

Application Note

Abstract

This application note describes how to mirror user data from one HA3969U system to another through the Pool Mirror feature, and in the event of a disaster, how to recover data from the target system when data loss occurred on the source system.

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Product Models Covered by This Document

This document applies to the following product models:

• HA3969U Systems

For more information about deduplication (dedupe), compression, virtualization, snapshot, remote replication, ZFS, backup, storage, network-attached storage (NAS), file sharing and WORM (Write Once, Read Many) folder, please read the user manual.

HA3969U Family of Unified Storage Systems

IT environments often feature multiple types of storage infrastructures to accommodate various types of data and achieve different service levels. The scattered boxes for DAS (Direct-Attached Storage), SAN (Storage Area Network), and NAS (Network-Attached Storage) configurations often lead to poor utilization and complicated management.

Storageflex HA3969U brings a thorough solution to simplify the situation: it simultaneously serves file and block-based applications on a unified storage platform, and features easy management, optimized resource utilization, high availability, flexible scalability, and competitive price/performance. In addition, HA3969U offers a comprehensive set of advanced software features at no additional costs. HA3969U systems help businesses effectively meet diverse and changing data demand while staying within budget.



Setting up Pool Mirror and Recovering Data upon Disaster

To mitigate a disaster's impact on business continuity, data loss and downtime have to be minimized. The built-in Pool Mirror function on HA3969U helps users perform real-time data replication between two different systems. When the primary system goes down, the standby system, which features exactly the same data, can seamlessly take over services at minimized downtime.

Mirroring is conducted on storage pool basis. Users need to establish a pool mirror pair between two HA3969U systems (the source and the target) and start syncing user data. When a disaster hits the source system, resulting in the loss of important user data, users can recover the original data from the target system by importing the mirrored pool.

Note: Pool Mirror over WAN is not supported, meaning the feature is only available for HA3969U systems located within the same LAN.

Procedure Overview

- 1. Prepare two HA3969U systems, the source and the target, with identical hard drive configurations.
- 2. Create a pool mirror pair and start syncing user data between the source and the target.
- 3. Monitor the source system to see if a disaster has affected important data.
- 4. If data on the source system requires recovering, disconnect the pool mirror pair.
- 5. Import data from the target system's mirrored pool to the source system to recover the original data.

Step 1: Preparing the Environment

- 1. In the source HA3969U system, specify or create a storage pool that is going to be mirrored to the target system.
- **2.** Prepare the target HA3969U system that meets the following conditions:
 - The target and the source systems must be of the same model.
 - The target and the source systems must contain identical hard drive configuration. For example, if the source storage pool consists of six 1TB hard drives, the target system must be installed with six 1TB hard drives as well.
 - There should be no storage pool created on the target system.
 - The target and the source systems should NOT share the same host name. To configure the host name, log in to the web interface of HA3969U, and then go to *Configuration > System > Host Settings*.
 - Both systems should be connected to the same LAN.

3. Note down the IP address of the target system.

Step 2: Creating a Pool Mirror Pair

1. Log in to the web interface of the source system, go to *Backup > Pool Mirror*, and then click *Add* to create a pool mirror task.

Note: If you want to set the connection timeout period for all your pool mirror tasks, click *Options* to configure the timeout period.

🖃 🌉 Backup		
🔯 Snapshot		
\delta Pool Mirror		
\mathbf{A}		
Pool Mirror		?
Data Mirroring over the Network		
Mirror your data to another NAS system mirrored) or asynchronous (periodical configuring, use the Schedule menu to	n on the network to keep an identical copy of all your data. Choose synchronous (always ly mirrored) depending on your network traffic and the priority of data protection. After o schedule the backup task.	
Pool Local Host L	.ocal Remote Host Remo Auto Split Difference State	
Option	ns Add Edit Delete Start Stop	

- 2. The Pool Mirror configuration window will appear. Specify the parameters:
 - A. Select the storage pool to be mirrored from the *Pool* drop-down menu.

Select the source pool.	
Backup Source	
Pool	Pool-1
Specify the target NAS device.	
Backup Target	
IP Address	
Automatically pause mirror whe	n I/O busy

B. Enter the IP address of the target system in the *IP address* field, and select or deselect the checkbox to decide whether to pause ongoing mirroring tasks when the source system is busy with other I/O operations.

Select the source pool.	
Backup Source	
Pool	Pool-1
Specify the target NAS device.	
Backup Target	
IP Address	192.168.5.3
Automatically pause mirror whe	n I/O busy

C.

