



**GeoVision**  
**iSCSI/NAS RAID Storage Manager**  
**User Manual**

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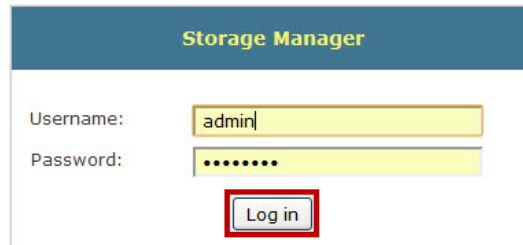
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# Chapter 1.

## Basic and RAID Configuration

### 1.1 Login Storage Manager

1. Open your browser with the IP address of Storage Manager for the URL.
2. The default IP address is 192.168.1.90. The browsers like IE, FireFox, and Chrome are supported.
3. After inputting your username and password in the dialog box below, click **Log in** to login to Storage Manager. Both fields are case-sensitive. The username of the system administrator is "**admin**", and its default password is "**password**".



The image shows a login dialog box titled "Storage Manager". It contains two input fields: "Username:" with the text "admin" entered, and "Password:" with masked characters (dots). Below the password field is a "Log in" button, which is highlighted with a red rectangular border.

4. After a successful login, the following is shown.

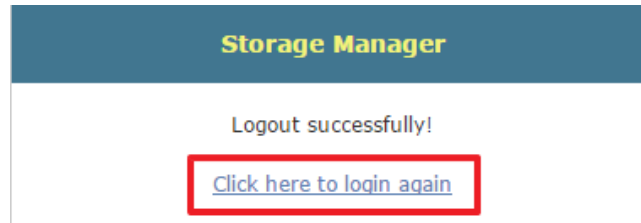


### 1.2 Logout Storage Manager

1. Click **Logout** at the upper-right corner of the page.



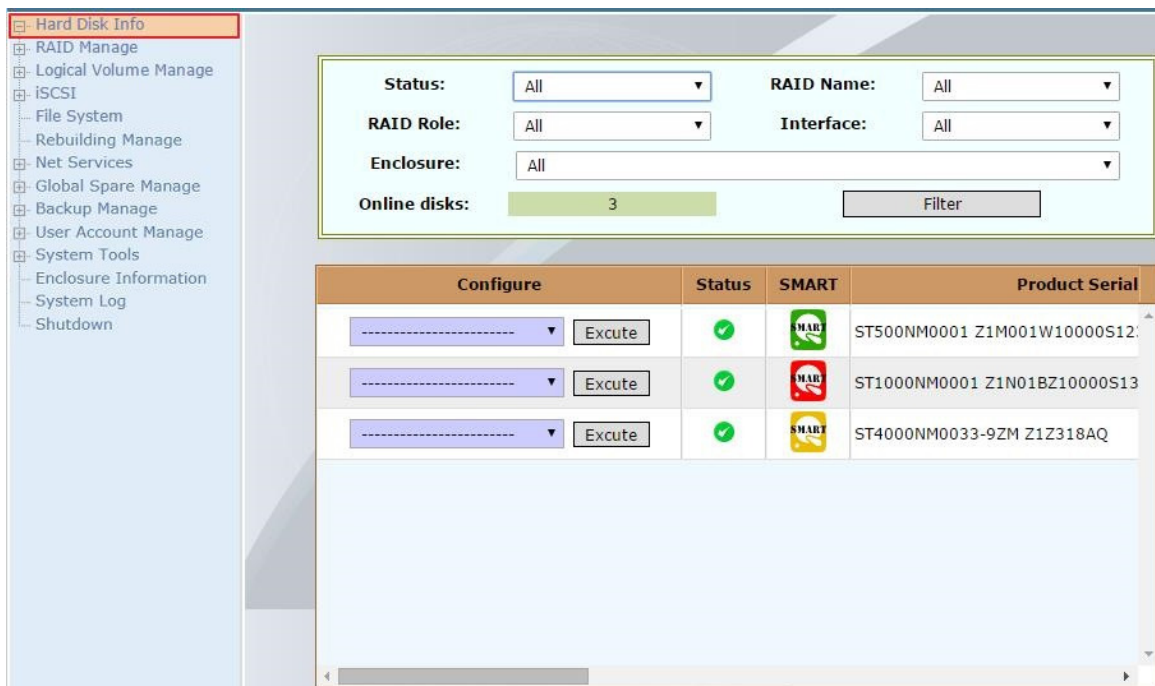
2. After a successful logout, click **Click here to login again** in the dialog box below to login again.



### 1.3 Main Menu

1. Hard Disk Info
2. RAID Manage
3. Logical Volume Manage
4. iSCSI
5. File System
6. Caching Manage
7. Rebuilding Manage
8. Net Services
9. Global Spare Manage
10. Backup Manage
11. User Account Manage
12. System Tools
13. Enclosure Information
14. System Log
15. Shutdown

### 1.4 Hard Disk Info

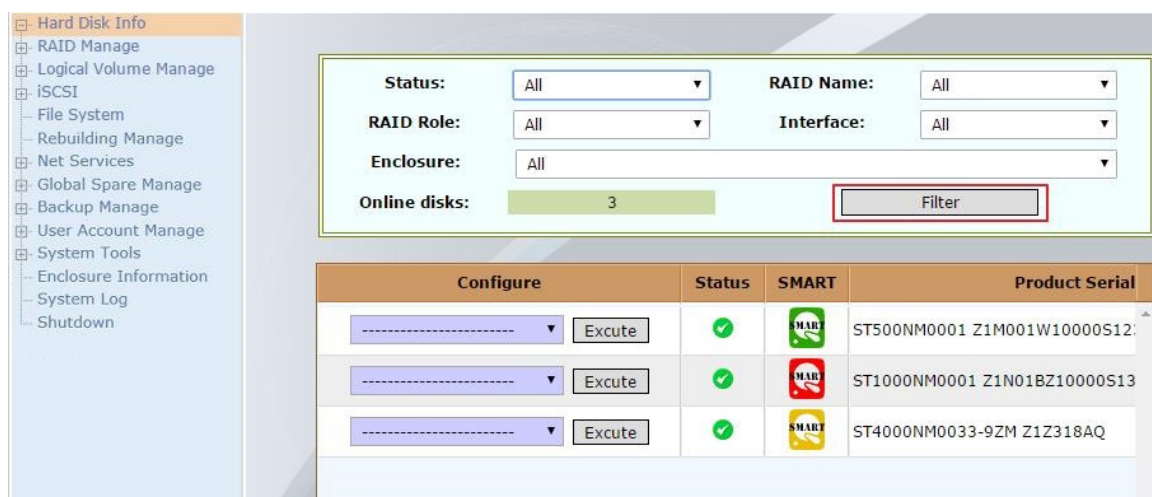


**Hard Disk Info** includes the following functions:

1. View Drive Information
2. Locate a Drive

### 1.4.1 View Drive Information

After setting the filter conditions, click **Filter** to list the drives you prefer.






Description of fields:




- **Configure**

The functions include **Location on** and **Location off**. If "n/a" is shown, it means the drive failed to be added into the system and those functions are disabled.

- **Status**

Icon	Status	Description
	Good	The drive functions normally.
	Missing	The drive, part of a disk array, is removed.
	Failed	The drive failed to be added into the system.

- **SMART**

Icon	Status	Description
	Good	No issue is found in SMART data.
	Warning	SMART data reports warning(s).
	Failed	SMART data indicates a possible imminent drive failure.

Click the icon to get detailed SMART data of the drive.

- **Product Serial#**

It is composed of the model name and serial number of the drive.

- **RAID Name**

If the drive is part of a disk array, it shows the RAID name otherwise "n/a".

- **RAID Role**

The available roles in a disk array are "RAID Disk", "Local Spare", "Local Candidate" and "Global Spare". If a "RAID Disk" drive is removed, the drive status becomes "Missing". If the "Missing" drive is re-inserted again, it will be a "RAID Disk" or "Local Spare" when the disk array is not busy. While busy, it will become a "Local Candidate".

- **Vendor**

The drive manufacturer

- **Capacity (GB)**

The drive capacity (GB)

- **Interface**

The drive interface is "SAS" or "SATA".

- **Enclosure**

It comprises the model name and the SAS address of SAS Enclosure which the drive is attached to.

- **Location**

The slot (bay) number in SAS Enclosure

- **Power Mode**




The available options are “Active” and “Standby”. When the drive is in power-saving mode, it shows “Standby”.

- **Read Write Monitor**




Real-time performance monitor on disk read and write

## 1.4.2 Locate a Drive




1. The drive can be located through the field **Configure** when its status is “Good”.

Configure	Status	SMART	Product Serial#
<div>----- ▾</div> <div>Excute</div>	✓		ST500NM0001 Z1M001W10000S1230
<div>----- ▾</div> <div>Excute</div>	✓		ST1000NM0001 Z1N01BZ10000S137
<div>----- ▾</div> <div>Excute</div>	✓		ST4000NM0033-9ZM Z1Z318AQ




2. To locate the drive, select **Locate on** in the field **Configure** and click **Execute**, and then the blue LED on the drive tray will blink slowly.

Configure	Status	SMART	Product Serial#
<div>Locate on ▾</div> <div>Excute</div>	✓		ST500NM0001 Z1M001W10000S1230
<div>----- ▾</div> <div>Excute</div>	✓		ST1000NM0001 Z1N01BZ10000S137
<div>----- ▾</div> <div>Excute</div>	✓		ST4000NM0033-9ZM Z1Z318AQ

3. To disable locating the drive, select **Locate off** in the field **Configure** and click **Execute**.

Configure	Status	SMART	Product Serial#
<div>Locate off ▾</div> <div>Excute</div>	✓		ST500NM0001 Z1M001W10000S1230
<div>----- ▾</div> <div>Excute</div>	✓		ST1000NM0001 Z1N01BZ10000S137
<div>----- ▾</div> <div>Excute</div>	✓		ST4000NM0033-9ZM Z1Z318AQ

4. If the SMART status shows “Warning” or “Failed”, the red LED on the disk tray will automatically blink slowly.

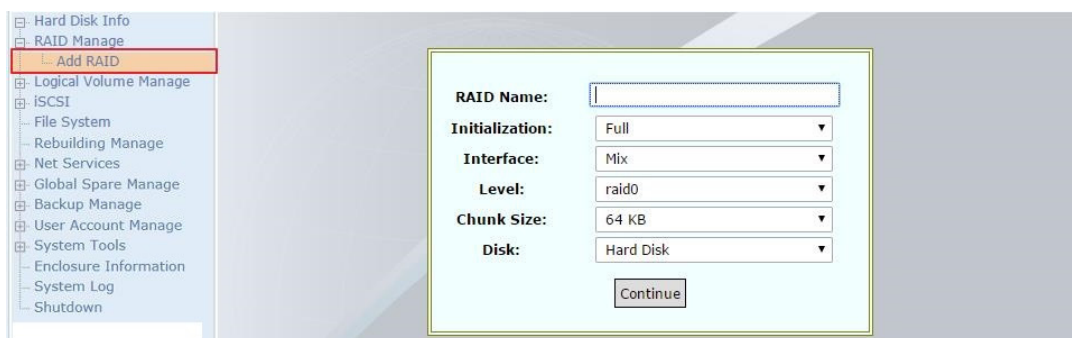
Configure	Status	SMART	Product Serial#
----- ▾ <input type="button" value="Excute"/>	✓		ST500NM0001 Z1M001W10000S1230
----- ▾ <input type="button" value="Excute"/>	✓		ST1000NM0001 Z1N01BZ10000S137
----- ▾ <input type="button" value="Excute"/>	✓		ST4000NM0033-9ZM Z1Z318AQ

## 1.5 Manage RAID

1. Create a Disk Array
2. View Disk Arrays
3. Start/Stop a Disk Array
4. Add a Local Spare Drive
5. Remove a Local Spare Drive
6. Grow a Disk Array
7. Remove a Disk Array
8. Online RAID Level Migration
9. Reshape RAID Chunk Size Online

### 1.5.1 Create a Disk Array

1. Click **Add RAID** to start a disk array creation. Click **Continue** when done on the configuration of the dialog box.





