

StarPort iSCSI and ATA-over-Ethernet Initiator: Using Mirror (RAID1) disk device



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Guide

Introduction

StarPort Mirror device is a virtual RAID-1 array based on 2 independent disks (mirrors), the data is written simultaneously on both mirrors what makes the device fault tolerant and protected from data loss in cases of hardware or software fault, network faults and power loss.

Using StarPort you can build a mirror (RAID-1) device based on a wide variety of devices and sources. Targets can be Local, iSCSI and FC (FCoE and AoE in upcoming version) in any combination. In the event of the failure of the Primary mirror the duplicate copy of all data maintained on the secondary mirror and can be used without any downtime. If needed, the broken mirror can be hot swapped without downtime.



Diagram 1. illustrates the RAID-1 based on 2 remote targets.





Diagram 2. Illustrates a RAID-1 built using one local image file device and a remote target.



Installation and configuration

Open StarPort console by double clicking the StarPort icon in the system tray.



Press the **Add Device** button to continue.



The installation wizard window will appear.

Welcome to new device insta	llation wizard	×
	Welcome to the StarPort devices installation wizard	
	This wizard helps you:	
	Create a new Local RAM disk device	
	Mount a remote iSCSI device	
	Create a new Virtual DVD device	
	 Mount a remote AoE (ATA-over-Ethernet) device 	
	 Mount a virtual hard drive within a regular disk file 	
	Create a new RAID -1 Mirror device	
	To continue, click Next.	
	< Back Cancel	



Select RAID - 1 device option.

Pleas	e select type of c	levice you wish t	:o create.	
Devid	a type:			
ΟL	cal <u>R</u> AM disk dev	ice		
O R	emote įSCSI devid	e		
ΟV	tual <u>D</u> VD device			
O R	emote <u>A</u> oE (ATA-	over-Ethernet) (device	
O Ir	hage File device			
• R	AID - 1 device			



Select **Create new device** option or **Mount existing device** to mount the device you have created before.

AID - 1 required action Please specify your activity type t	o add RAID - 1 c	levice		<u> XX</u>
Choose mount type:				
• Create new device				
C Mount existing device				
	< Ba	ck [Next >	Cancel



Specify a meaningful device name and its size in megabytes.

New RAID - 1 device parameters Please specify parameters for new RAID - 1 device Device name: storage Size in MBs: 5120	ce mount type			j
Device name: storage Size in MBs: 5120) - 1 device pa specify parame	meters s for new RAID - 1 device		
Size in MBs: 5120	e name: stor	e		
	MBs: 512			
	,			
< Back Next > Cancel		< <u>B</u> ac	:k <u>N</u> ext >	Cancel



Specify first mirror options, the mirror can be any local virtual disk of sufficient size. In case the mirror is a remote iSCSI device you have to specify target server's IP address and then select the virtual disk from the list. If the desired disk is not appearing in the list click the **Refresh** button.

Please specify parameters for Mirror 1 (RAID - 1) device	Sec.
	- A A A A A A A A A A A A A A A A A A A
O Local Image File	
Image File;	Browse
Create new file	
• Remote iSCSI device	
Taget address: 192.168.1.234 Port: 3260	
Device name:	
mi	•
Refresh list	
< Back	Cancel



Specify the second mirror disk location the same way as the first mirror.

ror (RAID -1) parameters Mirror 2 (RAID - 1) paramete Please specify parameters for	rs [•] Mirror 2 (RAID) - 1) device		<u> </u>
🔿 Local Image File				
Image File;				Browse
Create new file				
Remote iSCSI device				
Taget address: 192.168	3.1.106	Port:	3260	
Device name:				
m2				•
Refresh list				
		< <u>B</u> ack	Next >	Cancel



Select the initialization method for your RAID -1 device

D -1	device mirrors data initialization
Mirro F	ors (RAID - 1) initialization method Nease specify mirrors (RAID - 1) initialization method
F	lease select mirrors initialization method
(Synchronize mirrors data
(Clear mirrors (WARINING: All data will be deleted)
	Carel Next > Carel



You have successfully installed the RAID -1 device.

Device Installation Complete
Completing the Add Device Wizard The following virtual device was installed: Image: Structure Image: Structure
< <u>B</u> ack Finish Cancel

Press the **Finish** button to close the wizard window.



After closing the wizard window the StarPort console will look similar to the screenshot below.

