

# Disaster Recovery Module Linux

## Version 2.6

Installation and User's Guide

STOREWAY DPA





# STOREWAY DPA

## Disaster Recovery Module Linux Version 2.6

### Installation and User's Guide

#### **Software**

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# Chapter 1. Installation

See:

["Installation prerequisites" page 8](#)

["Installing the agent" page 9](#)

## Installation prerequisites

You need the **Disaster Recovery Unix & Linux** CD to perform the installation and the configuration of an agent.

The Linux backup agent must be installed before installing the Linux Disaster Recovery agent.

> See the installation instructions contained in the installation CD.

To know if your Linux version is supported, refer to the StoreWay DPA compatibility guide or contact your sales representative.

## Installing the agent

Mount the CD-ROM on your Linux system:

```
mount -t iso9660 /dev/cdrom /cdrom
```

In a terminal window or directly in the system text console run the script « install.sh ».

- > Go to the CDROM root directory, for example : **# cd /cdrom**
- > Run the installation script using ksh or bash : **# ksh ./install.sh** or **# bash ./install.sh**
- > Follow the installation instructions

This program installs standard Linux distribution packages. These packages are necessary for the smooth performances of the Recovery module on your system (mkisofs, lzo, newt, etc.). It also installs specific Disaster Recovery commands.

At least 30 MB will be occupied on **/usr** and **/usr/local**.

---

## Chapter 2 - System Backup

**TIP:** The Linux system backup must be performed before any system modification, to be able to restore the system in the event of a problem.

Backups must also be performed regularly to be able to restore a stable system state in the event of disk or configuration corruption.

Do not wait for a crash to test your restoration: there are many reasons why a bootable image will not work starting with the quality of the media used. You must therefore test the restoration of your Disaster Recovery images.

See:

["Perform a Disaster Recovery backup" page 11](#)

["Disaster Recovery options" page 12](#)

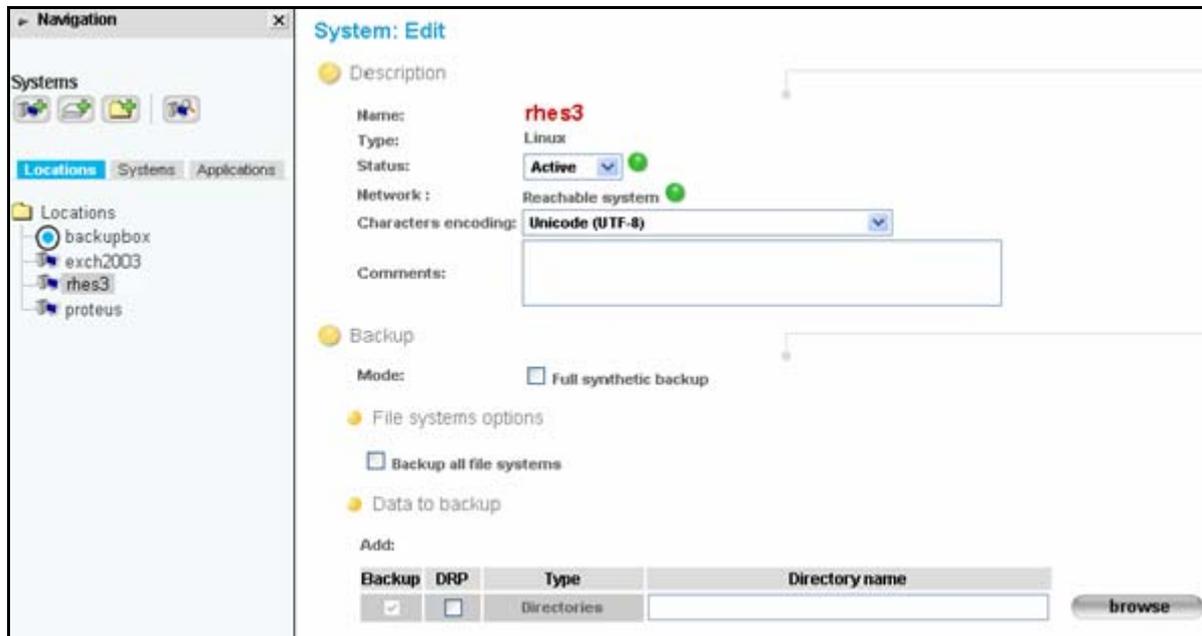
["Disaster Recovery backups follow-up" page 13](#)

["Externalizing Disaster Recovery images to tape" page 14](#)

["Generation of CD or DVD images" page 16](#)

## Perform a Disaster Recovery backup

- 1 Once the StoreWay DPA and Disaster Recovery agents are installed on your Linux system, your Linux server is auto-detected on the StoreWay DPA. You must declare it and associate it with a backup profile.