The screenshot shows a RAID configuration window with the following settings:

- RAID Name:** RaidDisk0
- Initialization:** Full
- Interface:** Mix
- Level:** raid0
- Chunk Size:** 64 KB
- Disk:** Hard Disk
- Continue** button (highlighted with a red box)

Description of fields:

- **RAID Name**

The name of the disk array, up to 30 characters composed of letters and numbers, is case-sensitive. This field is not allowed to be blank or an existing disk array name.

- **Initialization**

The available options for initializing the disk array are “**Full**” (default) and “**Fast**”.

- Option “**Full**”: All the capacity of the selected hard drives will be initialized. After the initialization is done, the disk array can be configured.
- Option “**Fast**”: It initializes a small part of the total capacity in the beginning. When done, the disk array starts to expand to the total capacity. Before the expansion is done, the disk array can be configured.

- **Interface**

The available options are “**Mix**” (default), “**SATA**” and “**SAS**”. With the “**Mix**” option, the disk array can be built with SATA and SAS drives.

- **Level**

The RAID level includes “**linear**”, “**raid0**” (default), “**raid1**”, “**raid5**”, and “**raid6**”.

- **Chunk Size**

The available options are “**4KB**”, “**8KB**”, “**16KB**”, “**32KB**”, “**64KB**” (default), “**128KB**”, “**256KB**”, “**512KB**”, and “**1024KB**”.

- **Disk**

The available options are “**Hard Disk**” (default) and “**RAID Disk**”. The latter option is for a nested array.

2. Choose hard drives for the disk array, set the fields **Read Cache** and **Write Cache**, and click **Create RAID** to create the array. (If the field **Write Cache** is set with the option “**Enable**”, there is a risk of data loss and damage to the disk array in the event of a power outage.)

RAID Name:	RaidDisk	Initialization:	Full
Level:	raid0	Read Cache:	Enable
Chunk Size:	64 KB	Write Cache:	Enable
Interface:	Mix	<button>Create RAID</button>	

	Status	Product Serial#	Interface	Vendor
<input checked="" type="checkbox"/>		ST1000NM0001 Z1N01BZ10000S137KQP3	n/a	SEAGATE

## 1.5.2 View Disk Arrays

Click **RAID Manage** to view disk arrays.

- Hard Disk Info
- RAID Manage**
  - Add RAID
- Logical Volume Manage
- ISCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Configure	Status	Name	Active Unit
<div> <div></div> <div>Excute</div> </div>		CAT	1
<div> <div></div> <div>Excute</div> </div>		RAIRD1	1




Description of fields:

- **Configure**

The functions include **On**, **Restart**, **Off**, **Add Spare**, **Remove Spare**, **Remove Candidate**, **Grow RAID Disk**, **Delete RAID**, **Migration RAIDx to RAIDx**, and **Reshape Chunk Size**.

- **Status**

Icon	Status	Description
	Good	The array and its "RAID Disk" drives function normally.
	Offline	When the disk array status is "Good", "Degraded", or "Initial", select <b>Off</b> and click <b>Execute</b> to make it offline.
	Degraded	One "RAID Disk" drive or two in the disk array does not work, but the array still can function.
	Stopped	When the number of the available "RAID Disk" drives in

		the disk array is less than its minimum which it needs to function, the array is forced to get into this mode.
	Failed	The disk array can not function any more.
	Initializing	The disk array is initializing. Before done, it can not be configured.
	Unknown	None of the above statuses

- **Name**

The name of the disk array

- **Active Unit**

Number of the available “RAID Disk” drives in the disk array

- **Spare Unit**

Number of the available “Local Spare” drives in the disk array

- **Faulty Unit**

Number of current faulty drives in the disk array

- **Capacity (GB)**

Total size of the disk array (GB)

- **Free (GB)**

Free size of the disk array (GB)

- **Interface**

Three types are “Mix”, “SAS”, and “SATA”. The “Mix” type includes the SAS drive and SATA drive.

- **Level**

It could be “linear”, “raid0”, “raid1”, “raid5”, or “raid6”.

- **RAID Unit**

Number of the “RAID Disk” drives in the disk array

- **Chunk (KB)**

It could be “4”, “8”, “16”, “32”, “64”, “128”, “256”, “512”, or “1024” KB (1 KB = 1024 Bytes).

- **MIN Component (GB)**

The minimum drive capacity (GB) among the “RAID Disk” drives in the disk array

- **Read Cache**

“Enable” or “Disable” for read cache on the drives in the disk array

- **Write Cache**

"Enable" or "Disable" for write cache on the drives in the disk array

(If set with the option "Enable", there is a risk of data loss and damage to the disk array in the event of a power outage.)

- **RAID Name**

If the disk array is part of a Nested RAID, it is the name of the Nested RAID, otherwise "n/a".

- **RAID Role**

If the disk array is part of a Nested RAID, it could be "RAID Disk", "Local Spare", or "Local Candidate". Otherwise, it is "n/a".

- **Progress**

The progress status is shown when the disk array is on initialization, resync, recovery, or reshape. When done, it shows "n/a".

- **Read Write Monitor**

Real-time performance monitor on the disk array's read and write

### 1.5.3 Start/Stop a Disk Array

1. If the disk array is being used by a logical volume or Nested RAID, please stop the logical volume or Nested RAID before trying to stop the disk array. When the disk array status is "Good", "Degraded", or "Initial", select **Off** and click **Execute** to stop it. The new status is "Offline" as below if successful.

Configure	Status	Name	Active Unit
Off <input type="button" value="Execute"/>	✓	CAT	1
----- <input type="button" value="Execute"/>	✓	RAIRD1	1

Configure	Status	Name	Active Unit
----- <input type="button" value="Execute"/>	⊗	CAT	1
----- <input type="button" value="Execute"/>	✓	RAIRD1	1

2. When the number of the available "RAID Disk" drives in the disk array is not less than its minimum which it needs to function, selecting **On** in the field **Configure** and clicking **Execute** can start it.

Configure	Status	Name	Active Unit
On <input type="button" value="Execute"/>	⊗	CAT	1
----- <input type="button" value="Execute"/>	✓	RAID1	2

3. If the disk array status is "Stopped", selecting **Restart** in the field **Configure** and clicking **Execute** can try to restart it.

Configure	Status	Name	Active Unit
Restart <input type="button" value="Execute"/>		CAT	0
<input type="button" value="Execute"/>		RAID1	2

### 1.5.4 Add a Local Spare Drive

1. Select **Add Spare** in the field **Configure** and click **Execute**.

Write Cache	RAID Name	RAID Role	Configure
	n/a	n/a	<input type="button" value="Execute"/> ----- Off <b>Add Spare</b> Grow RAID Disk Reshape Chunk Size

2. Select a drive and click **Add Spare** to add a local spare drive.

RAID Name:	RAID5-array	Active Unit:	3
Level:	raid5	Spare Unit:	0
RAID Unit:	3	Faulty Unit:	0
<input type="button" value="Add Spare"/>			

	Status	Product Serial#	QoS	Vendor
<input checked="" type="checkbox"/>		WDC WD1002FBYS-0 WD-WMATV0257107	n/a	ATA

3. If successful, the number in the field **Spare Unit** should have increased by 1.

Status	Progress	Name	Active Unit	Spare Unit
	n/a	RAID5-array	3	1

### 1.5.5 Remove a Local Spare Drive

1. The field **Spare Unit** reports the number of local spare drives in the disk array.

RAID	Status	Progress	Name	Active Unit	Spare Unit
<input type="button" value="Add RAID"/> <input type="button" value="Logical Volume Manage"/> <input type="button" value="SPECT"/>		n/a	RAID5-array	3	1

2. Select **Remove Spare** in the field **Configure** and click **Execute**.

Write Cache	RAID Name	RAID Role	Configure
✖	n/a	n/a	<div> <div>----- ▾</div> <div> Off  Add Spare  <b>Remove Spare</b>  Grow RAID Disk  Migrate RAID 5 to RAID 6  Reshape Chunk Size </div> </div> <div>Excute</div>

3. After choosing the drive, click **Remove Spare**.

RAID Name:	RAID5-array	Active Unit:	3
Level:	raid5	Spare Disk:	1
RAID Unit:	3	Faulty Disk:	0
<div>Remove Spare</div>			

	Status	Product Serial#	QoS	Vendor
<input checked="" type="checkbox"/>	✔	WDC WD1002FBYS-0 WD-WMATV0257107	Mix	ATA

4. The number of local spare drives in the disk array has been updated as the figure below.

Status	Progress	Name	Active Unit	Spare Unit
✔	n/a	RAID5-array	3	0

### 1.5.6 Remove a Local Candidate

If there is a local candidate in the field **RAID Role** for the disk array in the **Hard Disk Info**, selecting **Remove Candidate** in the field **Configure** and clicking **Execute** can remove a local candidate.

### 1.5.7 Grow a Disk Array

1. Select **Grow RAID Disk** in the field **Configure** and click **Execute** to configure the growing.

Write Cache	RAID Name	RAID Role	Configure
✖	n/a	n/a	<div> <div>----- ▾</div> <div> Off  Add Spare  Remove Spare  <b>Grow RAID Disk</b>  Migrate RAID 5 to RAID 6  Reshape Chunk Size </div> </div> <div>Excute</div>

- If both fields, **Min Disk Size** and **Min Disk Size (Current)** in the figure below, are different, it means that the minimum drive capacity (GB) among the "RAID Disk" drives in the disk array is expandable. To apply the larger minimum drive capacity without increasing the number of the "RAID Disk" drives, click **Grow** to expand the disk array capacity.
- The local spare drive is needed to expand the number of the "RAID Disk" drives in the disk array. Select an option in the field **Role** and click **Grow** to expand the number of the "RAID Disk" drives.

**Grow RAID Disks**

RAID Name:	RAID5-array	Active Unit:	3
Level:	raid5	Spare Unit:	1
RAID Unit:	3	Faulty Unit:	0
Role:	4	Min Disk Size:	1000.2
		Min Disk Size:	1000.2
		(Current)	

**Grow**

- When done on the expansion, verify the fields - **Active Unit**, **Spare Unit**, **Capacity (GB)**, **Free (GB)**, and **RAID Unit**.

Status	Progress	Name	Active Unit	Spare Unit
✓	reshape=4.7% = 7.0min	RAID5-array	4	0

### 1.5.8 Remove a Disk Array

- The disk array can be removed when its status is "Offline", "Stopped", or "Failed". In case of failing to stop it, remove all its partitioned blocks and try again.

Status	Progress	Name	Active Unit	Spare Unit
⊗	n/a	RAID5-array	4	0

- Select **Delete RAID** in the field **Configure** and click **Execute**. In the dialog box, click **Confirm**.

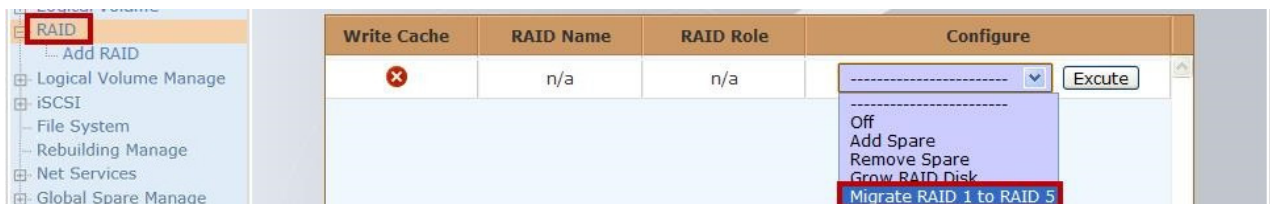
Write Cache	RAID Name	RAID Role	Configure
⊗	n/a	n/a	<div> <div>On</div> <div>Delete RAID</div> </div> <div>Execute</div>



### 1.5.9 Online RAID Level Migration

Please follow the section "2.2 Rebuilding Manage" to create a temporary file system with a logical volume named "RAID0LV" before the steps below. When the RAID level migration is done, the temporary file system can be removed.

1. If there is an option **Migration RAIDx to RAIDx** in the field **Configure**, the current array configuration supports an online RAID level migration which can be configured by selecting **Migration RAIDx to RAIDx** and clicking **Execute**.