🚯 StarPort										_ 🗆 🗙
<u>File View D</u>	evice <u>H</u> elp									
Evit	Sefrech	Preferences	D bba	+ evice	Remove		Rein		About	
	Kontosh	Thereforences		Vendor ID	Product		ricip F	Revision	Tupe	Statue
	WISHMASTER	sk devices		Tondonio	110000				1300	
	Remote iSCS	I devices								
	Sirtual DVD d	evices								
	Image File de	vices								
	Y AoE devices									
· · · · ·	RAID - 1 Mirr	or devices								
			10	ROCKET	RAID1 D	ISK	00	001	Disk	Connected
Ready										1.

Close the StarPort console.



Open computer management by going Start -> Administrative Tools -> Computer Management.

In the Computer management window select Storage -> Disk Management An Initialize Disk Window will appear.

😓 Computer Management			<u>_ × </u>
File Action View Help			
🗢 🔿 🚺 🖬 😰 🗊	X 📽 🖻 🔍 🞚		
Computer Management (Local)	Volume Layo	ut Type File System Status Ca	5
F F	HDD1 (C:) Simp	e Basic NTF5 Healthy (System, Boot, Page File, Active, Crash Dump, Primary Partition) 97 Disk Ma	lanagement 🔺
Event Viewer Event Viewer Shared Folders Model Users and Groups Gevice Manager	שטחיש (ט;) איז אוויב	Moi	ore Actions
🖃 🔮 Storage		Initialize Disk	
Disk Management		You must initialize a disk before Logical Disk Manager can access it.	
		Select disks:	
		Disk 1	
×>		Use the following partition style for the selected disks:	

Press the **OK** button to continue



Right click on the new volume and select the **New Simple Volume...** option.

🛃 Computer Management								
File Action View Help								
🗢 🔿 🔰 🖬 👔 🖬 👔	ef 😼							
Computer Management (Local)	Volume	Layout	Туре	File System	Status	Ca	Actions	
🖃 🎁 System Tools	HDD1 (C:)	Simple	Basic	NTFS	Healthy (System, Boot, Page File, Active, Crash Dump, Primary Partition)	97	Disk Management	
 Task Scheduler Task Scheduler Shared Folders Shared Folders Local Users and Groups Device Manager Storage Storage Disk Management Services and Applications 		Simple	Basic	NTFS	Healthy (Primary Partition)	13	More Actions	,
	Basic 232,88 GB Online	H 97 He	DD1 (C 7,66 GB M ealthy (S	:) NTFS ystem, Boot	, Page File, Active, Crash Healthy (Primary Partition)			
	Disk 1 Basic 5,00 GB Online	5, Ur	,00 GB nallocate	d New New	Simple Volume			
	DVD (E:)	0		Prop	erties			
	No Media	d 📕 Prin	nary partit	Help				



A New Simple Volume Wizard will appear.

New Simple Volume Wizard		×				
	Welcome to the New Simple Volume Wizard					
	This wizard helps you create a simple volume on a disk.					
	A simple volume can only be on a single disk.					
	To continue, click Next.					
	< Back (Next>) Cance	<u>;</u>				



Specify the Volume size in megabytes.

w Simple Volume Wizard							
Specify Volume Size Choose a volume size that is between the maximum and minimum sizes.							
Maximum disk space in MB:	5117						
Minimum disk space in MB:	1						
Simple volume size in MB:	5117						
	< <u>B</u> ack <u>N</u> ext > Cancel						



Assign a drive letter or path to the new volume.

New Simple Volume Wizard	×
Assign Drive Letter or Path For easier access, you can assign a drive letter	or drive path to your partition.
 Assign the following drive letter: Mount in the following empty NTFS folder: Do not assign a drive letter or drive path 	F T
	< Back Next > Cancel



Specify the format options for the new volume.

New Simple Volume Wizard	×						
Format Partition To store data on this partition, you must format it first.							
Choose whether you want to format this volume, and if so, what settings you want to use.							
© Do not format this volume							
Format this volume with the following settings:							
File system: NTFS							
Allocation unit size: Default							
Volume label: New Volume							
Perform a quick format							
Enable file and folder compression							
< <u>B</u> ack <u>N</u> ext > Cancel							



Review the settings you have selected for the new volume, Press the back button if need to make any changes.

New Simple Volume Wizard		×
	Completing the New Simple Volume Wizard	
	You have successfully completed the New Simple Volume Wizard. You selected the following settings: Volume type: Simple Volume Disk selected: Disk 1 Volume size: 5117 MB Drive letter or path: F: File system: NTFS Allocation unit size: Default Volume label: New Volume Duick format: No To close this wizard, click Finish.	
	< <u>B</u> ack Finish Cancel	

Press the **Finish** button to close the wizard.



After Closing the **New Simple Volume** wizard you will see that the new volume is formatted and ready to use.

