

ReadyRECOVER Software

User Manual

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Support

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ReadyRECOVER Solution Overview

ReadyRECOVER is a complete backup and recovery appliance designed for small and medium-sized businesses. Next-generation file system technology guarantees data integrity, efficient use of storage capacity, and minimal impact to computing resources. With ReadyRECOVER, full backups are instantly created every 15 minutes and can be used independently to quickly and reliably restore files, folders, or systems to any platform, physical or virtual.

Traditional backup solutions create incremental image chains and require regular resource-draining, full backup jobs to maintain data integrity and timely restore points. With ReadyRECOVER, each snapshot is a space-efficient recovery point that never requires image chain management or consolidation. In addition, each snapshot captures the entire target system, the Windows operating system, all services, all applications, all settings, and all data for fast full-system recovery.

ReadyRECOVER is a seamless integration of the ReadyDATA unified storage platform from NETGEAR[®] and ShadowProtect backup and recovery software from StorageCraft.

The solution has storage-efficient data-protection capabilities that deliver the following benefits:

- Protection of physical and virtual servers. These servers include the following:
 - Windows physical servers
 - VMware, Hyper-V, and Xen servers (Windows guest operating systems)
- Synthetic full backups. Every backup is represented as a full image (.vhdx) and provides quick single-file restoration and hardware-independent full restoration of server operating systems and their applications to any supported platform (physical servers, virtualization platforms).
- **Fifteen-minute recovery points**. Backups can be set to 15-minute intervals, regardless of the total capacity of the server (64 TB maximum per logical drive).
- **Storage efficiency**. The storage consumption of this solution is highly efficient because all data is compressed when it is written and only unique blocks of ongoing backups must be stored on disk. The more backups that are stored, the larger the savings become.
- **WAN efficiency**. For customers replicating backup sets offsite, only incremental block changes are replicated with ReadyDATA replicate.

For more information about the topics covered in this manual, visit the support website at *http://support.netgear.com.*

Install and Configure ReadyDATA

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If you have not done so already, install and configure the ReadyDATA unified storage platform. This chapter covers the following topics:

- ReadyDATA Hardware Installation
- Determine the IP Address of Your ReadyDATA
- Change the Administrator Password

ReadyDATA Hardware Installation

Information about installing the ReadyDATA 5200 and 516 is found in the following resources:

• ReadyDATA Hardware Manual and ReadyDATA OS Software Manual.

These documents are available on the resource CD that came with your product. You can also obtain these manuals by clicking the **?** icon in the ReadyDATA dashboard.

• The support website at *http://support.netgear.com*.

Determine the IP Address of Your ReadyDATA

If you have not discovered your ReadyDATA, connect the unit to your network and make sure that a DHCP server can reach the ReadyDATA. By default, the ReadyDATA is configured to receive an IPv4 IP address from a DHCP server.

If the ReadyDATA cannot locate a DHCP server, the unit is assigned an IP address through Automatic Private IP Addressing (APIPA). For more information, see "Automatic Private IP Addressing Without a DHCP Server" in the *ReadyDATA OS Software Manual*.

RAIDar is a software application that you use to discover ReadyDATA systems on the network. RAIDar is included on the resource CD that came with your system, which includes versions for Windows, Mac, and Linux operating systems. RAIDar is also available at *www.netgear.com/readydata*.

> To discover the ReadyDATA system and launch the dashboard:

- 1. Install the appropriate version of RAIDar on a computer that is connected to the same LAN as the ReadyDATA.
- 2. Launch the RAIDar utility.

RAIDar displays a screen that lists the systems on the network and provides details about the status of each system that it discovers.

22 1	IETGEAR ReadyNAS RAI	Dar					
	MAC Address	Model	Host Name	IP Address /			0
	00:0d:a2:c7:91:18	ReadyDATA 5200	res-c7-91-18	192.168.50.106	0	1.4.0	
	00:0d:a2:c7:91:3c	ReadyDATA 5200	res-c7-91-3c	192.168.50.130	0	1.4.0	
				Setup Browse	Rescan Locate F	Format About	Help Exit

3. Highlight the ReadyDATA and click the **Setup** button.

RAIDar opens your default browser and prompts you to log in to the ReadyDATA.

If you are unable to discover your ReadyDATA, see the *ReadyDATA OS Software Manual* for troubleshooting steps.

thentication Requi	red	X
The server 192.168. password. The serv	50.107:443 requires a username and er says: ReadyDATAOS.	
User Name:		
Password:		

- 4. Log in to the ReadyDATA using the default login credentials:
 - a. As the default user name, enter admin (case-sensitive).
 - **b.** As the default password, enter **password** (case-sensitive).

The dashboard screen displays.

Navigation bar											
ReadyDATA System	Shares & LUNs	Security	SAN	Netwo	ek 🔰					Profile 👻	ଡ •1 0
		Overview	Store	ige.	Settin	95	Info				4
Hardware	1	-			÷.	Model Serial	Ready 012345 Ready	DATA 5200 56789 DATAOS 1.0 8-T1	64		
System configura	ation bar				D	Name wice Time	DG-LAI May 8, 1	9-5200 🧿 2012 2:10:30 PM			
Volume Section heading	Volume: All Volume throughput 80 72 60	Tyr	oe: Operation	8 M) Perio	d 5 Min		Update: 5 Sec			
	ations per seco										
	80 -60 -80	14:05		14:06			14:07		14:08		14:09
	Vol2 Read Vol2 Write Vol1 Read Vol1 Write	Last: Last: Last: Last:	0.0 80.9 0.0 0.0		Avg: Avg: Avg: Avg:	0.0 19.3 0.0 0.0		Max: Max: Max: Max:	0.0 80.9 0.0 0.0	Min Min Min Min	1 0.0 1 0.0 1 0.0

Change the Administrator Password

Choose an administrator password that is different from the default password and keep it in a safe place. Anyone who obtains this password can change settings or erase data that is stored on the ReadyDATA.

