Disaster Recovery Guide for Windows 2008 and RHEL 5.x platforms with external disk support

HP Data Protector 6.11

Technical white paper

Table of contents

1. Assisted Manual Disaster Recovery	2
2 Overview / Procedure	2
2.1 AMDR for Windows 2008 systems	2
Phase O	2
Phase 1	2
Phase 2	
Phase 3	2
2.2 AMDR for Linux systems	2
, , , , , , , , , , , , , , , , , , ,	2
Phase 1	2
Phase 2	2
	0
3. Requirements	Z
4. Guidelines for Creating a Disaster Recovery for Windows 2008 R2 x86-64	
4.1 Preparation	
4.2 Step-by-step procedure	
4.2.1 Backup	
4.2.2 Backup of all files in the system	
4.2.3 Update the SRD file	
4.3 Creating a Mini OS	7
4.4 Recovery process	7
4.4.1 Replacing the faulty / new hard disk	7
4.4.2 Installing the Mini OS	7
4.4.3 Configuring the IP address	
4.4.4 Preparing the disk partion	
4.4.5 Installing the Mini DP	9
4.4.6 Running the restore process	
Notes	
	10
5. Guidelines for Creating a Disaster Recovery for Linux	10
5. I Backup	10
5.2 Kestore	
5.2.1 Minimal Red Hat Enterprise Linux 5 install	
5.2.2 Boot from a RHEL 5.5 OS boot CD	10
5.2.3 Preparing the disk partition	
5.2.4 Contiguring the IP address and completing the installation	10
5.2.5 Installing the Data Protector agents	12
5.2.6 Restoring the entire file system	12
For more information	



1. Assisted Manual Disaster Recovery

This document explains how to prepare and execute an Assisted Manual Disaster Recovery (AMDR) on Windows 2008 and Linux systems.

2. Overview / Procedure

2.1 AMDR for Windows 2008 systems

The general procedure for Assisted Manual Disaster Recovery of a Windows 2008 client is as follows:

Phase 0

- Perform a full host backup and an IDB backup (Cell Manager only).
- Update the SRD (system recovery data) file. Collect information on the original system to enable installation and configuration of the DR OS (disaster recovery operating system).

Phase 1

- Replace the faulty hardware.
- Re-install the operating system. (Create and format the necessary partitions.)
- Re-install the service packs.
- Manually re-partition the disk and re-establish the storage structure with the original drive letter assignments.

Phase 2

- Execute the Data Protector 'drstart' command that will install the DR OS and start the restore of critical volumes.
- The computer must be rebooted after the 'drstart' command finishes.

Phase 3

• Use the Data Protector standard restore procedure to restore user and application data.

2.2 AMDR for Linux systems

Phase 0

• Perform a full client backup and an IDB backup (Cell Manager only).

Phase 1

- Replace the faulty hardware.
- Install the Linux operating system. (Create and format the necessary partitions.)

Phase 2

- Install the Data Protector agents.
- Use the Data Protector standard restore procedure to restore user and application data.
- Reboot the server.

3. Requirements

- The partitions have to be the same size or larger than the partitions on the failed disk. This way, the information stored on the failed disk can be restored to the new disk.
- The hardware configuration of the target system must be the same as that of the original system. This includes the SCSI BIOS settings (sector remapping).
- If volume mount points were created before the disaster event, these mount points must be recreated before starting the disaster recovery procedure. This is because volume mount points are not

restored automatically. If the mount points are not recreated, data might be restored to the wrong location.

4. Guidelines for Creating a Disaster Recovery for Windows 2008 R2 x86-64

4.1 Preparation

To prepare for a successful disaster recovery, you should follow the instructions related to the general preparation procedure together with specific method requirements. Advance preparation is essential to perform the disaster recovery fast and efficiently. You should also give special attention to the disaster recovery preparation of the Cell Manager and the Microsoft Cluster Server.

4.2 Step-by-step procedure

4.2.1 Backup

The backup process includes running a back up session for all the files in the system and updating the SRD file. The SRD file contains information about the file system, and other relevant data.

4.2.2 Backup of all files in the system

A backup is done of all the files which have to be recovered in case of a disaster event. While running the backup process, the following options must be checked in the Data Protector Cell Manager GUI (graphical user interface):

- 1. Copy the full DR image (Figure 2)
- 2. Use shadow copy (Figure 3)
- 3. Detect VTFS hard links (Figure 3)

4.2.3 Update the SRD file

The SRD file is saved in a file location. It contains the information about the layout information of the file system. The data following the layout tag in the SRD file is to be noted down and will be provided as the unique disk ID while installing the Mini OS.

