

Replication Modules Version 2.7

Installation and User's Guide

STOREWAY DPA



StoreWay DPA

Replication Modules

Version 2.7

Installation and User's Guide

Software

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Table of Contents

Chapter 1.	Replication modules (in file mode and block mode)	7
Chapter 2.	Mastering a StoreWay DPA appliance	8
	Choosing the appliance model	9
Chapter 3.	The file mode replication module (NExt)	12
	File mode replication architecture.....	13
	The different types of file mode backup and replication	14
	Standard file mode backup on a NExt Client module	14
	Standard replication to tape/DVD	14
	Network replication (NExt Client module to NExt Data Center)	14
	Configuration steps for file mode replication	17
	Configure your file mode replication solution.....	18
	Allocate disk space for network replication	18
	Create one or several eDisks in an NExt Data Center module	19
	Manage storage spaces in a NExt Data Center	21
	Creating a NExt Data Center application in order to replicate to tape	23
	Configure the NExt Client module.....	24
	Configuring network replications on a NExt Client	24
	Creating profiles and systems on a NExt Client	24
Chapter 4.	The block mode replication module	26
	Block mode replication architecture	27
	Define replication policy	30
	Block mode replication steps.....	31
	Configuring the ASM Console	33
	Install the ASM Console	34
	Configure a replication between two appliances	35
	Check the replication status	41
	Promote the replicated disk to a primary disk	42
	TimeMark and TimeView	43
Chapter 5.	Glossary	45

Chapter 1. Replication modules (in file mode and block mode)

The StoreWay DPA now includes network replication features in the form of two complementary modules which can be added to a StoreWay DPA:

- > the replication module in file mode (NExt), enables you to duplicate protected data in file mode from one StoreWay DPA to another StoreWay DPA,
- > the replication module in block mode enables you to duplicate protected data in block mode in the ASM space to another StoreWay DPA.

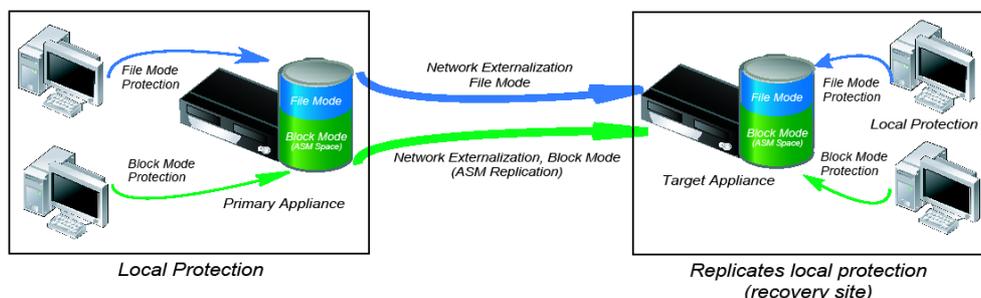
On a standard StoreWay DPA, replication is performed by duplicating data on the StoreWay DPA disk to another media (tape, DVD depending on the models). Network replication models enable companies to be completely free of tape and other media handling operations.

The installation of the replication modules in file or block mode requires you to use the 2.7.300 master installation.

File mode and block mode replication modules architecture

Two additional software modules perform replication tasks via a network connection of data protected by a backup appliance, one in file mode, the other in block mode. Each of these modules includes two components:

- > A "Client" component to install on the local StoreWay DPA (primary StoreWay DPA) responsible for local data, application, and system protection.
- > A "Data Center" component to install on the StoreWay DPA responsible for the transfer (replication) of data from the primary StoreWay DPA. This target StoreWay DPA is either located on the same site (LAN) or a remote site (WAN) or on a centralized site or with a service provider.



See also:

["Mastering a StoreWay DPA appliance" page 8](#)

["The file mode replication module \(NExt\)" page 12](#)

["The block mode replication module" page 26](#)

Chapter 2. Mastering a StoreWay DPA appliance

IMPORTANT: If you wish to use the network replication features offered by the version 2.7.300 (in file and/or block mode), you must remaster your StoreWay DPA to version 2.7.300.

The CD Master is called **StoreWay DPA Master CD-ROM Version 2.7.300**.

Mastering a StoreWay DPA version 2.7.300 comprises three key steps:

- 1** The choice of the model StoreWay DPA. Should it have a tape drive? What volume will be required for my replication configuration? For more information, please consult: "Choosing the appliance model" page 9
- 2** Dimensioning disk space on the StoreWay DPA. In other words: the space you want to dedicate to replications in file mode and, if required, the ASM space dedicated to replications in block mode. For more information, please consult: "Allocate disk space for network replication" page 18
- 3** The activation of licenses for the replication modules. For more information, please consult:
- 4** In the case where block mode replication modules are activated, the ASM Console needs to be installed. For more details, see "Install the ASM Console" page 34.

See also:

["Choosing the appliance model" page 9](#)

Choosing the appliance model

In version 2.7.300, the StoreWay DPA model must be selected with great care depending on the planned use and role of the StoreWay DPA. Some appliances have tape drives, others do not.

When applying the appliance master, a list of models is proposed. The choice of models must be based on the following criteria:

- > The physical model of the appliance (notably its data storage capacity)
- > Whether its role is as a Client or a Data Center and the type of replication required: file mode and/or block mode,
- > If a tape drive is required on the Data Center StoreWay DPA for supplementary data replication requirements.

The choice of physical model for the appliance

Choose your StoreWay DPA according to your replication needs, volumes and mode (client or data center, file and/or block, tape and/or network)

MODELS	CONSOLIDATION AND REPLICATION			
	Externalisation 	Client File Mode 	Data Center File Mode 	Client/Data Center Block Mode 
↻ DPA-100				
↻ DPA-100DX				
↻ DPA-150				
↻ DPA-300				
↻ DPA-600				
↻ DPA-750DX				
↻ DPA-3000DX Ext. 1 TB				
↻ DPA-6000DX Ext. 1 TB				
↻ DPA-9000DX Ext. 1 TB				

- > The StoreWay DPA equipped with tape drives are not designed to receive the NExt Client file mode replication module,
- > The NExt Data Center file mode replication module can equip all StoreWay DPA models,
- > Block mode Client and Data Center replication modules can equip ALL StoreWay DPA models.

The choice of model when installing a StoreWay DPA

The following table shows the type of StoreWay DPA that you need install according to your replication requirements and the type of machine.

StoreWay DPA Physical Model	Tape drive present	Selection of the model to be installed with the StoreWay DPA Master	
		Unused tape drive	Tape drive used
DPA 100	Yes	NA	DPA-100
DPA 100DX	No	DPA-100DX-E	DPA-100DX-S
DPA 150	Yes	NA	DPA-150
DPA 300	Yes	NA	DPA-300
DPA 600	Yes	NA	DPA-600
DPA 750DX	Option	DPA-750DX-E	DPA-750DX-S
DPA 3000DX	Option	DPA-3000DX-E	DPA-3000DX-S
DPA 6000DX	Option	DPA-6000DX-E	DPA-6000DX-S
DPA 9000DX	Option	DPA-9000DX-E	DPA-9000DX-S

NA: not applicable

WARNING: Important: Models followed by the letter "E" are not equipped with a tape drive. followed by the letter "S" are equipped with a tape drive.

Specific case when choosing a DX-type model

Choosing a model for a StoreWay DPA Master	With the file mode replication module		Without the file mode replication module	
	Client	Data Center	Client	Data Center
replication on a				
You use a tape drive	NA	-S	-S	-S
You have no tape drive or you do not need one	-E	-E	-S	-S

NA: not applicable

When using two replication modules simultaneously, in file and block mode, follow the instructions linked to the replication module in file mode.

Practical example of a choice of model when installing a master 2.7.300

Take the example of a StoreWay DPA DPA-750DX which handles local protection in file mode and block mode, and which performs a double replication via the network to a DPA-3000DX which externalizes to tape.

For the DPA-750DX:

- > the model chosen for the installation of the master is a DPA-750DX-E,
 - an ASM Space must be created and sized for local block mode protection,
 - a NExt Client module (file mode replication) must be configured,
 - a block mode replication client must be configured.

For the DPA-3000DX:

- > a tape library is installed,
- > the chosen model on installing the master is a DPA-3000DX-S,
- > an ASM Space must be created and sized for local block mode protection AND the replication of data from the ASM space in the DPA-750DX,
- > a NExt Data Center module (file mode replication) must be created and sized for the replication of data in file mode protected by the DPA-750DX,
- > a Data Center block mode replication module must also be configured.

Chapter 3. The file mode replication module (NExt)

See:

["The different types of file mode backup and replication" page 14](#)

["Configuration steps for file mode replication" page 17](#)

["Configure your file mode replication solution" page 18](#)

["Creating a NExt Data Center application in order to replicate to tape" page 23](#)

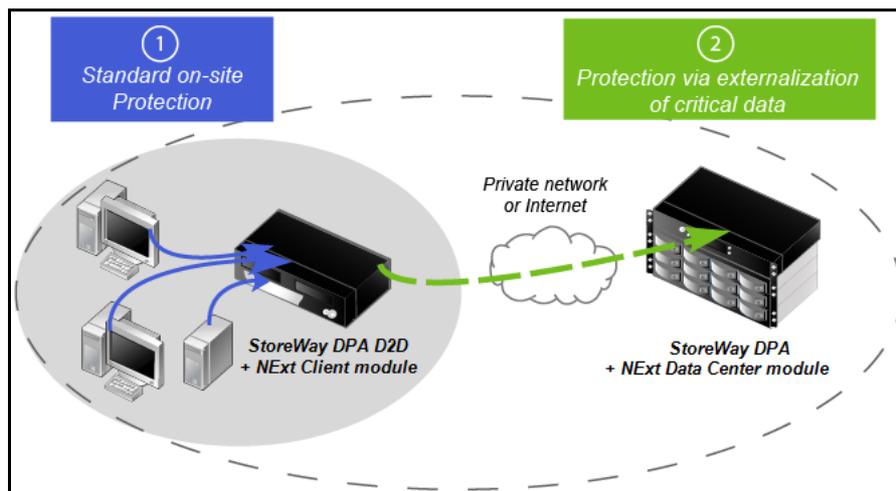
["Configure the NExt Client module" page 24](#)

File mode replication architecture

The NExt solution enables you, in addition to local data protection, to externalize critical data in file mode via a network connection to a remote StoreWay DPA.

