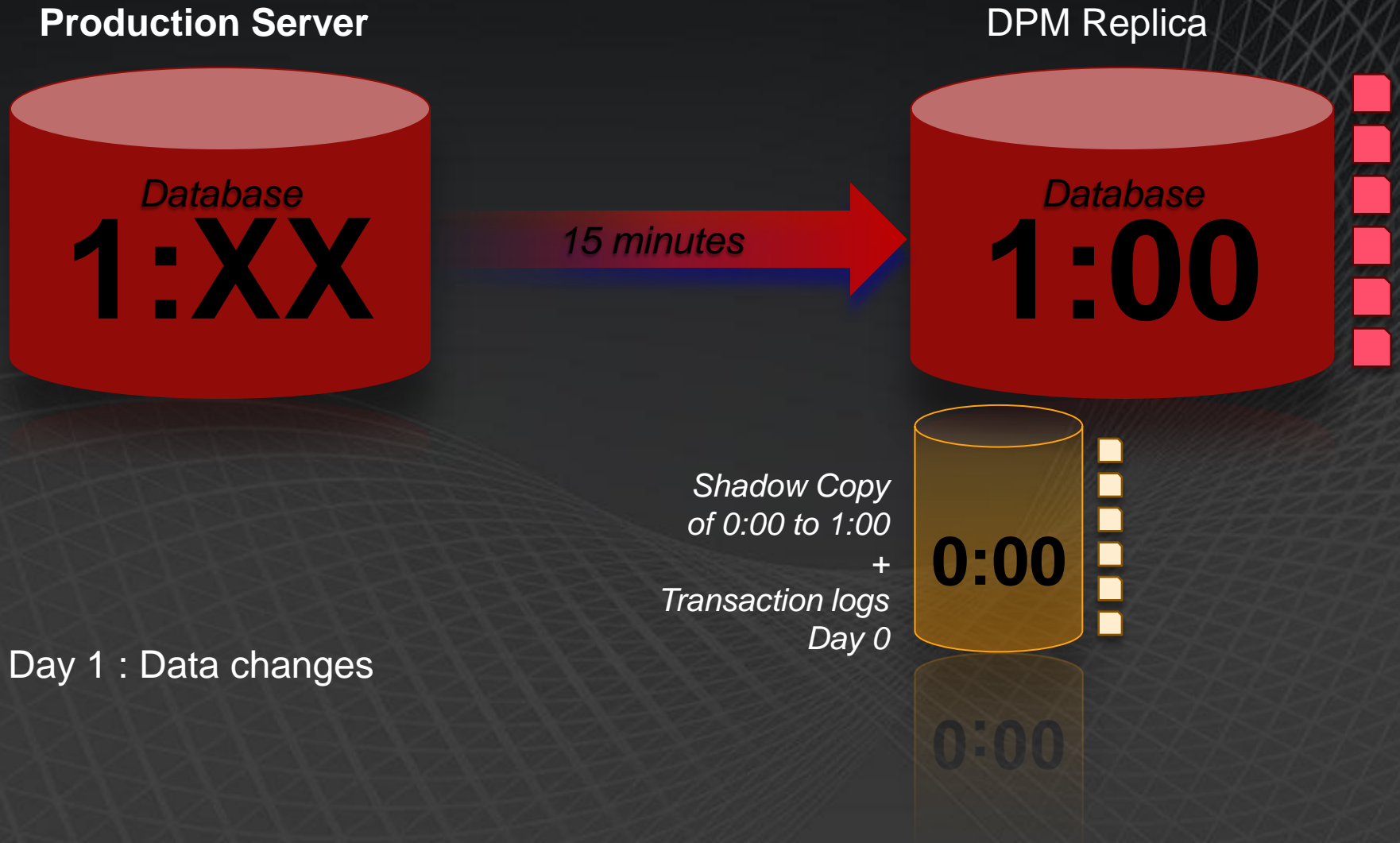# Day 1 : Transaction Logs
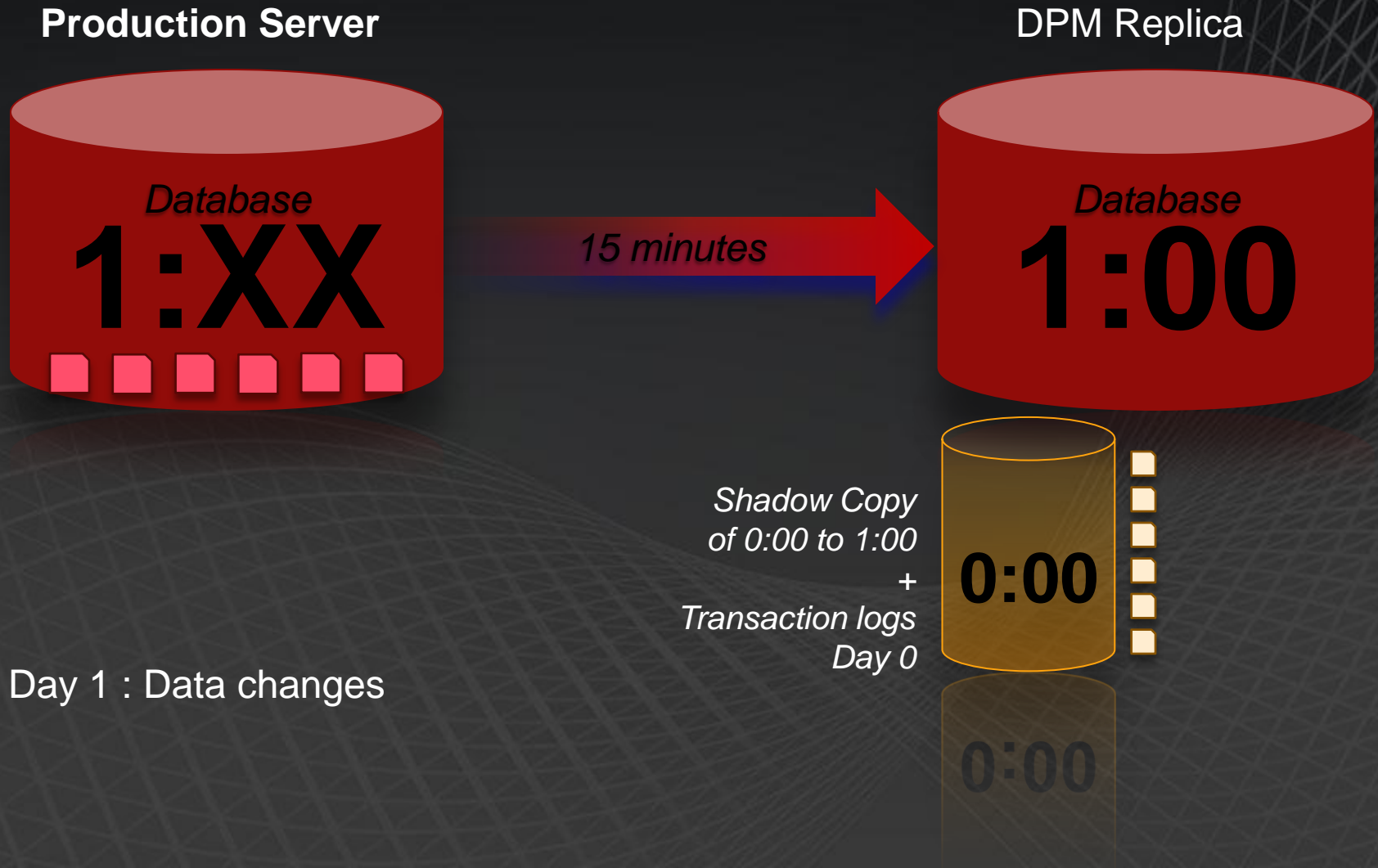
Production Server