Figure 1: Selecting all the files for backup

Backup Specifications	Image: Source Destination Options Schedule Backup Object Summary Select the items that you want to back up.	
MS Volume Shadow Cc E III Templates	Shog Selected Filesystem Back	up -
	CONFIGURATION	Map Network Share
	* V B C	Disconnect Share
u >		Cancel 2

In Filesystem Options, check the option Copy full DR image to disk.

Figure 2: Check 'Copy full DR image to disk'

. modily the object's at	avanuou opionis.	
Enhanced incremental b	ackup	
Use native Filesystem	<u>C</u> hange Log Provider if available	
Software compression		
 Display statistical info 		
Lock files during backup)	
■ Backup POSIX hard link	s as files	
Do not preserve access	time attributes	
Copy full DR image to di	sk	
jata security		
None		
ogging		
Log All		
ackup files of size		
All sizes 💌		
lear defined unishing		
uenned variables		
	Edit	

Figure 3: Check 'Use Shadow Copy' and 'Detect NTFS hard links'

Warning	
Open files	
Number of retries:	0
Time out:	0
Detect NTES bardlinks	
Do not use archive attribute	
Backup share information for direct	tories
Asynchronous reading	
MS Volume Shadow Copy Options	
🔽 Use Shadow Copy	
Allow fallback	
- L	

Figure 4: Updating the SRD file and saving it to a particular location

<u>oo</u> Disaster Recovery - HP Data Pro	tector Manager	_ 🗆 ×
Elle Edit View Actions Help		
Restore]] 💆 🖉 🛅 🔤 📰 📍 🖪 🖼 🖗 💭 💭 💭	
Restore Tasks Disaster Recovery Restore Internal Database Restore by Query	Disaster Recovery Select the host that you want to recover.	
	dpi5185 ind hp.com	•
	Clisaster recovery method	
	C Ephanced Automated Disaster Recovery	
	C Create Automated System Recovery set	
	C Disaster recovery with disk, delivery	
۰ ۱	< Back Next > Finish	Cancel
📳 Objects 📲 Tasks	N 4 P N Backup - windows-2008-12:x64 - Disaster Recovery	
	😡 dprsr-56	

Figure 5: Saving the SRD file to a particular location

e Edit View Actions Help		
Restore		
Restore Tasks Disaster Recovery Restore Internal Database Restore by Query	Save SRD information Select the destination directory where you want to place the updated SRD fit When ready, click Finish to update and save the SRD file.	ie.
		Browse
	(Back Next)	Frish Cancel

Figure 6: Note down the information about the layout in the SRD file

recovery.srd - WordPad	
Eile Edit View Insert Format Help	
-ver 100728832 -os VISTAAMD64 -host dpi5185.ind.hp.com -cm dpnsr-56	
-endsection header	
-section system	
-build 7600 -sp 0	
-sysroot C:\Windows -obhome "C:\Program Files\OmniBack\" -obdata C:	
\ProgramData\OmniBack\ -profiles C:\Users	
-sysvol StrNull	
-inetport 5555	=
-ismitter o	
-section network	
-computer DPI5185 -domain WORKGROUP	
-hostname dpi5185 -hostdomain ind.hp.com	
-adapteront 2	
-adapter 1 -dhcp 0 -ip 15.154.51.85 -subnet 255.255.254.0 -gateway	
15.154.50.1 -nameserver 16.110.135.51,16.110.135.52 -dnsname ind.hp.com	
-mac 0012798F5B31	
-adapter 1 -dncp 1 -1p 0.0.0.0 -subnet 255.0.0.0 -gateway StrNull -	
-endsection network	
-section diskinfo	
-diskcount 1	
-disk 0 -addr 0 -sizelow 0 -sizehigh 0 -descr "ST380817AS ATA Device"	
-geo 12 -cyl 9729 -tpc 255 -spt 63 -bps 512	
-layout 06C606C6 -partcount 4	
-part 1 -offslow 1048576 -offshigh 0 -lenlow 104857600 -lenhigh 0 -	
hidden 2048 -type 7 -boot 1 -recog 1 -rewrite 0	
-part 2 -pristow 1059001/0 -prishigh 0 -leniow 2609905664 -lennigh 18 -	
-part 0 -offslow 0 -offshigh 0 -lenlow 0 -lenhigh 0 -hidden 0 -type 0 -	
boot 0 -recog 0 -rewrite 0	
-part 0 -offslow 0 -offshigh 0 -lenlow 0 -lenhigh 0 -hidden 0 -type 0 -	
boot 0 -recog 0 -rewrite 0	
-enddisk 0	*
For Help, press F1	NUM