2. After verifying all fields, click **Migrate** to start the RAID level migration.

RAID Migration - RAID5			
Level:	raid5	Level:	raid6
RAID Unit:	3	RAID Unit:	4
Active Unit:	3	Active Unit:	4
Spare Unit:	1	Spare Unit:	0
Faulty Unit:	0	Faulty Unit:	0
RAID Size:	8388608	RAID Size:	8388608
Chunk Size:	64	Chunk Size:	64
Rebuilding:	enable	Volume Name:	RAID0LV
<div>Migrate</div>			

3. The table below is for the online RAID level migration. The capacity of the new disk array must be greater than or equal to that of the original disk array. The involved local spare drives will become "RAID Disk" drives after the migration.

Original RAID configuration	Local Spare Drive	New RAID configuration
-----------------------------	-------------------	------------------------

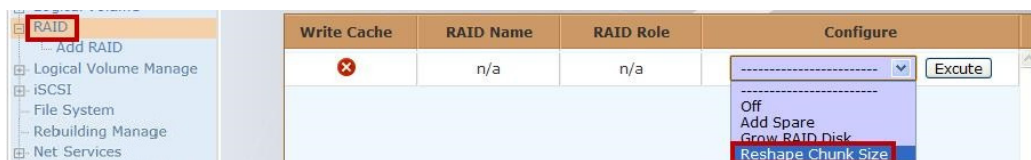


* disk number		* disk number
raid1 * 2	$N > 0$	raid5 * (N + 2)
raid5 * 3	$N > 0$	raid6 * (N + 3)
raid6 * 4	$N \geq 0$	raid5 * (N + 4)

### 1.5.10 Reshape RAID Chunk Size Online

Please follow the section “2.2 Rebuilding Manage” to create a temporary file system with a logical volume named “RAID0LV” before the steps below. When the reshaping RAID chunk size is done, the temporary file system can be removed.

1. If the current array configuration supports reshaping RAID chunk size online, there is **Reshape Chunk Size** in the field **Configure**. Select **Reshape Chunk Size** and click **Execute** to configure the reshaping.



2. After verifying all fields, click **Reshape** to start the reshaping.

#### RAID Reshape Chunk Size - RAID5

Level:	raid5		
RAID Unit:	3		
Active Unit:	3		
Spare Unit:	1		
faulty Unit:	0		
RAID Size:	8388608		
Chunk Size:	64		

Rebuilding: enable

Volume Name: RAID0LV

Reshape

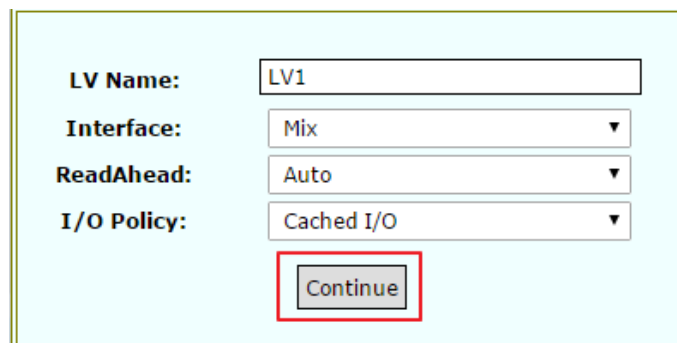
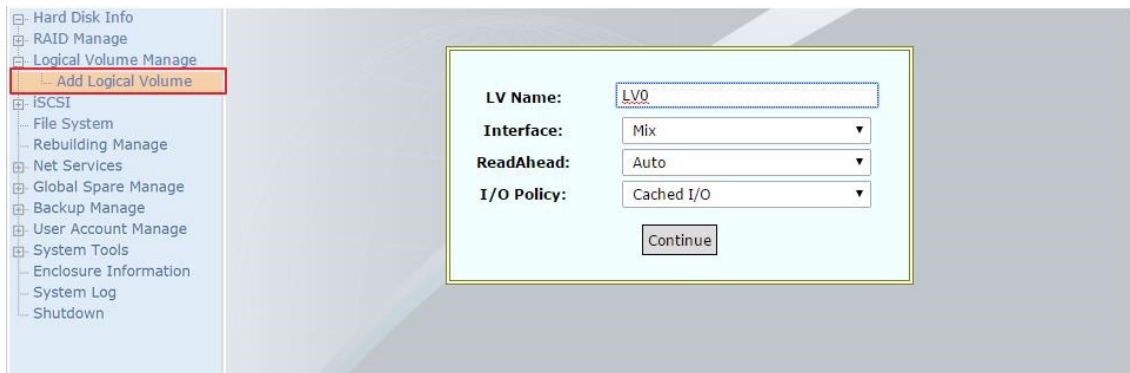
## 1.6 Manage Logical Volume

1. Create a Logical Volume
2. View Logical Volumes
3. Start/Stop a Logical Volume

4. Add Blocks into a Logical Volume
5. View Blocks of a Logical Volume
6. Remove a Block from a Logical Volume
7. Change Access Policy of a Logical Volume
8. Remove a Logical Volume
9. Start/Stop ReadAhead for a Logical Volume
10. Change I/O Policy of a Logical Volume
11. Remote Replication Volume

### 1.6.1 Create a Logical Volume

1. Click **Add Logical Volume** to start a logical volume creation. Click **Continue** when done on the configuration of the dialog box.



Description of fields:

- **LV Name**

The name of the logical volume, up to 30 characters composed of letters and numbers, is case-sensitive. This field is not allowed to be blank or an existing logical volume name.

- **Interface**

The available options are “**Mix**” (default), “**SATA**” and “**SAS**”. With the “**Mix**” option, the logical volume can be built with SATA and SAS drives.

- **ReadAhead**

The available options for the read-ahead feature are “**Auto**” (default) and “**None**”.

- **I/O Policy**

The available options are “**Cached I/O**” (default) and “**Direct I/O**”. (If set with the option “**Cached I/O**”, there is a risk of data loss and damage to the disk array in the event of a power outage.)

2. Select a disk array and the field **Reserved Size (MB)** for the size of the logical volume, and then click **Create LV** to create it. The number in the field **Reserved Size (MB)** should not be more than that in the field **Size (MB)** of the corresponding disk array. A logical volume can be created on multiple disk arrays.

The screenshot shows the Logical Volume Management configuration window. At the top, there are four fields: **LV Name:** LV1, **ReadAhead:** Auto, **Interface:** Mix, and **I/O Policy:** Cached I/O. Below these fields is a **Create LV** button. Below the configuration fields is a table with the following data:

	Reserved Size (MB)	Name	Block Type	Partition	Size (MB)
<input checked="" type="checkbox"/>	11992	RAIRD1	Partition	2	11992
<input type="checkbox"/>	454646	RAIRD5	Partition	5	454646
<input type="checkbox"/>	3815318	CAT	Partition	1	3815318

## 1.6.2 View Logical Volumes

Click **Logical Volume Manage** to view logical volumes.

The screenshot shows the Logical Volume Management interface. On the left is a sidebar with a tree view containing the following items: Hard Disk Info, RAID Manage, Logical Volume Manage (highlighted), Add Logical Volume, iSCSI, File System, Rebuilding Manage, Net Services, Global Spare Manage, Backup Manage, User Account Manage, System Tools, Enclosure Information, System Log, and Shutdown. The main area displays a table with the following data:







Configure	Status	Name	Configured Size (GB)
----- ▾ Execute	✓	LV0	1.934

Description of fields:

- **Configure**

The functions include **On**, **Off**, **Restart**, **Add Block**, **Block Info**, **Remove Block**, **Change Access Policy**, **Delete LV**, **ReadAhead None**, **ReadAhead Auto**, **Change I/O Policy**, **Remote Replication On**, and **Remote Replication Off**.

- **Status**

Icon	Status	Description
	Good	The logical volume functions normally.
	Offline	When the logical volume status is "Good", select <b>Off</b> and click <b>Execute</b> to make it offline.
	Stopped	If one of the disk array statuses in the logical volume is "Stopped", this logical volume is forced to get into this mode.
	Failed	The logical volume can not function any more.
	Moving blocks or being removed	The status reports being moving physical blocks of the logical volume or deleting the logical volume.
	Unknown	None of the above statuses

- **Name**

Name of the logical volume

- **Configured Size (GB)**

Configured size of the logical volume (GB)

- **Available Size (GB)**

Available size of the logical volume (GB)

- **Physical Block**

Number of physical blocks in the logical volume

- **Interface**

Three types are "Mix", "SAS", and "SATA". The "Mix" type includes the SAS drive and SATA drive.

- **ReadAhead**

It could be "Auto" or "None".

- **I/O Policy**

It could be "Cached I/O" or "Direct I/O". (If set with the option "Cached I/O", there is a risk of data loss and damage to the disk array(s) in the logical volume in the

event of a power outage.)

- **Access Policy**

It could be "Write Through", "Write Back", or "Read Only".

- **Snapshot (GB)**

The snapshot size in the logical volume (GB)

- **Progress**

It shows the percentage when the logical volume is moving blocks or being removed. When done, it shows "n/a".

### 1.6.3 Start/Stop a Logical Volume

1. If the logical volume is being used by an iSCSI volume or file system, stop the iSCSI volume or delete the file system before trying to stop the logical volume. When the logical volume status is "Good", select **Off** in the field **Configure** and click **Execute** to stop it.

Configure	Status	Name	Configured Size (GB)
<div>----- ▾</div> <div>Excute</div>	✓	LV0	1.934
<div>Off ▾</div> <div>Excute</div>	✓	LV1	11.711

2. If the associated disk array statuses are "Good" or "Degraded", select **On** in the field **Configure** and click **Execute** to start the logical volume when its status is "Offline".

Configure	Status	Name	Configured Size (GB)
<div>----- ▾</div> <div>Excute</div>	✓	LV0	1.934
<div>On ▾</div> <div>Excute</div>	⊖	LV1	11.711

3. If the logical volume status is "Stopped", selecting **Restart** in the field **Configure** and clicking **Execute** can try to restart it.

Status	Progress	Name	SAS	LUN	Configured Size
⊖	n/a	L0	✓	n/a	931.519

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Back	Any	<div>----- ▾</div> <div>Excute</div> <div>Restart</div> <div>Block Info</div> <div>Delete LV</div>

### 1.6.4 Add Blocks into a Logical Volume

1. Select **Add Block** in the field **Configure** and click **Execute** for the configuration.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Back	Any	<div><div>----- ▾</div><div>-----</div><div>Off</div><div>Block Info</div><div><b>Add Block</b></div><div>ReadAhead None</div><div>SAS On</div></div> <div>Excute</div>

2. In the shown dialog box, select a disk array and the field **Reserved Size (MB)** for the additional size, and then click **Add Block** to add it.

LV Name: LV0

LUN: n/a

QoS: Mix

Configured Size: 9.535 (GB)

Available Size: 9.531 (GB)

Physical Block: 1

**Add Block**

	Reserved Size (MB)	Name	Block Type	Partition	Si
<input checked="" type="checkbox"/>	9764	RAID-array2	Partition	1	

3. When done on adding the block, verify the fields - **Configured Size (GB)**, **Available Size (GB)**, and **Physical Block**.

LUN	Configured Size (GB)	Available Size (GB)	Physical Block	QoS
n/a	19.070	19.063	2	Mix

### 1.6.5 View Blocks of a Logical Volume

1. Select **Block Info** in the field **Configure** and click **Execute** for the configuration.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Back	Any	<div><div>----- ▾</div><div>-----</div><div>Off</div><div><b>Block Info</b></div><div>Add Block</div><div>ReadAhead None</div><div>SAS On</div></div> <div>Excute</div>

2. Information about the physical blocks of the logical volume is shown below.

LV Name:	LV0	Configured Size:	19.07 (GB)
LUN:	n/a	Available Size:	19.063 (GB)
QoS:	Mix	Physical Block:	2

Status	Name	Block Type	Partition	Size (MB)	Level	RA
✓	RAID-array1	Partition	1	9764	raid1	
✓	RAID-array2	Partition	1	9764	raid1	

Description of fields:

- **Status**

Status of the disk array including the physical block

- **Name**

Name of the disk array including the physical block

- **Block Type**

The available types used by the physical block are "Partition" and "Disk".

- **Partition**

The partition ID in the disk array is used by the physical block.

