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# Microsoft Data Protection Manager 2010

A practical step-by-step guide to planning deployment, installation, configuration, and troubleshooting of Data Protection Manager 2010

**Steve Buchanan**

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**Steve Buchanan**



BIRMINGHAM - MUMBAI

# Microsoft Data Protection Manager 2010

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I would like to say thank you for the opportunity to work with Steve Buchanan who did a great job with this book.

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*This book is dedicated to the memory of my grandfather James A. Buchanan.*



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# Preface

Microsoft Data Protection Manager (DPM) 2010 is a backup and recovery solution which provides continuous data protection for Windows application and file servers to seamlessly integrated disk, tape, and cloud.

This Data Protection Manager book is a practical, step-by-step tutorial that will show you how to effectively back up your business data using Microsoft Data Protection Manager 2010 and how to plan, deploy, install, configure, and troubleshoot Microsoft Data Protection Manager 2010 as a standalone product. This book will focus on Microsoft best practices as well as the author's own real world experience with Data Protection Manager.

## What this book covers

*Chapter 1, DPM Overview* provides an overview of what DPM is, along with what it can do. It discusses the history of DPM, new features to 2010, understanding licensing, and more.

*Chapter 2, Planning For Your Backup Needs* shows you how to develop a backup solution strategy.

*Chapter 3, Installation* looks into installing DPM as well as upgrading DPM.

*Chapter 4, Configuration* covers the required and optional configurations needed to get DPM up and running.

*Chapter 5, Administration* looks into DPM administration including the console, reporting, maintenance, and performance.

*Chapter 6, Configuring DPM to Back Up Servers and Clients* will cover topics such as protecting Windows' servers, Windows' clients, protecting clients and servers in untrusted domains or in workgroups, and configuring end-user recovery.

*Chapter 7, Backing Up Critical Applications* looks into backing up critical Microsoft applications such as SharePoint, SQL, Hyper-V, Exchange, and ISA Server 2006.

*Chapter 8, Recovery Options* deals with restoring critical Microsoft applications such as SharePoint, SQL, Hyper-V, Exchange, and ISA Server 2006.

*Chapter 9, Offsite, Cloud Backup and Recovery* covers the options that are available for Data Protection Manager offsite as well as cloud backup, recovery options and also how to configure them.

*Chapter 10, DPM PowerShell* discusses the basics of using PowerShell with DPM along with some useful scripts.

*Chapter 11, Troubleshooting and Resources* covers the basics of DPM troubleshooting as well as the many resources out there for DPM.

## What you need for this book

To run the examples mentioned in this book you will need the following software:

- Base build:
  - Windows Server 2008 R2
  - PowerShell
  - Microsoft DPM 2010
- Other software used in the book:
  - Firestreamer
  - Exchange 2007/2010
  - SQL 2005/2008
  - ISA 2006
  - SharePoint 2010
  - Hyper-V
  - CloudRecovery by Iron Mountain
  - EVault for DPM by i365

## Who this book is for

If you are a Network Administrator, System Administrator, Backup Administrator, Storage Administrator, or an IT consultant who wants to effectively back up your business data using Microsoft Data Protection Manager 2010, then this book is for you.

A good understanding of operating systems, backup devices and network administration is required. However, knowledge of Data Protection Manager is not necessarily required.

## 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 are shown as follows: "Disable the antivirus software real-time monitoring of `csc.exe` and `dpmra.exe`."

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

```
Get-Command -PSSnapinMicrosoft.DataProtectionManager.PowerShell
```

**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: "The **Libraries** tab is similar to the **Disk** tab."

 Warnings or important notes appear in a box like this.

 Tips and tricks appear like this.

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# 1

## DPM Overview

Welcome to the first chapter of our journey into the world of data protection through Microsoft Data Protection Manager (DPM). This chapter will provide you with an overview of DPM. After reading this chapter you will understand what DPM is and the basis of what it can and cannot do. We will go through DPM Architecture, pricing of DPM, DPM downfalls, compare DPM to other back up solutions, DPM features as well as features specific to the new 2010 version.