4.3 Creating a Mini OS

The first scenario (and the recommended one) for creating a Mini OS is to install W7/R2 WAIK on a Windows 2008 client. Then, using the installed WAIK's tools, manually prepare the bootable CD-ROM. This preparation may involve the installation of drivers which support the underlying hardware on the system to be recovered. Check the link for other scenarios for making the Mini OS CD: http://technet.microsoft.com/en-us/library/dd799278%28WS.10%29.aspx

For step-by-step instructions on creating a Mini OS, see http://technet.microsoft.com/en-us/library/dd799303%28WS.10%29.aspx

4.4 Recovery process

The process of recovery starts with:

- Replacing the faulty/new hard disk
- Installing the Mini OS
- Configuring the IP
- Preparing the disk partition
- Installing the Mini DP
- Running the restore process

Note:

Mini DP is the name given to the CD containing the installation package which is used to install the Date Protector on the new machine.

Mini OS is the name given to the CD containing the installation package which is used to install the operating system on the new machine.

4.4.1 Replacing the faulty / new hard disk

The old or faulty hard disk is replaced with a new hard disk. Files are to be restored to the new hard disk.

4.4.2 Installing the Mini OS

When the new hard disk is installed and available, the Mini OS CD which contains the iso image is inserted and the system is booted.

Figure 7: The boot process with the Mini OS CD inserted



4.4.3 Configuring the IP address

Manually configure the ip:

 netsh interface ip set address name="Local Area Connection" static 15.154.51.85 255.255.254.0 15.154.50.1 1

Manually configure the dns settings:

• netsh interface ip set dns "Local Area Connection" static 16.110.135.51



The IP address information is provided later on, when omnidr.exe recovery module is run manually. Also, the firewall must be disabled to let other systems access the cell to gain access to the Disk Agent/Omnilnet.

4.4.4 Preparing the disk partion

Use 'diskpart' to re-partition the disk(s). Create partitions, format volumes, and assign drive letters. Partition sizes should normally be similar to the original ones. The source of this information is the SRD file. An important step is the assignment of the disk signature to the disk to be recovered. Without this, the system will not boot. Additionally, make the System Reserved partition active/bootable. This also renders the system to be recovered bootable.

4.4.5 Installing the Mini DP

The Mini DP installation CD (containing 'Disk1.iso', along with the previously updated SRD file) is used for the Mini DP installation. The omnidr.exe executable is run manually. The commands to be executed are shown in the following screenshot. Note that the disk ID which was noted from the SRD file is used here as an argument for the 'uniqueid disk' command.

DISKPART> uniqueid disk id=06C60 DISKPART> detail disk Disk IDE 06C606C6 Type : ATA	86C6				
Status : Online Path : 1 Target : Ø LUN ID : Ø Location Path : PCIROOT(Ø)#PCI(Gurrent Read-only State : No Read-only : No Boot Disk : No Pagefile Disk : No Hibernation File Disk : No Grashduny Disk : No	1F02>#A	TA <c01t00l00< td=""><td>></td><td></td><td></td></c01t00l00<>	>		
Volume ### Ltr Label	Fs	Туре	Size	Status	Info
Volume 2 E * Volume 3 C	NTFS	Partition Partition	100 MB 74 GB	Healthy Healthy	
DISKPART> _					-

Figure 8: Installation of the Mini DP

resh Terminal Bircs Cet-And	If necessary, click in I Del At Lock T Chi	temote Console image below to enable keybo aracter Set 437: US 💌	and input.
22 Advantation 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	system 37 (ondexe 819,20 1,457,64 1,457,64 213,77 85,51 2,44 (s) 4,836,1 3	00 Dr1.cab (d Dr2.cab (d Dr2.cab (5 Dr4.cab) (6 Dr5.cab) (6 Dr5.cab) (7 Dr5.cab) (8 Dr5.cab) (7 Dr5.cab) (8 Dr5.ca	
F:\Disk1>drstart.ex	aster Recovery Wiza	rd in the second se	×
Fibilal Jx1 Xi Windows System 32 fix Vindows System 32 fix Vindows System 32 Fix Vindows System 32 Wolume in drive F Wolume in drive F Wolume Serial Numb Directory of Fix MY 432 / 2010 MY 112 FIX 7432 / 2010 MY 113 F MY 432 / 2010 MY 113 F MY 432 / 2010 MY 113 F	VinDak RegEdt Ced TakMy Options Cotops P particip	Deaster Recovery setup of initial files from the following locations: + DR Initialiation Source: +SRD File: F:vecovery and	
10/15/2007 06:21 A 08/27/2018 12:45 A 9 Di 9 Di P:\>drstat 'drstat' is not recoyn operable program or bu F:\>drstart.exe	sized as an inte atch file.	<pre> {Buck Freeh Aco ernal or external command,</pre>	
P153			•
Secured (128 Bit)			

4.4.6 Running the restore process

Change directory path to '\Windows\System32\OB2DR\bin'. Run 'omnidr.exe' in Disk Delivery mode (this requires some specific command-line parameters to be specified). The restore session starts after this step. Use the 'Wpeutil' command to restart the machine.