DPM Replica

Database
1:XX

15 minutes

Database
1:00

Shadow Copy of 0:00 to 1:00

+

Transaction logs Day 0

0:00

Day 1 : Data changes

Efficient Protection beyond De-duplication
Day 1 : Transaction Logs

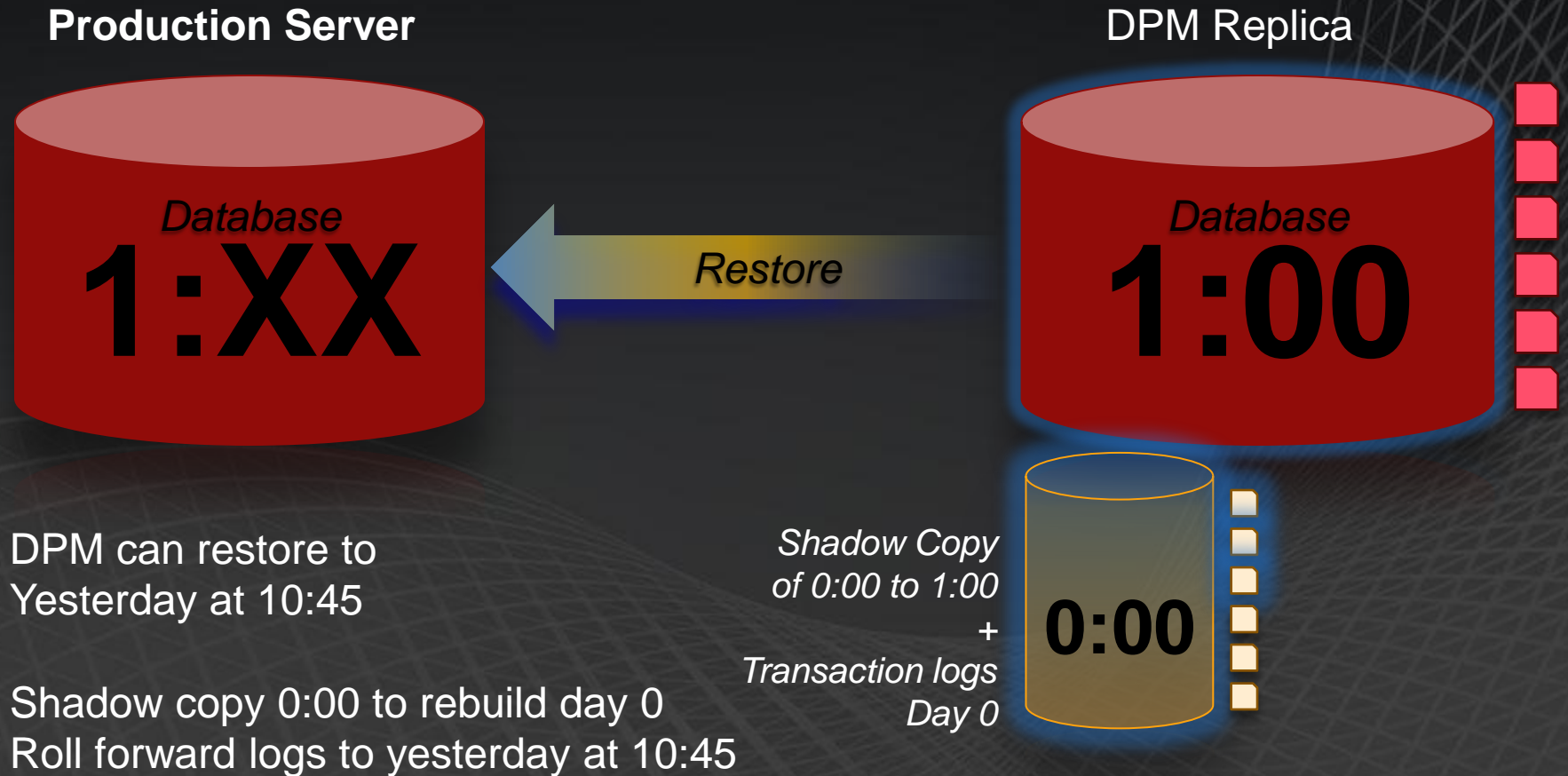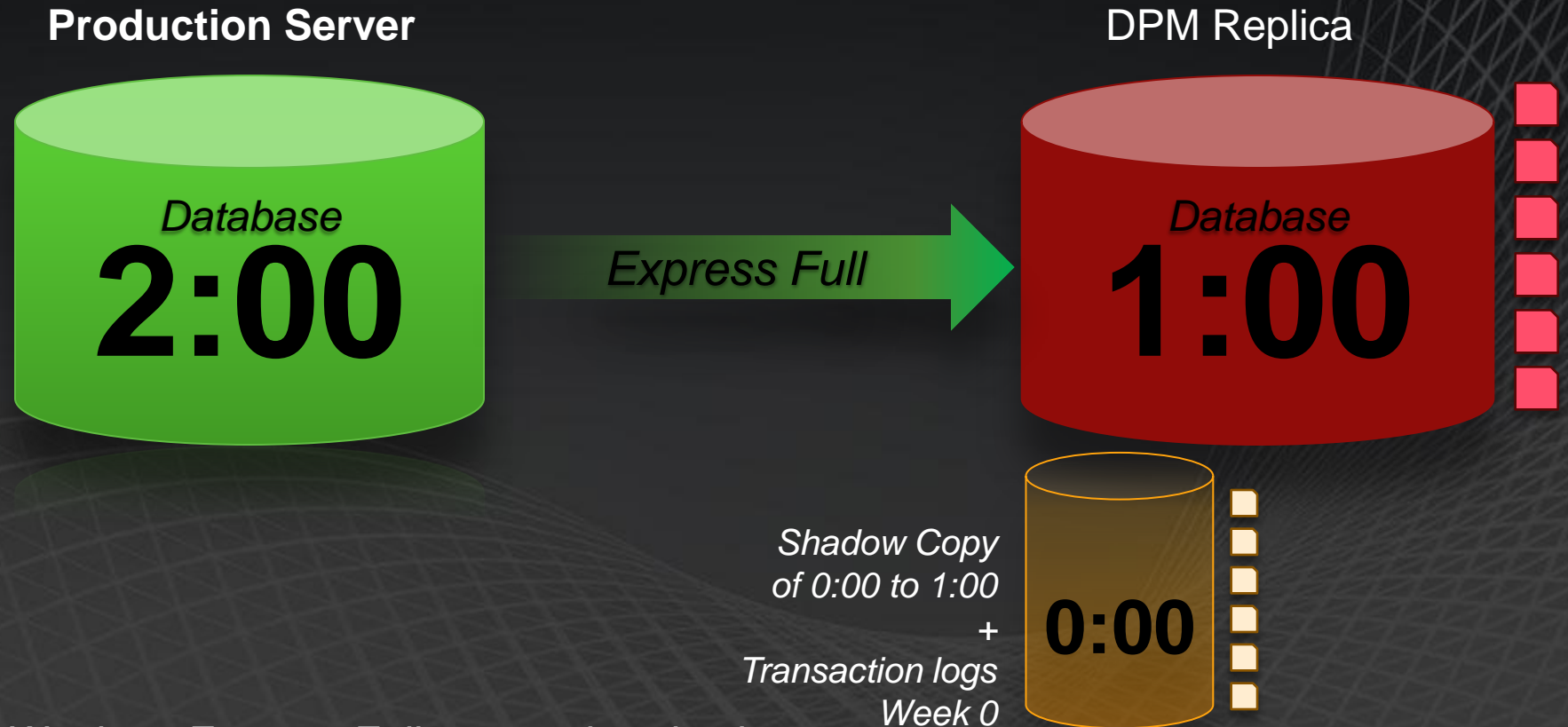# Efficient Protection beyond De-duplication
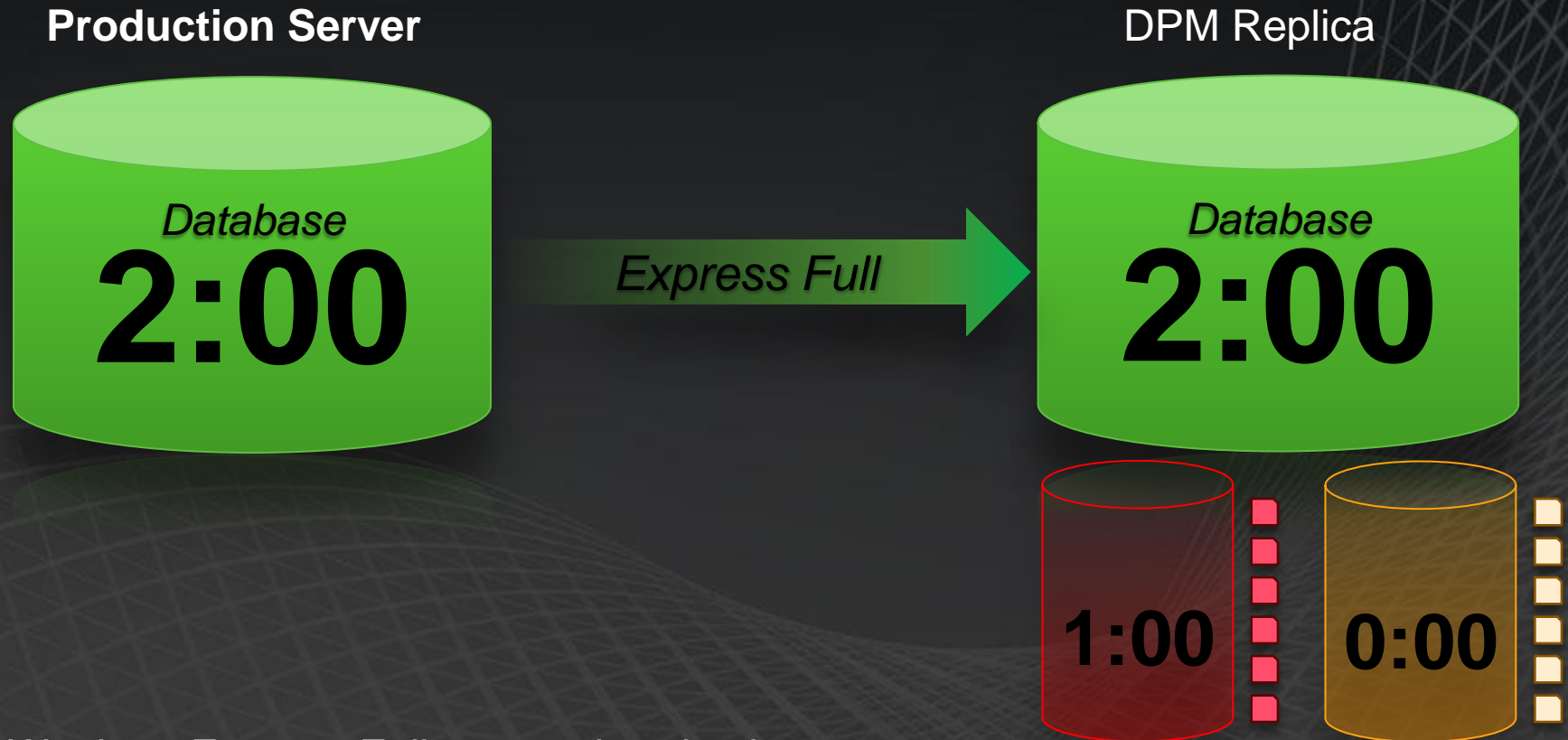# Day 1 : Transaction Logs