The StoreWay DPA used to back up your data on site contains a module called the **NExt Client**. The remote StoreWay DPA which receives critical externalized data contains a module called the **NExt Data Center**. This module can receive data from several NExt Client modules.

Since your critical data will be externalized to disk, you will no longer have to manage standard removable media (tape and DVD).



See:

["The different types of file mode backup and replication" page 14](#)

["Configuration steps for file mode replication" page 17](#)

["Configure your file mode replication solution" page 18](#)

["Creating a NExt Data Center application in order to replicate to tape" page 23](#)

["Configure the NExt Client module" page 24](#)

The different types of file mode backup and replication

See:

["Standard file mode backup on a NExt Client module" page 14](#)

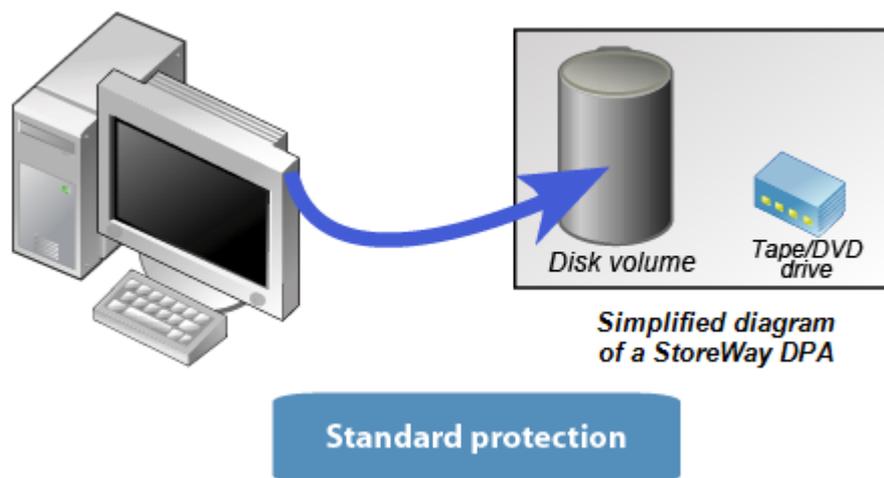
["Standard replication to tape/DVD" page 14](#)

["Network replication \(NExt Client module to NExt Data Center\)" page 14](#)

Standard file mode backup on a NExt Client module

Standard backup consists of creating one or several systems and/or applications to back up on the disk space of the StoreWay DPA equipped with the NExt Client module. Once the backup perimeter has been defined, you can create a backup profile which defines your backup schedules, retention periods and backup tasks. See:

["Creating profiles and systems on a NExt Client" page 24](#)



Standard replication to tape/DVD

Standard replication to tape/DVD: the duplication of the data on StoreWay DPA models equipped with a tape drive or library remains an option for the NExt Data Center.

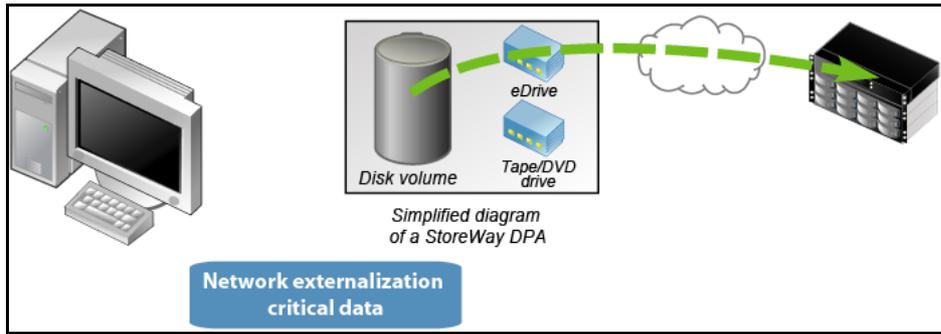
See:

["Creating profiles and systems on a NExt Client" page 24.](#)

Network replication (NExt Client module to NExt Data Center)

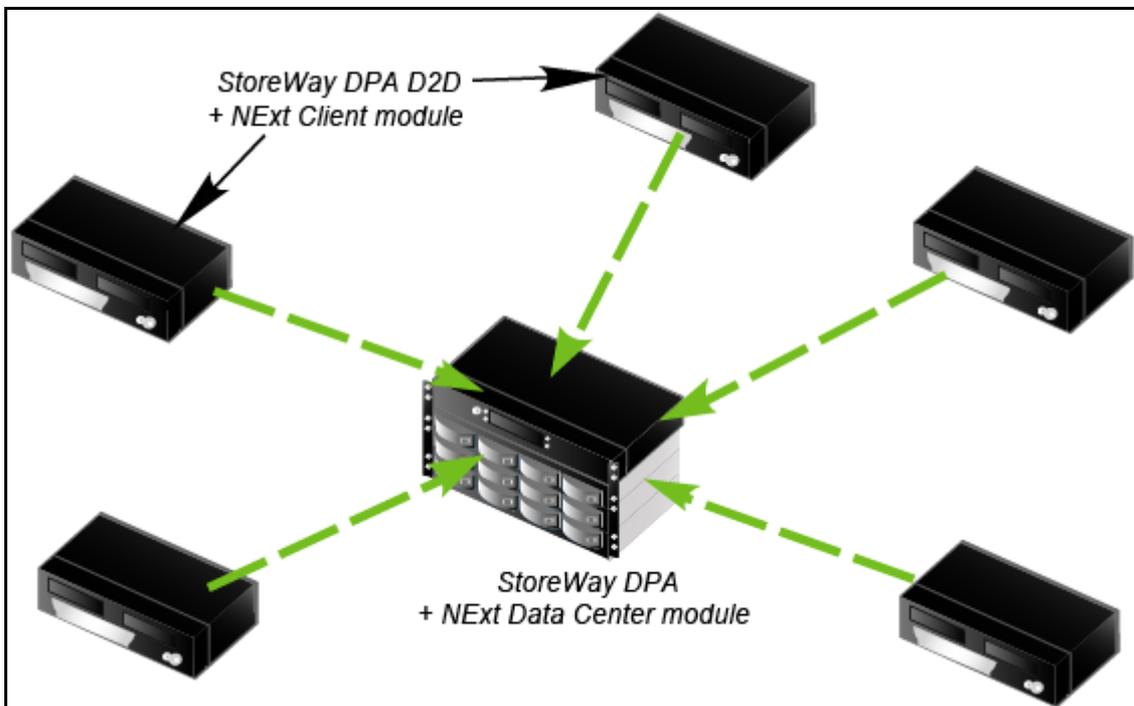
Selective network replication consists of sending critical data from one or more StoreWay DPA equipped with a NExt Client module to a remote StoreWay DPA equipped with a NExt Data Center module. For obvious security reasons, the StoreWay DPA NExt Data Center will typically be situated on another site.

On the StoreWay DPA Client, critical data is managed by a logical drive called an eDrive. The eDrive writes data via the network to the NExt Data Center.

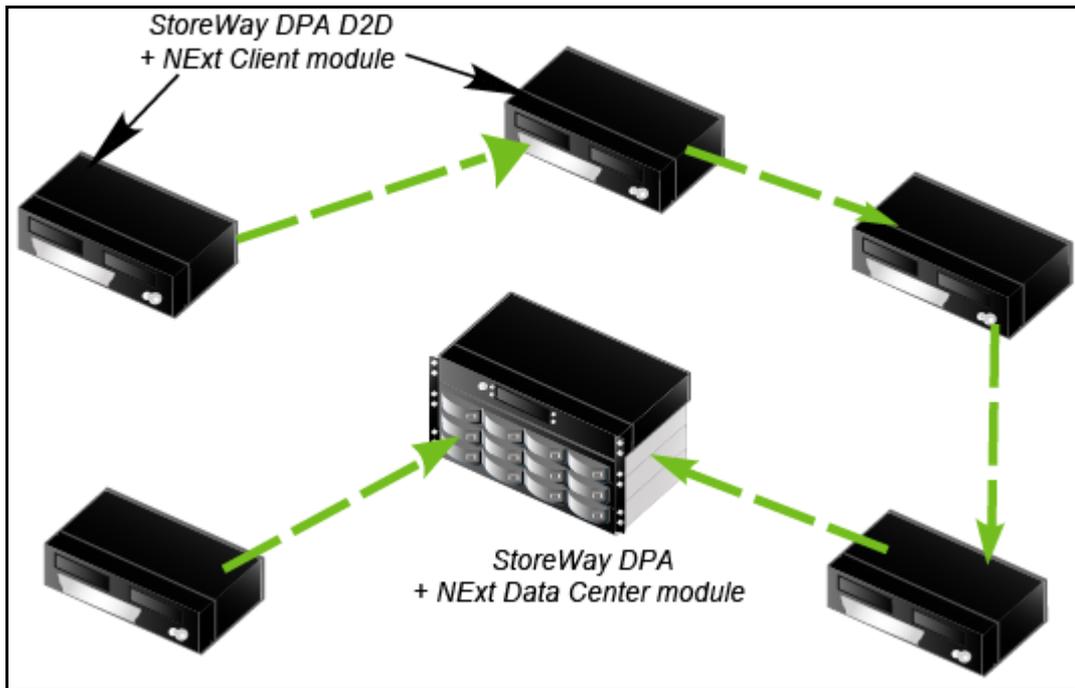


WARNING: It is important to be selective when configuring network replication for your critical data because network capacity and bandwidth typically impose limits on the volumes which can be externalized to a few GB per day (as opposed to several hundred GB per hour on tape or DVD).