- 2 On your Linux system, go to the StoreWay DPA agent installation directory (by default: `/usr/dpa`).
- 3 Run the `bin/sbx_mkimage` command: the Linux system Disaster Recovery backup is performed automatically and kept by the StoreWay DPA.

```
[root@rhas4]# bin/sbx_mkimage
wed feb 22 08:50:40 THIS 2008 - sbx_mkimage V1.1.2.1 - Copy-
right (c) 2005, Bull(tm)
wed feb 22 08:50:40 THIS 2008 - StoreWay DPA(tm) client for
Linux
wed feb 22 08:50:40 THIS 2008 - making system image for rhas4
on StoreWay DPA tm) rmdsb1
wed feb 22 08:50:40 THIS 2008 - using network temporary di-
rectories for building.
wed feb 22 08:50:40 THIS 2008 - Step 1 - Temporary directories
creation
wed feb 22 08:50:41 THIS 2008 - Step 2 - Setting system envi-
ronment
wed feb 22 08:50:41 THIS 2008 - Step 3 - Building image
wed feb 22 10:10:31 THIS 2008 - Step 4 - Cleaning environment
wed feb 22 10:10:31 THIS 2008 - Step 5 - Cleaning up environ-
ment
[root@rhas4]#
```

### Notes

- > Local disk space is required on your Linux system to generate or store Disaster Recovery images.
- > Depending on system capacity utilization, a Disaster Recovery backup can last several hours. For a standard system, however, this time is generally below two hours.
- > The `sbx_mkimage` command authorizes certain options, which can be useful depending on the situation.

## Disaster Recovery options

The **sbx\_mkimage** binary has a certain number of options, accessible by running the argument **-help** when the command starts:

```
[root@rhas4]# ./sbx_mkimage --help
wed feb 22 10:27:37 THIS 2007 - sbx_mkimage V1.1.2.1 - Copyright
(c)Bull SAS(tm)
```

```
sbx_mkimage [ -sb <Store_Way_name> ] [-c|-d|-d2] [-v|-q]
  -sb          Choose the target StoreWay DPA
  -c          build cd image (default).
  -d          build single layer dvd image.
  -d2         build double layer dvd image.
  -v          Verbose mode
  -q          Quiet mode
  -h          Display this usage message
```

If you wish to exclude files or directories from backup, list them into

```
/home/dpa/config/exclude
```

- > **-sb**: specifies the StoreWay DPA name on which the image will be stored. By default, the «reference» StoreWay DPA is selected (in the admin.cfg file located by default in the **/usr/dpa/config** directory).
- > **-c** : default option, the image created is generated in the CD auto format (approximately 600 MB), in some cases, several ISO will be created:

dr200602221928-2.iso	22/02/2006 20:09	 Complete	511 MB
dr200602221928-1.iso	22/02/2006 19:52	 Complete	511 MB

- > **-d** : option to create a single layer DVD image.
- > **-d2** : option to create a double layer DVD image.
- > **-v** : verbose mode, enables you to obtain more information on the processing performed during the image creation (mode generally used when generation problems occur).
- > **-q** : quiet mode, no information is generated from the Disaster Recovery image generation.
- > **-h** : displays the different options that can be used.

## Exclusion

Disaster Recovery backup restores the system and not data. Specify in the **exclude** file all directories to not back up. In this way, you reduce image creation time and the number of ISO images generated. The *exclude* file is located in the config directory in the client agent installation directory (by default: **/usr/dpa**).

The syntax to use in this file is the following:

```
/rep1
/rep2
/rep3/rep31
/rep4/rep41/rep411
```

Example of an **exclude** file:

```
/home
/usr/people
/data
```

## Disaster Recovery backups follow-up

**WARNING:** Because of their critical nature, StoreWay DPA Disaster Recovery backups are generated with no limit to their retention period. They are therefore kept as long as you have not expressly requested their removal from the disk.

To display available Disaster Recovery images:

- 1 Log onto the StoreWay DPA and select the **operations/Backup** menu.
- 1 In the tree menu, select your Linux system.
- 1 Choose the **System Images** tab (this tab is only visible when Disaster Recovery type images have been performed on the server), which enables you to display available Disaster Recovery images on your system.

To remove a disk image for the selected StoreWay DPA, select this image, and click the **erase** button on the bottom of the page. Erase images regularly, but always keep at least two versions. We recommend you also regularly burn images to CD or DVD.