🛃 Computer Management							
Eile Action View Help							
🗢 🔿 🔰 🖬 👔	X 📽 🖻 🔍 😼						
Computer Management (Local)	Volume	Layout	Туре	File System	Status	Actions	
System Tools Task Scheduler	HDD1 (C:)	Simple	Basic	NTFS	Healthy (System, Boot, Page File, Active, Crash Dump, Primary Parti	Disk Management	-
Construction of the end of t	New Volume (F:)	Simple	Basic	NTFS NTFS	Healthy (Primary Partition) Healthy (Primary Partition)	More Actions	,
	Disk 0 Basic 232,88 GB Online	HDD1 (C: 97,66 GB N Healthy (Sy) TFS /stem, E	300t, Page File	HDD2 (D:) 135,23 GB NTF5 Healthy (Primary Partition)		
	Disk 1 Basic 5,00 GB Online	New Volu 5,00 GB NT Healthy (Pr	ne (F:) FS imary P) artition)			
	DVD (E:) No Media						
	Unallocated N	⁹ rimary partiti	on				



Data Recovery

Replacing failed mirror

Right click on the device and select **Properties**, go to the **Device status** tab. The device properties window shows that the both mirrors are valid and synchronized.

🚯 StarPort		×
File View Device Help		
Exit Refresh General Dev	e properties	About
WISHMASTER Local RAM disk Covice statu Mirror 1: Address: 19 State: Valid Mirror 2: Address: 19 State: Valid Mirror 3: State: Valid Active mirror Mirrors are	ROCKET RAID1 DISK 0001 s: 92.168.1.234:3260 m1 92.168.1.106:3260 m2 or: 1 synchronized	n Type Status Disk Connected
	OK Cancel	Apply
Ready		11.

Press the **OK** button to close the window.



If active mirror fails, StarPort automatically switches to the second one. As a result - no system downtime.

😽 StarPort									<u>×</u>
File View Devic	ce Help								
Evit	Defrech			vice D		g Bound Volumes	() Help	Obout	
	Kerresin	FIGICICICS	TID	Vendor ID	Product ID		Bevisio		Status
wI	SHMASTER		110	Toridor ib	1 Iodalot Ib		1101100	1 1900	
	🍉 Local RAM disł	< devices							
	Remote iSCSI	dev StarPort					×		
	일 Virtual DVD de	vice 🗼	Active mirro mirror swite	or of StarPort hed to mirror	RAID1 device #2.	e 'storage' failed.	Active		
6	🍃 Image File dev	/ices							
	AoE devices						ок		
	📄 RAID - 1 Mirro	r devices							
			10	ROCKET	RAID1 DISK	:	0001	Disk	Connected
Ready									1.

Press the **OK** button to close the window.



When one of the mirrors fails the device icon looks like on the screenshot below.

뤗 StarPort										_0×
<u>File View D</u> evice	Help									
Exit	Refresh	Preferences	Add De	evice	Remove	9 Bound Volumes	He		About	
			TID	Vendor ID	Product	tID		Revision	Туре	Status
WISH	MASTER Local RAM dis Remote ISCSI	ik devices [devices evices		3						
	Image File de AoE devices	vices								
	RAID - 1 Mirro	or devices								
	1		10	ROCKET	RAID1 D	ISK		0001	Disk	Connected



Device status shows the detailed information about which mirror has failed and the synchronization status.

🛟 StarPort			
File View Device Help			
Exit Refresh	RAID - 1 device properties	C () About	
WISHMASTER Local RAM disk Remote iSCSI Virtual DVD de Image File dev AoE devices	10, ROCKET RAID1 DISK 0001 Device status: Mirror 1: Address: 192.168.1.234:3260 m1 State: Invalid Mirror 2: Address: :192.168.1.106:3260 m2 State: Valid Active mirror: 2 Mirrors are not synchronized	n Type	Status
Ready	OK Cancel Apply	Disk	Connected



The failed mirror can be replaced with a healthy one in this way: Right click on the device.

💮 Sta	arPort					5-7-7-					
File	⊻iew	<u>D</u> evice <u>H</u> elp									
	() Exit	Refresh	Preferences	Add De	vice Rem	Sove Device	9 Bound Volumes	He	e lp	About	
				TID	Vendor ID	Product I	D		Revision	Туре	Status
		WISHMASTER									
		🕋 Local RAM d	lisk devices								
		Remote iSC:	SI devices								
		🤹 Virtual DVD	devices								
		🌍 Image File d	levices								
		AoE devices	;								
		RAID - 1 Mir	rror devices								
		V		🚫 Er	operties		F2		0001	Disk	Connected
				Sy	nchronize						
				Sv	vitch active m	nirror	•				
				Re	place passiv	e mirror					
				📑 Re	emove Device rce Remove	e Device	Del				

Select Change passive mirror option.