Production Server

DPM Replica

Database
1:XX

Restore

Database
1:00

DPM can restore to
Yesterday at 10:45

Shadow copy 0:00 to rebuild day 0
Roll forward logs to yesterday at 10:45

*Shadow Copy
of 0:00 to 1:00*
+
*Transaction logs
Day 0*

0:00
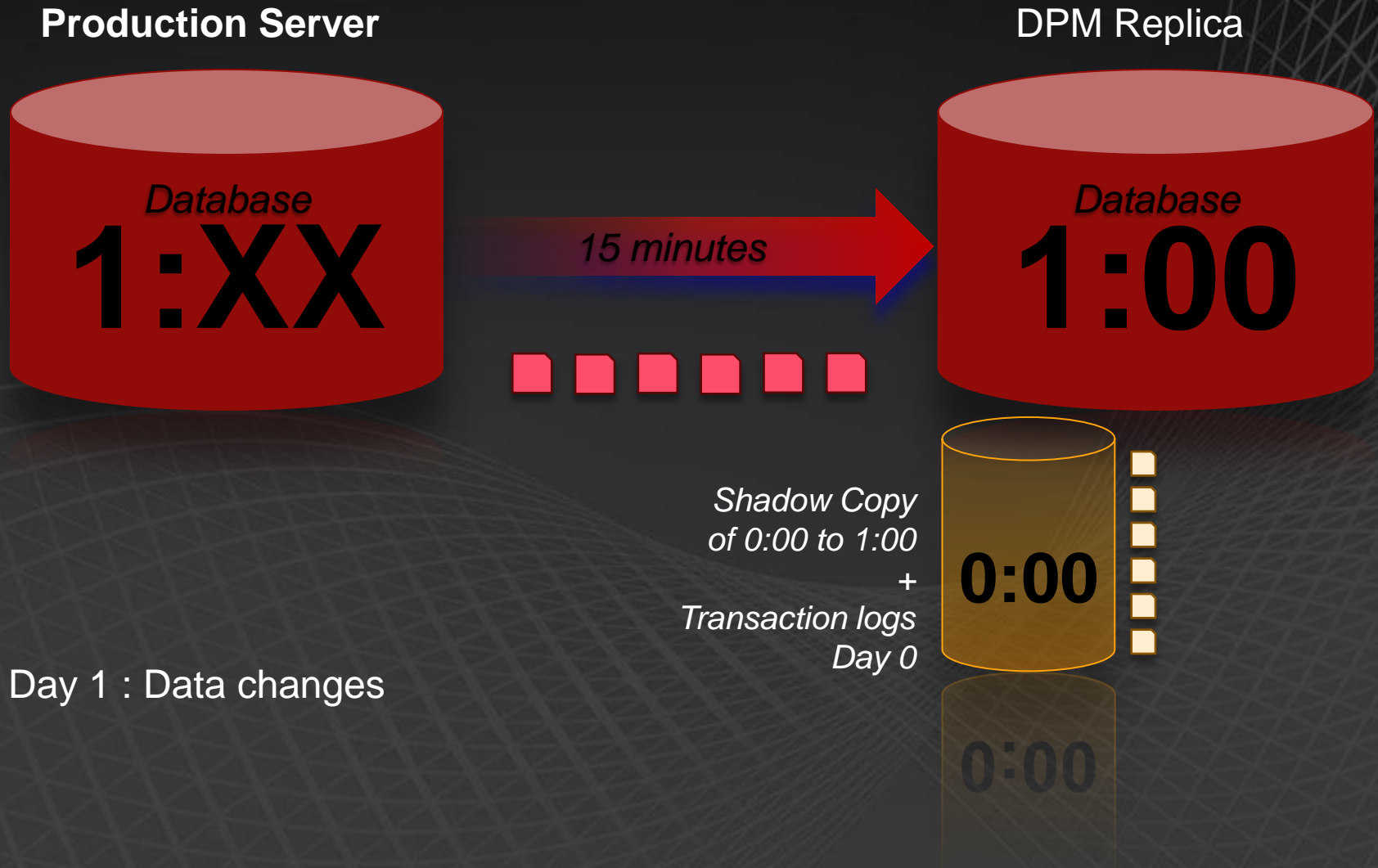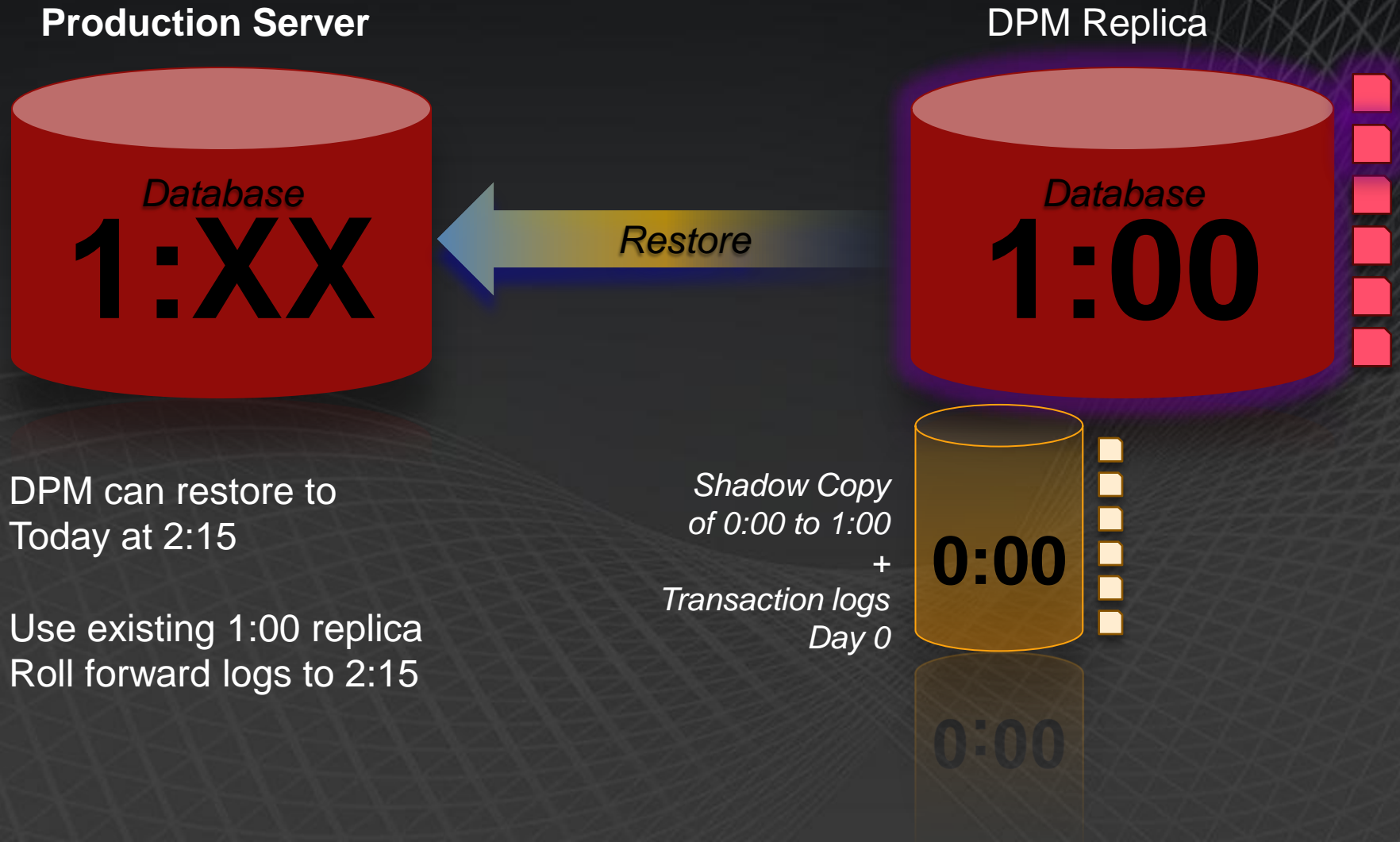
Efficient Protection beyond De-duplication
Day 2 : DPM Express Full