In this chapter, we will cover the following topics:

- What is DPM?
- DPM Architecture
- Cons of DPM
- DPM pricing
- DPM feature set
- New features of DPM 2010
- What makes DPM different from other back up solutions

### What is DPM?

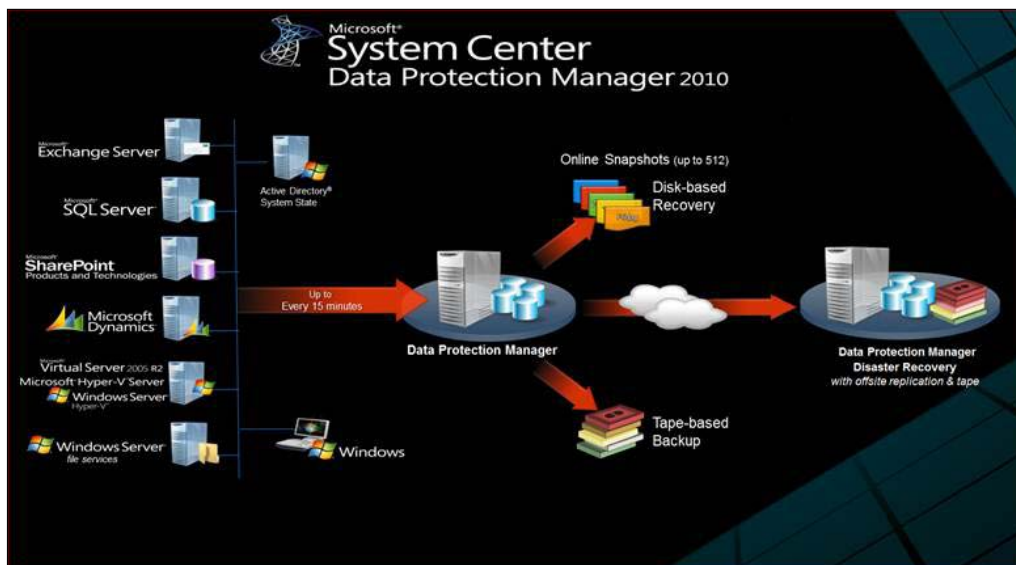
**Data Protection Manager (DPM)** is a part of the Microsoft System Center product suite. The Microsoft System Center products are recognized as tools that IT professionals use to manage their Microsoft domain environments. DPM fits right into this category of products. DPM is Microsoft's first strategy in the back up and recovery space. DPM is on its third version starting with DPM 2006 released in 2005, then DPM 2007 and now DPM 2010. Data Protection Manager is designed to provide IT professionals with a better, more stable way to manage data back up and recovery and minimize data loss.



DPM is a centralized back up solution for Microsoft domain environments. DPM does not back up non-Microsoft operating systems natively. Backing up non-Microsoft systems can be done through third party solutions that we will cover later in *Chapter 9* (this includes server and client operating systems). DPM utilizes **Microsoft Shadow Copy** technology to perform continuous back ups. It performs these continuous back ups at the block-level to ensure data integrity. DPM creates continuous snapshots of data from protected clients. DPM performs a synchronization of only changed data from protected clients keeping the space requirements low on the drives you are backing up to. For example, if you have 200 GB of data that you are protecting on the protected server, DPM will only synchronize the changed data and this might be a couple hundred MB of data. Sending a couple hundred MB of data over a network versus 200 GB of data helps keep bandwidth usage low allowing DPM to perform back ups more frequently.

DPM can perform these synchronizations as often as every 15 minutes, depending on workload being protected, providing constant protection.

The following is a diagram of what DPM can protect and how it can provide protection in your environment:



The DPM Architecture has many parts to it but is easy to understand. We will go through the various pieces. DPM's index and configuration information is stored in a SQL database. This DPM database can be either local or remote on a new or existing instance of SQL. A SQL 2008 instance is required for the DPM database. DPM 2010 runs on Windows Server 2008 or Windows Server 2008 R2 64 bit architecture. It is recommended by Microsoft that DPM needs to be installed on a server dedicated for DPM only. DPM has several combinations in which it can back up your data which help determine the topologies in which DPM can be set up. A number of things need to be considered such as how long you need to retain data, how quickly you need to recover data and how much data you have to back up.

DPM is capable of Disk-to-disk (D2D), Disk-to-tape (D2T), Disk-to-disk-to-tape (D2D2T), and Disk-to-disk-to-cloud (D2D2C) protection. Back up to disk offers fast restores while back up to disk then to tape offers a way to archive data for long retention. You can also back up straight to tape skipping back up to disk all together and back up to the cloud. Backing up to the cloud offers a way to get critical data offsite without the need to send tapes offsite. DPM was designed to back up data on any disk that is presented to the operating system on the DPM server including internal hard drives, Direct Attached Storage (DAS), tape solutions, Storage Area Network (SAN), iSCSI NAS, and to the cloud.