> To change the administrator password:

1. On the navigation bar at the right, select **Profile**.

The Profile menu displays (see the following figure).

2. Select Change Admin Password.

The Change Admin Password pop-up screen displays:



3. Click the Apply button.

Supported Disks and Initial Startup

The ReadyDATA 5200 supports up to 12 disks. With optional expansion disk arrays that can contain either 12 or 24 disks each, you can increase the total number of supported disks to 60. The following figure shows a ReadyDATA 5200 with an optional expansion disk array that supports 24 disks and another array that supports 12 disks.

The ReadyDATA 516 supports up to 6 disks and does not support expansion disk arrays.

For information about additional information about supported disk types, see the ReadyDATA OS Software Manual for your system.

SAS 100 GB	SAS 100 GB SAS 100 GB	SAS 100 GB	SAS 100 GB SAS 100 GB SAS 100 GB
BDA4XXXX			SAS Port1
ED42XXXXX			SAS Port 2

Figure 1. ReadyDATA 5200 with optional disk expansion arrays as displayed on Dashboard

Create a Volume and Select the RAID Level

Note: ReadyRECOVER requires a dedicated volume. Other workloads, such as LUNs for virtualization or file server, must be serviced by separate volumes.

For small ReadyRECOVER volumes with six disks or less, RAID 5 or RAID 6 can be used. Larger ReadyRECOVER volumes with more than six disks should use RAID 50 or RAID 60.

RAID Level	Number of Required Disks	Redundancy
RAID 0	1 or more	None
RAID 1	2 only (more disks are not supported in RAID 1)	Supported
RAID 5	3 or more	Supported for one disk
RAID 6	4 or more	Supported for two disks
RAID 10	4 or more, but an even number	Supported for all disks

Table 1. RAID level and required number of disks

RAID Level	Number of Required Disks	Redundancy
RAID 50	6 or more, but an even number	Supported for one disk per RAID 5 set
RAID 60	8 or more, but an even number	Supported for two disks per RAID 6 set

Table 1. RAID level and required number of disks (continued)

> To create a volume and select the RAID level:

1. On the ReadyDATA screen, select **System > Storage**.

The Storage screen displays.

The following figure shows one optional expansion disk array and one volume. A new system does not have any volumes.

ReadyDATA	System Shares & LUN	Security	SAN	Network		Profile 👻 🔞	-1	Ф*
All Volumes 🖌 👻	Filler by name 🛛 🛇 🔍	Overview	Storage	Settings				0
Volumes		Vol1						
•	Data: 0	SATA 700	GB	SATA 470 GB	SATA 470 GB	SATA 470 GB		
•	Reserved: 0	SATA 700	GB [SATA 470 GB	SATA 470 GB	SATA 470 GB	Intern	
C Vol1	Type: RAID 1+	SATA 470	GB	SATA 470 GB	SATA 470 GB	SATA 470 GB		
	Decupe. 1.00	SATA 470	GB		1	Y		
		SATA 470	G8 7		1	1	AS Po	
		SATA 470	GB				112	
		a a a a a a a a a a a a a a a a a a a		RAID (RAID 1+) 📕 I	.og 📕 Cache 📕 Spare	Y and		

2. In the enclosure, click the disks that you want to select as members of the volume.

You can select disks with a black color coding only. If you have an expansion disk array, you can select disks from both the ReadyRECOVER Software and the expansion disk array.

The selected disks are highlighted and all volume buttons become available, including the **New Volume button** under the enclosure:

ReadyDATA	System Shares & LUNs	Security	SAN No	twork		Profile 🛩	0 1	Ф.
All Volumes 🔍	Filler byriame 🛛 😒 🕴	Overview	Storage	Settings				0
Volumes		Vol1						
0	Data: 🔳 0 Snanshots 📕 0	SATA 700	GB	SATA 470 GB	SATA 470 GB	SATA 470 G	B	
•	Reserved 0	SATA 700	GB	SATA 470 GB	SATA 470 GB	SATA 470 G	B	
C Vol1	Type: RAID 1+	SATA 470	GB	SATA 470 GB	SATA 470 GB	SATA 470 G	в	
Write boost		SATA 470	GB			-		
Read boost	Cancel	SATA 470	GB			1	SIAS PO	
~		B SATA 470	GB			1	210	
					Lon Carbo E Coaro			
	C	New Volume	G	obal spare	Log Cache Spare			
				ubar spare				
								13

3. Below the enclosure, click **New Volume** button.

The New Volume pop-up screen displays:

New Volum	e	8
Name:		0
RAID:	RAID 0	
	RAID 0	
	RAID 1 RAID 5	
	RAID 6 RAID 10	

The RAID levels that are displayed depend on the number of disks that you selected.

Note: For ReadyRECOVER, RAID 50 or RAID 60 should be used with disk groups that are no larger than nine disks.

- 4. Configure the following settings:
 - **Name**. Enter a name for the volume. The volume name must begin with a letter, and can contain only alphanumeric characters, underscores (_), hyphens (-), periods (.), and colons (:). The volume names *mirror*, *logs*, and *spare* are reserved and cannot be used, as are all names that begin with the *c*[0–9] pattern. However, you can use names that begin with the *C*[a–z0–9] or *c*[a–z] pattern.
 - **RAID**. From the drop-down list, select the RAID level. The RAID level that you can select depends on the number of disks that you selected in *Step 2*. For more information, see *Table 1* on page 9.