Production Server

Database
2:00

DPM Replica

Express Full

Database
1:00

*Shadow Copy
of 0:00 to 1:00*
+
*Transaction logs
Week 0*

0:00

Week 2 : Express Full - resynchronization

Efficient Protection beyond De-duplication
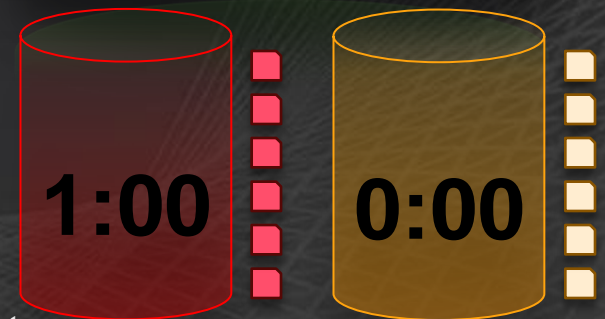# Up to 512 weeks of restorable data to 15m

Production Server

DPM Replica

Database
2:00

Database
2:00

1:00   ## 0:00

Up to 512 shadow copies, plus their logs

512w x 7d x 24h x 4(15m) = 344,000 Recovery Points

DPM 2010

Server Features

DPM 2010 – Enhanced Datasources

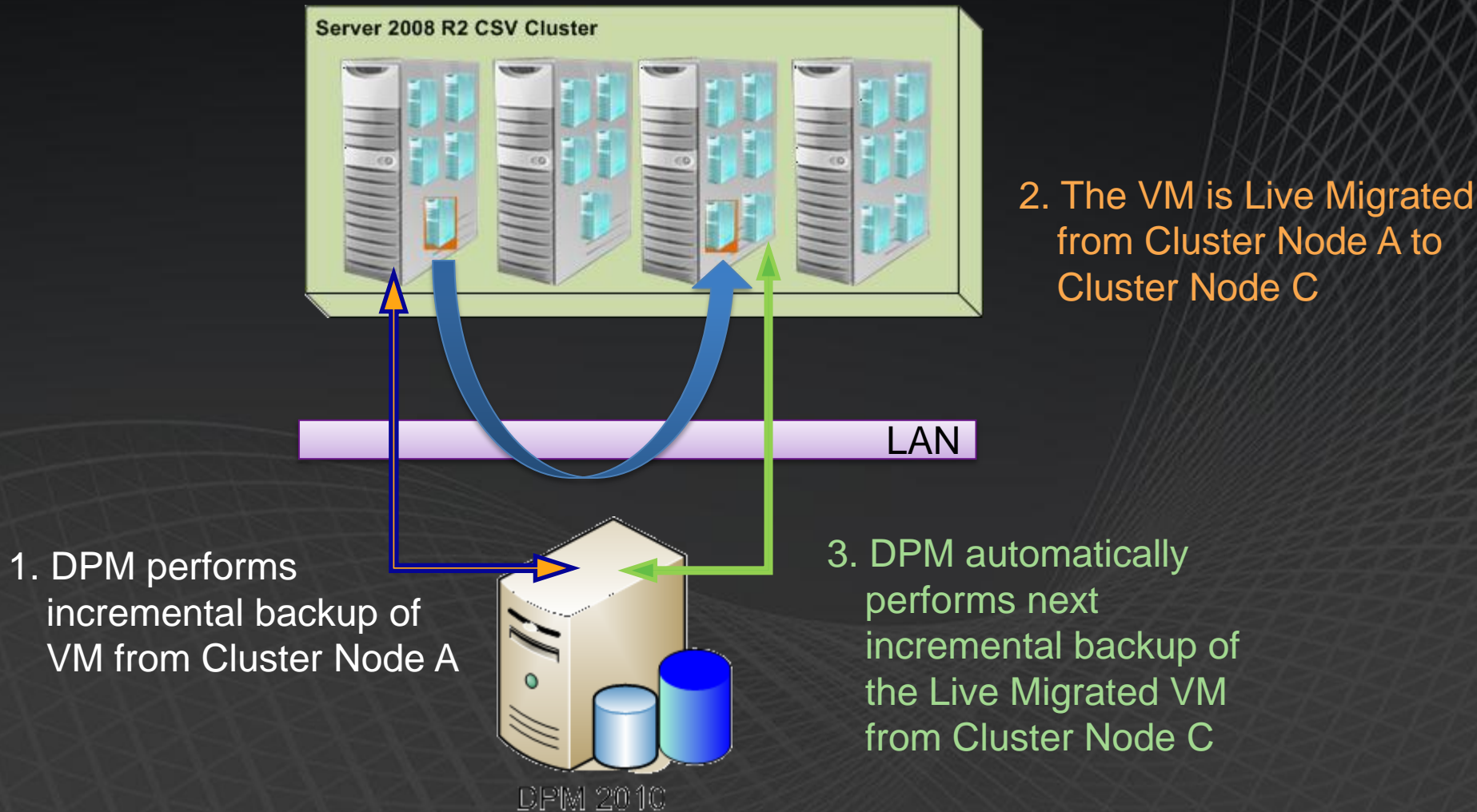|	
SQL	• Protect entire SQL instance - autodiscovery of new DB's • Ability to protect 1000's of DB's using a single DPM server • EUR by SQL Admin via DPM console and Role-Based Access
SharePoint	• Support for Office 2010, MOSS 2007 and SPS 2003 • No Recovery Farm requirement with Office 2010 • Auto-protection of new content databases within Farm
Exchange	• Support for 2010, plus Ex2007 and Ex2003 • Improved Restore Granularity
HyperV	• Item level restore from VHD backup • Support for Hyper-V ^{R2} deployments using LiveMigration (CSV) • Dynamic VM guest migration support (restore to alternate Hyper-V host)

DPM & Hyper-V Roadmap

DPM 2007 SP1

- Host Level Backup of Hyper-V VM on Server 2008
- Cluster Aware
- Quick Migration Awareness

DPM 2010

- Host Level Backup of Hyper-V VM on Server 2008 R2
- Alternate Host Recovery
- Item Level Recovery
- Cluster Shared Volumes (CSV) Awareness
- Seamless protection of Live Migrating VMs

DPM v3 – Live Migration & CSV's

Server 2008 R2 CSV Cluster

2. The VM is Live Migrated from Cluster Node A to Cluster Node C

LAN

1. DPM performs incremental backup of VM from Cluster Node A

3. DPM automatically performs next incremental backup of the Live Migrated VM from Cluster Node C

DPM 2010

DPM v3 – New Datasources

Active Directory	• Leverages Windows Server Backup for dual restore scenarios
	    • Centrally managed from DPM -- Executed locally
	    • Local admin restore from WSB
	    • DPM restoration of whole domain controller

Bare Metal Recovery	• WS03 - Will continue to include DPM SRT for WS03 BMR • WS08 – Use Windows Server Backup for supported image-restore. • Centrally managed from DPM -- Executed locally
New Datasources	• Microsoft Dynamics AX (other Dynamics offerings tbd) • SAP® running on Microsoft SQL Server

DPM v3 – Additional Server Info

DPM to DPM Replication	• Chaining support • Improved scheduling capabilities • One-click DPM DR failover and failback
SAN restore	• Continued support for SAN-restore using scripts/whitepapers (same as DPM 2007)
Platform Support	• DPM Server must be 64-bit & Windows Server 2008 or better • Integration capability with Windows EBS 2008 R2