- **Size (MB)**

Capacity of the physical block (MB)

- **Level**

RAID level of the disk array including the physical block

- **RAID Disk**

Number of "RAID Disk" drives in the disk array including the physical block

### 1.6.6 Remove a Block from a Logical Volume

1. When the logical volume status is "Offline", a physical block in it can be removed.
2. Select **Remove Block** in the field **Configure** and click **Execute** for the configuration.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Back	Any	<div> <div>-----</div> <div> On  Change I/O Policy  Change Access Policy  Block Info  <b>Remove Block</b>  Delete LV </div> </div> <div>Excute</div>

3. In the shown dialog box, select a block and click **Remove Block** for the deletion.

LV Name:	LVO	Configured Size:	19.07 (GB)
LUN:	n/a	Available Size:	19.063 (GB)
QoS:	Mix	Physical Block:	2
<input type="button" value="Remove Block"/>			

	Name	Block Type	Partition	Size (MB)	Level
<input type="radio"/>	RAID-array1	Partition	1	9764	raid1
<input checked="" type="radio"/>	RAID-array2	Partition	1	9764	raid1

4. When done on the deletion, verify the fields - **Configured Size (GB)**, **Available Size (GB)**, and **Physical Block**.

LUN	Configured Size (GB)	Available Size (GB)	Physical Block	QoS	
n/a	9.535	9.531	1	Mix	

### 1.6.7 Change Access Policy of a Logical Volume

- When the logical volume status is "Offline", its access policy can be configured.
- Select **Change Access Policy** in the field **Configure** and click **Execute** for the configuration.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Back	Any	<div> <input type="button" value="Execute"/> </div> <div> On  Change I/O Policy  <b>Change Access Policy</b>  Block Info  Delete LV </div>

- In the shown dialog box, select the field **New Access Policy** and click **Submit** to apply the new policy. (If set with the option "**Write Back**", there is a risk of data loss and damage to the disk array(s) in the logical volume in the event of a power outage.)

LV Name:	LVO
Access Policy:	Write Back
New Access Policy:	Write Through
<input type="button" value="Submit"/>	

Physical Block	QoS	ReadAhead	I/O Policy	Access Policy	Allowed WWN
1	Mix	Auto	Cached I/O	Write Through	Any



### 1.6.8 Remove a Logical Volume

1. When the logical volume status is "Offline", "Stopped", or "Failed", it can be removed.
2. Select **Delete LV** in the field **Configure** and click **Execute** to remove the logical volume.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Through	Any	<div><div>----- ▾</div><div>On Change I/O Policy Change Access Policy Block Info <b>Delete LV</b></div></div> <div>Excute</div>

### 1.6.9 Start/Stop ReadAhead for a Logical Volume

1. When the logical volume status is "Good", the read-ahead function can be configured.
2. Select **ReadAhead None** in the field **Configure** and click **Execute** to disable the read-ahead function.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Through	Any	<div><div>----- ▾</div><div>Off Block Info Add Block <b>ReadAhead None</b> SAS On</div></div> <div>Excute</div>

Physical Block	QoS	ReadAhead	I/O Policy	Access Policy	Allowed WWN
1	Mix	None	Cached I/O	Write Through	Any

3. Select **ReadAhead Auto** in the field **Configure** and click **Execute** to enable the read-ahead function.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Through	Any	<div><div>----- ▾</div><div>Off Block Info Add Block <b>ReadAhead Auto</b> SAS On</div></div> <div>Excute</div>

Physical Block	QoS	ReadAhead	I/O Policy	Access Policy	Allowed WWN
1	Mix	Auto	Cached I/O	Write Through	Any

### 1.6.10 Change I/O Policy of a Logical Volume

1. When the logical volume status is "Offline", the I/O policy can be configured.
2. Select **Change I/O Policy** in the field **Configure** and click **Execute** for the configuration.

I/O Policy	Access Policy	Allowed WWN	Configure
Cached I/O	Write Through	Any	<div> <div>----- ▾</div> <div> On  <b>Change I/O Policy</b>  Change Access Policy  Block Info  Delete LV </div> </div> <div>Excute</div>

3. In the shown dialog box, select the field **New I/O Policy** and click **Submit** to apply the new policy. (If set with the option "Cached I/O", there is a risk of data loss and damage to the disk array(s) in the logical volume in the event of a power outage.)

LV Name:

LV0

I/O Policy:

Cached I/O

New I/O Policy:

Cached I/O ▾

Submit

### 1.6.11 Remote Replication Volume

1. If the logical volume is used by an iSCSI volume or file system, it can not be configured as a remote replication volume.
2. To be a remote replication volume, select **Remote Replication On** in the field **Configure** and click **Execute**. Click **Backup Manage** and **Remote Replication** for further configuration.

Configure	Status	Name	Configured Size (GB)
<div>----- ▾</div> <div>Excute</div>	✓	LV0	1.934
<div>Remote Replication ▾</div> <div>Excute</div> <div> Off  Block Info  Add Block  Add SnapShot Block  ReadAhead None  <b>Remote Replication On</b> </div>	✓	LV1	11.711

3. To be not a remote replication volume, select **Remote Replication Off** in the field **Configure** and click **Execute**.

Configure	Status	Name	Configured Size (GB)
----- ▾ <b>Execute</b>	✓	LV0	1.934
----- ▾ <b>Execute</b>	✓	LV1	11.711
Off Block Info <b>Remote Replication Off</b>			

## 1.7 Manage Global Spare Drives

1. Add a Global Spare Drive
2. Remove a Global Spare Drive

### 1.7.1 Add a Global Spare Drive

Click **Add Global Spare**, and then select the drive you want to add and click **Add**.

<ul style="list-style-type: none"> <li>Hard Disk Info</li> <li>RAID Manage</li> <li>Logical Volume Manage</li> <li>ISCSI</li> <li>File System</li> <li>Net Services</li> <li>Global Spare Manage</li> <li><b>Add Global Spare</b></li> <li>Backup Manage</li> <li>User Account Manage</li> <li>System Tools</li> <li>Enclosure Information</li> <li>System Log</li> <li>Shutdown</li> </ul>	<b>Add</b>				
		<b>Status</b>	<b>Product Serial#</b>	<b>Interface</b>	<b>Vendor</b>
	<input type="checkbox"/>	✓	ST1000NM0001 Z1N01BZ10000S137KQP3	n/a	SEAGATE

### 1.7.2 Remove a Global Spare Drive

Click **Global Spare Manage**, select **Remove from Global Spare** in the field **Configure** of the chosen drive and click **Execute** to remove the global spare drive.

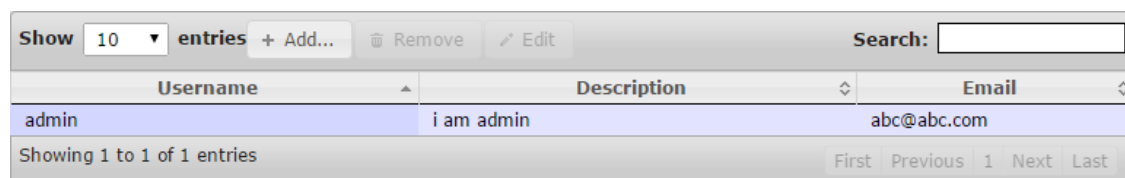
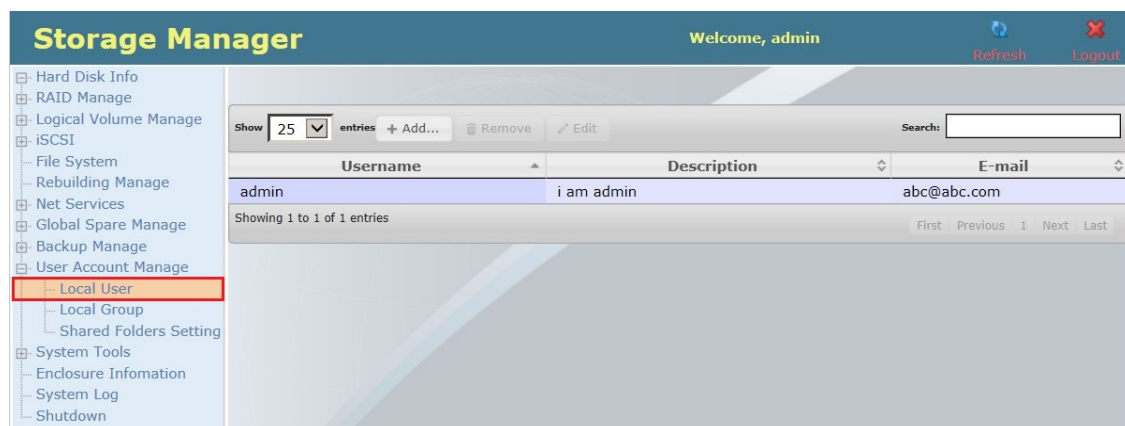
Configure	Status	Product Serial#
Remove from Global S ▾ <b>Execute</b>	✓	ST1000NM0001 Z1N01BZ10000S137KQP3
<b>Remove from Global Spare</b>		

## 1.8 Manage User Accounts

1. View User Accounts
2. Add a User Account
3. Modify a User Account
4. Remove a User Account
5. View User Groups
6. Add a User Group
7. Modify a User Group
8. Remove a User Group
9. View Shared Folders
10. Add a Shared Folder
11. Modify the Description of a Shared Folder
12. Remove a Shared Folder
13. NFS Permissions on a Shared Folder

### 1.8.1 View User Accounts

Click **Local User** to view user accounts.



Description of fields:

- **Username**  
User account
- **Description**

Description about the user

- **Email**

User Email

## 1.8.2 Add a User Account

1. Click **+ Add...** to add a user account. Click **Next** when done on the configuration of the dialog box **"First step – Common starting point"** below.

Show	10	entries	<div>+ Add...</div>	<div>Remove</div>	<div>Edit</div>	Search:	<input type="text"/>
User Name		Description		Email			
admin		i am admin		admin@example.com			
bob		bob		bob@example.com			
Showing 1 to 2 of 2 entries				<div>First</div> <div>Previous</div> 1 <div>Next</div> <div>Last</div>			

Add A New User

First step – Common starting point

Username:

eric

Description:

Eric Johnson, Senior Software Engineer

Email:

eric@example.com

Password:

.....

Confirm Password:

.....

Back

**Next**

2. In the dialog box **"Step 2 – Select Group"**, select a group and click **Next**.

Add A New User

Step 2 – Select Group

Group Name	Group Description	ADD
admin	administrator	<input type="checkbox"/>
user	generic	<input checked="" type="checkbox"/>

Back

**Next**

3. In the dialog box **"Step 3 – Privilege (Shared Directory) Setting"**, select the permission and click **Submit**.

**Add A New User**

Step 3 - Privilege(Shared Directory) Setting

Directory Name	Directory Description	RO	RW	Deny
web_server	Folder for web server	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Back Submit

### 1.8.3 Modify a User Account

1. Select a user account and click **Edit**.

Show 10 entries + Add... Remove Edit Search:

User Name	Description	Email
admin	i am admin	admin@example.com
bob	bob	bob@example.com
eric	Eric Johnson, Senior Software Engineer	eric@example.com

Showing 1 to 3 of 3 entries First Previous 1 Next Last

2. In the following dialog box, click **Submit** after modification.

**Edit User**

Basic Info Group Privilege

Username: bob

Description: Bob Lee, Junior Software Engineer

Email: bob@example.com

Password:

Submit Cancel

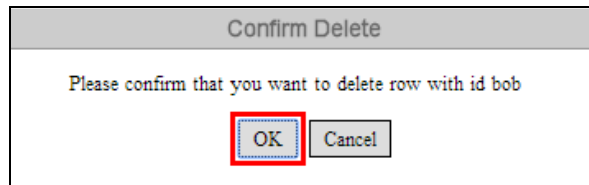
### 1.8.4 Remove a User Account

1. Select a user account and click **Remove**.

Show 10 entries + Add... Remove Edit Search:

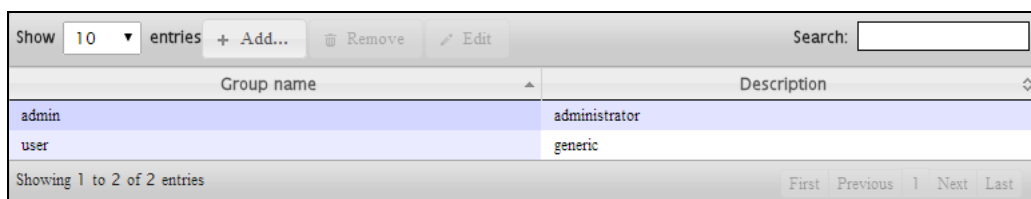
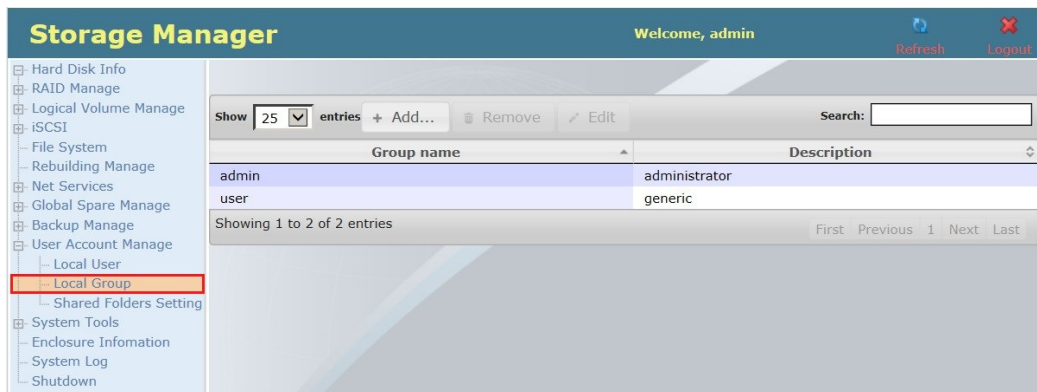
User Name	Description	Email
admin	i am admin	admin@example.com
bob	Bob Lee, Junior Software Engineer	bob@example.com
eric	Eric Johnson, Senior Software Engineer	eric@example.com

2. Click **OK** for confirmation.



### 1.8.5 View User Groups

Click **Local Group** to view user groups.