The standard NEXt technology configuration consists of centralizing critical data of several NEXt Client towards one StoreWay DPA NEXt Data Center. For example, a centralization of critical data at a regional level to a NEXt Data Center at national level:



It is also possible to implement a more linear configuration in which data is transferred to the NEXt Data Center via one or several StoreWay DPA equipped with a NEXt Client module:



The NExt Client module can also be equipped with a NExt Data Center module which enables it to pass data on from one site to another. For example, critical data at a local level can be transferred to a regional then national level.

See also:

["Creating profiles and systems on a NExt Client" page 24](#)

Configuration steps for file mode replication

The NExt technology configuration with one or more NExt Data Center and one or more NExt Client is as follows:

Step	See:
NExt Data Center configuration	
Install and configure a NExt Data Center.	See the StoreWay DPA Quick Start Guide.
Allocate the storage space in the eVolume of your NExt Data Center.	"Allocate disk space for network replication" page 18
Create eDisks in the NExt Data Center.	"Create one or several eDisks in an NExt Data Center module" page 19
Create an NExt Data Center application.	"Creating a NExt Data Center application in order to replicate to tape" page 23
NExt Client configuration	
Configuration of the eDrive on a NExt Client.	"Configuring network replications on a NExt Client" page 24
Create profiles and systems on a NExt Client.	"Creating profiles and systems on a NExt Client" page 24

Configure your file mode replication solution

See:

["Allocate disk space for network replication" page 18](#)

["Create one or several eDisks in an NExt Data Center module" page 19](#)

["Manage storage spaces in a NExt Data Center" page 21](#)

["Creating a NExt Data Center application in order to replicate to tape" page 23](#)

Allocate disk space for network replication

After installing your NExt Data Center, you need to configure this installation and, in particular, allocate disk space in the NExt Data Center. The space allocated for replication in file mode (NExt) is called the "eVolume". The dedicated eVolume capacity must be carefully calculated according to:

- > the number of StoreWay DPA NExt Clients to externalize and the expected volumes of data,
- > the data retention periods planned for externalized data.

NOTE: If you want to return to the configuration page, use this address: **https://<your_NExt_Data_Center>/config/wizard_init_welcome.php/**

Configure a NExt Data Center and allocate disk space for file mode replications

- 1 In the Home page when you first connect to the NExt Data CenterStoreWay DPA you need to:
 - accept the license,
 - configure the date and time,
 - activate the NExt Data Center (by retrieving an identification file and activating it on the extranet site),
 - configure the administrator account (log on etc.).

See the Quick Start guide for more information.

- 2 When you reach Step 5, check the box: **Activate the NExt Data Center module**.

NOTE: You can activate both modules ("ASM" and "NExt Data Center"). Two dedicated spaces will be created on the StoreWay DPA.

NOTE: The NExt Data Center module is always activated with a NExt Client module already activated by default.

The pre-allocation of space dedicated to network replications enables you to avoid disk space management problems on the Data Center.

If there is too much data on the disk or if the retention periods are lengthened, there is a risk of saturation and replications in error due to a lack of space.

In general, and because only critical data is externalized, the necessary disk space for critical data is equal to critical data backups with an additional 20% to ensure the consistency of backups.

- 3 Enter the space to allocate (in GB) in the field **Allocate eVolume space for the NExt Data Center** module (GB) and check the box below to confirm this configuration choice.

NOTE: This space allocation can be modified at any time. If you see that the replications are beginning to reach maximum capacity, you need to consider the option of reducing your data retention periods (see the online help or the User Guide PDF for more details).

- 4 Click **Next**.
- 5 In the last dialog box, confirm the configuration by clicking on **Next**. The StoreWay DPA reboots automatically.

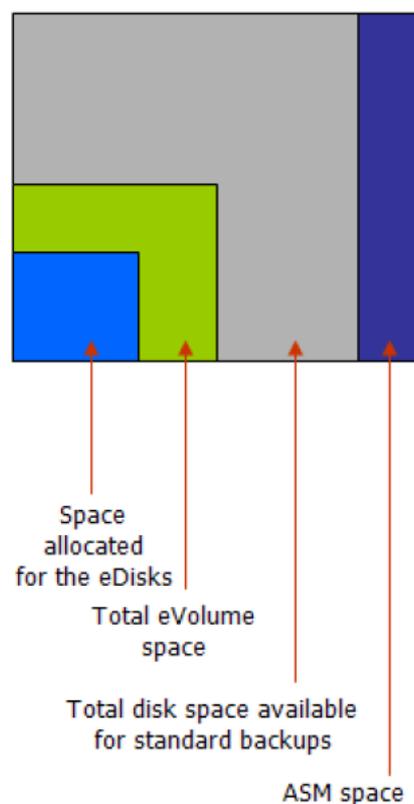
Create one or several eDisks in an NExt Data Center module

Once the global space dedicated to replication in file mode is defined, you need to configure a welcome space for each remote Next Client. This dedicated space is called an eDisk. It receives data from a full backup of a Next Client over the Internet or via a WAN network.

Access to this eDisk is secured by an access name and a password. Typically, the name of the eDisk will be the same as the NExt Client but this is not compulsory. This password can also be the same as the NExt Client to facilitate the management of a NExt Client group but this is not compulsory.

For each eDisk, you need to allocate a space in the eVolume of the NExt Data Center.

In the **Storage management** section, you can see the total space available in the eVolume you configured for this NExt Data Center. This space corresponds to the space configured for the initialization of the NExt Data Center minus the space already allocated to eDisks which are already configured.



NOTE: The total eVolume space remains available for the extension of eDisks. You can increase allocated size of the eVolume but this reduces the storage capacity for standard backups on the NExt Data Center. See the section: "Manage storage spaces in a NExt Data Center" page 21.

Create an access to an eDisk

- 1 In the NExt Data Center interface, open the menu: **operations/storage/NExt Data Center/Manage eDisks**.

These elements are displayed:

- The list of eDisks currently configured on the NExt Data Center module.
- For each eDisk: the total space allocated to this disk, and the used and available space. With this information, you can reallocate space to better read the load over your eDisks.
- The total space still available in the eVolume for the creation or extension of the eDisks.

- 2 Click on the button **add** at the bottom of the screen.
- 3 Give this eDisk a name. This name can for example be the name of the NExt Client which depends on this NExt Data Center.
- 4 Enter a password. This password can correspond to the password of the NExt Client which depends on this NExt Data Center.

You can now create a space to allocate to an eDisk.

Create space to allocate for an eDisk

- > In the page **Add an eDisk**, enter a number which corresponds to the space to allocate (in MB) in the field **Space to allocate (MB)**.

NOTE: You can increase or decrease this space if your network replication requirements evolve.

Modify eDisk parameter

- 1 In the NExt Data Center interface, open the menu: **operations/storage/NExt Data Center/Manage eDisks**.
- 2 Select an eDisk from the list by clicking the radio button and click on the button **modify**. In the page **Modify eDisk parameters** you can:
 - Modify the name and/or password for this eDisk.
 - Increase or decrease storage space allocated to this eDisk. The occupied space in% is displayed to help you judge your room for maneuver.

Upload eDisks using a configuration file

In order to manage greater numbers of eDisks, you can upload a configuration file which avoids your having to enter each eDisk manually.

In the section **Download a new configuration file**, click on the button **Browse...** and upload the text file. This file must have the following format:

- > The first line defines the action:

ADD|MODIFY: To add new eDisks or modify existing eDisks.

REPLACE: The same action as "ADD|MODIFY" then erases the eDisk which are not in the configuration file but which are in the data base.

- > For each eDisk, specify its characteristics:

ediskname password quota_in_MB

- > Separate the information by a space:

In this example, we will replace the eDisks in the database with the three new

eDisks:

REPLACE		
edisk1	edisk1	1000
edisk2	edisk2	1000
mercuretx	mercuretx	2500

Manage storage spaces in a NExt Data Center

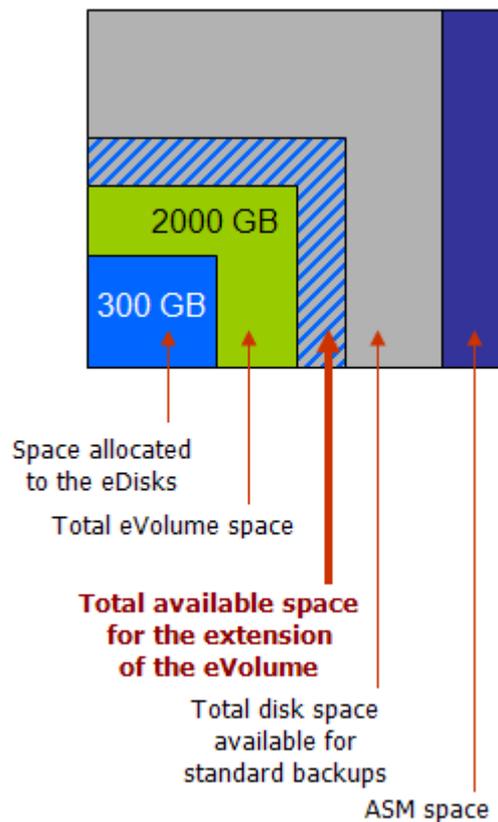
If your storage requirements evolve, you will probably have to consider modifying your NExt Data Center storage space. For this, you can increase or decrease the size allocated to the eVolume. You can, for example, reduce the space dedicated to standard backups configured on the StoreWay DPA to increase the size of your eVolume.