DPM 2010

Client Features

Backups outside corporate network

LAN clients

Microsoft®
System Center
Data Protection Manager

Edge Network

Internet

Backup over VPN

Remote clients
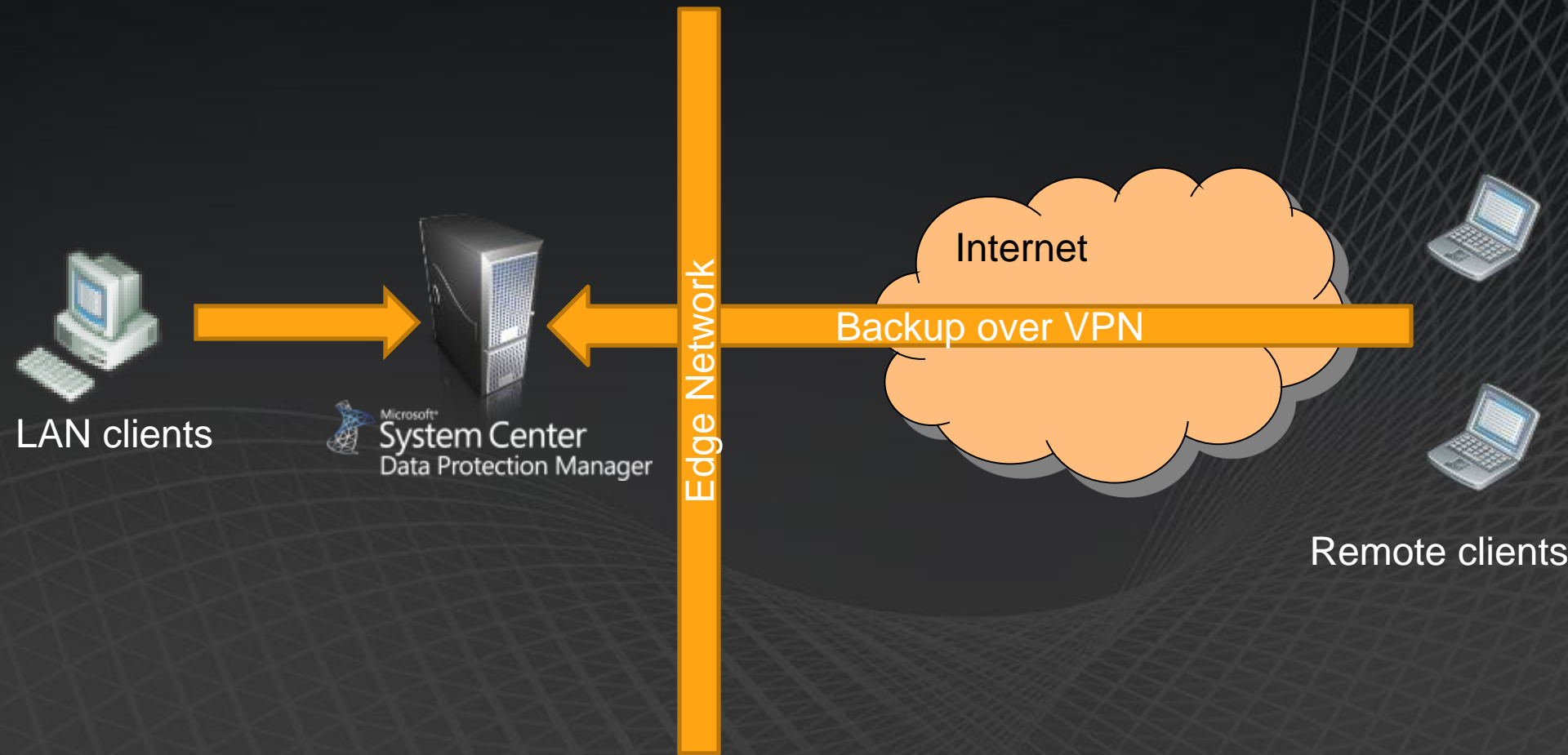
DPM 2010 – Laptops

- Best in class laptop protection for Windows Clients
- Backup over VPN
- Support for XP, Vista, and W7
- Scale to 1000 clients per DPM server
- "Unique user data" only
  - Not the whole machine, so that the OS is not repeatedly backed up
- Integration with local Shadow Copies for Vista & W7
  - Centrally configured from DPM admin UI
  - End User enabled restore from local copies offline and online, as well as DPM copies
  - Admin enabled restore from DPM copies

Client backup - Challenges

How DPM helps