If you select RAID 5 and six or more disks (or RAID 6 and eight or more disks), a screen opens letting you select RAID 5+0 instead of RAID 5 (or RAID 6+0 instead of RAID 6).

5. Click the **Create** button.

The volume is created.

Install and Configure ShadowProtect Agents



To use ReadyRECOVER with your NETGEAR ReadyDATA unified storage platform, install and configure the ShadowProtect backup and recovery software from StorageCraft. This chapter covers the following topics:

- Supported Platforms
- Install ShadowProtect
- Configure Your First Backup Job
- Browse Recovery Points
- Mount Recovery Points for File Recovery
- Full Volume Restore for Data Volumes
- Full System Restore or Bare Metal Recovery

Supported Platforms

ShadowProtect for ReadyRECOVERY runs on the following operation systems:

- Desktop and mobile
 - Windows XP
 - Windows Vista
 - Windows 7
 - Windows 8.x
- Server
 - Windows Server 2003
 - Windows Server 2008 & 2008 R2
 - Windows Server 2012 & 2012 R2

Note: ReFS is not supported at this time.

Install ShadowProtect

To install ShadowProtect, you need the following:

- ShadowProtect install file (www.storagecraft.com/downloads/software-updates)
- ShadowProtect license key (obtained through your sales representative, NETGEAR, or StorageCraft)

Note: If you are using this product under an MSP model, obtain your key through your MSP portal login.

> To install ShadowProtect:

- 1. Place ShadowProtect software on the Windows server or client that you want to back up.
- 2. Run the installer and follow the wizard.
- **3.** Accept the default settings.
- 4. When the installer finishes, reboot the server or client.

> To activate ShadowProtect:

- 1. Obtain a ShadowProtect license key.
- 2. Open the ShadowProtect Console.

- 3. Select Help > Product Activation from the menu.
- 4. Complete the Activation screen.

Activate Product		×
Serial Number:		
Name:		
Organization:		Optional
Status:	Days Remaining: 30	
	ОК	Cancel

5. Click the **Activate** button.

Configure Your First Backup Job

After a reboot, ShadowProtect drivers are engaged and ready to start protecting your data. You need the following information to set up successful backups:

- IP address of the ReadyDATA appliance
- Administrative credentials of the ReadyDATA appliance

> To set up your backup job:

- 1. Launch the backup wizard.
- 2. From within ShadowProtect interface, select **Backup** from the tasks on the left-hand menu.

🐺 StorageCraft ShadowProtect	[W2K3R2SP2-TEST]
Eile Tasks View Options He	elp
View 🛞	Wizards Management View
💫 Network View	Backup Jobs [W2K3R25P2-1E51] Destinations [W2K3R25P2-1E51] Execute Cancel Pause New Delete Edit Details Refresh
Tasks 🌋	Name Type Status Ne
03 Backup 133 Restore 133 Explore Backup 134 Dismount Backup Image	
Tools Image Verify Image Image Conversion Tool	
🕢 Help 🙁	

3. Step through the wizard.

🐻 В	ackup [W2K3I	R25P2-TEST]					×
	Volumes to Back Specify one or mo	Up pre volumes to backup					5
							2 🗐 🖬
	Drive Letter	Volume	File System	Size	Used	Partition Type	Partition Flags
	Disk 0: Virtual H	D					
	C:/	📚 No Label	NTFS	49.99 GB	5.65 GB	NTFS	Act,Pri
				< Back	Ne	ext >	Cancel

- 4. Select the volumes that you want to protect.
- 5. Click the Next button.

🐻 Backup [W2K3R2SP2-TEST]			×
Backup Name and Destination Specify a name for your backup image and select a locati	on to save the backup		5
Select network location or browse to a local path			
Interview Continue Continues Cont			▼ Browse
Specify image names			
File Name	Volume		
* Double-click to rename file, or select it and hit space or F2			
		1	
	< Back	Next >	Cancel

- 6. From the list, select **Network Locations**.
- 7. Click the Next button.

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Destination [W2K3R25P2-	-TEST]		×
Destination Type:			
😟 NETGEAR ReadyDATA			•
New Destination Share			
W2K3R2SP2-TEST_Job1			
ReadyDATA IP / Host Name			
192.168.1.100			
ReadyDATA Admin credentials			
Name:			
admin			
Password:			
••••••			Connect >>
Select a volume which will contain	backup data		
		Ŧ	
Specific ReadyDATA account for	1ob		
New/Existing		C Use admin account	
User Name:			
Deserved			
Password:			
Confirm password:			
		OK	Cancel
		06	

- 8. From the Destination Type list, select NETGEAR ReadyDATA.
- 9. Complete the fields in the top half of the screen.

Note: The admin password on ReadyDATA must not be the default password (which is password).

10. Click the **Connect** >> button.

When ShadowProtect connects to the destination, the ShadowProtect Agent lists the available ReadyDATA volumes.

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Destination [W2K3R25P2	-TEST]		<u>×</u>
Destination Type:			
😟 NETGEAR ReadyDATA			~
New Destination Share			
W2K3R2SP2-TEST_Job1			
ReadyDATA IP / Host Name			
192.168.1.100			
ReadyDATA Admin credentials			
Name:			
Password:			
			Connect >>
Select a volume which will contain	o backup data		
Data Size:913.00 GB. Eree:53	3 00 GB	T	
	0.00 35		
Specific ReadyDATA account for	Job		
New/Existing		Use admin account	
User Name:	admin		
Password:			
Confirm password:			
	,		
		OK	Cancel

11. Select a volume from your ReadyDATA.

Note: If ReadyDATA does not have a volume created already (the factory default), this setup procedure creates a volume for you with the default settings.