**NOTE:** DPM natively cannot back up to external USB hard drives but there is a work around for this which we will cover in *Chapter 7*.

For every operation that DPM performs, there is a PowerShell code that runs underneath. This is good news because that means that anything DPM does from the GUI can be scripted to help automate certain tasks. In fact, some tasks can only be performed in PowerShell. This will be covered in detail in *Chapter 10*. It is recommended that you have PowerShell knowledge or start learning it as soon as you can. Microsoft is now creating a good amount of its new applications in PowerShell, some of these being products in the System Center suite.

## Cons of DPM

As with every product, DPM does have some disadvantages. Along with all the pros of DPM we need to understand what the cons are as this will help you determine if DPM will fit your needs or not. The last thing you want is to invest in DPM only to find out it won't do what you need it to do.

The cons of DPM are as follows:

- One obvious con is that DPM can only back up Windows based servers and clients natively. DPM can back up Linux if it is running on a Hyper-V virtual machine. You can also get a third-party appliance to back up non-Microsoft workloads such as Linux. This is still a problem if you need to back up MAC, Linux, or anything non-Microsoft in your environment without purchasing another tool to do so. The other problem with running Linux on Hyper-V is that Hyper-V can only run certain Linux distributions. The list of supported Linux distributions can be found here: <http://blogs.technet.com/b/seanearp/archive/2008/06/29/linux-on-hyper-v.aspx>.
- By default DPM uses the local c:\ drive of a protected server when backing up system state on that protected server. This could cause the drive to fill up on that protected server and we all know that is not a good thing. There is a way to change the drive used to store the system state back up by altering the PSDataSourceConfig.xml file on the protected computer.
- DPM cannot back up the server that it is on right out of the box without some further configuration or unless you are backing it up to tape. You can enable DPM to protect itself by running the following command in PowerShell (we will cover more of this in *Chapter 10*):

```
Set-DPMGlobalProperty -AllowLocalDataProtection $true -  
DPMServerName
```

We cover PowerShell in *Chapter 10*. The best option for backing up a DPM server is with another DPM server. We will cover how to back up a primary DPM server with another secondary DPM server in *Chapter 9*.

DPM is an intuitive back up tool built with System Administrators, Messaging Administrators, Database Administrators, SharePoint Administrators, Virtualization Administrators, and developers in mind. Microsoft's goal was to provide anyone in these roles with the power to back up without the complex configurations or the need for extensive training in back up and storage.

DPM is not the be all and end all back up solution if you have non-Microsoft servers and clients in your environment, nor is it perfect. It is however, a top industry leading data protection solution compared to other data protection solutions out there on the market. DPM is a back up/restore/disaster recovery solution that you can depend on for backing up and recovering your data. DPM integrates well with the products it protects such as Exchange, SharePoint, SQL Server, and other Microsoft applications. Last but not least, DPM provides great value for the price as you will see next.

## DPM pricing

DPM 2010 pricing can be confusing on the Microsoft site. In the following chart the DPM licensing and pricing has been broken down in a way that is easier to understand. DPM 2010 pricing is as follows:

DPM type	Cost	Description
DPM 2010 Enterprise	\$432	This allows you to back up file servers as well as application-specific servers. Some application-specific servers include: SharePoint, SQL 2008, Exchange, and Hyper-V. This license gives you the power to do bare metal restore and is required if you are backing up 2003 and 2003 R2 servers using SRT (System Recovery Tool was a tool used for BMR with DPM 2007. In DPM 2010, SRT is only used for BMR when protecting 2003 servers. DPM 2010 has BMR natively built in for Windows 2008 servers.)
DPM 2010 Standard	\$158	This license gives you file level protection as well as system protection such as system state and BMR. With this license you cannot back up application-specific servers such as Exchange or SharePoint.
DPM 2010 Client license	\$32	This license is for backing up client computers on your network. This is good for Windows XP, Windows Vista, and Windows 7 only. This does include system state and backing up remote staff computers.



No license is required for the DPM Server in DPM 2010. You can have as many DPM servers as you like as long as the servers being protected are appropriately licensed as per the previous table.