Schedule the mirror tas	sk.
Schedule your backup task.	
Schedule	
Real-Time Backup	
Scheduled	
Settings	
Sync Duration :	Until Completion
	Hours
Period:	● Daily at 00 ▼ : 00 ▼
	Customize

- **Real-time backup:** Mirroring will occur continuously. Note that while this option is the safest of all, it consumes system resources and thus might lead to performance degradation.
- Backup daily at: Mirroring will occur on a daily basis at the specified time.
- **Customize:** Allows users to customize mirroring schedule. For more details on this option, refer to the Appendix section at the end of this document.
- **3.** Click Next to view the summary of the pool mirror schedule. Click *Back* to modify or *OK* to confirm.

Edi	t Schedule	×
	Click Back to modify or OK to confirm the sched	duled backup task.
	Schedule Type:	Mirror
	Task:	Pool-1
	Period:	Daily
	Start Time:	18:20
		Back OK Cancel

4. The new pool mirror task will appear in the list. When the sync process starts, the progress will also be shown in the list.

Name		Directory	Туре 💌	Status	Created on	Descr	iption	
PM_Schedul	ie_20141209_182049	Pool-1001	Mirror	Enable	2014-12-09 19:37:29			
				JL.				
				¥				
Pool	Local Host	Local Volume	Remot	e Host Remot	e Volume	Auto Split	Difference	State
Pool-1	NAS3016 2 A	Slot 1	NAS30	16 1 A Slot 1	, volume	Enabled	97.08%	syncing
Pool-1	NAS3016 2 A	Slot 2	NASSO	16 1 A Slot 2		Enabled	97.11%	syncing
Deel 1	NACODIC_2_A	01012	NAGO	10_1_A 01012		Enabled	93.62%	syncing
P001-1	NA55010_2_A	5101.5	NAS3U	NO_1_A SIOUS		Enabled	00.5270	syntemy
Pool-1	NAS3016_2_A	Slot 4	NAS30	I16_1_A Slot 6		Enabled	93.57%	syncing
Pool-1	NAS3016_2_A	Slot 7	NAS30	116_1_A Slot 9		Enabled	93.67%	syncing

Step 3: Recovering the Source Data from the Target System

1. If you suspect a disaster might have hit the source system, check the delta (differences) between the source HA3969U system and the target HA3969U system in the Pool Mirror list. If the percentage value shows there is a big difference between the source and the target systems, it is very likely that the source data might have been damaged. Click *Explorer* at the top-right corner and navigate to the pool to see if the original data has been damaged.

		LOCE VOLUME	Remote Host	Remote Volume	Sync	Difference
P004-1	NA83220	81011	NV83230	81011	yes	86.5%
1004-1	NA53229	5612	NA53230	5612	yis	05.54%
1-400	NA\$3220	Sieta	NA\$3238	Siet3	yea	84.51%
00-1	NA83220	Sigt 4	NA83230	Stat 4	yes	84,51%
004-1	NA83220	8465	NA83230	8015	yes	84.54%
00-1	NA53220	Siet 6	NA53230	Set6	yea	94.52%
ool-1	NA\$3220	Slet7	NA\$3230	Slet7	766	84,51%
001-1	NA83220	Siet8	NA83230	81418	765	84,53%
		¥	,			
			Char			di Home
			Shor	ttut E	explorer	Home
Explorer VolumeiFoldenFile Managemi Add. delete. or upload files thr	ent ough this explore	rr window. Use the sid	Shor	Velcome admin	explorer	Harne
Explorer VolumerFolder/File Managem Add, delete, or upload files thr	ent ough this explore	r window. Use the sid	Shor Shor debar to expand the w	tcut E Velcome admin olume/file hiera	rchy.	Home
Explorer VolumerFoldenFile Managem Add, delete, or upload files thr Decimal	ent ough this explore F Name	r window. Use the sid	debar to expand the w	tcut E Velcome #dmin olume/file hiera	Last Update	Harme

2. If the source data does need recovering, the existing pool mirror pair must be disconnected first. Log in to the web interface of the source system, go to Backup > Pool Mirror, select the pool mirror pair, and click the Delete button to disconnect the link between the source and the target systems.

Note: Disconnecting the link between the paired systems will not delete the actual data.