12. Select a ReadyDATA user account as the backup owner.

A new backup user on the ReadyDATA is created.

13. Click the OK button.

A NETGEAR ReadyDATA destination object is created.

Backup [W2K3R25P2-TEST]			×
Backup Name and Destination Specify a name for your backup image and select a locati	on to save the backup		5
Select network location or browse to a local path			
🙎 W2K3R2SP2-TEST_Job1 (\\10.2.11.206\W2K3R2SP2-T	EST_Job1)	-	Browse
Specify image names			
File Name	Volume		
Windows2003_Job1_C_VOL	C:\ (No Label)		
* Double-click to rename file, or select it and hit space or F2			
	< Back Ne	ext >	Cancel

14. Click the Next button.

🐻 Backup [W2K3R2SP2-TES	T]						×
Specify the backup schedul	e						5
Schedule	VSS Increme	ntal Backups –					
C Now	Sun	Mon	Tue	Wed	Thu	Fri	Sat
C Later							
C Weekly					Start time:	6:00:00 PM	*
C Monthly		cremental Back	uns				
Continuous Incrementals	Sun	Mon	Tue	Wed	Thu	Fri	Sat
			\checkmark			V	
			Sta	rt taking backuj	ps at this time:	8:00:00 AM	*
			Sto	op taking backuj	ps at this time:	6:00:00 PM	• •
				Minutes bety	ween backups:	15	•
	🔽 Use V	/55		Bac	kups per day:	41	
			< Back		Next >		Cancel

- **Note:** The only option that is available is **Continuous Incrementals**. This solution never requires a full backup process after the first backup. For that reason, the other options are always be grayed out.
- **15.** Adjust backup schedule as desired.
- **16.** Click the **Next** button.

etention Backup Image Commands		
🔽 Enable a retention policy. Use to free st	orage space by deleting older backups,	-
Minimum number of backups to keep:	100 -	
Maximum days to keep backups:	180 -	
Enforce policy before starting the next f	ill backup	
Retention policy rules		
1. Keep all backups for the first 24 bours		
Trikeep all backups for the first 24 hours		

- **17.** Change the retention parameters.
- **18.** lick the **Next** button.

🐻 Backup [W	2K3R25P2-TEST]		×
Wizard Sumr Please revie	nary w the options you have selected before clicking Finish		5
Ushman and Day			
volumes and bac	C:\ (No Label) to \\10.2.11.206\W2K3R2SP2-TEST_Job1\W	indows2003_Job1_C_VOL	-
Backup options:	 Include free space Performance Throttling: 100% I Ignore read failures and continue backup Enable Write Caching Enable write Caching Enable self-healing incremental recovery Auto execution of unexecuted task Enable retention policy Minimum number of backups to keep: 100 Maximum retention range in days: 180 		Ţ
		Click finis	h to begin the operation
	< Back	Finish	Cancel

19. Select the **Finish** button.

The backup job is saved and appears in the ShadowProtect interface.

Browse Recovery Points

On the ReadyDATA appliance, for each ShadowProtect backup, a share is created. On the appliance, a share is represented with the following icon:



Figure 2. Share icon

After backups have been running for a while, under the share created, a folder called Completed_Backups is created.



Figure 3. Completed_Backups folder

Within the completed backup folder, each point in time is represented with a folder for the date and time that the backup was created.

File Home Sh	are	View				Y
Ð ⊚ ▾ ↑ 🌉 «	NG	TESTSERVER_job7	• v ¢	Search Comp	leted_Backups	۶
	^	Name	Date modified	Туре	Size	
🕞 Libraries		퉬 s_2014_05_28_08_32_37_p420	5/28/2014 8:41 AM	File folder		
Documents		🍌 s_2014_05_28_09_00_10_p420	5/28/2014 8:58 AM	File folder		
Music		퉬 s_2014_05_28_09_45_32_p420	5/28/2014 9:44 AM	File folder		
Pictures		🍌 s_2014_05_28_10_00_29_p420	5/28/2014 9:58 AM	File folder		
Videos		퉬 s_2014_05_28_11_05_59_p420	5/28/2014 11:04 AM	File folder		
		퉬 s_2014_05_28_12_00_13_p420	5/28/2014 11:58 AM	File folder		
Computer		퉬 s_2014_05_28_13_00_12_p420	5/28/2014 12:58 PM	File folder		
Local Disk (C:)	=	s_2014_05_28_14_00_12_p420	5/28/2014 1:58 PM	File folder		
		J s_2014_05_28_15_00_10_p420	5/28/2014 2:58 PM	File folder		
RECOVERY (E:)		s_2014_05_28_16_00_12_p420	5/28/2014 3:58 PM	File folder		
C N N N		s_2014_05_28_17_00_12_p420	5/28/2014 4:58 PM	File folder		
wetwork		s_2014_05_28_18_00_11_p420	5/28/2014 5:58 PM	File folder		
		🛄 s 2014 05 29 08 00 11 n420	5/29/2014 7·58 AM	File folder	-	

Figure 4. Backup folder contents

Within each folder recovery point, a set of .VHDX files represent the data points for that given point of time. These .VHDX files are used for file folder recovery through mounting or full volume restore.