WARNING: If you increase the NExt Data Center space, you reduce the space allocated to local/standard backups. The ASM space cannot be modified and will remain unchanged.

Configure storage space (eVolume) in a NExt Data Center

- 1 In the NExt Data Center interface, open the menu: **operations/Storage/NExt Data Center/Manage the eVolume**.

In this example, 2000 GB have been allocated to the eVolume and 300 GB to all your eDisks. You have 1700 GB of potential available eVolume space to extend the eDisk allocation – either by increasing the quotas for existing eDisks or by adding new eDisks. The following diagram shows how data is allocated disk space on a StoreWay DPA NExt Data Center:



- 2 Modify the size in the field **Total eVolume size** to increase or decrease the total size of the eVolume.

- 3 If you increase the size of the NExt Data Center, you reduce by the same amount the size of available space for local/standard backups.
- 4 In the section **Alarm sent**, you can configure the threshold limit above which an alarm is sent warning you to modify your eVolume space. The default alarm threshold is 90%. You have two options:
 - Increase the eVolume space (losing standard backups space).
 - Reduce data retention periods on the eVolume (go from two months to one month, for example). See: "Creating profiles and systems on a NExt Client" page 24.

Creating a NExt Data Center application in order to replicate to tape

Once the eVolume and eDisk spaces are configured, you can create a NExt Data Center application. This application enables you to select the NExt Client(s) to replicate.

The eDisk on a NExt Data Center is not automatically replicated to tape. You need to configure a NExt Data Center application with a view to:

- > Associating an externalization/replication profile for data to tape transfers.
- > Adding or removing an eDrive space for a network replication.

Creating a profile for the replication of data to tape

- 1 In the NExt Data Center, open the **settings/Backups** menu and click on the **Create a new profile** icon.
- 2 In the section "Choose the type of backup profile", select **Application** then **NExt Data Center eDisk Externalization**.
- 3 Give a name to this profile (for example: "tape replication")
- 4 Give a priority ("High" by default) and add a comment if necessary.
- 5 Click on the **create** button.
- 6 Once the profile is created, click the tab **DRP**.
- 7 Depending on your replication policy (update to tape, retention periods etc.), enter the necessary details (consult the main online help for more details).

Create an eDisk - NExt Data Center application

- 1 In the NExt Data Center, open the **settings/System** menu and click on the icon **Create an application**.
- 2 In the list of applications click **eDisk - NExt Data Center**.
- 3 Give this application a name, for example: "NExt_application1".
- 4 Complete the "Description" and "Profiles checked for this application" fields (see the main online help for more details).
- 5 Associate, if necessary, the replication profile of data to tape described above.
- 6 Click on the button **create**.

Associate eDisks with your NExt Data Center application

- 1 In the page **Application: Edit** for your **Next Data Center** application, click on the button **browse** in the section **Backup/Data to back up**.
- 2 A page opens enabling you to select or deselect a StoreWay DPA NExt Client:
- 3 Select or deselect the eDisk(s) to add or remove from the application. Click on **add to cart** and **apply** to select or view the cart, check the eDisk(s) and click on the button **remove from cart** to deselect the eDisk.
- 4 In the page **Application: Edit**, click on the button **update**.

Configure the NExt Client module

See:

["Configuring network replications on a NExt Client" page 24](#)

["Creating profiles and systems on a NExt Client" page 24](#)

Configuring network replications on a NExt Client

You need to indicate, for each NExt Client in your network replication solution, the connection parameters with the NExt Data Center.

The connection with the NExt Data Center is managed by a logical drive called the "eDrive". To configure this connection, you will need:

- > The name of the remote machine and its port number (617 by default).
- > The log on name and the password which are configured in the NExt Data Center. Your administrator will provide these.

Create or modify an eDrive for an eDisk on a NExt Data Center

- 1 In the NExt Client interface, open the menu: **operations/Storage/NExt Client**.
- 2 Click on the icon **eDrive**.
- 3 Click on the button **plan** at the bottom of the screen.
- 4 In the page **Modify eDrive parameters**, you can create an eDrive or modify the parameters of an existing eDrive:
 - > **Remote Machine**: enter the name of the NExt Data Center and its port number (by default 617).
 - > **Disk Name**: enter the name of the eDisk dedicated to this NExt Client and its associated password. Your administrator will provide this information.
 - > **Alarm for full remote eDisk**: modify the alert threshold which when reached an alarm is sent to the NExt Client machine if the capacity exceeds this threshold (90% by default).
- 5 Click the **update** button.

Creating profiles and systems on a NExt Client

For each NExt Client in your network replication configuration, you need to:

- > configure the profiles which manage standard backup and network replication - called eDRP (Disaster Recovery Plan),
- > associate systems backed up by the NExt Client.

Create an eDRP profile

The eDRP profile enables you to select one or several systems and/or applications and associate them with a Disaster Recovery Plan (eDRP).

NOTE: A system or application can be a part of a standard backup profile without being part of a eDRP.

Create a new eDRP profile

- 1 Click on the menu **settings/Backups**

- 2 Click on the button **Create a new profile**.
A profile edit window opens.
- 3 Select **System**.
- 4 Give this profile a name (for example: "Replication_Network4") and complete the description fields for this profile.
- 5 In the section **Data to backup**, you must enter a file path (or "/" for root) in order to display the **Data** tab.
- 6 In the **Data** tab, click the eDRP column to activate this profile.
- 7 In the **Backup** tab, you can:
 - configure the full and incremental backup retention periods,
 - configure the backup periods for your full and incremental backup configurations.

NOTE: In the **eDRP** tab, the retention periods only concern full backups. Retention periods and backup schedules are typically more spaced out.
- 8 Click **create** (or **update**).
- 9 You can now create systems and applications to associate with this profile and finish implementing your eDRP solution.

NOTE: For more information on how to create profiles and systems and also how to restore backed up data, please consult the main online help in the StoreWay DPA interface.

Chapter 4. The block mode replication module

See:

["Block mode replication architecture" page 27](#)

["Block mode replication steps" page 31](#)

["Configuring the ASM Console" page 33](#)

["TimeMark and TimeView" page 43](#)

Block mode replication architecture

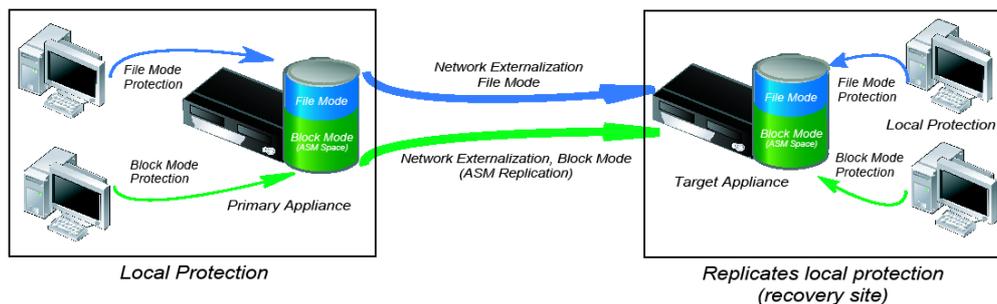
The replication module via network in block mode secures a StoreWay DPA responsible for local protection in block mode by replicating data to another StoreWay DPA over a LAN or WAN.

A minimum of two StoreWay DPA are required:

- > the primary StoreWay DPA, responsible for local protection,
- > the target StoreWay DPA, either local or remote, which receives the replicated data from the primary StoreWay DPA.

Each StoreWay DPA is equipped with a block mode network replication module:

- > the primary StoreWay DPA contains the block mode **Client replication module**,
- > the target StoreWay DPA (local or remote) contains the block mode **Data Center replication module**.



Network replication in block mode will typically (but not obligatorily) occur between one or more equipped with a Client module to a remote target StoreWay DPA equipped with a Data Center module because:

- > a series of StoreWay DPA equipped with Client modules typically handle your primary data and replicate them to a target StoreWay DPA equipped with a Data Center module with greater data storage capacities,
- > the advantage of locating the target StoreWay DPA on a remote site is to be able to retrieve critical data in the event of critical data in the event of a major incident which could have caused the loss of your primary data.

NOTE: You can also re-externalize you replicated data to tape (see "Mastering a StoreWay DPA appliance" page 8 for more details) if your StoreWay DPA has a tape drive or tape library.

WARNING: Each StoreWay DPA whose ASM space is activated during the mastering can either receive primary data replicated from another StoreWay DPA either replicate its own primary to another target StoreWay DPA or both (see the multi-site architecture section below). For this, you need to ensure you add the block mode Client or Data Center modules depending on whether the machine receives data or replicates.

WARNING: The ASM space reserved for block mode cannot be modified after the appliance has been initialized (see "Allocate disk space for network replication" page 18). The only way to modify this configuration is to remaster the appliance.