Mirror replacement wizard window appears.

Specify the address where the replacement mirror is stored or create a local image file of a sufficient size.

Passive mirror (RAID-1) replacement	
🔿 Local Image File	
Image File;	Browse
🔽 Create new file	
• Remote iSCSI device	
Taget address: 192.168.1.108	Port: 3260
Device name:	
m1new	•
Refresh list	
	Change Cancel

Press the **Change** button to continue.



StarPort informs that the passive mirror is replaced and needs to be synchronized.

🚯 Sta	arPort				2					<u>_ 0 ×</u>
Eile	⊻iew	Device	e <u>H</u> elp							
	() Exit		Refresh	O Preferences	Add Device	Remove Devic	g Bound Volumes		About	
,					TID Ven	dor ID Product	ID	Revision	Туре	Status
		HK-MP7	.ocal RAM dis Remote iSCS) /irtual DVD d m StarPort	sk devices I devices evices Passive mirror of :	5tarPort RAID1	device 'Raid1' cha	inged by user requ	Jest. Device needs to	be synchronize	ed.
Ready										

Press the **OK** button.



You will be prompted if you wish to start synchronization process. During the synchronization the disk will be accessible and functional.

🚯 Sta	arPort										_	
Eile	⊻iew	Device	e <u>H</u> elp									
	() Exit		Refresh	Preferences	Add (ታ Device Rer	nove Device	Bound Volumes	Help) (Dout	
					TID	Vendor ID	Product	D	R	evision Typ	e Status	
			STER .ocal RAM dis Remote ISCSI Virtual DVD de Image File de AoE devices	k devices : devices evices vices	5tarPort	Do you want	to start mirr	ors synchronization	×1 17			
						Yes			000	01 Disk	Connecte	d

Press the **OK** button to start synchronization.



StarPort will inform you that the synchronization process has finished.

StarPort le View Device	Help									
(C) Exit	Contraction Refresh	O Preferences	Add De	vice R	emove	Bound Volume	s H	elp	() About	
			TID	Vendor ID	Product	t ID		Revision	Туре	Status
🖃 🚺 🖉 WISHM	IASTER									
	Local RAM disk	devices								
- ¢-	Remote iSCSI d	levices								
-	Virtual DVD dev	ices StarPort						×		
3	Image File devi	ces								
Ŷ	AoE devices	1	StarPort success.	RAID1 device	e 'storage'	synchronization I	finished wit	h		
-	RAID - 1 Mirror	devici								
00	9						ОК		Disk	Connected
	<u></u>									

Press the **OK** button.



The device is now shown as synchronized.

😚 Sta	arPort									
<u>File</u>	<u>/</u> iew <u>D</u> evice	Help								
(Befrech	Dreferences	Add De	+ wice		Sound Volumer		() Obout	
		Kenesn	Freiences	AUGUDE		Remove		neip		
1000000				TID	Vendor ID	Product	ID	Hevis	sion Lype	Status
	- 🧾 WISHN	ASTER								
	Ritter	Local RAM dis	k devices							
	- (Remote iSCSI	devices							
	- 🔔	Virtual DVD de	vices							
	S	Image File dev	vices							
	Ŷ	AoE devices								
		RAID - 1 Mirro	or devices							
		I		10	ROCKET	RAID1 DI	ISK	0001	Disk	Connected
Ready										//.



Manually switch active mirror and perform synchronization

In case the remote server storing the active mirror needs to be rebooted or disconnected from the network you can manually switch the active mirror to prevent the data loss and mirror desynchronizing.

In the StarPort console right click on the mirror device.



Select **Switch active mirror** menu item and choose the second mirror as active.



StarPort console will inform that active mirror has been changed.

👽 StarPort	- O ×
Eile View Device Help	
Exit Refresh Preferences Add Device Remove Device Bound Volumes Help About	
TID Vendor ID Product ID Revision Type Statu	s
WISHMASTER Local RAM disk devices Remote iSCSI device Virtual DVD devices Image File devices Active mirror of StarPort RAID1 device 'Raid1' switched to mirror #2. CK	
RAID - 1 Mirror devices	
1 ROCKET RAID1 DISK 0001 Disk Conne	cted



Optionally select Synchronize popup menu item. Passive mirror will be synchronized with the active one.

Remember that on previous step we have switched active mirror to the second one. So by selecting Synchronize popup menu item first mirror with be synchronized with the second one that is active.

Right click on the device.