Figure 5. Folder recovery point files

Mount Recovery Points for File Recovery

Mounting takes the .vhdx (point and time) file and presents it as a disk for browsing. This method is preferred for individual file folder recovery. Once a file is mounted, copy and paste it from the mounted drive to its intended destination.

> To mount and recover files:

- 1. From a UNC path to the data share, select the latest .vhdx file where you have written the data.
- 2. Right-click the .vhdx and select StorageCraft Mount.
- **3.** Follow the wizard.
- 4. Select the mount parameters.

属 Explore Backu	p Image Wizard		×
Backup Imag Select a back	e File Name up image file to explore		S
R2SP2-TEST_Jo	b1\Completed_Backups\s_sp_2014_0	4_30_19_45_05\Windows2003_Job1_(VOL-b001.vhdx Browse
File format	Properties	Microsoft virtual disk 49.99 GB 5.68 GB	
64.00 TB	* 49,99 GB	nallocated space 3.95 TB	
		< Back	Next >Cancel

5. Click the Next button.

🕻 Explore Backup Image Wizard		X
Mounted Backup Images Verify current selection or select another	r point in time	S
Select drive letter or path:		
Assign the following drive letter:		
E:		
\bigcirc Mount in the following empty NTFS for	older:	
C:\Documents and Settings\Admir	iistrator\My Documents\My Backups	Browse
Select how to name the mount point	: sub-folder:	
Time/Date		
C File name		
C Custom	4-30-2014 1.45.05 PM	
Mount Backup as Read-Only Note: See help for modifying backup image:	Σ	
	< Back Next >	

- 6. Browse to the drive letter that is selected in the mount wizard and look for the data you backed up earlier.
- 7. Save that data back to the desktop or other location.
- 8. Click the Next button.
- 9. In Windows Explorer, right-click the mounted drive and select Quick Dismount.

The drive is removed.

Note: In a non-Windows domain security model, the administrator might need to take ownership of the files before browsing them.

Full Volume Restore for Data Volumes

If the OS is intact, but the full data volume needs restoration, you can take the recovery point (.VHDX) and restore the full volume.

This option replaces all data on the target partition. Use this option only when you intend to replace the data.

> To recover a data volume:

1. If you have a running backup job on the server for the given volume, pause the backup process.

Wizards	ERVER]	nagement View Destinations [NGTES	TSERVER]	Disk Map [NGTESTSERVER] Backup History [NGTESTSERVER]
Execute Cancel Pause New	Ø Ø Q Delete Edit Details	₽ 200 Refresh		
Name Type	•	Status Ne	xt Run Time	
NGTESTSERVER_job7 Sche	duled Backup Job	disabled Nev	ver	
				-

2. In ShadowProtect, launch the volume Restore Wizard.

3	Restore [NGTESTSERVER]	x
	Welcome to the Restore Wizard!	
	This wizard will help you to restore entire data volumes from existing backup image files. To restore the system volume you must restore by booting the ShadowProtect Recovery Environment CD. To restore individual files, run the Explore Backup wizard.	2
	Press Next to continue	
	< Back Next > Cancel	

3. Click the Next button.

3	Restore [NGTESTSERVER]							
Backup Image To Re Select the backup image	5							
Select network location or	browse to a local path							
🙎 NGTESTSERVER_jo	b7 (\\10.2.11.206\NGTESTSERVER_job	7) 🗸	Browse					
Specify image names								
Base Name	First Image Creation Time	Last Image Creation Time	Points					
Job7_C_VOL-b001	5/28/2014 8:32:37 AM	5/28/2014 10:00:29 AM	4					
Job7_System Res	5/28/2014 8:32:37 AM	5/28/2014 10:00:29 AM	4					
E_VOL-b001	5/28/2014 9:45:32 AM	5/28/2014 10:00:29 AM	2					
		< Back Next >	Cancel					

- 4. Select the data volume to be restored.
- 5. Click the **Next** button.

V	Restore [NGTESTSERVER]									
Backup Image Dependencies Verify current selection or select another point in time										
	File Name	Creation Time /	E	Image File Properties		^				
	E_VOL-b001.vhdx	5/28/2014 9:45:32 AM		File format	Microsoft virtual disk					
	E_VOL-b001.vhdx	5/28/2014 10:00:29 AM		Volume Size	9.97 GB	=				
				Used space	84.06 MB					
				Creation Time	5/28/2014 10:00:29 AM					
				Backup type	None					
				Image creation method	VDIFF direct					
				Free space exclusion	Yes					
				Bootable System Root Volu	n NO	~				
		[•	< Back Next >	Cancel					

- 6. Select the point in time to be restored.
- 7. Click the **Next** button.

3		Restore [[NGTESTSE	RVER]		X		
Restore Destination Select the volume or free space where you want to restore your backup								
						2 💷 🚾		
Drive Letter	Volume	File System	Size	Used	Partition Type	Partition Flags		
🖃 Disk 0: Virtual	HD							
□ *:\	System Reserved	NTFS	350.00 MB	241.30 MB	NTFS	Act,Pri		
C:\	河 No Label	NTFS	126.66 GB	34.52 GB	NTFS	Pri		
Disk 1: Virtual	HD							
□ *:\	🗇 No Label	Unrecognized	32.00 MB	32.00 MB	Windows Micro			
⊠ E:\	📚 Data Volume	NTFS	9.97 GB	88.06 MB	Windows Basic			
			< Back	N	ext >	Cancel		
						1		

8. Select the restore destination volume.

3	Restore [NGTESTSERVER]	x
Wizard Summ Please review	hary / the options you have selected before dicking Finish	
Image Files Chain: Destination Volum	: \\10.2.11.206\WGTESTSERVER_job7\Completed_Backups\s_2014_05_28_10_00_29_p420\E_VOL-b001.vhdx e: E:\ (Data Volume)	<
	Click finish to star	t restore
	< Back Finish Cancel	

9. Click the **Finish** button.

The restore process starts.