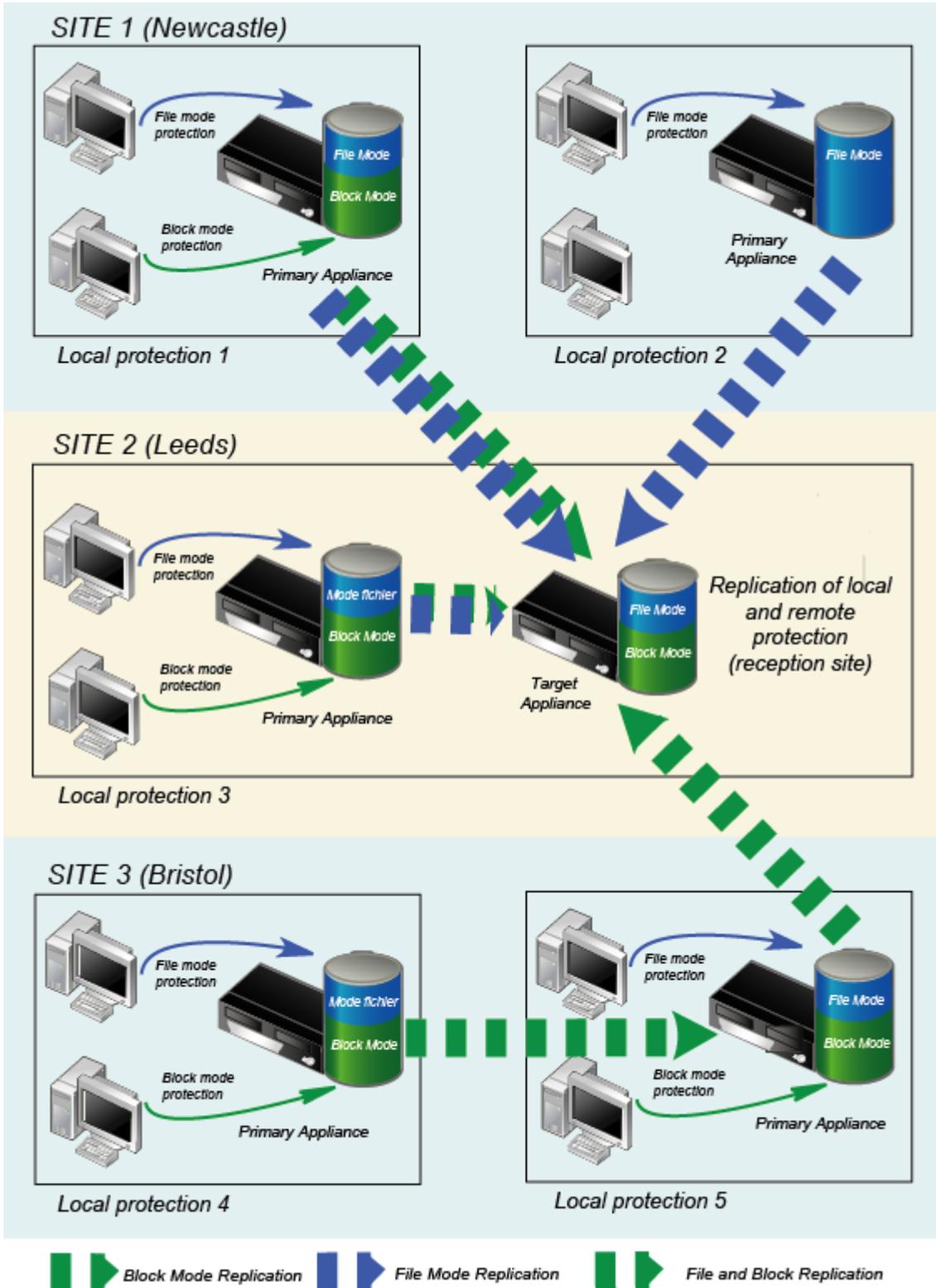
Example of multi-site architecture

In the following diagram, we can see that:

- > the target StoreWay DPA in Leeds "receives" data in file mode and block mode from

two remote sites (Newcastle and Bristol) plus locally replicated data in Leeds,

- > the local protection in Newcastle is replicated from a StoreWay DPA which replicates in file and block mode and another StoreWay DPA which only replicates in block mode (the entire disk space is reserved in this case for ASM),
- > on the site in Bristol, there is a first-level local replication of data in block mode and a remote replication to the Leeds site in block mode:



What type of for each site?

SITE	Which appliance models for each site?	Tape drive possible*
SITE 1: Newcastle: local protection 1	Block mode replication Client module (ASM)	NO*
	File mode replication Client module (NEXT)	
SITE 1: Newcastle: local protection 2	File mode replication Client module (NEXT)	NO*
SITE 2: Leeds: local protection 3 (Primary Appliance)	Block mode replication Client module (ASM)	NO*
	File mode replication Client module (NEXT)	
SITE 2: Leeds: local protection 3 (Target Appliance)	Block mode replication Data Center module (ASM)	YES*
	File mode replication Data Center module (NEXT)	
SITE 3: Bristol: local protection 4	Block mode replication Client module (ASM)	NO*
SITE 3: Bristol: local protection 5	Block mode replication Client module (ASM)	YES*
	Block mode replication Data Center module (ASM)	

* A client with externalization/replication in file or block mode cannot contain a tape drive.

See also:

["Block mode replication steps" page 31](#)

Define replication policy

Replication is a process of performing an identical transfer of a resource from one machine to another. At precise intervals, a SnapShot is taken of the resource (primary disk) and the modified data is transferred over the network in block mode to the replication disk (target disk) where the synchronization takes place.

Replicated data can be retrieved if a major incident occurs requiring the restoration of the primary disk. In normal circumstances, you will not need to access this target disk which is situated typically on a remote site (or at least in a different building). You need to define your replication policy based on these considerations:

- > The number of disks to replicate and the volume of data represented by this replication,
- > The critical nature of the data and the frequency of the replication (every hour, every day etc.). You can use the "Continuous" mode to replicate any change between the primary and target disk.
- > The available bandwidth for data replication over an IP network.

Your ASM configuration can also be part of an advanced configuration which encompasses the following:

- > storage (the number of SnapShots to keep, disk segments to use, limiting or extending available disk space for replications),
- > replication protocol (TCP or RUDP),
- > compression,
- > encryption.

See the following section for more details on how to configure your replication policy:

["Configure a replication between two appliances" page 35](#)

Block mode replication steps

The main steps when configuring your replication between two appliances are as follows:

Mastering and configuring the primary appliance (appliance equipped with the Client Module)

- > Mastering in version 2.7.300 and managing the volumes,
- > Installing and managing the product keys for the block mode Client replication module.

NOTE: Sizing the volumes dedicated to the Client replication modules requires no specific reservation of disk or partition space. The partitioning between the space in file mode and block mode (ASM) is calculated based on the type of protection and the volumes involved with additional space defined for future growth (usually at least 20% but this can vary depending on the type of data being replicated; system disaster recovery will probably require less space for growth than mail system or application configurations).

WARNING: ASM space reserved for block mode is NOT modifiable after the appliance has been initialized unless you completely remaster this space.

See:

["Mastering a StoreWay DPA appliance" page 8](#)

Mastering and configuring the target appliance (appliance equipped with the Data Center Module)

- > Mastering in version 2.7.300 of the StoreWay DPA and managing the volumes,
- > Installing the product keys for the block mode Data Center replication module.

NOTE: Sizing the ASM space used for the Data Center module requires careful planning: the target StoreWay DPA must have the capacity to enable replicated StoreWay DPA data to be stored in addition to possible local storage requirements. Adding all primary disks to be replicated plus local data storage plus future growth requirements will give you an idea of how the ASM space to configure).

WARNING: ASM space reserved for block mode is NOT modifiable after the appliance has been initialized unless you completely remaster this space.

See also:

["Mastering a StoreWay DPA appliance" page 8](#)

Configuring and using the ASM Console

- > Installing the console on an administrator work station,
- > Defining a replication policy,
- > Configuring the replication,
- > Checking the replication status,

> Promoting a replica disk to a primary disk.

See:

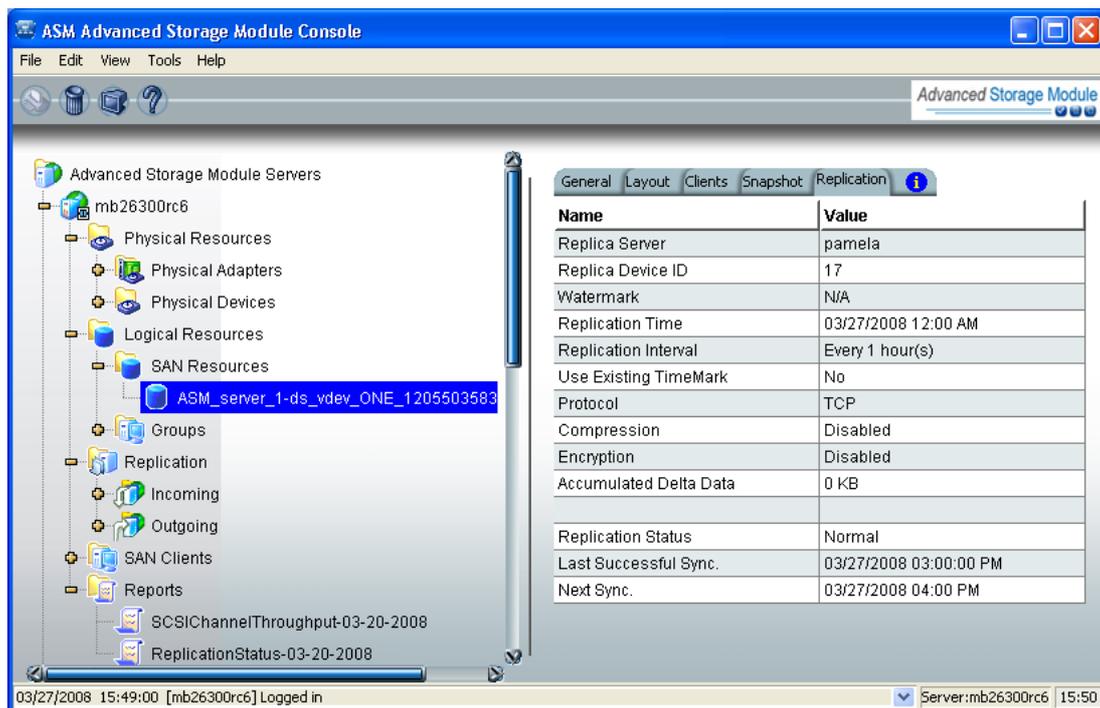
["Configuring the ASM Console" page 33](#)

Configuring the ASM Console

The ASM Console (Advanced Storage Module Console) enables you to manage replication between two or more StoreWay DPA equipped with the block mode replication module. The left-hand menu displays the StoreWay DPA (Advanced Storage Module Servers) which have been added to the Console.