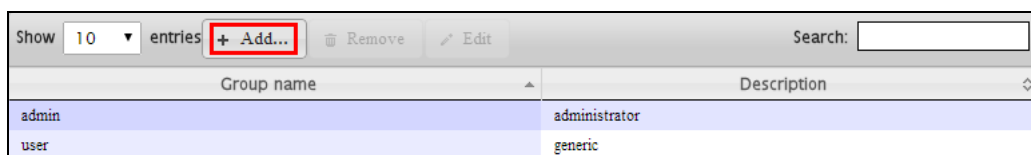


Description of fields:

- **Group Name**  
Name of the group
- **Description**  
Description about the group

### 1.8.6 Add a User Group

1. Click **+ Add...** to add a user group. Click **Next** when done on the configuration of the dialog box "**First step – Common starting point**" below.



**Add A New Group** [X]

First step - Common starting point

Group Name:

Description:

2. In the dialog box “**Step 2 – Privilege (Shared Directory) Setting**”, select the permission and click **Submit**.

**Add A New Group** [X]

Step 2 - Privilege(Shared Directory) Setting

Directory Name	Directory Description	RO	RW	Deny
web_server	Folder for web server	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 1.8.7 Modify a User Group

1. Select a group and click **Edit**.

Show  entries    Search:

Group name	Description
admin	administrator
tester	Group for testers
user	generic

2. In the following dialog box, click **Submit** after modification.

**Edit Group** [X]

Group Name:

Description:

### 1.8.8 Remove a User Group

1. Select a group and click **Remove**.



Show	10	entries	+ Add...	<b>Remove</b>	Edit	Search:	
Group name		Description					
admin		administrator					
<b>tester</b>		<b>Group for testers</b>					
user		Group for general users					

2. Click **OK** for confirmation.

Confirm Delete

Please confirm that you want to delete row with id tester

OK

Cancel

### 1.8.9 View Shared Folders

Click **Shared Folders Setting** to view shared folders.

**Storage Manager**
Welcome, admin
Refresh
Logout

Hard Disk Info
RAID Manage
Logical Volume Manage
iSCSI
File System
Rebuilding Manage
Net Services
Global Spare Manage
Backup Manage
User Account Manage
Local User
Local Group
**Shared Folders Setting**
System Tools
Enclosure Information
System Log
Shutdown

Show 25 entries + Add... Remove Edit Search:

Folder Name	Description	Volume name	Status
No data available in table			

Showing 0 to 0 of 0 entries First Previous Next Last

Show	10	entries	<b>+ Add...</b>	Remove	Edit	Search:	
Folder Name	Description	Volume name	Status				
web_server	Folder for web server	LVO	Good				
Showing 1 to 1 of 1 entries				First	Previous	1	Next Last

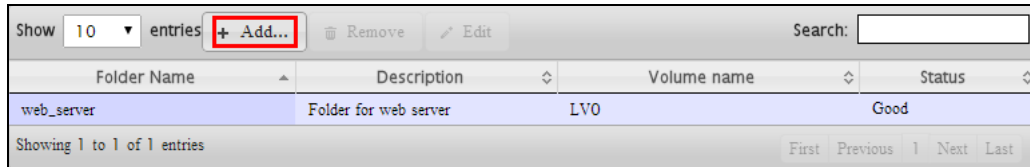
Description of fields:

- **Folder Name**  
Name of the shared folder
- **Description**  
Description about the shared folder
- **Volume Name**  
Name of the logical volume which the shared folder is attached to
- **Status**

Status of the shared folder

### 1.8.10 Add a Shared Folder

1. Click **+ Add...** to add a shared folder.

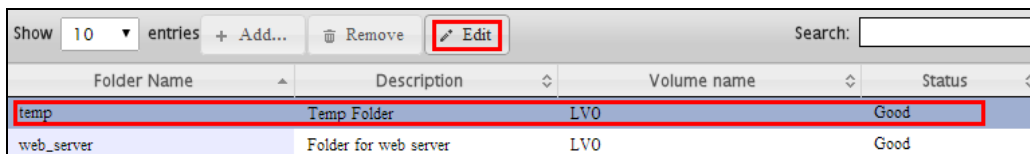


2. In the following dialog box, select a logical volume for the shared folder and input the fields, **Folder Name** and **Description**, and then click **Submit**.

The dialog box 'Add A New Folder' contains three input fields: 'Folder Name' with the value 'temp', 'Description' with the value 'Temp folder', and 'Volume Name' with a dropdown menu showing 'LV0'. At the bottom right, there are 'Back' and 'Submit' buttons, with 'Submit' highlighted by a red box.

### 1.8.11 Modify the Description of a Shared Folder

1. Select a folder and click **Edit**.

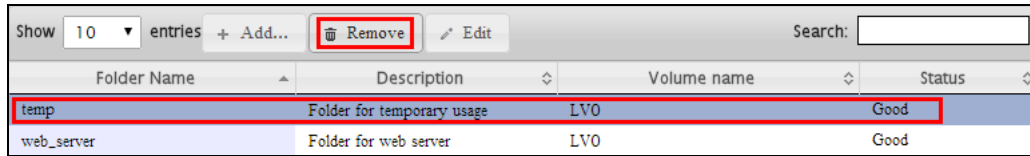


2. In the following dialog box, click **Submit** after modification.

The dialog box 'Edit Folder' contains two input fields: 'Folder Name' with the value 'temp' and 'Description' with the value 'Folder for temporary usage'. At the bottom right, there are 'Submit' and 'Cancel' buttons, with 'Submit' highlighted by a red box.

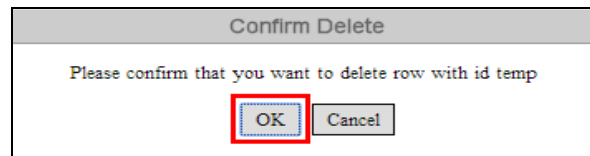
### 1.8.12 Remove a Shared Folder

1. Select a shared folder and click **Remove**.



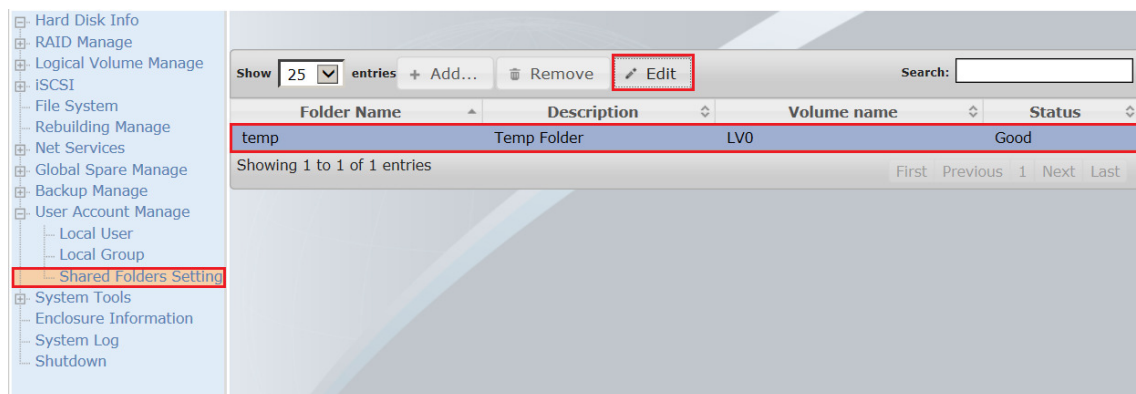
Show	10	entries	+ Add...	<b>Remove</b>	Edit	Search:	
Folder Name	Description	Volume name	Status				
temp	Folder for temporary usage	LV0	Good				
web_server	Folder for web server	LV0	Good				