Full System Restore or Bare Metal Recovery

A full system recovery is also known as a bare metal recovery.

A secondary boot environment provides a temporary operating system on the recovery server to allow for OS replacement.

The target servers can be physical or virtual.

When you are restoring data to hardware that is different from the source hardware, the hardware independent restore (HIR) process inserts the proper drivers from the Windows catalog of drivers contained within the recovery environment (RE). If the driver is not present, you can add your own driver to the HIR process.

Boot the Recovery Environment and Map to the VHDX Stores

> To boot the recovery environment and map to the VHDX stores:

1. Place the recovery environment CD or .iso file into a target server and turn on to boot.



- 2. When prompted, click the **Yes** button to start network support.
- 3. When prompted, select the proper time zone.

The PE environment is configured by default for DHCP. If you see an IP address in the information section on the left-hand panel, you have a properly running network interface.

4. To map a network drive, from the left-hand Tools panel, select Network Configuration.



- 5. From the left-hand menu, select Network Drives.
- Complete the information for the share and the credentials to connect.
 The share name is the name that you created in the backup job process.
- 7. Click the **Connect** button.

Ģ	PE Network Manager 0	58.2	_		
Properties	Drive letter:	•	v 🗜 🕐	Connect	
Computer	Path:	\\10.2.11.206\NGT	TESTSERVER_jo	b7 🗸	
🇊 Sharing	Usemame:	admin			
🖳 Network Drives	Password:	•••••			
🖹 Profiles					
🍅 Other	Browse network				
? About	Connected network drives:		又 Dia	sconnect	
	Local Remote	Sta	atus (Dpen	
	⇒ <u>A</u> pply ✓	<u>о</u> к	×	<u>C</u> lose	
Ready					

- 8. Click the OK button.
- 9. On the Network Configuration screen, click the **Close** button.

Restore Volumes

The restore volumes process is similar to data volume restore process.

> To restore the volumes:

1. From the main ShadowProtect menu, select Restore Wizard.

3	Restore Wizard	x						
Welcome to the Restore Wizard!								
	This wizard will help you restore data you have previously backed up. Press Next to continue							
	< Back Next > Cancel							

2. Click the Next button.

W	Restore Wizard		×
Restore type Specify the restore type			
 Restore Resume aborted restore Restore subsequent incrementals Finalize an HSR restore 			
	< Back	Next >	Cancel

- 3. Select the **Restore** radio button.
- 4. Click the **Next** button.

5. Browse to the image sets on the mapped drive and look for the proper point in the completed backups folder.

Note: The default file type is the ShadowProtect . SPF and . SPI. Change the file type to .VHDX to see virtual hard drives.

Select the backup im	V	Op	en			×	
	Look in: 🚺	s_2014_05_28_12_00_13	_p420 🗸	01	🖻 🛄 🗸		
	Name	*		Date mo	dified	Т	
Z:\Completed_Backups'	Comple	ted_Backups		5/28/201	4 9:30 AM	Fi	Browse
	E_VOL-	b001		5/28/201	4 12:58 PM	н	
- Image File Propert	Job7_C	VOL-b001		5/28/201	4 12:58 PM	н	
File format	👝 Job7_Sy	stem Reserved_VOL-b001		5/28/201	4 12:58 PM	н	
Volume Size							
64.00 TB	<					,	
35	File name:	Job7_System Reserved_	VOL-6001	¥	Open		
Select source partition	Files of type:	Microsoft Virtual Hard Disl	c File (VHDX)	~	Cancel		

The screen changes and is populated with information about the original volume.

6. Click the **Next** button.

		Resto	ore Wizard				
Backup Image Select the bad	To Restore kup image you want to re	store			5		
Z:\Completed_Ba	ckups\s_2014_05_28_12	2_00_13_p420\Job7_	System Reserved_VO	IL-b001.vhdx	Browse		
Image File Pi	roperties			^			
File format		Micro	soft virtual disk				
Volume Size		350.00	IMB	v			
64.00 TB		1727 3	МВ				
	* 350.00 MB	Unallocat 64.00 TB	Unallocated space 64.00 TB				
elect source pa	rtition from the virtual	disk					
		10°14					
			Contraction of the	1	070005520		
			< Back	Next >	Cancel		

A partition must be created on the target disk to receive the data.

- 7. Click the **Next** button.
- 8. To create a volume, right-click and select your option.

Most users select Create exact primary partition at the beginning of free space.

3	Restore Wizard								
Restore Destination Select the volume or free space where you want to restore your backup									
ی 🔜 🔤 🗟									
Drive Letter	Volume	File Sy	ysten	n	Size	Used	Partition Type	Partition Fla	gs
🖃 Floppy 0: Virtua	il HD								
□ *:\	👒 Unallocated spa	Not F	orma	itted	64 00 TR	64 00 TR			
Disk : Unknown	n Disk			Creat	e exact primar	y partition at	the beginning of fre	e space	
□ X:\	Soot Soot	NTFS		Creat	e exact primar	y partition at	the end of free spac	e	
				Creat	e primary part	ition using all	unallocated space		
				Enter	a size of a new	v primary part	ition and create it		
				Conv	ert to MBR dis	k			
				Clean	disk				
Note: You can right clic	Note: You can right click on a volume and delete it to c			Initial	ize Disks				
				Edit P	olicy				
			2	Refree	sh Volumes Inf	fo			

9. To complete the task, click the **Close** button.

Options		~
Partition Type	Windows Basic Data Partition 👻	
Pustition name		
Partition id	{a93eb6b4-6d4c-4709-b2ec-5e86b2	
Attributes		
Platform required	Off	
No Block IO Protocol	Off	
	0//	1.4
Partition Type Unique ID that defines the purp	ose and type of this partition.	
Legacy BIOS Bootable Partition Type Unique ID that defines the purp	ose and type of this partition.	•

Note: If the original source disk was of the type MBR, the destination disk needs to be of the same type. If the original source was GPT, the destination disk needs to be GPT. Conversion of the disk is displayed within the disk map tab on the main screen.