A StoreWay DPA is:

- > either a primary StoreWay DPA which replicates a primary disk to a second StoreWay DPA located on the same site or on a remote site (LAN or WAN).
- > or a target StoreWay DPA which receives the primary disk to protect which has been replicated from a primary StoreWay DPA located on the same site or on a remote site (LAN or WAN).



The following sections explain how to:

- > Install an ASM Console on an administrator workstation,
- > Configure a replication between two StoreWay DPA,
- > Check the replication configuration and performances,
- > Restore (promote) a replicated disk to another, StoreWay DPA
- > Configure TimeMarks and TimeViews.

See:

["Install the ASM Console" page 34](#)

["Configure a replication between two appliances" page 35](#)

["Check the replication status" page 41](#)

["Promote the replicated disk to a primary disk" page 42](#)

["TimeMark and TimeView" page 43](#)

Install the ASM Console

The ASM Console enables you to set up your replication configuration between two ASM servers (two StoreWay DPA).

- > The Setup for the installation of the ASM Console is on the CD **ASM Console & Documentation Version 2.7.300**.
- > The ASM Console binary file is at the root of this CD.
- > To open the Console for Windows, click on **start/All programs/ASM/ASM Console**.

The ASM Console opens in a separate window.

Add a StoreWay DPA in the ASM Console

- 1 Open the ASM Console and right-click **Advanced Storage Module Servers**.
- 2 Select **Add ASM Server**.

NOTE: You can also select **Tools/Discover ASM Servers** in order to list all the StoreWay DPA on a sub-network.

- 3 Enter the Subnetwork Filter and Subnetwork Mask.
- 4 For each StoreWay DPA you wish to add to the ASM Console, you need to enter its name (in the field **ASM Server**) along with its associated user name and password.



- 5 A dialog box opens requesting three pieces of information: the license keys, network parameters for the StoreWay DPA and the host name.



The license is already handles by the communication with the StoreWay DPA. Network parameters and host name are automatically recognized via the StoreWay DPA and all you need to do here is click three times on the button **Skip**.

- 6 Repeat this operation for each StoreWay DPA that you wish to replicate in block mode.

Configure a replication between two appliances

In this section, we will use the ASM Console to replicate data from a primary disk towards a target disk.

NOTE: **Prerequisites:** The primary disk (or partition) must be created beforehand on a client system and be protected by a StoreWay DPA. To find out how to create this disk, please consult the DiskSafe documentation.

Open the ASM Console

- > To open the ASM Console, open a Windows session and click on **Start/All programs/ASM/ASM Console**.

The ASM Console opens in a new window.

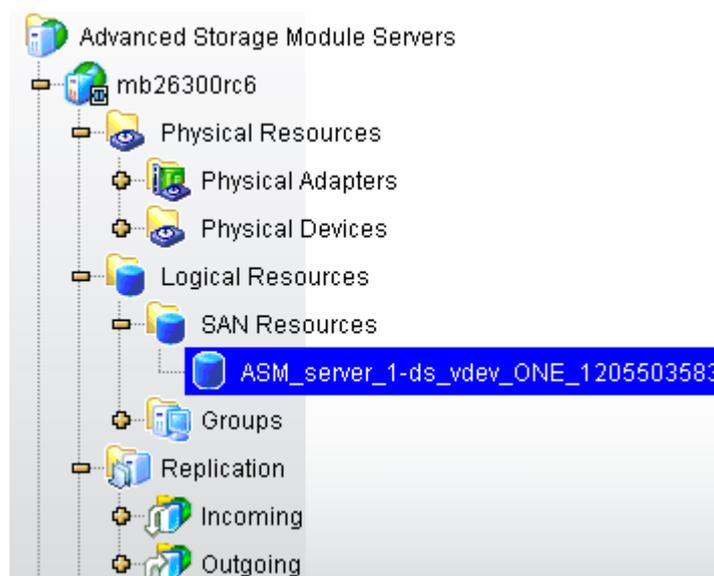
If you have not already created a StoreWay DPA in the Console, see the section: "Install the ASM Console" page 34.

Select the primary disk to replicate

Once you have added the StoreWay DPA in the ASM Console, you can start to configure them for replication (send or receive externalized data in block mode from one StoreWay DPA to another StoreWay DPA).

You can activate the replication either for a single disk, or for multiple disks (using the "batch" features). You need to create Snapshot Resources for primary disks and replication. to create these resources, follow this procedure:

- 1 In the Console, click on the primary StoreWay DPA from which you want to replicate one or more disks.
- 2 To replicate a single primary disk, locate this resource in the following location:
StoreWay DPA **name/Logical Resources/SAN Resources**



In this example, the StoreWay DPA mb26300rc6 has a single "SAN Resource" (primary disk) which can be replicated towards another StoreWay DPA.

- 3 Right click on the resource and select **Replication/Enable**.

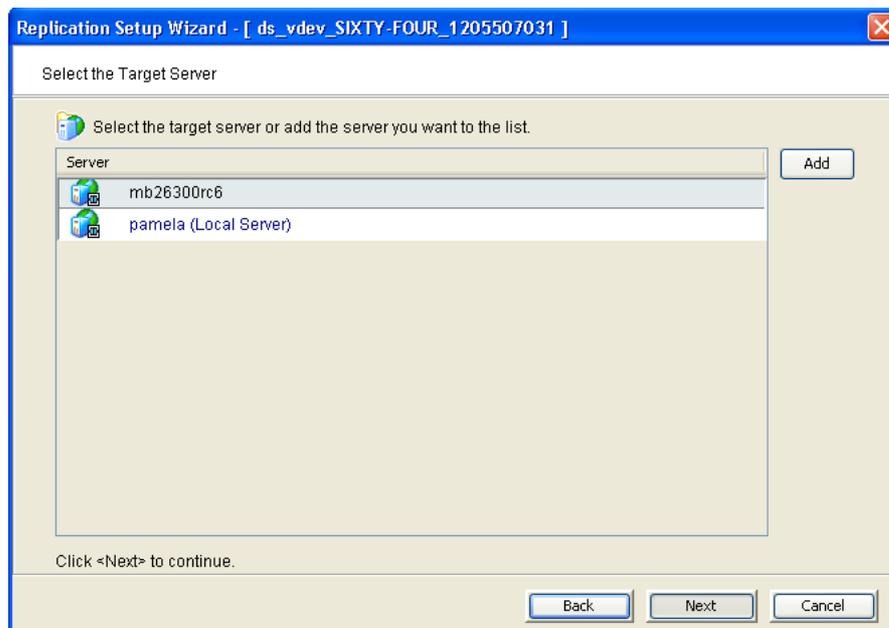
To select all resources under **SAN Resources**, right click on the **SAN Resources** and select **Replication/Enable**.

NOTE: You can also create a group by right-clicking on the Group object and following the wizard to select the resources you wish to replicate.

Configure replication options

The replication wizard opens.

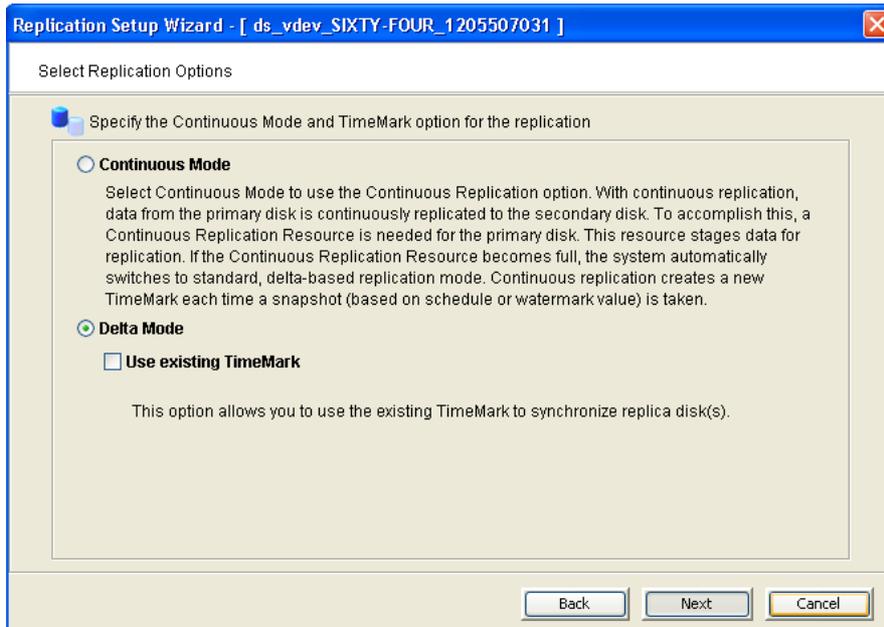
- 1 Select the StoreWay DPA ("target server") which will receive the replicated data.



For a remote replication, select any available StoreWay DPA except the local StoreWay DPA.

If the StoreWay DPA does not figure on the list, click on the **Add** button.

- 2 Confirm the StoreWay DPA name or enter an IP address for the target StoreWay DPA.
- 3 Specify if you want to use the option (Continuous Mode) and if you want to create a TimeMark when the replication starts.