2. Click **OK** for confirmation.

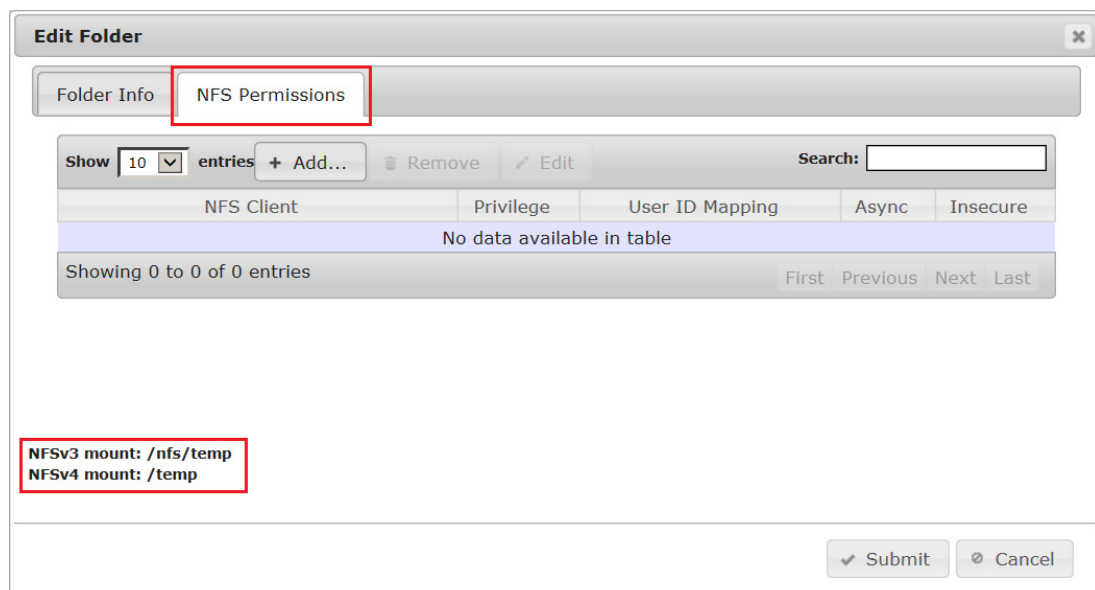


### 1.8.13 NFS Permissions on a Shared Folder

1. After enabling NFS service, click **Shared Folders Setting**, and then select a shared folder and click **Edit**.

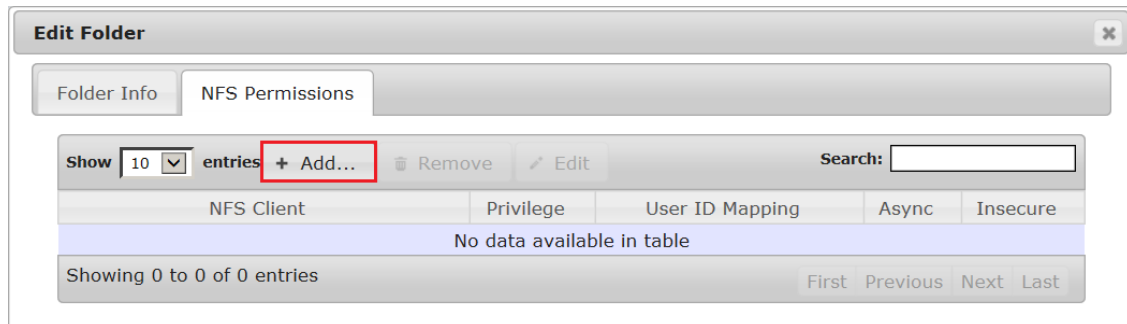


2. Click the tab **NFS Permissions** for the mount information.



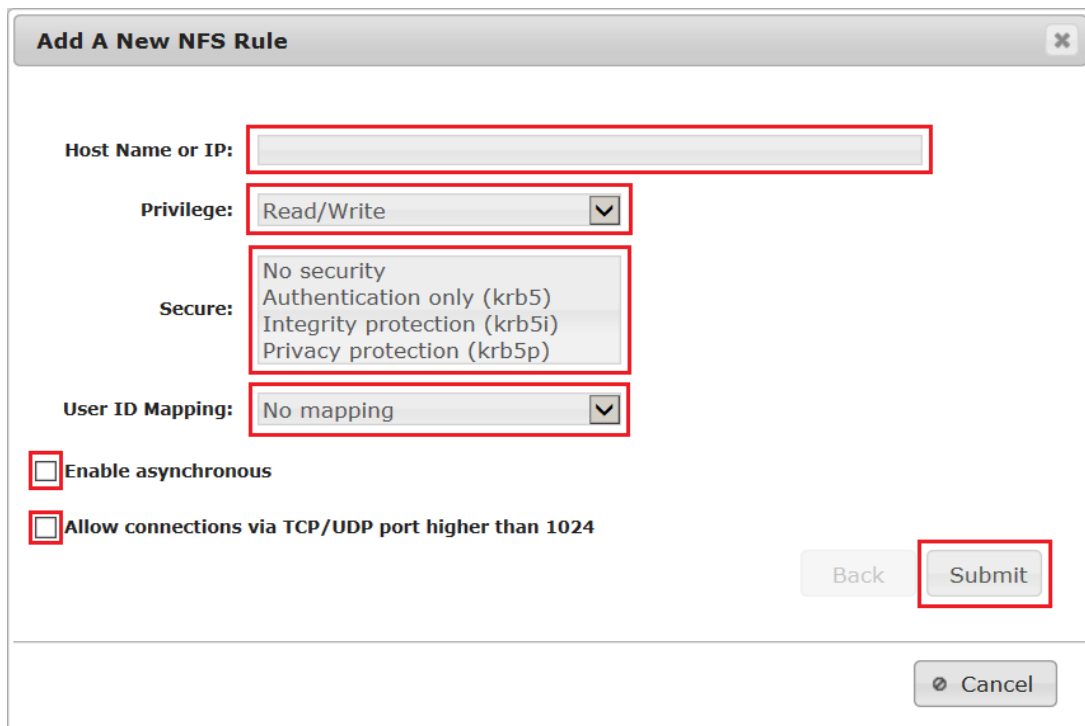
### 1.8.13.1 Add NFS Permissions

1. Click **+ Add...** to add a new NFS rule for a NFS client.



The screenshot shows the 'Edit Folder' window with the 'NFS Permissions' tab selected. At the top, there are tabs for 'Folder Info' and 'NFS Permissions'. Below the tabs, there is a table with columns: 'NFS Client', 'Privilege', 'User ID Mapping', 'Async', and 'Insecure'. The table is currently empty, with a message 'No data available in table' in the center. Above the table, there is a search bar and a '+ Add...' button, which is highlighted with a red box. Below the table, there is a status bar showing 'Showing 0 to 0 of 0 entries' and navigation buttons: 'First', 'Previous', 'Next', and 'Last'.

2. Input **Host Name or IP**, select **Privilege**, **Secure**, **User ID Mapping**, **Enable asynchronous**, and **Allow connections via TCP/UDP port higher than 1024**. And then click **Submit**.



The screenshot shows the 'Add A New NFS Rule' window. It contains several input fields and checkboxes, all of which are highlighted with red boxes. The fields are: 'Host Name or IP' (a text input field), 'Privilege' (a dropdown menu with 'Read/Write' selected), 'Secure' (a dropdown menu with 'No security' selected), and 'User ID Mapping' (a dropdown menu with 'No mapping' selected). Below these fields are two checkboxes: 'Enable asynchronous' and 'Allow connections via TCP/UDP port higher than 1024'. At the bottom right, there are three buttons: 'Back', 'Submit' (highlighted with a red box), and 'Cancel'.

Description of fields:

- **Host Name or IP**

The host name or IP address/subnet mask (for example: 192.168.0.1/24) for a NFS client

- **Privilege**

The available options are "**Read/Write**" (default) and "**Read only**".

- **Secure**

It's a multiple select field of which the available options are "**No security**", "**Authentication only (krb5)**", "**Integrity protection (krb5i)**" and "**Privacy protection (krb5p)**".

- Option "**No security**": No Kerberos
- Option "**Authentication only (krb5)**": Use Kerberos for authentication only
- Option "**Integrity protection (krb5i)**": Use Kerberos for authentication, and include a hash with each transaction to ensure integrity.
- Option "**Privacy protection (krb5p)**": Use Kerberos for authentication, and encrypt all traffic between the client and server.

- **User ID Mapping**

The available options for mapping the client user to local admin or guest are "**No mapping**" (default), "**Map root to admin**", "**Map root to guest**", and "**Map all users to admin**".

- **Enable asynchronous**

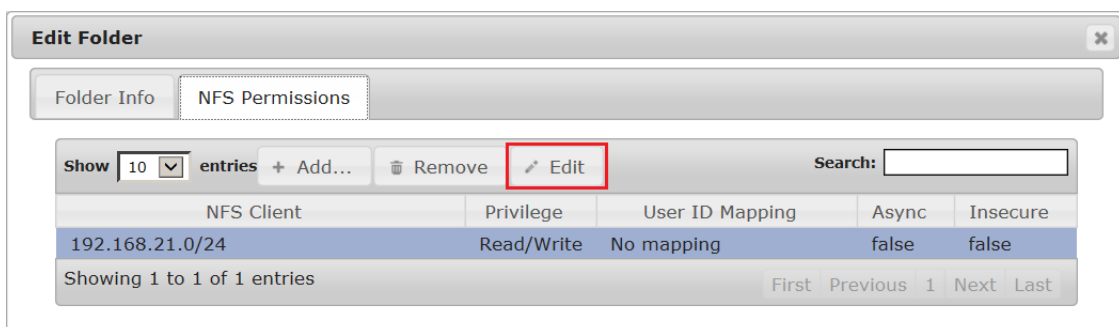
It allows the server to reply to client requests as soon as it has processed the request and handed it off to the local file system without waiting for the data to be written to the storage.

- **Allow connections via TCP/UDP port higher than 1024**

Services started on port numbers less than 1024 must be started as root. Select this option to allow the NFS service to be started by a user other than root.

### 1.8.13.2 Modify NFS Permissions

1. Select a NFS client and click **Edit**.

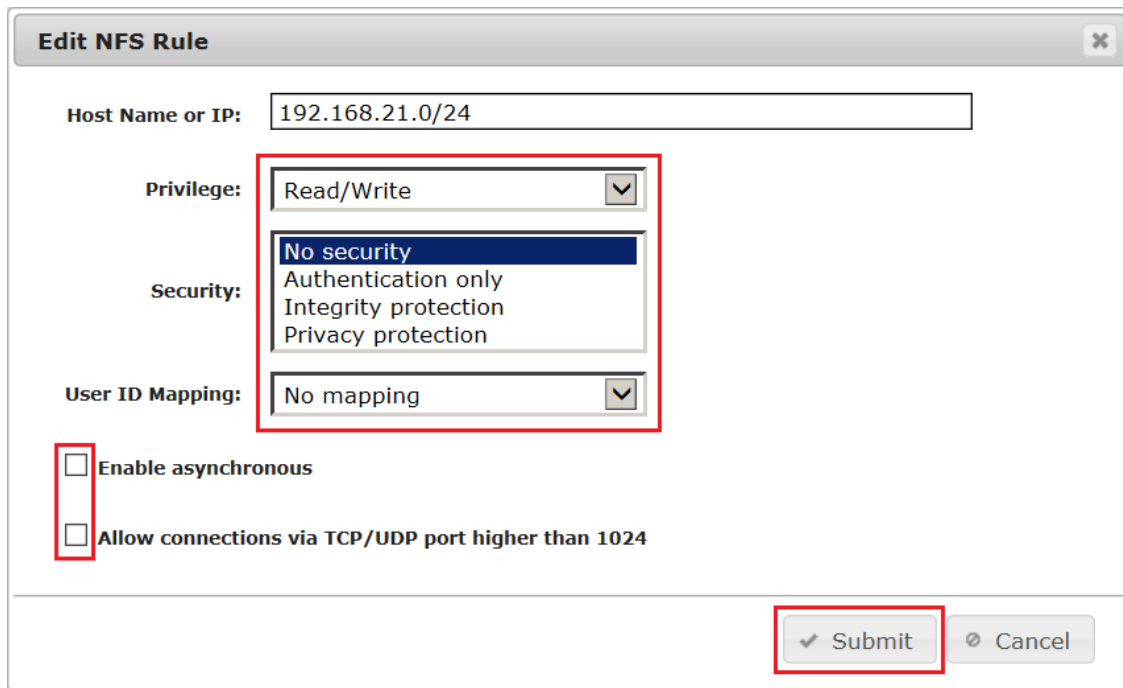


The screenshot shows the 'Edit Folder' window with the 'NFS Permissions' tab selected. The 'Edit' button is highlighted with a red box. The table below shows the current NFS permissions for the client 192.168.21.0/24.

NFS Client	Privilege	User ID Mapping	Async	Insecure
192.168.21.0/24	Read/Write	No mapping	false	false

Showing 1 to 1 of 1 entries

2. Click **Submit** after modification.



**Edit NFS Rule**

Host Name or IP: 192.168.21.0/24

Privilege: Read/Write

Security:
 

- No security
- Authentication only
- Integrity protection
- Privacy protection

User ID Mapping: No mapping

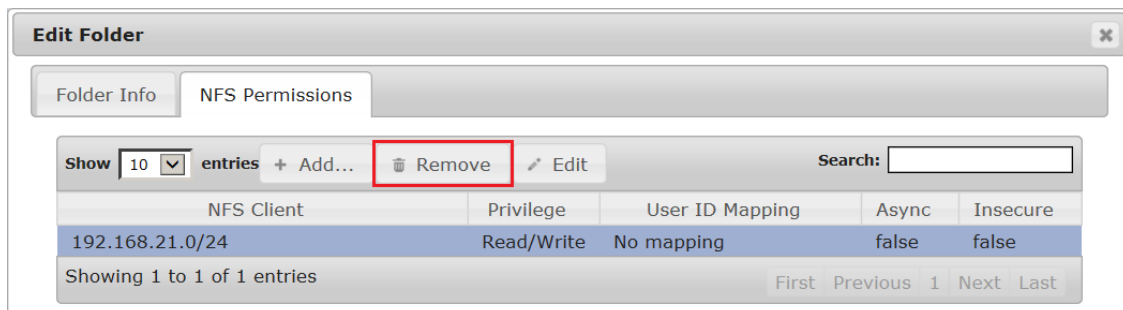
☐ Enable asynchronous

☐ Allow connections via TCP/UDP port higher than 1024

Submit Cancel

### 1.8.13.3 Remove NFS Permissions

1. Select a NFS client and click **Remove**.



**Edit Folder**

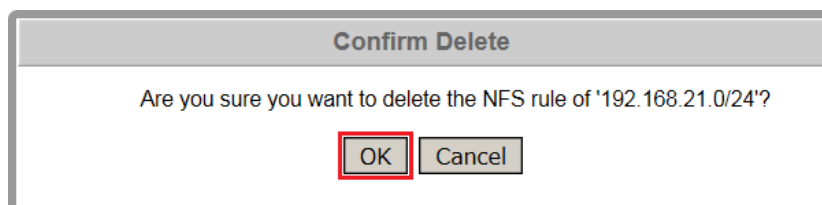
Folder Info NFS Permissions

Show 10 entries + Add... Remove Edit Search:

NFS Client	Privilege	User ID Mapping	Async	Insecure
192.168.21.0/24	Read/Write	No mapping	false	false

Showing 1 to 1 of 1 entries First Previous 1 Next Last

2. Click **OK** to delete the NFS rule.



**Confirm Delete**

Are you sure you want to delete the NFS rule of '192.168.21.0/24'?

