Microsoft System Center Data Protection Manager 2012 SP1

Learn how to deploy, monitor, and administer System Center Data Protection Manager 2012 SP1

Steve Buchanan
Robert Hedblom
Islam Gomaa
Flemming Riis

[PACKT] PUBLISHING
enterprise professional expertise distilled

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BIRMINGHAM - MUMBAI

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Credits

Authors

Steve Buchanan

Islam Gomaa

Robert Hedblom

Flemming Riis

Reviewers

Mike Resseler

Yegor Startsev

Acquisition Editor

Mary Nadar

Lead Technical Editor

Arun Nadar

Technical Editor

Hardik B. Soni

Project Coordinators

Abhishek Kori

Wendell Palmer

Proofreaders

Dan McMahon

Bernie Watkins

Indexer

Rekha Nair

Graphics

Ronak Dhruv

Abhinash Sahu

Production Coordinator

Pooja Chiplunkar

Cover Work

Pooja Chiplunkar

About the Authors

Steve Buchanan is an infrastructure consultant at RBA with a focus on System Center. He has 13 years of experience in information technology around systems management and systems administration. Steve authored System Center Data Protection Manager (SCDPM) 2010 SP1 and was a technical reviewer for the *System Center Service Manager 2012 Cookbook* and *System Center Virtual Machine Manager 2012 Cookbook*, *Packt Publishing*. Steve is a Microsoft System Center MVP and holds the following certifications: Linux +, MCP, MCTS, MCSA, MCITP: Server Administrator, and MCSE: Private Cloud.

Steve can be found blogging at `www.buchatech.com`.

I want to first and foremost give thanks to God for making opportunities such as this possible. I would like to thank my wife, Aya, and my three sons for being patient and supportive as I work on time consuming projects like this. I would also like to thank all of my other family and friends. I want to give a big thanks to the other System Center MVPs Robert Hedblom, Islam Gomaa, Flemming Riis, Yegor Startsev, and Mike Resseler for being a part of the team on this book, as it takes a great amount of effort to put something like this together. I also want to thank the Packt Publishing team for supporting all the authors and reviewers during this project. I would also like to say thanks to my employer RBA for being supportive and encouraging these types of community-based efforts. Last but not least, thank you to the System Center community for being supporters of books like this.

Islam Gomaa is a System Architect at Kivuto Solutions Inc, the global leader in complex digital distribution solutions. Islam has over 15 years of expertise in helping organizations align their business goals using Microsoft technology and deploying Microsoft-based solutions, which helped Kivuto become ISO 27001 certified and achieve the Microsoft Gold competency as an ISV.

Islam is an SCDM MVP and member of the Windows Springboard Technical Expert Panel (STEP) for Windows 8 and Server 2012, having delivered STEP presentations as an evangelist across Canada and the USA. He has also authored select advanced webcasts on Microsoft private cloud. Islam presented at both TechEd 2013 North America and Europe, and is welcomed each year to present for TechEd and MMS as a guest speaker.

Islam has a Bachelor's in computer science from Montreal University, holds several Microsoft technical designations, and is an active member of the IT community.

Islam enjoys sharing his adventures and ideas about system administration through his blog at `http://blog.islamgomaa.com` and `http://www.IslamGomaa.com`.

First of all, I would like to thank God for allowing me to participate in a great project like the writing of this book. I would like to thank my wife Marwa and son Yassine for being patient and supportive. I can't thank enough everyone that participated in the making of this book, Robert Hedblom, Steve Buchanan, Flemming Riis, Yegor Startsev, and Mike Resseler. They have invested a lot of their time to this project; a special thanks to Steve Buchanan for taking the lead on this project and guiding each of the authors. I also want to thank the Packt Publishing team for their outstanding work and support rendered to all the authors and reviewers during this project; I know it wasn't easy to coordinate between four authors living in four different countries.

Robert Hedblom is a Microsoft Most Valuable Professional (MVP) for System Center Cloud and Datacenter Management and works as a Solution Architect for System Center for hosters, EPG, and SMB customers globally. He was previously an MVP for DPM. Robert's knowledge is often used by Microsoft as a reviewing partner and consultant via Microsoft Consultant Services (MCS) or Premier Field Engineers (PFE) on a global scale.