뤗 Sta	rPort										_ 🗆 ×
Eile	⊻iew	<u>D</u> evice <u>H</u> elp)								
	() Exit	Refres	h Preferences	Add D	t evice Ren	nove Device	9 Bound Volumes	Hel	Þ	About	
				TID	Vendor ID	Product I	D		Revision	Туре	Status
		WISHMASTER									
		Cocal RAI	M disk devices								
		C Remote i	iSCSI devices								
		Virtual DV	VD devices								
		🧊 Image Fil	le devices								
		AoE devi	ices								
	: 	RAID - 1	Mirror devices								
		Ş		O Prop	erties		F2	0	001	Disk	Connected
				Sync	hronize						
				Swite	h active mirr	or	•				
				Repl	ace passive n	hirror					
					ove Device		Del				
				Eoro	e Remove De	vice					1.

Select the **Synchronize** menu item.



You will be informed about the synchronization status.

🚯 Sta	arPort								
Eile	View	<u>D</u> evice <u>H</u> elp							
	() Exit	Refresh	O Preferences	Add Device	Remove Device	g Bound Volumes		About	
				TID Vend	lor ID Product I	D	Revision	Туре	Status
	IL TON	WISHMASTER	: devices devices						
		Virtual DVD de	vices						
		AoE devices	r devi	StarPort RAID1	device 'Raid1' sync	hronization finished	with success.	Disk	Connected
Ready									1.



Recreate RAID1 device with 1 existing mirror

Open the New device installation wizard.





Select **RAID-1** device from the list.

Please select type of device yo	ou wish to create.	<i>S</i>
Device type:		
C Local <u>R</u> AM disk device		
C Remote <u>i</u> SCSI device		
C Virtual <u>D</u> VD device		
C Remote <u>A</u> oE (ATA-over-Eth	nernet) device	
C Image File device		
RAID - 1 device		



Select Create new device menu item.

ber device modific type				
RAID - 1 required action Please specify your activity	' type to add RAII	D - 1 device		<u> AA</u>
Choose mount type:				
Create new device				
C Mount existing device				
		([
		< Back	<u>N</u> ext >	Cancel



Specify the device name and size in megabytes.

t type			
i ce parameters arameters for new Ra	AID - 1 device		
storagenew			
5120			
		1	
	t type ice parameters arameters for new R/ storagenew 5120	t type ice parameters arameters for new RAID - 1 device storagenew 5120	t type ice parameters arameters for new RAID - 1 device storagenew 5120



Specify existing mirror as the first one. By default first mirror is active.

rror (RAID -1) parameters Mirror 1 (RAID - 1) parameters Please specify parameters for Mirror 1	l (RAID - 1)) device		
C Local Image File				
Image File:				Browse
Create new file				
Remote iSCSI device				
Taget address: 192.168.1.234		Port:	3260	_
Device name:				
m1				-
Refresh list				
	<u>< B</u>	iack	<u>N</u> ext >	Cancel



Specify new mirror as the second one. By default second mirror is passive.

irror (RAID -1) parameters Mirror 2 (RAID - 1) parameters Please specify parameters for Mirror 2	2 (RAID - 1)) device		
C Local Image File				
Image File:				Browse
Create new file				
Remote iSCSI device				
Taget address: 192.168.1.108		Port:	3260	
Device name:				
m2new				_
Refresh list				
	< <u>E</u>	Back	<u>N</u> ext >	Cancel



Choose Synchronize mirrors data. Passive mirror will be synchronized with the active one.

Please specify mirro	rs (RAID - 1) ir	nitialization r	method		Ś
Please select mirror:	; initialization m	ethod			
Synchronize miri	ors data				
C Clear mirrors (W	ARINING: All d	ata will be d	leleted)		



Wizard informs that the device has been successfully created.

Device Installation Complete					
To close this wiserd, click Einich					
< <u>B</u> ack Finish Cance					

Press the **Finish** button to close the wizard.



You will see the new disk in the StarPort console.

🌎 s	tarPor	t									
Eile	View	Device	Help								
			S efrech	Dreferences				Sound Volumes	() Help		
	LAIC		Kerresir	Freierences		Vandas ID	Deadure		Devisio	- Tues	Chabus
E]	WISH	MASTER			Vendorito	Floud	. ID	nevisio	n Type	Status
		HHH	, Local RAM dis	sk devices							
	Remote ISCSI devices										
		-	Virtual DVD d	evices							
		5	Image File de	vices							
		Y	AoE devices								
	-	- 6	RAID - 1 Mirr	or devices							
			j.		17	ROCKET	RAID1 D	ISK	0001	Disk	Connected
Read	У										1.



Conclusion



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