OK Cancel

## 1.9 System Tools

1. Set Email Notification for Alarm
2. Change System Time
3. Manage Network Interfaces

4. Upload a Firmware File
5. Upload/Download the System Configuration
6. Schedule for RAID Check
7. Configure Drive Spin-Up Time
8. Configure Drive Power Mode
9. Configure SNMP
10. Join AD (Active Directory) Domain
11. Bind LDAP (Lightweight Directory Access Protocol) Server
12. Configure LDAP (Lightweight Directory Access Protocol) Server

### 1.9.1 Set Email Notification for Alarm

1. Click **E-mail Alarm** for configuration. When the configuration is done, click **Save** to save the settings.

Description of fields:

- **SMTP Email Alert**

This item is not selective if none in the receiver list exists. If this item is selected, any alert will be sent to each receiver by Email.

- **Notification for warning message**

The setting of this item is ignored if the checkbox **SMTP Email Alert** is not selected. If selected, any warning message will be also sent to each receiver by Email.

- **Notification for RAID rebuilding termination/completion**

The setting of this item is ignored if the checkbox **SMTP Email Alert** is not selected. If selected, any message regarding RAID rebuilding termination and completion will be also sent to each receiver by Email.

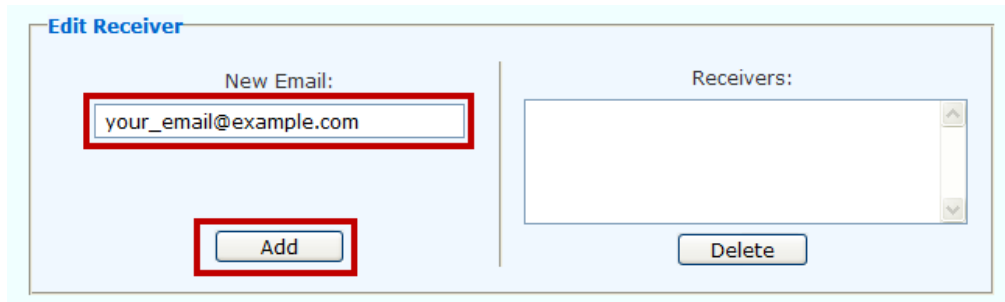
- **Storage Name**

It is the hostname on the network. This name will be put into the email subject. While receiving any notification email, you can tell where it comes from via the subject.

- **IP of SMTP Email server**

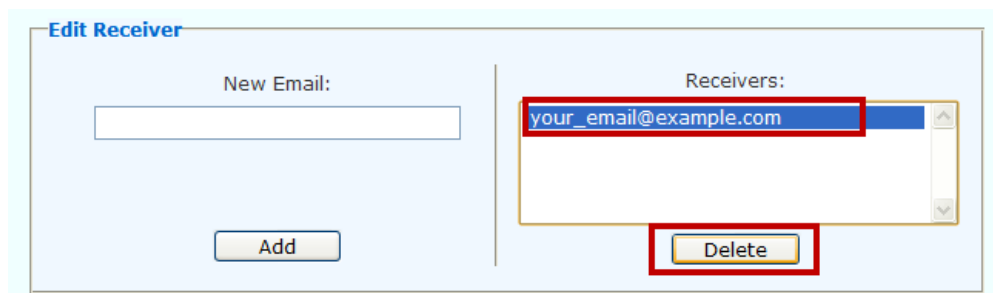
The IP address of SMTP Email server

2. To add a new receiver, input the new email address in the field **New Email** and click **Add**.



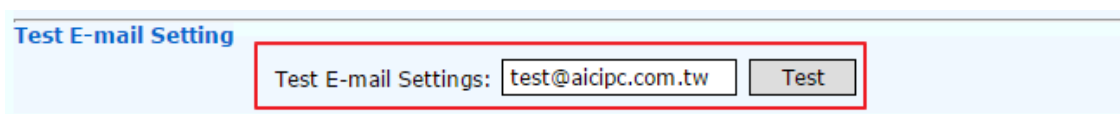
The screenshot shows a web interface titled "Edit Receiver". It has two main sections. The left section is labeled "New Email:" and contains a text input field with the value "your\_email@example.com". Below this field is a button labeled "Add". The right section is labeled "Receivers:" and contains a list box that is currently empty. Below the list box is a button labeled "Delete". Red rectangular boxes highlight the "New Email" input field and the "Add" button.

3. To remove an existing receiver, select it in the field **Receivers** and click **Delete**.



This screenshot shows the same "Edit Receiver" form. In this state, the "New Email" field is empty. The "Receivers:" list box now contains one item, "your\_email@example.com", which is highlighted with a blue selection bar. A red rectangular box highlights the "Delete" button located below the list box.

4. To test email sending, input the email address in the field **Test E-mail Settings** and click **Test**.

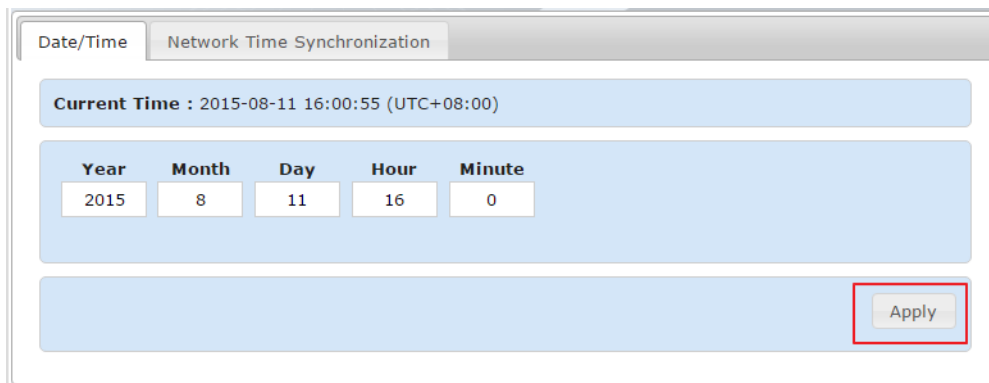
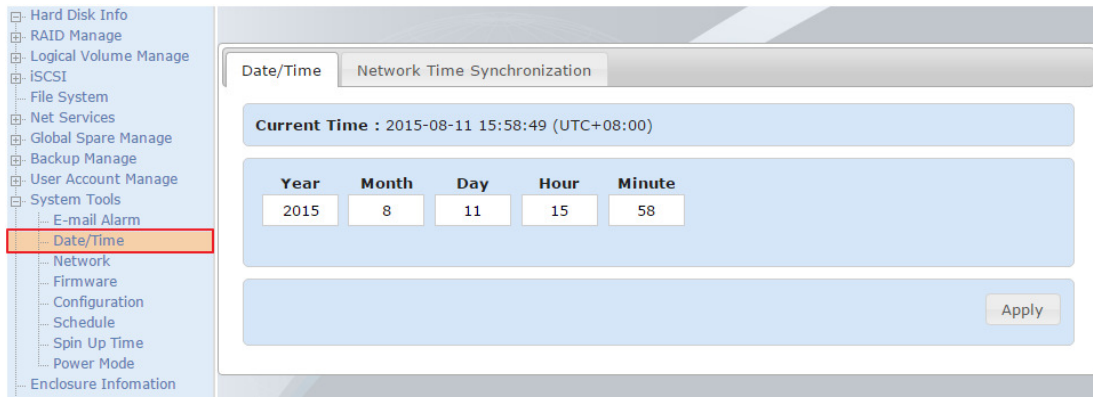


The screenshot shows a web interface titled "Test E-mail Setting". It contains a single text input field labeled "Test E-mail Settings:" with the value "test@aicipc.com.tw". To the right of this field is a button labeled "Test". A red rectangular box highlights both the input field and the "Test" button.

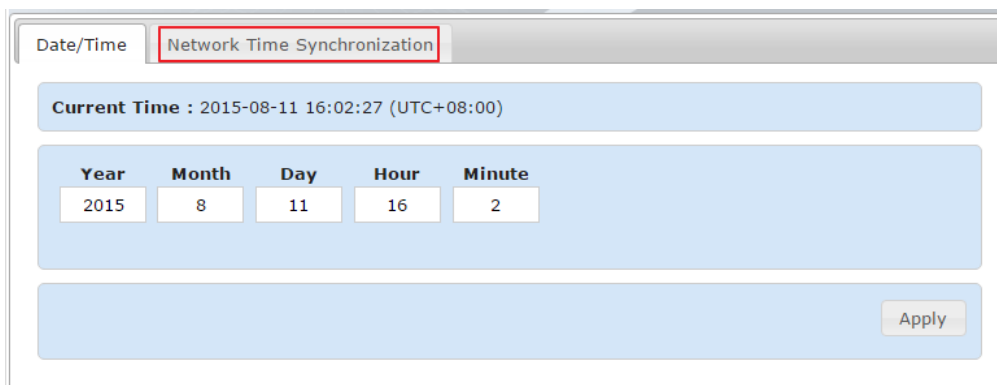
## 1.9.2 Change System Time

1. Click **Date/Time**, click the tab **Date/Time**, and click **Apply** to manually set the system time after modification.





- Click the tab **Network Time Synchronization** for Network Time Protocol (NTP) configuration. Input the fully qualified domain name or IP address of your time server, and click **Sync** for manual synchronization. For automatic synchronization, select the checkbox **Enable** and click **Save**. If the DNS and gateway are not configured properly, the synchronization would fail.



Date/Time    Network Time Synchronization

**Current Time:** 2015-08-11 16:04:38 (UTC+08:00)

☒ **Enable**

**Server:** pool.ntp.org    Sync

Save

### 1.9.3 Manage Network Interfaces

1. System Network Configuration
2. Configure a Network Interface
3. Enable/Disable a Network Interface
4. Configure the Bonding (Port Trunking) Interface

#### 1.9.3.1 System Network Configuration

Click **Network** for system network configuration.

Hard Disk Info  
RAID Manage  
Logical Volume Manage  
iSCSI  
File System  
Net Services  
Global Spare Manage  
Backup Manage  
User Account Manage  
System Tools  
  E-mail Alarm  
  Date/Time  
  **Network**  
  Firmware  
  Configuration  
  Schedule  
  Spin Up Time  
  Power Mode  
Enclosure Information  
System Log  
Shutdown

General    NIC

**Hostname:** TServer

**Gateway:** 192.168.21.254

**DNS:**  
**Primary DNS:** 168.95.192.1  
**Secondary DNS:** 168.95.1.1

✓ Apply

Connect Status: OK    External IP: 59.125.185.163

1. Click the tab **General** for the hostname, gateway, and DNS.

General NIC

Hostname: TServer

Gateway: 192.168.21.254

DNS:  
 Primary DNS: 168.95.192.1  
 Secondary DNS: 168.95.1.1

✓ Apply

Connect Status:OK External IP:59.125.185.163

Description of fields:

- **Hostname**  
The name of Storage Manager is unique in SMB/CIFS network.
- **Gateway**  
The IP address of a default gateway forwarding packets on to other networks
- **Primary DNS**  
The IP address of the primary domain name server
- **Secondary DNS**  
The IP address of the secondary domain name server

2. Click the tab **NIC** for either the bonding interface “bond0” or the available LAN interfaces which include “eth0” and “eth1” at least.

General NIC

Bonding Edit Down Link

bond0  
 Connected

Click one interface **bond0** or **Local Area Network – eth0** for example.

Description of fields:

- **bond0 or Local Area Network – eth0**

The status for the bonding interface could be “*Connected*” or “*Unconnected*”, and the status for the LAN interface could be “*Offline*”, “*Connected*”, or “*Unconnected*”.