All of the above licenses are considered to be Management Licenses (MLs). MLs are legal rights and have no digital footprint. This means MLs are not installed on the managed device (OSE) or placed in the registry. It is up to the customer to make sure they are in compliance with licensing. DPM 2010 requires ML licenses for each managed device (OSE). OSE stands for Operating System Environment. An OSE covers all OSs running in any environment (physical or virtual). A managed device would be more fitting. A managed device is any server or client that is protected by DPM. However an ML is not required for any managed device that is functioning solely as a network infrastructure device. An example of this would be an ISA server. The ISA server performs network functions such as being a firewall or a load balancing device.



All prices mentioned were applicable at the time of writing this book.  
For the most current pricing visit: <http://www.microsoft.com/systemcenter/en/us/data-protection-manager/dpm-pricing-licensing.aspx>

## DPM feature set

DPM has a robust set of features and capabilities. The following are some of the most valuable ones:

- Disk-based data protection and recovery
- Continuous back up
- Tape-based archiving and back up
- Built in monitoring
- Cloud-based back up and recovery
- Built-in reports and notifications
- Integration with Microsoft System Center Operations Manager
- Windows PowerShell integration for scripting
- Remote administration
- Tight integration with other Microsoft products
- Protection of clustered servers
- Protection of application-specific servers
- Backing up the system state
- Backing up client computers

## New features of DPM 2010

Microsoft has done a great job of updating Data Protection Manager 2010 with great new features and some much needed features. There were some issues with Data Protection Manager 2007 that would cause an Administrator to perform routine maintenance on it. Most of these issues have been resolved with Data Protection Manager 2010. The following are the most exciting new features to DPM:

- DPM 2007 to DPM 2010 in-place upgrade
- Auto-Rerun and Auto-CC (Consistency Check) automatically fixes Replica Inconsistent errors
- Auto-Grow will automatically grow volumes as needed
- It allows you to shrink volumes as needed
- Bare metal restore

- A Back up SLA report that can be configured and e-mailed to you daily
- Self-restore service for SQL Database Administrators of SQL back ups
- When backing up SharePoint 2010, no recovery farm is required for item level recoveries for example: recover SharePoint list items, and recovery of items in SharePoint farm using host-headers. This is an improvement to SharePoint that DPM takes advantage of
- Better back up for mobile or disconnected employees (This requires VPN or Direct Access)
- End users of protected clients are able to recover their data. The end users can do this without an Administrator doing anything.
- DPM is Live Migration aware. We already know DPM can protect VMs on Hyper-V. Now DPM will automatically continue protection of a VM even after it has been migrated to a different Hyper-V server. The Hyper-V server has to be a Windows Server 2008 R2 clustered server.
- DPM2DPM4DR (DPM to DPM for Disaster Recovery) allows you to back up your DPM to a second DPM. This feature was available in 2007 and it can now be set up via the GUI. You can also perform chained DPM back up so you could have DPM A, DPM B, and DPM C. Before you could only have a secondary DPM server backing up a primary DPM server.
- With the 2010 release, a single DPM server's scalability has been increased over its previous 2007 release:
  - DPM can handle 80 TB per server
  - DPM can back up up to 100 servers
  - DPM can back up up to 1000 clients
  - DPM can back up up to 2000 SQL databases

As you can see from the previous list there are many enhancements to DPM 2010 that will benefit Administrators as well as end users.

## What makes DPM different from other back up solutions

As you will probably know there are many products out there in the data protection market. Here are a few, broken down by paid and free:

<b>Paid</b>	<b>Free</b>
ARCserve Backup	AMANDA
Backup Exec	Bacula
Acronis	rsync
CommVault	BackupPC
Handy Backup	DirSync Pro
Mozy	Cobian Backup

Most of the free products are for Linux platforms and offer limited and/or community support because they are open source. A few of them such as DirSync Pro, AMANDA, and BackupPC will back up MAC OS as well. All of the free products on the list will back up Windows based servers. None of the free products are nearly as good as DPM when comparing features and you will not get the same level of support that you will receive from Microsoft.