He also runs one of the largest DPM blogs (`http://robertanddpm.blogspot.com`) where he blogs frequently about DPM and also other System Center products for the System Center community.

Robert has written several DPM trainings for versions 2010, 2012, and 2012 SP1 that a large number of training centers are using. Robert is often seen as a speaker on MMS, TechEd, and several other seminars that Microsoft runs. He was involved in the previous book for System Center Data Protection Manager as a technical reviewer.

I would like to dedicate a big thank you to my family, and especially my wife Hanna, who is the reason that I can fulfill my dream.

Flemming Riis is an infrastructure consultant at Kompetera with a focus on System Center.

He has been working there since 1997 in various roles, starting with repairing PCs and then presales support. He is now a consultant who started with management software, then became Operations Manager, and hasn't looked back since.

Flemming is a Microsoft System Center MVP and holds the following certifications: MCP, MCTS, MCSA, and MCITP.

Flemming can be found blogging at `www.flemmingriis.com`.

I want to first and foremost give thanks to Steve Buchanan and the rest of the team on this book for allowing me to contribute to the great team, and in general to the whole community around Microsoft Solutions, where everyone is very helpful across company relations; this is a true inspiration for others to follow.

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About the Reviewers

Mike Resseler is a Product Strategy Specialist for Veeam. Mike is focused on technologies around Hyper-V and System Center. With years of experience in the field, he presents regularly at large events such as MMS, TechEd, and TechDays. Mike has been awarded the MVP for System Center Cloud and Datacenter Management since 2010. His major hobby is discussing and developing solid Disaster Recovery scenarios. Additionally, he has enterprise-class experience in Private Cloud architecture, deployment with marked focus on protection from the bottom to the top. He holds certifications in many Microsoft Technologies including MCITP. You can also follow Mike on Twitter `@MikeResseler` and `@Veeam`.

Yegor Startsev is a System Center Cloud and Datacenter Management MVP from Samara, Russia. Yegor has worked in the IT industry for over 11 years, starting as a systems administrator and working up to his current role as a Chief Information Officer at VTS. Yegor is focused on managing IT departments and budgets, architecting and developing IT projects in a large group of construction companies. He is a regular speaker at regional Microsoft and IT Pro community events. Yegor also runs the DPM blog, *The recovery point* (`http://ystartsev.wordpress.com`). Yegor is married and a proud father of triplets (two boys and a girl).

I'm thankful for the great opportunity to work with Steve, Robert, Islam, and Flemming. I would also like to thank my wife, Olga, for her support and patience throughout this project.

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Preface

Microsoft Data Protection Manager (DPM) 2012 SP1 is a protection and recovery solution, which provides continuous data protection for Windows application and file servers to seamlessly integrated disk, tape, and cloud.

This book includes deep dive contributions from seven experienced System Center MVPs, with hands-on and real-life experience in deploying, managing, and configuring DPM. This book will show you how to effectively plan and deploy DPM and how to effectively back up your business-critical data using Microsoft DPM 2012 SP1. This book will focus on Microsoft's best practices as well as the authors' own real-world experience.

What this book covers

Chapter 1, *What is Data Protection Manager?*, will give you an overview on System Center Data Protection Manager (SCDPM), what it is, and how it works using underlying components in the operating system such as VSS and PowerShell.

Chapter 2, *Backup Strategies*, will help you understand protection planning and show you how to create a backup and custom recovery strategy for your own enterprise.

Chapter 3, *DPM Server Management Tasks*, will provide guidance on how to manage your DPM server, including the most common DPM management task and DPM third-party add-ons.

Chapter 4, *Monitoring and Managing Performance of DPM*, will help you in monitoring your DPM server using standard Windows tools as well as operation manager.

Chapter 5, *Workload Protection*, will cover an introduction on how to protect Microsoft workloads using DPM with a workaround on how to back up non-Microsoft workloads.

Chapter 6, *DPM-aware Windows Workload Protection*, will cover how DPM is aware of certain workloads and how it protects and recovers these workloads.

Chapter 7, *DPM Non-aware Windows Workload Protection*, will cover how DPM can protect and recover some non-Microsoft workloads.

Chapter 8, *Managing Tapes in DPM*, will help you understand how DPM manages tapes and how it will write data to a tape using different recovery goals.

Chapter 9, *Client Protection in DPM*, will cover how DPM can protect trusted clients, off-site protection, and the challenges that this presents.