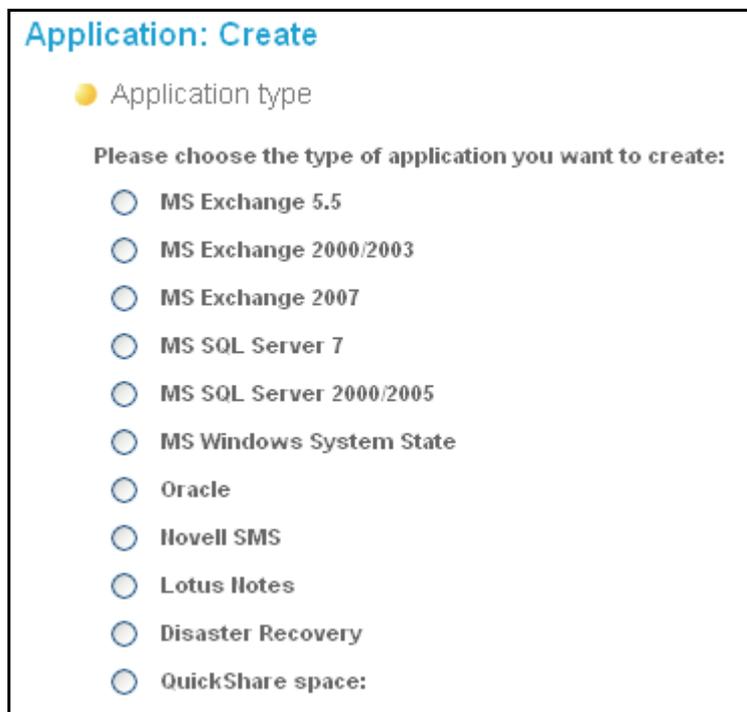
## Externalizing Disaster Recovery images to tape

To be ready for any disaster situation and prepare a DRP (Disaster Recovery Plan), you might wish to externalize Disaster Recovery images to tape. The StoreWay DPA enables you to perform this operation by creating a Disaster Recovery type application on the system in question then by backing up this application.

**TIP:** This method does not enable you to generate media which will directly restore your systems, but simply secure the images by saving them to tape. To prepare your DRP (Disaster Recovery Plan), it is recommended to externalize to a safe box, all tapes and bootable CDs or DVDs which have been generated from Disaster Recovery images (see the section "Generation of CD or DVD images" page 16). This media must be stored in a dry, dark, cool and dust-free environment.

### Create a Disaster Recovery application

- 1 In the **settings/System** menu, click on the icon which enables you to create a new application.
- 2 In the **Application: Create** window, select the **Disaster Recovery** application then click **create** at the bottom of the page.



- 3 In the **Disaster Recovery Application: Create** page, choose the name of the application and associate it with your Linux system. Click **create**.

### Create a Disaster Recovery backup profile

- 1 In the **settings/System** menu, click on the icon which enables you to create a new backup profile.
- 2 In the **New backup profile** window, select **Application** profile then the sub-type profile qualifier **Disaster Recovery Application**
- 3 Click **create**.



- 4 In the **Disaster Recovery Application backup profile** window, choose the name of the profile, and associate it to your Disaster Recovery application.
- 5 Don't forget to specify the required backup periods and retention periods in the **Backup** tab and click **update**.

Your Disaster Recovery backups will be copied to tape as configured. You can follow this externalization at the same time as your other backup jobs in the menu **operations/Backup**.

## Generation of CD or DVD images

Don't wait for a problem to occur, burn the Linux Disaster Recovery images regularly to externalize the CD or DVD media.

Each StoreWay DPA model integrates a CD or DVD burner which enables you to easily burn your Snapshots. If the generated images are in the DVD format and your StoreWay DPA has a CD burner, you need to save the images to burn them to an external burner (see below).

### Burn on StoreWay DPA.

- 1 In the **operations/Backup** menu, select the corresponding Linux system.
- 2 Click the **System Images** tab to display the images created and present on the StoreWay DPA.
- 3 Insert a CD-RW into the StoreWay DPA burner.
- 4 Select the box corresponding to the image to burn and click **burn**.