A target partition is created.

- **10.** Select the target partition.
- **11.** Click the **Next** button.

5			Restor	e Wizard			×				
	Restore Destination Select the volume or free space where you want to restore your backup										
L							2 💷 🖬				
	Drive Letter	Volume	File System	Size	Used	Partition Type	Partition Flags				
E) Floppy 0: Virtua	I HD									
	[C:\	👒 No Label	Unrecognized	350.00 MB	350.00 MB	Windows Basic					
	1 *:\	🗇 Unallocated spa	Not Formatted	64.00 TB	64.00 TB						
G	Disk : Unknown	Disk									
	X:\	le Boot	NTFS	32.63 MB	2.43 MB	Unknown					
No	te: You can right clic	k on a volume and delete	it to create free sp	ace.							
				< Back	Ne	xt >	Cancel				

This screen displays and applies only to system volumes.

12. Click the **Next** button.

8	Restor	e Wizard		×
Specify the restoration op	ions			
MBR and Track Zero Options				
Set partition active				
Restore MBR				
Restore MBR from the image	ge file			
Restore original Windows I	/BR			
Restore disk signature				
Restore Disk Hidden Track				
Hardware Independent Restore ()otions			
Use Hardware Independent P	estore (when restoring to a differ	ent computer)		
	store (when restoring to a differ	ent computer)		
Advanced				
				-
		< Back	Next >	Cancel

13. Click the **Next** button.

3	Restore Wizard	×
Wizard Sum Please revie	nmary iew the options you have selected before the wizard will finish	3
Virtual Disk File: Destination Volu	: Z:\Completed_Backups\s_2014_05_28_12_00_13_p420\Job7_System Reserved_VOL-b001.vhdx Partition: 1 lume: C:\ (No Label)	^
Restore options	s: [] Use Hardware Independent Restore (HIR)	
		~
	Click finish to start restore opera	ition
	< Back Finish Cancel	
	< Back Finish Cancel	

14. To start the restore process, click the **Finish** button.

A new tab labeled Tasks displays in the ShadowProtect interface and shows the progress of the volume restore.

Volume C:\ (No Label) Restore	83% Completed *
Source Image: Z:\Completed_Backups\s_2014_05_28_12_00_13_p420\Job7_System Reserved_VOL-b001.vhdx	
Destination Volume: C:\ (No Label)	
Status: 83% Completed	
Remaining Time: 1 second(s), 36.73 MB/s	
Show Details	
Cancel	

Hardware Independent Restore

For any system volume that contains an OS on which you are restoring data to a device with a different hardware configuration, you must run the hardware independent restore (HIR) process against the restored volume.

> To restore the hardware:

1. From the main ShadowProtect menu, select **Restore Wizard**.

Se la companya de la comp	Restore Wizard
	Welcome to the Restore Wizard!
	This wizard will help you restore data you have previously backed up.
	< Back Next > Cancel

2. Click the Next button.

Restore Wizard		
		5
	Restore Wizard	Restore Wizard

- 3. Select the **Restore** radio button.
- 4. Click the **Next** button.
- 5. Browse to the image sets on the mapped drive and look for the proper point in the completed backups folder.

Note: The default file type is the ShadowProtect . SPF and . SPI. Change the file type to . VHDX to see virtual hard drives.

Select the backup ima	1	Open			×	
	Look in: 🕕	s_2014_05_28_12_00_13_p420	- G 🜶	► 🛄 🔁		
	Name	*	Date m	odified	Т	
Z:\Completed_Backups	Comple	ted Backups	5/28/20	14 9:30 AM	Fi	Browse
	E_VOL-b	001	5/28/20	14 12:58 PM	н	
- Image File Propert	Job7_C	VOL-6001	5/28/20	14 12:58 PM	н	
File format	Job7_Sys	tem Reserved_VOL-b001	5/28/20	14 12:58 PM	н	
Volume Size	1					
liced space						
64.00 TB	<				>	
35	File name:	Job7_System Reserved_VOL-b001	~	Open	Ĩ	
Select source partition	Files of type:	Microsoft Virtual Hard Disk File (VHD	× (X	Cancel		

The screen changes and is populated with information about the original volume.

6. Click the **Next** button.

		Restore Wizard	
Backup Imag Select the ba	e To Restore ickup image you want to re	store	8
Z:\Completed_I	3ackups\s_2014_05_28_12	2_00_13_p420\Job7_System Reserved_VOL-b001.vhdx	Browse
🗉 Image File	Properties		^
File format		Microsoft virtual disk	
Volume Size	5	350.00 MB	
liced snace		237 20 MR	× .
04.00 TB	* 350.00 MB	Unallocated space 64.00 TB	
	C. C		
ielect source p	artition from the virtual	disk	

A partition must be created on the target disk to receive the data.

- 7. Click the Next button.
- 8. To create a volume, right-click and select your option.