➢ Difficult centralized management

    ➢ Setup the backups centrally on DPM server

➢ High value data but expensive to back it up

    ➢ Manage with aggregated alerts and reports

➢ Need to empower users within corporate policies

    ➢ End user functionality as enabled by administrator

➢ User education required

    ➢ Backup with default policies without end-user action

DPM & DPM-SRT

Microsoft Exchange Server

Microsoft SQL Server

Microsoft SharePoint Products and Technologies

Microsoft Virtual Server 2005 R2

Windows XP

Windows Server 2003

Daily or Weekly

DPM 2007
with integrated Disk & Tape

DPM SRT Server
Can run on DPM Server or separate platform
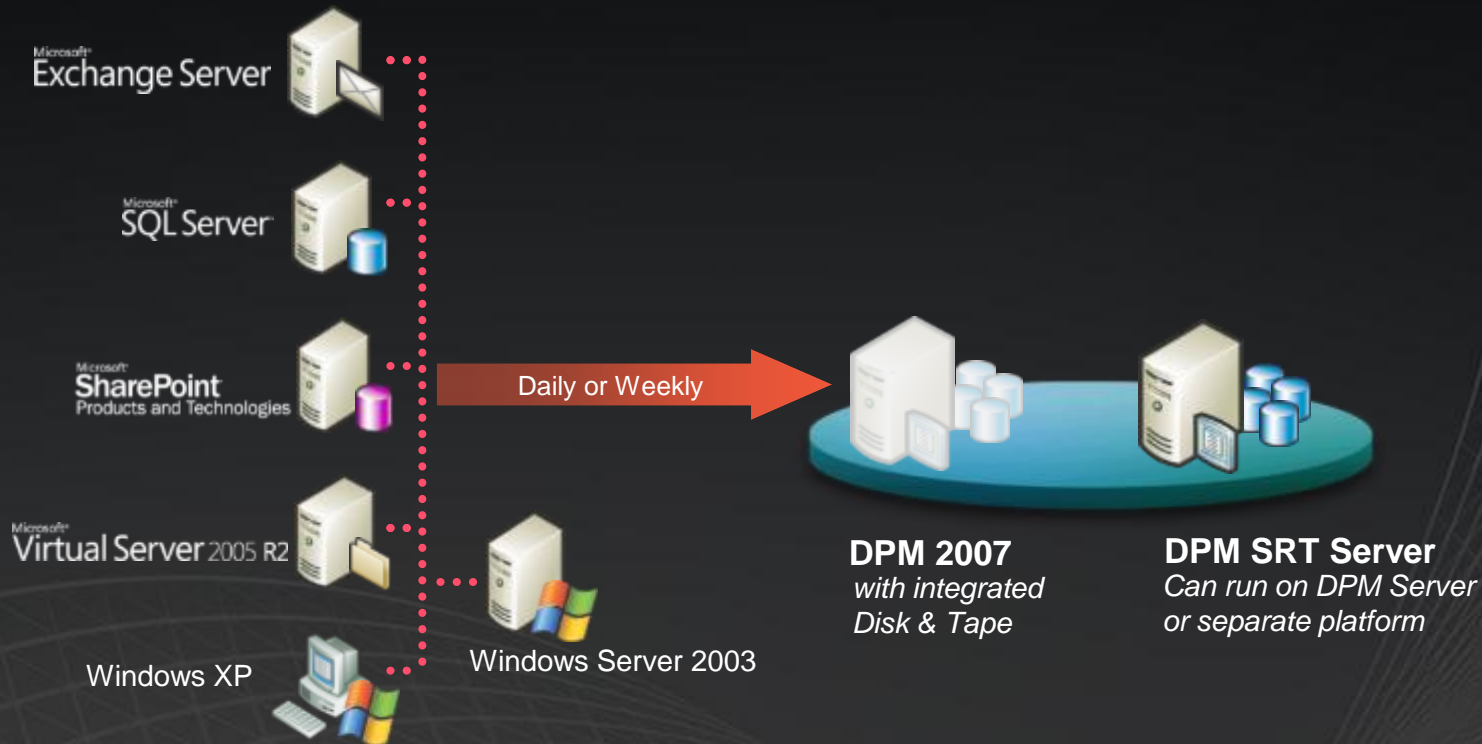
DPM System Recovery Tool - SRT