**WARNING:** Images must be burnt one by one. If you want to burn several images, you will have to use several sessions.



The screenshot shows the 'System : Operations' interface. Under the 'Description' section, the system name is 'rhes3', the type is 'Linux', and the status is 'Active'. Below this, there are three tabs: 'Backup activity', 'Backup Launching', and 'System Images'. The 'System Images' tab is selected, showing a 'List of declared systems:' table with the following data:

Sel.	Name	Date	Status	Volume
<input type="checkbox"/>	dr200602221928-2.iso	22/02/2006 20:09	Complete	511 MB
<input type="checkbox"/>	dr200602221928-1.iso	22/02/2006 19:52	Complete	511 MB

- 5 Burn on an external burner
- 6 Click the image link to save the ISO image to a machine or server equipped with a CD or DVD burner.
- 7 Perform a classic ISO image.

**TIP:** Once the image is burnt, check that the CD or DVD 1 is bootable.

**NOTE:** Regularly delete images from the StoreWay DPA (the **erase** button).

---

## Chapter 3 - System restoration

Restore your Linux system when your system is corrupt or does not restart after a modification.

See:

["System restoration : overview" page 19](#)

["Main restoration constraints" page 20](#)

["Performing a Disaster Recovery restoration" page 21](#)

["Automatic restoration" page 22](#)

["Interactive restoration" page 23](#)

["General restoration constraints" page 24](#)

## Restoration prerequisites

Disaster Recovery images are essential to perform a Disaster Recovery restoration of your Linux system.

Three cases can arise:

- 1 You have images on the bootable media you prepared prior to a crash: this is the simplest solution; you only have to restore your system.
- 2 You have the images on non-bootable media which are stored on the StoreWay DPA. Refer to the previous chapter section **Generation of CD or DVD images** to burn the necessary bootable media for your system restoration.
- 3 Disaster Recovery images only exist on the tape where they were stored at the backup of a Disaster Recovery application: the first step is to retrieve this data from the tape to the StoreWay DPA disk to then be able to burn bootable CDs or DVDs from these images.

## Retrieve system images from tape

To retrieve system images from tape, proceed as follows:

- > In the **operations/Restoration** menu, select the Disaster Recovery application in question.
- > Click **open a restoration session**.
- > In the restoration interface, click **time navigation**.
- > Select the display of missing images, specifying how long your Disaster Recovery images have been removed from the disk then choose the date.
- > In the list of images, select the one you wish to retrieve to disk. In the case where the image does not fit on a single media but requires several media to be burnt, select all the images you will need for a complete image of your operating system.
- > Click **restore**, then follow instructions until the system image is effectively performed.

Once this retrieval is over you can refer to the previous item "Generation of CD or DVD images" page 16, to burn the necessary bootable media for the restoration of your system.

## System restoration : overview

The restoration of the Linux system is performed from bootable CDs or DVD which will completely reinstall the Linux system as if you were to use the manufacturer's installation CDs or DVDs. If your system image is too voluminous to fit onto a single media, the StoreWay DPA will offer to burn several CDs or DVDs.

The first step therefore consists of retrieving information from the StoreWay DPA to create one or more bootable CD/DVD. This operation, which can take up to 30 minutes, can be performed regularly as part of your standard operations with a view to systematically conserving your Linux system Disaster Recovery CD/DVDs in case of need.

> See "Generation of CD or DVD images" page 16

Once this CD/DVD is generated, you need to insert the first CD/DVD into your Linux machine drive then start the machine, and follow the standard setup procedure of the Linux system from the CD/DVD.

## Main restoration constraints

### Several constraints condition the Disaster Recovery restoration:

- > Linux cores are usually optimized for a type of processor. The restoration to an architecture with a different processor (Intel, AMD, AMD64...) has little chance of working. A core optimized for one architecture does not normally work on another architecture.
- > The type of disk is also a constraint. The restoration has more chance of succeeding if the destination machine (IDE, SCSI, SATS) is identical to the original machine. Moreover, if these disks are managed by a specific controller card (RAID controller cards, for example). The restoration will only be possible if you have a machine with the same type of controller card or if the original machine had the driver for the destination machine controller card.
- > Any change to the disk controllers or the types of disks between the original and destination machine can lead to peripheral name changes of the Linux system (hda can become sda for example). This will make restoration difficult.

## Performing a Disaster Recovery restoration

Insert the first media generated on the StoreWay DPA into the system CD/DVD disk drive.

If the startup CD/DVD boots correctly, a page of text appears with two choices:

- > **«nuke»**: automatically restores the system without asking questions.
- > **«interactive»**: restores the system interactively. Use this if you want to change the system configuration for the restoration.

**NOTE:** **KEYBOARD:** when this menu is displayed, no system is loaded, the keyboard is therefore configured as an American «qwerty» keyboard. You need to enter «interqctive» on a French «azerty» keyboard.