Most users select Create exact primary partition at the beginning of free space.

B				F	Restor	e Wizard				x
Restore D Select th	estination e volume or free	space where yo	u want	to re:	store yo	ur backup				5
e e e e e e e e e e e e e e e e e e e										
Drive Let	ter Volur	ne	File S	ysten	n	Size	Used	Partition Type	Partition Flag	gs
🖃 Floppy 0	: Virtual HD									
□ *:\	🌍 Ur	nallocated spa	Not F	orma	atted	64 00 TR	64 00 TR			
🖃 Disk : Ur	nknown Disk				Creat	e exact primar	y partition a	t the beginning of fre	e space	
□ X:\	🌍 Bo	oot	NTFS		Creat Creat Enter	e exact primar e primary part a size of a nev	y partition a ition using a v primary pa	t the end of free spac Ill unallocated space Intition and create it	e	
Note: You can	right click on a v	olume and delete	e it to a		Conv Clean Initial	ert to MBR dis disk ize Disks	k			
				2	Edit P Refree	olicy sh Volumes In	fo			

9. To complete the task, click the **Close** button.

ReadyRECOVER Software

Options			^
Partition T	Гуре	Windows Basic Data Partition 👻	
Postition r	name		
Partition in	d	{a93eb6b4-6d4c-4709-b2ec-5e86b	
🛛 Attribute	5		1
Platform r	equired	Off	
		04	
No Block	IO Protocol	Un	
No Block Legacy Blo Partition Ty	IO Protocol OS Bootable pe	Off	~

Note: If the original source disk was of the type MBR, the destination disk needs to be of the same type. If the original source was GPT, the destination disk needs to be GPT. Conversion of the disk is displayed within the disk map tab on the main screen.

A target partition is created.

- 10. Select the target partition.
- 11. Click the Next button.

Ų	3			Restor	e Wizard			×				
	Restore Destination Select the volume or free space where you want to restore your backup											
e 🕮												
	~	Drive Letter	Volume	File System	Size	Used	Partition Type	Partition Flags				
	Ξ	Floppy 0: Virtual	HD									
		C:\	阿 No Label	Unrecognized	350.00 MB	350.00 MB	Windows Basic					
		*:\	Unallocated spa	Not Formatted	64.00 TB	64.00 TB						
	Ξ	Disk : Unknown	Disk									
		X:\	河 Boot	NTFS	32.63 MB	2.43 MB	Unknown					
l												
N	lote	e: You can right click	on a volume and delete	it to create free spa	ace.							
					< Back	Nex	d >	Cancel .::				

This screen displays and applies only to system volumes.

12. Click the Next button.

The Specify restoration options screen displays.

B	Restore Wizard
Specify the restoration op	ions 🔊
MBR and Track Zero Options	
Set partition active	
Restore MBR	
Restore MBR from the ima	ge file
Restore original Windows	MBR.
Restore disk stopature	
Restore Disk Hidden Track	
Hardware Independent Restore Use Hardware Independent R Advanced)ptions estore (when restoring to a different computer)
	<back next=""> Cancel</back>

- 13. To force the HIR process after a restore, select the Use Hardware Independent Restore (when restoring to a different computer) check box.
- 14. If you anticipate that a specific driver is needed (such as the RAID controller driver), click the **advanced** button.
- **15.** Click one of the following buttons:
 - The Add File button to add a specific individual driver.
 - The Add Dir button to point a directory that contains drivers and their INF files.

Note: This choice is not always needed. HIR attempts to use the base Windows drivers available from the driver catalog in the OS.

ReadyRECOVER Software

ShadowProtect HIR Configuration - Advanced Options								
This tool will attempt to automatically install optimal drivers for the storage controllers on this computer. You can override the driver(s) that this tool chooses to install by specifying folders containing the driver(s) of your choice. Only add folders to the list which contain both driver and installation (.INF) files. If the StorageCraft knowledge-base indicates that your storage controller is not supported, then you must add the path to your storage controller's driver here.								
	Add File	Add Dir	Delete	DOWN	UP			
While precedence will always be given to the best matching driver, you can specify how tolerant this tool will be if it cannot find exact matching drivers and instead uses generic drivers.								
De-Activate Windows	3			ОК	Cancel			

16. To apply the drivers, click the **OK** button.

To close the screen, click the **Cancel** button.

- 17. In the Wizard, click the Next button.
- **18.** To start the restore process, click the **Finish** button.
- To see the details about the restore process in the recovery environment, from the task manager screen, click Show Details.



The HIR process occurs as the last task after the restore process. The following entries in the detail log show that the restore is complete.

28-May-2014 14:14:40	sptask	109	HIR Configuration Starting
28-May-2014 14:14:40	sptask	109	HIR Configuration Status:Starting HIR Configuration
28-May-2014 14:14:42	sptask	109	HIR Configuration Status:Searching for Devices
28-May-2014 14:14:42	sptask	109	HIR Configuration Status:Searching for Device Drivers
28-May-2014 14:15:00	sptask	109	HIR Configuration Status:Installing Device Drivers
28-May-2014 14:15:01	sptask	109	HIR Configuration Status: Finishing HIR Process
28-May-2014 14:15:02	sptask	109	HIR Configuration Status:Finished
28-May-2014 14:15:02	sptask	200	HIR Configuration Completed

When all volumes are restored, either close the recovery environment or force a reboot to start the restored system. **Note:** Occasionally, the Windows Catalog does not have the proper driver and you must locate and place the driver manually. When this happens, reboot the system to the recovery environment and select the HIR process from the left Tools panel. This component runs the process independent of the restore process.