Chapter 10, *Workgroups and Untrusted Domains*, will focus on how DPM can protect untrusted and workgroup clients using various authentication methods.

Chapter 11, *Disaster Recovery*, will look at the steps we need to take to ensure that we can always recover our organization's data, even if multiple events occurs at the same time.

Chapter 12, *DPM PowerShell, Automation, and Private Cloud*, will cover DPM and PowerShell along with some new cmdlets, using PowerShell ISE with DPM. It will also help you understand DPM's role in private cloud, automating DPM with System Center Orchestrator, and how to deploy the DPM Remote Administration console via SCCM.

Who this book is for

This book is for IT professionals who are looking to expand their knowledge on how to use and monitor DPM to protect their enterprise and its mission-critical data.

What you need for this book

In order to perform the demo and examples within this book, a functional DPM installation 2012 SP1 is required. DPM SP1 is resource-intensive; in terms of storage, there are some areas in which you will need to have more than one server, especially when you are practicing the Cluster Shared Volume.

The configuration you decide to use will most likely need some type of virtualization software such as Hyper-V or VMware.

The following are the core software components that you will need to perform the demos and examples:

- Windows Server 2008
- Windows Server 2012
- Exchange server 2012/2013
- SQL Server 2008 R2 / 2012 in a cluster or mirroring scenario
- SharePoint 2010/2013
- File Server on Windows 2008 R2 / Windows 2012
- Hyper-V 2012 in cluster or standalone mode
- Reporting services 2008 R2

The book doesn't cover the installation of the workload that needs to be backed up by the DOM servers and nor does it cover troubleshooting the DPM installation. In order to know more about these tasks, refer to `http://technet.com`.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "Open the restored files and you will see a catalog with the structure name `DPM_date_time`."

A block of code is set as follows:

```
DECLARE @w int
SET @w = (SELECT [WorkHoursTransmissionRate] from tbl_AM_
InstalledAgent WHERE InstallID = '2083CDAA-2872-4D2D-BAEA-
ADF033021EB9')
DECLARE @n int
SET @n = (SELECT [NonWorkHoursTransmissionRate] from tbl_AM_
InstalledAgent WHERE InstallID = '2083CDAA-2872-4D2D-BAEA-
ADF033021EB9')
DECLARE @t nvarchar(max)
SET @t = (SELECT [ThrottlingSettings] from tbl_AM_InstalledAgent WHERE
InstallID = '2083CDAA-2872-4D2D-BAEA-ADF033021EB9')
UPDATE [DPMDB].[dbo].[tbl_AM_InstalledAgent]
SET
```

```
    [IsThrottled] = 1
    ,[WorkHoursTransmissionRate] = @w
    ,[NonWorkHoursTransmissionRate] = @n
    ,[ThrottlingSettings] = @t
    GO
```

Any command-line input or output is written as follows:

```
start /wait setup.exe /i /f <path>\DPMsetup.ini /l <path>\dpmlog.txt
```

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in the text like this: "In the **Getting Started** wizard, click on **Chart Wizard**."

Warnings or important notes appear in a box like this.

Tips and tricks appear like this.

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1
What is Data Protection Manager?

This chapter will give you a good understanding of what System Center **Data Protection Manager** (**DPM**) is and how it works, using the underlying components in the operating system.

There are many different backup software vendors that claim the market today. They have all got one thing in common, they perform backups. The big difference between third-party backup software and DPM is that DPM isn't a backup software, it's a restore product. This was the primary idea from Microsoft when introducing DPM to the market. You shouldn't need to be a DBA to restore your SQL databases nor should you need to be a SharePoint administrator to be able to perform fast, optimized, and fully supported restore operations in your Microsoft environment. As a DPM administrator, you will have the ability to perform all restore operations possible in your datacenter or smaller server environments.

DPM uses many different components and functions to be able to give you that great experience when protecting your Microsoft environment. Though DPM relies on different components in the operating system, there are three different key components that you must be aware of:

- PowerShell
- DPMDB
- Volume Shadow Copy Services (VSS)

All the configurations made in DPM regarding deployed agents, throttling, protection groups, and so on, are stored in a local or remote SQL database called `DPMDB`. It is very important that you backup your `DPMDB` database when it comes to restoring your DPM server. The `DPMDB` database can be placed in a local SQL that is also shipped with your DPM media or it can be placed on a remote SQL that is already in place in your Microsoft environment.