The « textonly » option can be added behind one of these choices to perform the restoration without using the graphic library. This option is useful on systems whose graphic library causes the restoration interface to crash.

**WARNING:** «interactive textonly» requires the use of a Linux text editor «vi». If you do not know how to use this editor, use «nuke textonly».

## Automatic restoration

Automatic restoration (nuke mode) enables you to restore the system without asking the user any questions.

This restoration mode must only be used during a restoration to an identical (or almost identical) system to the original. The type of disk (SCSI or IDE) and the controller card must be identical.

If the Disaster Recovery detects that the automatic restoration is impossible (because of a hardware change, for example), it suggests switching to interactive mode.

## Interactive restoration

Interactive restoration enables you to modify parameters during the restoration, particularly concerning disk partitioning. This is the method recommended when you restore to a different system from the original, particularly for partition size changes during system restoration with a different disk capacity to the original system.

### Starting the interactive restoration

After booting on the CD and entering «interactive», a first menu requests confirmation of the restoration mode (automatic, interactive, comparative backup with the system installed or return to the shell). Choose «Interactively» to continue the interactive restoration.

A menu proposes the media format containing the Disaster Recovery. Only the options «CD-R», «DVD» and «CD-RW» can be used.

### Resizing partitions during the restoration

You can modify the disk partitioning during the restoration. You can change both the size of the partitions and create or delete new partitions.

We recommend, however, that you do not change the name of the partition « / » (replacing `/dev/hda1` for `/dev/hda6`). This could prevent your system from rebooting correctly after the restoration.

In some cases, the Disaster Recovery automatically adjusts the size of partitions if there is a slight change to the hardware configuration or if the size of the partition was not optimized to start with.

A confirmation appears after validating the partition table.

Before the real partitioning begins on the hard disk, another confirmation window appears, and a 20-second countdown enables you to reboot the system before partitioning.

When the partitioning is over, you can select what you want to restore: all data, only some data, the mount table.

### Modifying the boot-loader parameters

After restoring data, a window asks if you want to initialize the boot-loader (answer “**yes**” if you are not sure), then another window appears if the start up peripheral has changed (answer “**no**” if you are not sure, the start up peripheral may have changed if the disk system is not connected to the same place on the original disk for example).

If you answered «**yes**», you could edit the `fstab` file (the mount list) to change the name of the peripherals, then the `lilo.conf` or `grub.conf` files (depending on the boot-loader used on your system) to take hardware changes into account.

Finally, **StoreWay DPA Disaster Recovery for Linux** proposes to rewrite the partition labels: answer «**yes**».

**WARNING:** These procedures require a solid working knowledge of Linux and boot-loaders. Any error may prevent the system from restarting if any hardware changes are made between the backup machine and the restoration machine. The manipulations are not necessarily enough to be able to correctly restore a viable system.

## General restoration constraints

### Switch from hd disks (IDE) to sd disks (SCSI or SATA) and vice-versa

This type of restoration is not supported by **StoreWay DPA Disaster Recovery for Linux**.

However, by choosing the interactive restoration, modifying the mount table and boot-loader configuration, it can be possible to restore data without being sure that the system will restart correctly. Use your Linux distribution CD to try to repair the restored system.

### Support of other peripherals

If other peripherals (network cards, sound cards...) have changed between the original machine and the destination machines, it is not sure they are supported for the restored system. Refer to your distribution documentation to see how to support them.

### Red Hat Enterprise 2.1

**StoreWay DPA Disaster Recovery for Linux** requires the version 2.0 of the mkisofs package to be present.

By default on the Red Hat Enterprise 2.1, an older version is installed.

You have to uninstall before starting the Disaster Recovery installation which installs a more recent version.

To uninstall mkisofs, log on as root to your Linux server and enter this command:

```
# rpm -e mkisofs
```

---

## Chapter 4 - Appendix

### FAQ

#### Can I backup partitions whose size exceeds a CD's capacity?

Yes. If the size of the image created exceeds the CD capacity, the Disaster Recovery agent will segment it into several CDs, and the reinstallation will require the successive insertion of the different CDs on the request of the Linux system, in the same way as a Linux installation from several CDs.

**WARNING:** In the case of several CDs being burnt, number each one and keep all CDs in order to keep the same image.

#### Can I also perform images of non-system partitions?

Yes, this is possible. However, user data can be restored more simply by using the standard StoreWay DPA Linux Agent which enables you to perform more frequent incremental backups. It is therefore preferable to keep Disaster Recovery to only backup the Linux system itself. In addition, backing up all data will probably require a high media volume and take a long time to complete.



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