- **Centralized Backup of Disk Layout, System Volume and other Critical volumes**
- **Protects Window 2003 Servers or XP workstations**
- **Recovery uses customized ISO image that can be burnt to a CD**
- **Uses "Single Instancing" technology – thereby drastically reducing the storage requirements**

Restoring a whole server
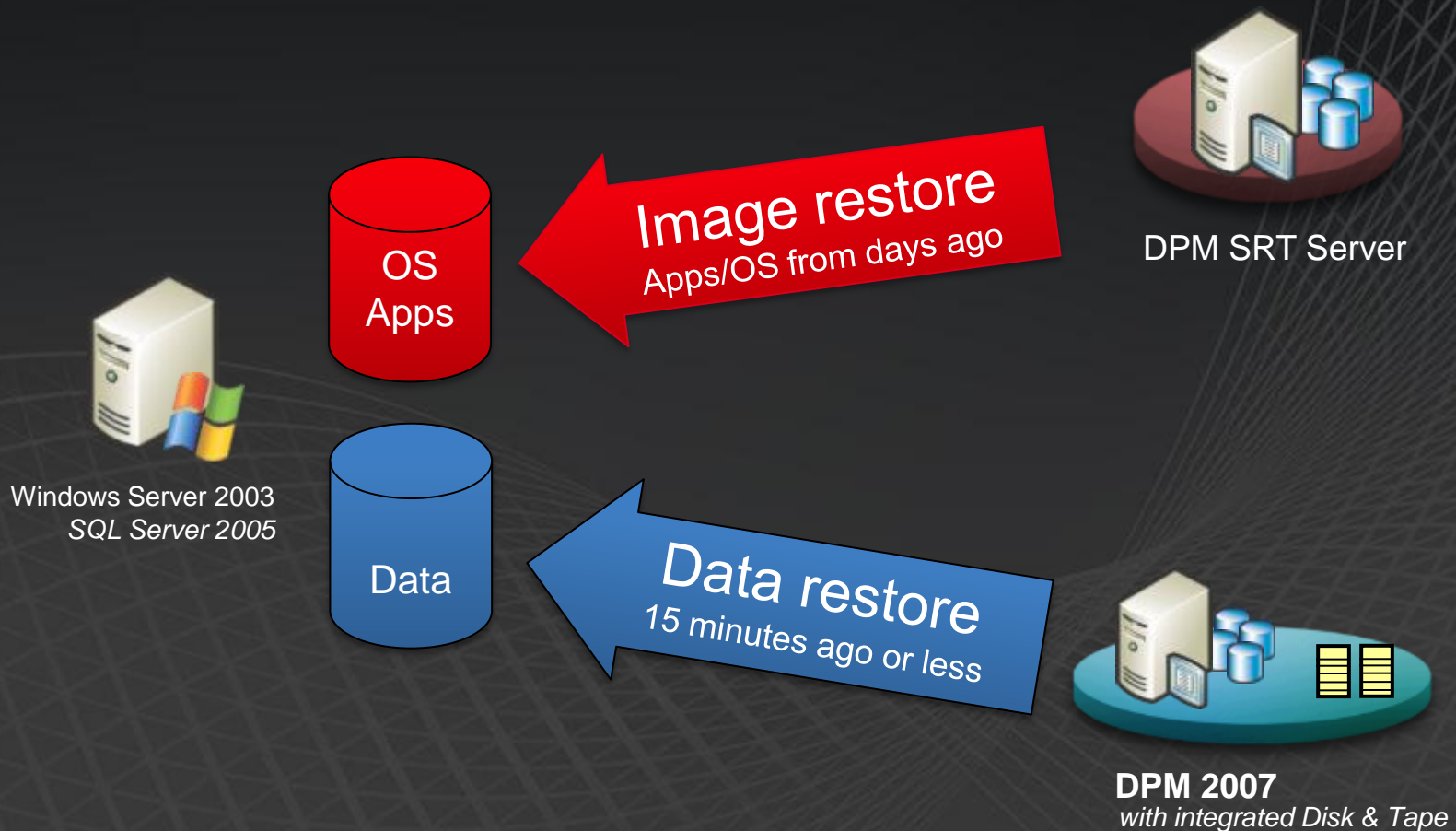
Boot Client Wizard

- Allows users to create an ISO image
  - Special drivers for Mass Storage Controllers & Network Controllers can be added to the image
- ISO image can be used to boot Production Servers (PS) that are unbootable
  - Burn to ISO to media OR
  - Mount it remotely
- To begin recovery – PS should be booted using Boot Client and in waiting mode

Boot Client – Start up

Boot Client – Waiting

DPM eLearning

This is a collection of **6 two-hour eLearning modules** that include hands-on labs, much of the same courseware as our newly announced **classroom-based DPM course**, and is built to prepare you for the **DPM Certification exam**.

There are six modules – each approximately two-hours long:

- *eLearning course 10144 –* **Installing and Configuring** DPM 2007
- *eLearning course 10145 –* Protecting and Recovering **SQL Server** with DPM 2007
- *eLearning course 10146 –* Protecting and Recovering **Exchange Server** with DPM 2007
- *eLearning course 10147 –* Protecting and Recovering **SharePoint** with DPM 2007
- *eLearning course 10148 –* Protecting and Recovering **Virtualized Environments** with DPM 2007
- *eLearning course 10149 –* **Disaster Recovery** and Monitoring the DPM server

And Microsoft Learning has them in a bundle, so you can get all 6 modules as a kit.

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Microsoft TechNet