VSS is the most important component. VSS gives DPM the ability to make online snapshots of online and live data that are read during the backup process. In this chapter we will cover:

- Planning for your DPM deployment
- The Windows applications
- The DPM disk pool
- Dependent services, local accounts, and groups
- VSS
- How does the DPM agent operate?
- A GUI walkthrough
- Additional functions and roles within DPM
- PSDataSourceConfig.XML
- Troubleshooting backups
- Upgrading scenarios

Planning for your DPM deployment

When it comes to planning your deployment of DPM there are several scenarios you need to consider. The first thing is the number of DPM servers you would like to deploy, whether to use a backup network or not, agent deployment, the total size of the DPM disk pool, and so on. First, let's have a look at the hardware requirements.

Hardware requirements

There is a major difference between minimum requirements and recommended requirements, regarding the performance of the DPM server. In the planning phase, you probably have some expectations regarding what performance DPM will have in your environment.

Remember that DPM stores its configurations in SQL (DPMDB) and if you are using a local SQL installation, you may consider using a slightly higher amount of RAM than the recommended requirements. Since hardware isn't a big cost or investment for companies these days, you may consider buying hardware that will give DPM of the hardware resources it really needs.

Minimum requirements

The minimum hardware requirements are as follows:

Processor	**1 GHz dual-core CPU**
RAM	4 GB
Page file	0.2 percent of all combined size of all recovery point volumes
Disk space	DPM installation location: 3 GB
	Database files drive: 900 MB
	System drive: 1 GB
DPM disk pool	1.5 times the size of the protected data

Recommended requirements

The recommended hardware requirements are as follows:

Processor	**2.33 GHz quad-core CPU**
RAM	8 GB
Page file	1.5 times the amount of RAM
Disk space	Always has at least 3 GB of free disk space on the volume that the DPM is installed on.
DPM disk pool	1.5 times the size of the protected data

Limitations of DPM

Depending on the load you put on the DPM server, it will be able to protect different numbers of servers. In your DPM deployment, it is important that you are aware of the limitation based on the minimum requirements of DPM.

There are some guidelines you should be aware of. First off, based on the minimum hardware requirements, a DPM server can protect 75 servers and 150 clients. The DPM disk pool can have a total number of 600 volumes, of which 300 are replica volumes and 300 are recovery points.

In the disk pool you can have 64 recovery points for file data and 512 online snapshots for other workloads.

Based on the minimum requirements, a DPM server can have 80 TB of disk storage in the disk pool and 40 TB of this is the maximum recovery point size.

DPM is a 64-bit software that can protect both 32-bit and 64-bit operating systems. DPM must be installed on a 64-bit operating system.

The Windows applications

DPM was designed to be fully supported and fully optimized for backup, restore, and disaster recovery scenarios of the Windows workloads. Since DPM only follows a predefined definition from the product groups that states the backup and restore operation, this will give you an advance regarding restore scenarios compared with different vendors. DPM protects Windows applications that have a defined VSS writer. If these Windows applications are clustered, DPM will be fully aware of the cluster configuration and also inform you if you haven't installed a DPM agent on all of your cluster members.

The Exchange server

DPM protects the Exchange Windows application with the following Service Pack levels:

- 2003 SP2
- 2007
- 2010
- 2013

The SQL Server

DPM protects the following versions of the SQL Windows applications:

- 2000 SP4
- 2005 SP1
- 2008
- 2008 R2
- 2012

SharePoint

DPM protects the following versions of the SharePoint Windows applications:

- Windows SharePoint Services 3.0
- Windows SharePoint Services 3.0 SP Search
- Microsoft Office SharePoint Server 2007
- SharePoint 2010
- SharePoint 2013

Virtual platforms

DPM protects the following virtual platforms:

- Hyper-V 1.0
- Hyper-V 2.0
- Hyper-V 3.0

The Windows clients

DPM protects the following Windows clients:

- Windows XP SP2
- Vista
- Windows 7
- Windows 8

The system state

DPM can protect the system state as a workload (the Active Directory).

The DPM disk pool

Before you can start protecting a production environment, you must attach a disk or disks to the DPM disk pool to be able to perform fast disk recovery.