Local Volum Slot 1 Slot 2	- Rem N#5 1985	te Hoet Rem 230 Slot 1 230 Slot 1	ote Volume	Syme no	Ofference 0.0%
Local Volumy Dot 1 Biol 2	- Res 1945	the Host Remu	ole Volume	Sync no	Differenc 0.0%
Local Volum Stot 1 854 2	Rem NASI NASI	te Host Renv 230 Sid 1 230 Sid 2	ole Volume	Sync	Difference 0.0%
Local Volum Slot 1 Slot 2	Ren NAS	te Host Rem 230 Stof 1 230 Stof 2	ote Volume	Sync no	Difference 0.0%
5kd.1 8kd.2	NAS: NAS:	230 Siot 1 230 Siot 2		no	0.0%
80.2	NA33	230 5642			0.004
AL. 4			۶	90	
Sect. 7	NAS)	290 Stot 9)	60	0.0%
Slot 4	NAS:	230 Slot 4	4	no	0.0%
5568.5	N433	230 500 5	,	00	0.0%
Sect	1483	280 Skot 6)	40	0.0%
Slat 7	NASI	230 Siloi 7	1	mo	0.0%
Slot 8	NAS:	230 51010	3	190	0.0%
	Stat 4 Stat 5 Stat 5 Stat 7 Stat 8	Stat4 N433 Stat5 N433 Stat5 N433 Stat7 N433 Stat7 N433 Stat8 N453	Side 4 NAS3220 Side 4 Side 5 NAS3220 Side 5 Side 8 NAS3220 Side 7 Side 7 NAS3220 Side 7 Side 8 NAS3220 Side 7 Side 8 NAS3220 Side 7 Side 8 NAS3220 Side 7	Stat4 N453230 Stat4 Stat5 N453225 Stat5 Stat5 N453230 Stat6 Stat7 N453226 Stat7 Stat6 N453230 Stat6 Stat7 N453226 Stat7 Stat6 N453230 Stat6	Side4 NuR32220 Side4 no 05kt5 NuR32250 Stot5 Hold 20x8 NuR32220 Stot6 no Sixt7 NuR32220 Stot7 no Sixt8 NuR32220 Stot7 no Sixt8 NuR32220 Stot7 no Sixt8 NuR32220 Stot7 no

3. Go to *Storage > Pool*, select the pool that needs recovering, and click *Import*.

🗆 🗐 Storage					
😑 Poo	bl				
📋 Vol	ume				
	$\mathbf{\Psi}$				
Pool					?
Virtual Storag	e Pools				
Create and m individual dis	ianage virtual storag k drives. Pool capaci	e pools. Virtual storage ity can be expanded whe	bools allow you to consi n necessary by adding i	olidate storage be more drives witho	yond the physical limitations of ut reformatting or repartitioning.
Name	Used Space	Free Space	Utilization	Status	Deduplication Ratio
Pool-1	OMB	220GB	0.00%	Online	0%
	Create	Expand	Edit Delete	Details	Import Export

4. The mirrored pool should appear in the list of available pools. Select the pool, double-check the member drive configuration in the *Member Drives* section, and click *Import* to start importing the mirrored backup data into the source pool.

Name	ID	RAID Leve	l Status
Pool-1	4474955391444740794	RAID 6	ONLINE
Member Drives —			
Slot 1		34.2GB	ONLINE
Slot 2		34.2GB	ONLINE
Slot 3		34.2GB	ONLINE
Slot 4		34.2GB	ONLINE
Slot 5		34.2GB	ONLINE
Slot 6		34.2GB	ONLINE
Slot 7		34.2GB	ONLINE
Slot 8		34.2GB	ONLINE

- 5. When the import process is complete, check whether the source pool is fully recovered:
 - **A.** Check the pool list to confirm that the original pool has been restored.

Name	Used Space	Free Space
Pool-1	OMB	1.77TB

B. Also, click *Explorer* at the top-right corner and navigate to the source pool to check the contents of the imported pool.

				Charles and the second	Explorer	di Home
				Welcome admi	n 👍 Logout	Links 🔻
Explorer						?
Volume/Folder/File Management						
Add, delete, or upload files through t	his explorer wind	ow. Use the sid	lebar to expand	the volume/file hier	archy.	
	1/Pool-1			· · · · · · · · · · · · · · · · · · ·		
UserHome	Name	Available	Used	Туре	Last Update	
	🚺 UserHome	220GB	31KB	folder	2012-08-01 15	:05

Appendix: Customizing Pool Mirroring Schedule

1. If the *Customize* option has been selected when scheduling a pool mirror task, the *Edit Schedule* window will appear.