One of the most well-known and used product is Symantec's Backup Exec. Some of the differences between DPM and Backup Exec are that DPM is a lot more intuitive and easy to set up and DPM is integrated much better when backing up Microsoft applications servers. The following is a list comparing DPM to other back up solutions on the market. We will only cover three of the paid back up products:

	DPM 2010	Back up Exec 2010	Acronis® Back up & Recovery™ 10 Advanced Server	CommVault Simpana
<b>Cost</b>	\$432 for the enterprise license. This price does gives you all the functionality of DPM. This allows you to back up applications such as Exchange, SQL, or SharePoint.	\$1,162.66, and does not include agents' licenses. This also does not allow you to back up any applications such as Exchange, SQL, or SharePoint. If you needed to back up an application like SharePoint you would need to pay an extra \$1,162.66 for this license.	\$1,219.00 for one server license. You would need to buy separate licenses to back up workstations. This does not allow you to back up any applications such as Exchange, SQL, or SharePoint.	\$1,503 for a single server for Windows, not including agents' licenses. This also does not allow you to back up any applications such as Exchange, SQL, or SharePoint.
<b>Bare metal restore</b>	Yes	Yes	Yes	No
<b>Linux</b>	No	Yes	Yes	Yes
<b>Remote management</b>	No	Yes	Yes	Yes
<b>Deduplication</b>	No	Yes	Yes	Yes
<b>Continuous back up protection</b>	Yes	Yes	No	Yes
<b>Back up targets</b>	Local disc, DAS, iSCSI NAS, SAN, TAPE, Cloud	Local disc, DAS, SAN, TAPE	Disc, NAS, SAN, Tape, FTP	Local disc, DAS, SAN, TAPE
<b>Server cluster support</b>	Yes	No	No	Yes
<b>VSS integration</b>	Yes	No	Yes	Yes



	DPM 2010	Back up Exec 2010	Acronis® Back up & Recovery™ 10 Advanced Server	CommVault Simpana
<b>Bandwidth throttling</b>	Yes	No	No	Yes
<b>Scripting</b>	Yes	No	Yes	No
<b>Virtualized back up</b>	Yes	Yes	Yes	Yes
<b>Reporting</b>	Yes	Yes	No	No

As you can see from the preceding table, there are many features that are common across all of these back up products and there are some major differences as well. **Acronis** is easy to implement in firewall protected environments. Acronis also lets you take complete images of your servers as none of the other above products do. One of the major differences is cost and this is where DPM takes the prize. All of the mentioned solutions require you to purchase extra licensing to back up workstations. Most of the solutions require you to buy additional licensing to back up specific applications such as SQL, SharePoint, and Exchange. However DPM includes this in its enterprise license and it still costs less than the other back up products.

Something you will notice when you shop for a back up product is that most of the pricing options on the products' websites are complex. This can make it difficult when trying to figure out the pricing of what you need for your environment. Choosing a DPM solution for your workload is relatively simpler. For example, you only pay one price and you are able to back up applications in your network.

The majority of the back up products mentioned earlier have a good amount of training resources and information around to help you get up to speed with them. The only one I found difficult to find training and documentation on was CommVault.

One of the drawbacks of DPM is that it is limited to only backing up Microsoft servers natively. You can protect non-Microsoft computers if it runs as a virtual machine in Hyper-V or with a third party product. All of the other products can back up Linux servers natively without third party add-ons. Many environments contain VMware and not being able to back this up with DPM is a problem. Microsoft has included the capability to manage and monitor non-Microsoft products such as VMware with System Center Operations Manager and System Center Virtual Machine Manager. You would think Microsoft would have included the ability to protect VMware and Linux with DPM. This would be a nice feature to have within DPM. Maybe Microsoft will add protection to non-Microsoft servers that are common today in many environments in the next release of DPM: that way you won't need to purchase a third party product for it.

## Summary

From this chapter, you should now have a good understanding of what Data Protection Manager is, its architecture, features, licensing, new features for 2010, its pros, cons, and what makes it different from other data protection products.

In the next chapter we will touch on preparing for your back up strategy and DPM 2010 deployment.



# 2

## Planning For Your Backup Needs

In this chapter we will explore backup and Disaster Recovery (DR) as well as planning for a DPM deployment. You should have an understanding of backup and DR before you can really get into planning your DPM deployment. In the first half of this chapter we will go into detail about what to back up in your environment. Some IT professionals don't really have a good understanding of this and this chapter will point out some best practices regarding this. We will also briefly cover disaster recovery, what it means and how to plan for it.

In the second half of this chapter, we will plan our DPM deployment by digging into how to plan for protection groups and the recovery goals. This is what you need to get ready when making decisions about how many DPM servers your environment will need, where they should be located and whether to use hard drives or tapes, and so on.

We will cover the following topics:

- Why back up?
- Assessing your backup needs
- Disaster Recovery
- Planning DPM deployment