The choice of disk type or technology is really made easy with DPM. The only important part is that the storage used for the DPM disk pool must be presented as a local attached storage, which means that SAN, NAS, DAS, and local disks will work.

You cannot use USB or IEEE 1394 FireWire disks since they are presented as removable storage in the operating system.

Since the DPM disk pool is based on the disk management and its underlying technologies, there are some limitations that you must be aware of:

- **Master Boot Record** (**MBR**) disks have a 2 TB physical disk limit.
- Don't make your GPT disk larger than 17 TB even if Microsoft supports it. This is a recommendation from the DPM development group.
- The NTFS supports up to 16 TB volume size using the default cluster size.
- The **Virtual Disk Service** (**VDK**) supports up to 32 member spanned volumes, which means that you shouldn't use more than 32 disks in the DPM disk pool.
- Don't exceed 80 TB of storage for production data in the DPM disk pool with a maximum recovery point size of 40 TB.
- You can have up to 600 volumes in your DPM disk pool.

The RAID levels for the disk pool

When it comes to planning the DPM disk pool, selecting the RAID level is a strategic choice since this will be one area that will give you good or poor performance of the DPM disk pool.

There are four categories that you must consider when planning for the DPM disk pool:

- Capacity
- Cost
- Reliability
- Performance and scalability

Many companies will use the RAID 5 for their RAID level since this gives you an ok score in all four categories. One thing that is often forgotten is the actual number of disks that could be included in a RAID 5 before it will impact the reliability and performance. This differs among different vendors and you should verify the maximum limits permitted from each storage vendor.

The following matrix will give you a good understanding of the RAID level you should choose to fit your company performance need and disk cost. The value 1 in the matrix is poor and 4 is very good.

RAID level	Capacity	Cost	Reliability	Performance and scalability
JBOD	4	4	1	4
RAID 0	4	4	1	4
RAID 1	1	1	4	3
RAID 5	3	3	3	3
RAID 10	1	1	4	4
JBOD	5	5	1	2
RAID 0	5	5	1	5
RAID 1	1	2	3	3
RAID 5	4	4	2	3
RAID 6	3	3	5	2
RAID 10	1	1	4	5
RAID 50	3	2	4	4

If your company would like to have good performance in their DPM disk pool you should choose the RAID 10 level. This choice isn't the most cost effective but gives you great performance.

Software controllers versus hardware controllers

Regarding the choice of software versus hardware, Microsoft always recommends that you use a hardware controller. DPM will work with a software controller but if you are looking for stability, performance, and reliability for your DPM disk pool, you should always use a hardware controller.

The sector size

When planning your DPM disk pool for an enterprise deployment, there are two critical issues that you must consider:

- How the data stream is being written
- The size of the data being written to disk

This is important in those scenarios where you need to plan your SAN being used for the DPM disk pool. DPM will write the data in a sequential I/O with the size of 64 KB.

The custom volumes

DPM 2012 has some auto-heal functions; one of these is automatically growing the volumes that were introduced in DPM 2010. In some cases you might like to place your more important or critical protected production data on a storage solution that has a better I/O performance for your restore process. As a DPM administrator, the only way to choose which disk in the DPM disk pool to host the protected data is to use the custom volumes. Consider the scenario where you would like to place your protected Exchange mailbox databases on a performance SAN instead of cheaper storage so you can manage your SLA. A custom volume can also be encrypted.

By using the custom volumes you will be able to manage the creation of the volume for the replica and the volume for the recovery point yourself in disk management. During the creation of a protection group, you can associate the created volumes with the data source you want to protect. The custom volumes will not grow automatically and, as an administrator, you need to be able to increase the size when needed.

Deduplication

DPM doesn't do deduplication for the DPM disk pool. It can be done by using third-party software or by using hardware that performs deduplication on the disks that are presented to the DPM server operating system.

For the software deduplication there is one piece of vendor software that you should use. The software name is BitWackr and the vendor is Exar.

For hardware-based deduplication, there are two options. If your SAN supports deduplication for the disks that will be used for the DPM disk pool then you will be able to have the deduplicated data in your disk pool. The second option is to use a product called CRUNCH from the company BridgeSTOR.

Dependent services, local accounts, and groups

After the installation of DPM, you will have some new services running in your operating system and also two specific accounts that you will have been prompted to enter a password for. We will now explain the purpose of these services and the local accounts.