Schedule			
🔍 Real-Time B	Эаскир		
Scheduled	qs		
Sync Du	- iration :	 Until Completion Hours 	
Period:		 Daily at 00 ▼ : 00 ▼ Customize 	
		$\mathbf{\Psi}$	
Edit Schedule			×
Select the sou	rce directory, enter a des	scription, and set the backup time	9.
Directory	Pool-1		
Name	PM_Schedule_201412	09_234324	
Description			
Start Time	Daily T 23	3 ▼ : 43 ▼	Advanced
			Next Cancel

- 2. Specify the basic options:
 - **A.** Enter the optional description in the *Description* field to give the schedule a short description.
 - **B.** Choose any of the following from the *Start Time* drop-down menu to specify when to repeat a scheduled task:
 - Daily: The task will be scheduled to run every day.
 - *Weekly*: The task will be scheduled to run on specified days of a week. After this option is chosen, select the checkboxes in the Schedule Weekly Tasks to specify the day(s) you want.

Directory	Pool-1				
Name	PM_Schedul	e_2014120	9_234324		
Description					
Start Time	Weekly	• 23	▼ : 43 ▼		Advanced
Sched	jule Weekly Ta	sks ——			
🔲 Mo	n 🗆	Tue	Wed	🔲 Thu	🔲 Fri
Sa Sa	t 🗆	Sun			

• *Monthly*: The task will be scheduled to run on the selected day of a month. After this option is chosen, do the following:

1. Choose the time from the drop-down menus next to *Start Time*.

2. Select *Day____of the month(s)* and choose a date ranging from *01* to *31*, or select *The_____of the month(s)* and choose from the drop-down menus to specify a day as the start date (such as *first Monday*).

3. Click *Select Month* and select the month(s) in which the task will be scheduled to run. By default, all months are selected.

Select the sou	rce directory, ente	r a description, a	nd set the backup tim	e.
Directory	Pool-1			
Name	PM_Schedule_2	0141209_23432	4	
Description				
Start Time	Monthly •	23 🔻 : 4	13 ▼	Advanced
Scheo	lule Monthly Tasks			
💿 Day	01 🔻 of the	month(s)		
🔍 The	first 🔻 M	onday 🔻	of the month(s)	
Select	Month			
	-			
🗹 Select All				
January May	February	March	✓ April	
September	Cctober	November	December	

C. Specify the hour and minute of a day to run the task using the two drop-down menus next to *Start Time*.

Start Time Monthly 🔻 23 🔻 : 43 🔻	Advanced
----------------------------------	----------

3. Click *Advanced* to set the advanced scheduling options.

Schedule - Advanced Settings	ĸ
Start Date 2014-12-09	
End Date	
Repeat	
Every: 10 V Minutes V	
Until: Time: 00 Until: 00 Unti	
Ouration: 00 ▼ Hour(s) 00 ▼ Minute(s)	
ОК]

A. To set the start date and end date, click in the *Start Date* and *End Date* fields, and then choose the dates from the calendar pop-ups.

Schedule - Advanced Settings	i de la constante de la constan	×
Start Date	✓ December, 2014 ►	
🕑 End Date	wk Mo Tu We Th Fr Sa Su 49 1 2 3 4 5 6 7	
- 🗹 Repeat	50 8 9 10 11 12 13 14 51 15 16 17 18 19 20 21]
Every: 10 V	52 22 23 24 25 26 27 28 1 29 30 31 1 2 3 4 2 5 6 7 9 0 10 11	
Until: 💿 Time,-		
Ouration	on: 00 ▼ Hour(s) 00 ▼ Minute(s)	
	ОК	

B. The *Repeat* section, once selected, allows you to configure the duration of the backup job.

🗹 Rep	eat —		
Every:	10 V N	Minutes 🔻	
Until:	Time	e: 23 V : 08 V	
	Oural	ation: 00 ▼ Hour(s) 00 ▼ Minute(s)	

- *Every*: Depending on your choices, the mirroring task will be scheduled to run every few hours or minutes.
- *Until*: Specifies when to stop an ongoing mirroring task. If *Time* is selected, the task will run until the specified moment. If *Duration* is selected, the task will run for the specified period of time.
- **4.** Click *Next* to view the summary of your mirroring schedule. Click *Back* to modify or *OK* to confirm.

Edit	Schedule		×
	Click Back to modify or OK to confirm the schedul	led backup task.	
	Schedule Type:	Mirror	
	Task:	Pool-1	
	Period:	Daily	
	Start Time:	18:20	
		Back OK Cancel	

5. The new pool mirroring schedule will appear in the list.

-						
Name	Directory	Туре 💌	Status	Created on	Description	
PM_Schedule_20141209_182049	Pool-1001	Mirror	Enable	2014-12-09 19:37:29		