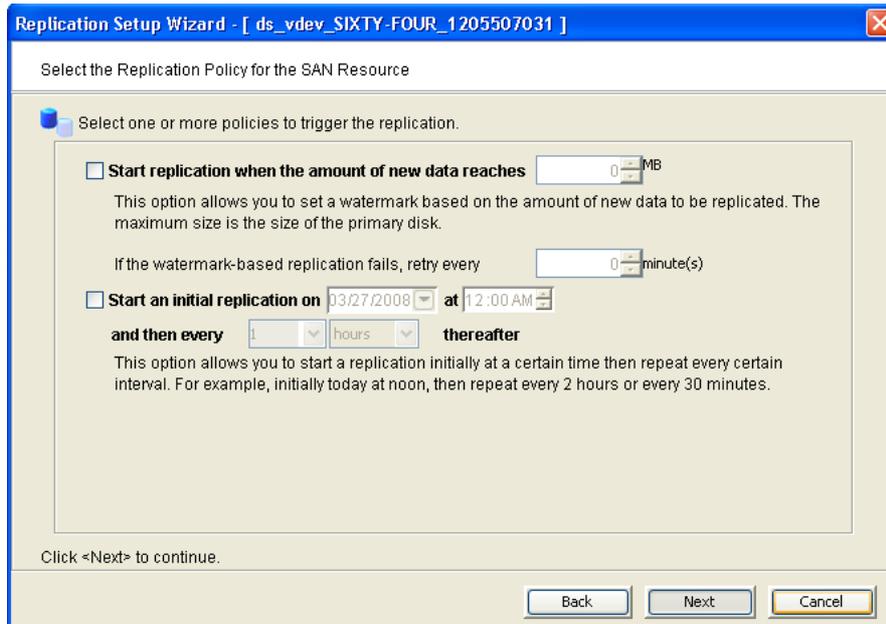
- **Continuous Mode** - At the end of the replication wizard, you will be asked to create "Continuous Replication" resource.
- **Delta Mode - Use existing TimeMark** - ("Delta" replication only.) Select this mode if you want to use the most recent TimeMark of the primary StoreWay DPA.

If you use an existing TimeMark the load on the Snapshot Resource is reduced. However, replicated data will not always be the most recent.

EXAMPLE: Your replication is scheduled for 11:15 and the most recent TimeMark is 11:00. If you have selected **Use Existing TimeMark**, the replication will occur with the 11:00 data even if there were changes made between 11:00 and 11:15.

If you use the option **Use Existing TimeMark**, you need to align the TimeMark schedule with the replications.

- 4 Configure the replication frequency and policy.



You need to select at least one policy but it is possible to have several.

NOTE: The maximum number of delta replication tasks at any one time is 5. If an extra task is programmed, it must wait for the current replication to finish.

Start replication when the amount of new data reaches - If you enter a "watermark" value, when this value is reached, a Snapshot is taken and the data replication begins. If additional data (over and above the "watermark" value) are written to disk after the Snapshot is taken, this data is not replicated until the next replication. If a replication triggered by a watermark fails, the replication will be restarted according to the value entered in the field **If the watermark-based replication files retry every ___ minutes**. To retry, the system must detect the existence of changes to the primary disk. Any future replication triggered by a watermark will not start until there has been a successful replication.

NOTE: If you have chosen to use the replication in continuous mode and you have entered a watermark value, this value must be reachable otherwise few SnapShots will be taken. The replication in continuous mode does not take a SnapShot but you will need a recent SnapShot if you have if you need to promote the replication to a more recent TimeMark in order to retrieve the primary disk from a network replication.

Start an initial replication on mm/dd/yyyy at hh:mm and then every n hours/minutes thereafter - Enter the date and time from which the replication should begin and the frequency of repetition.

If a replication is already in progress when the interval is reached, the new replication request will not be taken into account.

- 5 Choose the replication protocol between TCP or RUDP. If your firewall separates both StoreWay DPA, you can select TCP because this protocol avoids you having to open ports. The default protocol will always be selected according to StoreWay DPA properties.
- 6 Check the **Compression** and/or **Encryption** options.
The **Compression** option improves data transfer during the replication by compressing data flows.
The **Encryption** option secures the data transfer via the network during replication.

Create a SnapShot Resource on the target StoreWay DPA

For each disk to replicate, you need to create a SnapShot Resource which enables you to manage your storage requirements and disk evolutions.

The SnapShot Resource creation wizard opens automatically after the above replication configuration steps.

Why create a SnapShot Resource?

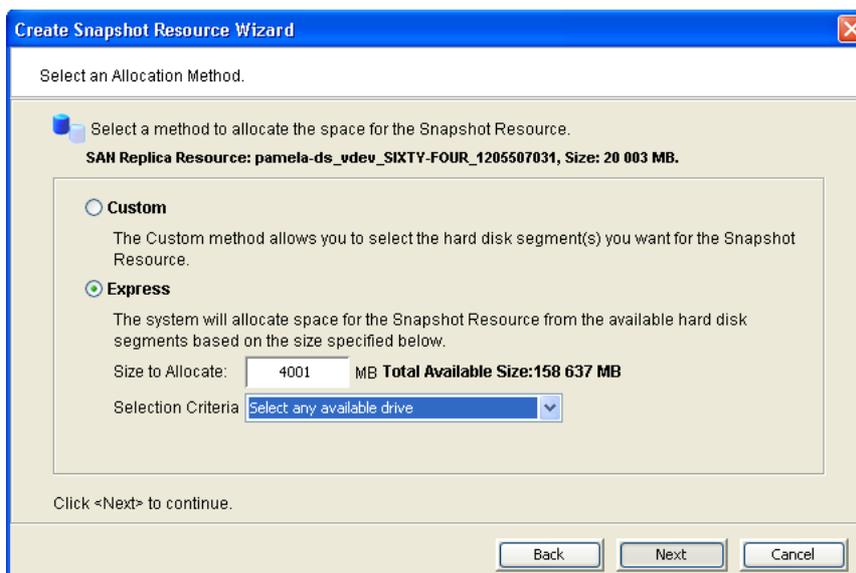
Because old data blocks are moved to the Snapshot Resource as new data is written to the replication (target) disk, the Snapshot Resource needs to be big enough to handle the replicated data volumes.

And since it is not always easy to know how much data volumes will change, it is recommended to enable the SnapShot Resource on a target StoreWay DPA to extend its volume requirements and decide what to do if your Snapshot Resource runs out of space.

By default, the system stops writing data and will stop any new writes to disk when the Snapshot Resource runs out of space and cannot allocate any more.

Once you create your replication configuration, you should not change the hostname of the source (primary) server. If you do, you will need to recreate your replication configuration.

- 1 Select the method used to allocate space for the disk to be replicated.



Custom enables you to select which disk segments to use and the space to allocate to each of these segments.

Express automatically creates the replication using the available disk segments in the ASM space of the target StoreWay DPA.

WARNING: All target data will be erased.

- 2 Enter a name for the replication disk (not case sensitive).

Check the replication status

There are several ways to check replication status:

- > The **Replication** tab on the primary disk displays information about a specific resource.
- > The **Incoming** and **Outgoing** objects under the Replication object display information about all replications to or from a specific server.
- > The **Event Log** displays a list of replication information and errors.
- > The **Replication Status Report** provides a centralized view for displaying real-time replication status for all drives enabled for replication.

Replication Status Report

The **Replication Status Report** can be run from the **Reports** object. It provides a centralized view for displaying real-time replication status for all drives enabled for replication. It can be generated for an individual drive, multiple drives, source server or target server, for any range of dates.

This report is useful for administrators managing multiple servers that either replicate data or are the recipients of replicated data. The report can display information about existing replication configurations only or it can include information about replication configurations that have been deleted or promoted (you must select to view all replication activities in the database).

Set global options

You can set global replication options that affect system performance during replication. While the default settings should be optimal for most configurations, you options can adjust the settings for special situations.

To set global replication properties for a server:

- 1 Right-click on the server and select **Properties**.
- 2 Select the **Performance** tab.

Default Protocol - Select the default protocol to use for replication jobs.

Timeout replication after [n] seconds - Timeout after inactivity. This must be the same on both the primary and target replication servers.

Throttle - The maximum amount of bandwidth that will be used for replication. This parameter affects all resources using either remote or local replication. Throttle does not affect manual replication scans; it only affects actual replication. It also does not affect continuous replication, which uses all available bandwidth. Leaving the **Throttle** field set to 0 (zero) means that the maximum available bandwidth will be used. Besides 0, valid input is 10-1,000,000 KB/s (1G).

Enable Microscan - Microscan analyzes each replication block on-the-fly during replication and transmits only the changed sections on the block. This is beneficial if the network transport speed is slow and the client makes small random updates to the disk.

Tune replication parameters

You can run a test to discover maximum bandwidth and latency in order to optimize parameters remote replication.

- 1 Right-click on a server under **Replication/Outgoing** and select **Replication Parameters**.

- 2 Click the **Test** button to find the maximum bandwidth and latency numbers.
If you know the numbers, you can manually enter them. These values are used to automatically set internal parameters that will optimize replication.
These parameters will take effect for the next new replication session.

Promote the replicated disk to a primary disk

The replicated disk is only used if you need to retrieve data after a major incident on one of your sites where one appliance is damaged, out of order or destroyed.

Assign Clients to the replica disk

You can assign Clients to the replica disk in preparation for promotion or reversal. Clients will not be able to connect to the replica disk, the Client's operating system will not see the replica disk, and the SAN Client Monitor will not see the device listed until after the promotion or reversal. After the replica disk is promoted or a reversal is performed, you can restart the SAN Client or rescan for new devices on the SAN Client Monitor to see the new information and connect to the promoted disk.

Assign Clients to the replica disk

- 1 Right-click on an incoming replica resource under the Replication object and select **Assign**.
- 2 Select the Client to be assigned and assign the appropriate access rights. If the Client you want to assign does not appear in the list, click the **Add** button.
- 3 Confirm all of the information and then click **Finish** to assign the Client.
- 4 Switch Clients to the replica disk when the primary disk fails

Because the replica disk is used for disaster recovery purposes, clients do not have access to the replica. If a disaster occurs and the replica is needed, the administrator can promote the replica to become the primary disk so that clients can access it. The **Promote** option promotes the replica disk to a usable resource. Doing so breaks the replication configuration. Once a replica disk is promoted, it cannot revert back to a replica disk.