Notes

- Disk Delivery Disaster Recovery is not supported for Microsoft Cluster Server.
- RAID is not supported. This includes software RAIDs (fault-tolerant volumes and dynamic disks).
- Internet Information Server (IIS) Database, Terminal Services Database and Certificate Server Database is not restored automatically during Phase 2. They can be restored on the target system using the standard Data Protector restore procedure.

5. Guidelines for Creating a Disaster Recovery for Linux

5.1 Backup

Perform a full backup of the entire Linux machine.

5.2 Restore

5.2.1 Minimal Red Hat Enterprise Linux 5 install

For a successful installation of the Linux operating system, follow these steps.

5.2.2 Boot from a RHEL 5.5 OS boot CD

A RHEL 5.5 OS boot CD is inserted into the disk drive and the system is booted from the CD.

5.2.3 Preparing the disk partition

The new hard disk is partitioned in a similar way as the old hard disk was partitioned.

5.2.4 Configuring the IP address and completing the installation

The IP address of the new system needs to be configured and the packages can be unpacked. For a minimal installation, uncheck all packages except 'Base' in the 'Base System' category.

Figure 9: Preparing the disk partition

	ame.htm					• 😨 Certifi
150 Auto I Yanna a Gara	lowanal aver	If necessary, click in Re	temote Console image	78 below to enable keyboard in	nput.	
resh Terminal Svci	Ctri-At-Del At Locki	charader Set 437: US	•			
		IV 5			- F	
NIERP	RISE LINU	X 5				
	Drive /dev/sda (76317	MB) (Model: ATA ST	380817AS)	[eda]		
	72214 MB			409		
New	Edit	Delete	Poset	RAID		
	Mount Boint/	Size				
Device	RAID/Volume Type	Format (MB)	Start End			
* Hard Drives						
♥ /dev/sda					-	
/dev/sda1	/ ext3	72214	1 9206			
/dev/sda2	swap	✓ 4094	9207 9728		•	
	Free sp	ace 7	9729 9729			
Free		mbers				
Free Hide RAID devic	NLVM Volume Group me					
Free	NLVM Volume <u>G</u> roup me					
Free Hide RAID device	/LVM Volume <u>G</u> roup me			(A Parts)	d line	
Free Hide RAID device Belease Notes	2/LVM Volume <u>G</u> roup me			ф <u>В</u> аск	∯ <u>N</u> ext	
Free Hide RAID device Belease Notes Secured (128 Bit)	∦LVM Volume <u>G</u> roup me			∯ <u>B</u> ack	ŵ Next	
Free Hide RAID device Belease Notes Secured (128 Bit)	≥LVM Volume <u>G</u> roup me			ф <u>B</u> ack	∲ Next	

Figure 10: Configuring the IP address

ttps://15.154.51.78/drc	frame.htm			
			🔹 😳 Cetti	cate
lose	If necessary, dick	Remote Console 15.154.51.78 in Remote Console image below to enable keyboard i	nput.	?
etesh Terminal Svo	Ctrl-Atl-Del At Lock T Character Set 4	37: US •	_	
ED HAT				
INTER	RISE LINUX 5			
	Edit Int	terrace		
Network Devi	Broadcom Corporation NetXtreme E Hardware address: 00:12:79:8F:5B:	BCM5704 Gigabit Ethernet 31		
Active on Boo	Enable IPv4 support			
	O Dynamic IP configuration (DHCP)			
0	Manual configuration	Brafix (Batenack)		
·	15.154.51.85	/ 255.255.254.0		
Hostname	Enable IPv6 support			
Set the hostnar	Automatic neighbor discovery			
 automatica 				
O manually				
Miscellaneous				
		X Cancel QK		
		k		

5.2.5 Installing the Data Protector agents

Installing the Data Protector agents includes:

- Installing the Data Protector Disk Agent (DA)
- Installing the Data Protector Media Agent (MA)
- Importing the client after local installation

5.2.6 Restoring the entire file system

A restore session of the entire file system is now performed and the server is rebooted.

For more information

To read more about Data Protector, go to www.hp.com/go/dataprotector



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4AA3-1624ENA, September 2010