You must have a valid replica disk in order to promote it. For example, if a problem occurred (such as a transmission problem or the replica disk failing) during the first and only replication, the replicated data would be compromised and therefore could not be promoted to a primary disk. If a problem occurred during a subsequent replication, the system will use the data from the Snapshot Resource to recreate the replica from its last good state.

NOTE: You cannot promote a replica disk while a replication is in progress.

NOTE: If you are using continuous replication, you should not promote a replica disk while write activity is occurring on the replica.

- 1 In the ASM Console, right-click on an incoming replica resource under the **Replication** object and select **Replication/ Promote**.
- 2 Confirm the promotion and click **OK**.
- 3 After promoting a replica of a NAS Resource, the folder(s) of the promoted NAS Resource may not be displayed. To display the folder(s), right-click on the specific NAS Resource and select **Refresh**.
- 4 Assign the appropriate Clients to this resource.
- 5 Rescan devices or restart the Client to see the promoted resource.

TimeMark and TimeView

The **TimeMark Copy** enables you to recreate a real permanent and independent disk since the start of all TimeMarks.

"TimeMarks" are images of a set moment of a protected disk. They enable you to manage multiple images of the same "timestamped" disk. If you need to retrieve a deleted file or return to a point in time prior to data corruption, you can retrieve and restore the disk in line with the existing TimeMarks.

The TimeMark takes incremental Snapshots of modified data and keep only these modifications which means that the Snapshot Resource represents a small part of the complete disk

Configure TimeMarks

You need a Snapshot Resource for the logical resource you are going to configure. If you do not have one, you will create it through the wizard.

- 1 Right-click on a SAN Resource and select **TimeMark/Enable**.
- 2 Determine how often TimeMarks should be created.

ASM allows you to schedule periodic TimeMarks.

EXAMPLE: It is possible to create a TimeMark every hour, giving you the ability to restore the disk content back to a known good state with hourly granularity.

In order for a TimeMark to be created, you must select at least one policy. Otherwise, you will have enabled TimeMark, but not created any. You will then need to manually create them using **TimeMark/Create**.

If you enter a value in the **Schedule to create a TimeMark every** field, a new TimeMark will be created in n hours/minutes. If you leave the Create the first TimeMark in field set to zero, the first TimeMark will be created as soon as the wizard completes.

NOTE: The **Create a TimeMark everyday at** field uses 24-hour clock (00:00 - 23:59), where 00:00 represents midnight.

The maximum number of TimeMarks that can be maintained is 256. The maximum does not include the Snapshot images that are associated with TimeView resources. Once the maximum is reached, the earliest will be deleted.

- 3 Confirm that all information is correct and then click **Finish** to enable TimeMark. You will now have a TimeMark tab for this Resource.

Check TimeMark status

You can see a list of TimeMarks for this virtual drive, along with your TimeMark policies, by checking the **TimeMark** tab.

- > Right-click on the virtual drive and select **Refresh** to update the information on this tab.
- > To see how much space TimeMark is using, check the **Snapshot** tab.

Mount a TimeView

TimeView allows you to mount a TimeMark as a virtual drive. Use TimeView if you need to restore individual files from a drive but you do not want to rollback the entire

drive to a previous point in time. Simply use TimeView to mount the TimeMark and then copy the files you need back to your original virtual drive.

- 1 Right-click on the virtual drive and select **TimeMark/ TimeView**.
- 2 Highlight the TimeMark that you want to mount.
- 3 Enter a name for the new virtual drive and click **OK** to finish.
- 4 Assign the TimeView to a client.

At any time, if you need to map a different TimeView to the same client, you can right-click on the TimeView and select **Remap**.

Chapter 5. Glossary

Block mode replication

The block mode replication module is deployed on a StoreWay DPA to perform a replication via the network of protected data in the StoreWay DPA ASM space.

Block mode replication (Data Center)

The Data Center block mode replication module is deployed on a StoreWay DPA to receive the block mode replication externalized by another StoreWay DPA.

Block mode replication (Client module)

The Client module for replication in block mode is deployed on a StoreWay DPA to perform network replications in block mode on the ASM space to the ASM space of a second StoreWay DPA.

eDisk

The term eDisk refers to the logical space reserved for network replications or eDRP from a StoreWay DPA equipped with the NExt Client module. The eDisk is situated in the eVolume space of the StoreWay DPA equipped with the NExt Data Center module. Each eDisk is designated by a name and a password.

eDrive

The term eDrive refers to the logical drive which is dedicated to network replications from a NExt Client. The eDrive performs the transfer of data over the network to the dedicated disk space for this NExt Client module to the remote StoreWay DPA (NExt Data Center).

The StoreWay DPA NExt Client module is an appliance dedicated to network replication and as such only have a single replication drive: the network drive. This StoreWay DPA is typically located close to the primary data it needs to protect.

eVolume

The term eVolume refers to the space dedicated to the centralization of network replications on a StoreWay DPA equipped with the Data Center module. The eVolume space is the global space that can be allocated to network replications. This space will be divided into specific eDisks reserved for each StoreWay DPA equipped with the NExt Client module.

A StoreWay DPA with the Data Center module has the capacity to externalize eDisks to tape by declaring an "eDisk - NExt Data Center" application and by selecting the eDisk(s) to externalize.

File mode replication (NExt Data Center)

The NExt Data Center is the Data Center module for file mode replications deployed on a StoreWay DPA to receive network replications performed by the StoreWay DPA NExt

modules. This feature manages the replication of one or several StoreWay DPA. This feature or module is activated on a StoreWay DPA.

File mode replication (NExt Client)

The NExt Client is the Client replication in file mode module deployed on a StoreWay DPA to perform network replication in file mode.

File mode replication technology (NExt)

NExt technology is a StoreWay DPA option enabling you to activate network replications in file mode. It is one additional module to add to the StoreWay DPA and it is packaged as two components: the Client module for network replication in file mode and the Data Center module for replication in file mode.

Network replication (eDRP)

Network Replication is a duplication of the information which is on the StoreWay DPA hard disk. The StoreWay DPA now has three externalization methods:

- > **Standard replication to tape:** full duplication of the contents of the StoreWay DPA disk to tape for the models DPA 10- 100 and DPA 150 - 600.
- > **DRP (Disaster Recovery Plan) mode:** selective replication to tape. The duplication is limited to the disk contents for DPA < 900> models.
- > **Selective network externalization (eDRP):** the replication via a limited duplication of critical data from a NExt Client module to a NExt Data Center module typically located on a separate site.

Network replication or eDRP is identical to StoreWay DPA DRP: it allows you to only externalize critical data for a rapid return to operational activity in the event of a serious incident.

The selectivity of network replication is essential because network capacity limits the volumes which can be externalized to a few GB per day (compared to several hundred GB per hour on tape or DVD).

TimeMarks

"TimeMarks" are images taken at a precise moment of a protected disk. TimeMarks enable you to manage multiple timestamped images of the same disk. If you need to retrieve a deleted file or return to a point in time before data corruption, you can recreate or restore the disk based on existing TimeMarks.

TimeView

A TimeView enables you to mount a TimeMark as a virtual disk. Use a TimeView to restore individual files from this disk without restoring the entire disk. Use the TimeView to mount the TimeMark before copying the files to the primary disk.

Index

A

- alarm
 - modify threshold 22
- allocate
 - space on the NExt Data Center 18
- architecture
 - NExt technology 13
- ASM
 - disk space 21
 - space sizing 31
- ASM Console
 - add StoreWay DPA 34
 - configure 33
 - install 34

B

- batch replication 35

C

- Clients
 - assign new 42
- configuration
 - NExt Data Center 17
- configure
 - ASM Console 33
 - the NExt Data Center space 21
- Console
 - install 34
- create
 - eDisk 19
 - eDisk - NExt Data Center 23
 - eDrive 24
 - externalization profile for data backups to tape 23
 - space to allocate for an eDisk 19

D

- Data Center
 - definition 45
- data storage
 - management 13
- disk
 - promote replicated to primary 42
- disk space
 - ASM 21

E

- eDisk
 - create 19
 - create space to allocate 19
 - definition 45
- eDisk - NExt Data Center
 - create application 23
- eDisk - NExt Data Center application
 - create 23
- eDrive
 - create 24
 - definition 45
- eDRP
 - definition 46
 - replication 14
- Event Log 41
- eVolume
 - definition 45
- externalization
 - standard to tape 14
- externalization profile
 - create for data backups to tape 23

F

- file mode replication
 - technology 13

I

- install
 - ASM Console 34

M

- master
 - select model 9
- mastering
 - appliance 8
- model
 - select when mastering 9
- modify
 - alarm threshold 22
 - eDrive parameters 24

N

- network replication

- overview 46
- NExt
 - definition of the technology 46
- NExt Client
 - definition 45
- NExt Data Center 45
 - allocate space 18
 - configuration 17
 - configure storage space 21
 - configure the port 24
- NExt technology
 - architecture 13

- threshold
 - modify for the alarm 22
- TimeMark 43
- TimeView 43

P

- port
 - configure 24
- primary disk
 - promote to replicate 42
 - replicate 35
- promote
 - primary disk 42

R

- remastering
 - appliance 8
- replication
 - batch 35
 - eDRP 14
 - network protocols 38
 - primary disk 35
 - status 41
 - status report 41
 - steps 31
- RUDP
 - replication protocol 38

S

- sizing
 - ASM space 31
- status
 - replication 41
- status report
 - replication 41
- StoreWay DPA
 - add to ASM Console 34

T

- tape
 - create externalization profile 23
 - externalization 14
- TCP
 - replication protocol 38
- Technology NExt
 - definition 46

Technical publication remarks form

Title:	Replication Module - Version 2.7. Installation and User's Guide
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Reference:	DPA_REPLICATION_V2_7_EN
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