- Status “*Offline*”: The network interface is disabled.
- Status “*Connected*”: The network interface is enabled, and the network signal is detected.
- Status “*Disconnected*”: The network interface is enabled, but the network signal can not be detected.

- **IP Address**

The IP address of the network interface

- **NetMask**

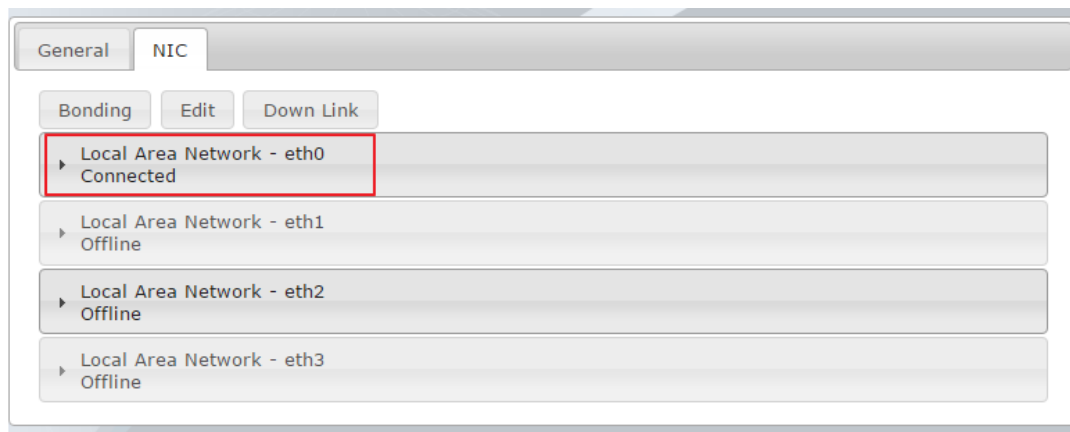
The subnet mask of the network interface

- **Information**

It reports the link speed, duplex, MTU (maximum transmission unit) size, and bonding mode (Transmit Hash Policy).

### 1.9.3.2 Configure a Network Interface

1. In the tab **NIC**, configuring the bonding interface is the same as configuring a LAN interface. Click the interface **Local Area Network – eth0** for example and then click **Edit**.



Bonding **Edit** Down Link

Local Area Network - eth0  
Connected

IP Address: 192.168.21.11

NetMask: 255.255.255.0

Information: 100Mb/s, Duplex: Full, MTU: 1500

2. In the following dialog box, there is a feature **Jumbo Frame**. If this feature is disabled, the MTU size supported by this network interface is 1500 bytes per packet, otherwise more than 1500 bytes. After modification, click **Apply** to immediately apply the new setting.

**Edit NIC** ✕

IP Address: 192.168.21.11

NetMask: 255.255.255.0

Jumbo Frame: disable ▼

✓ Apply

### 1.9.3.3 Enable/Disable a Network Interface

1. All network interfaces other than "bond0" and "eth0" can be disabled.
2. In the tab **NIC**, click the interface **Local Area Network - eth1** with either status - "Connected" or "Unconnected", and then click **Down Link**. Its new status will be "Offline".

Bonding Edit **Down Link**

Local Area Network - eth0  
Connected

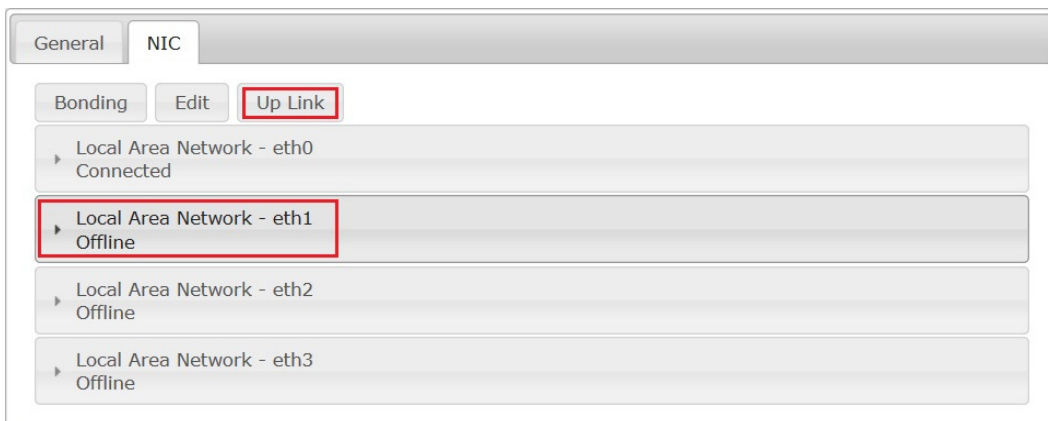
Local Area Network - eth1  
Unconnected

IP Address: 192.168.1.100

NetMask: 255.255.255.0

Information: Unknown!, Duplex: Unknown! (255), MTU: 1500

3. Click the interface **Local Area Network – eth1** with the status “Offline”, and then click **Up Link**. Its new status will be “Connected” or “Unconnected”.

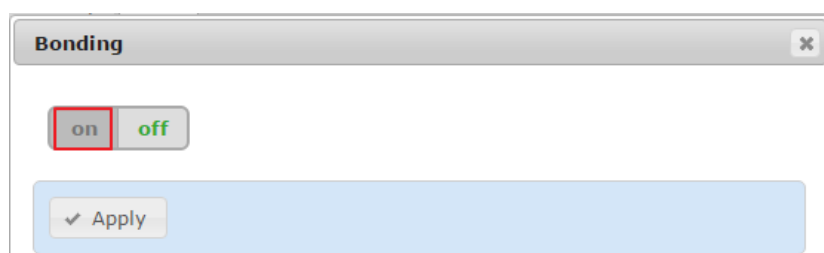


#### 1.9.3.4 Configure the Bonding (Port Trunking) interface

1. Bonding allows you to aggregate multiple LAN interfaces into a single group, effectively combining the bandwidth into a single connection. Bonding also allows you to create multi-gigabit pipes to transport traffic through the highest traffic areas of your network. You can use it wherever you need redundant links, fault tolerance or load balancing networks. It is the best way to have a high availability network segment.
2. In the tab **NIC**, click **Bonding** to aggregate all LAN interfaces into a single group “bond0”.



3. In the following dialog box, click **on** to configure the bonding interface. When done, click **Apply** to immediately create the bonding interface “bond0”.



Two bonding modes:

- **Load balancing (round-robin)**

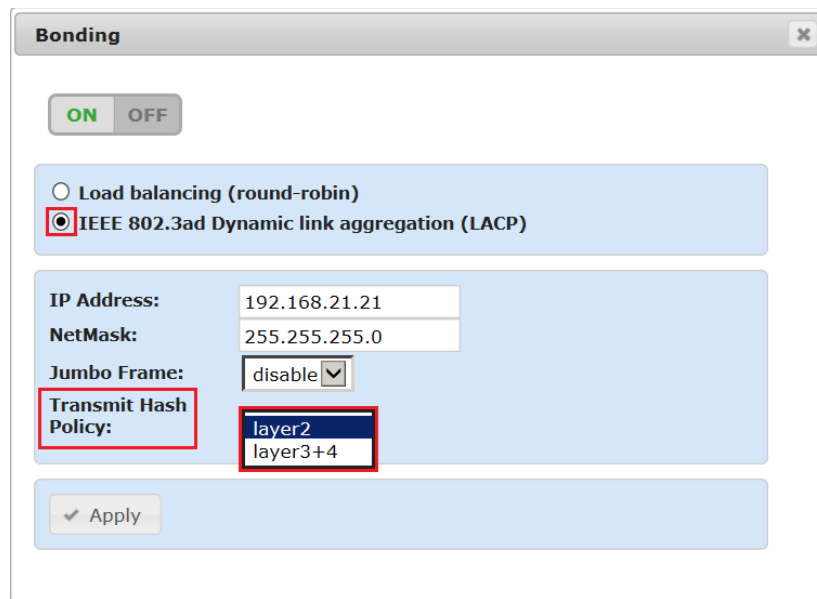
Transmit packets in sequential order from the first available LAN interface through the last. It provides load balancing and fault tolerance. All LAN interfaces should connect to a switch of which the connected ports are configured as a static port trunk.

- **IEEE 802.3ad Dynamic link aggregation**

It creates aggregation groups that share the same speed and duplex settings, and utilizes all LAN interfaces in the active aggregator according to the 802.3ad specification. It provides load balancing and fault tolerance, but requires a switch that supports IEEE 802.3ad with LACP mode properly configured. This bonding mode supports Transmit Hash Policy with two following options.

- Option “**layer2**”: It uses the XOR of hardware MAC addresses to generate the hash.
- Option “**layer3+4**”: Use upper layer protocol information (when available) to generate the hash. This allows for traffic to a particular network peer to span multiple slaves although a single connection will not span multiple slaves.





**Bonding**

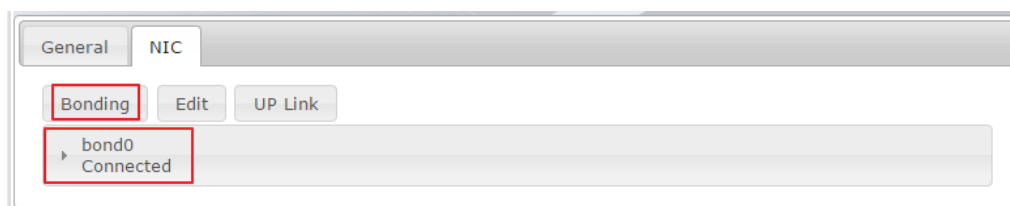
ON OFF

☐ Load balancing (round-robin)  
☒ IEEE 802.3ad Dynamic link aggregation (LACP)

IP Address: 192.168.21.21  
 NetMask: 255.255.255.0  
 Jumbo Frame: disable ▾  
 Transmit Hash Policy: layer2 layer3+4

✓ Apply

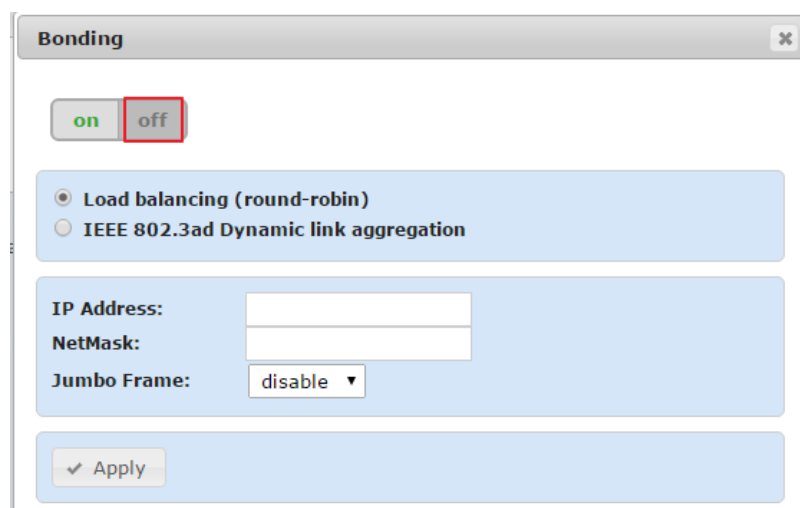
4. To remove the bonding interface “bond0”, click the interface **bond0** and then click **Bonding**.



General NIC

Bonding Edit UP Link  
 ▶ bond0 Connected

5. In the following dialog box, click **off** and then click **Apply** to immediately remove “bond0”.



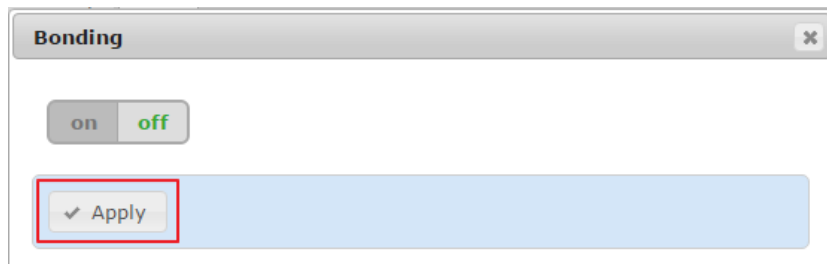
**Bonding**

on off

☒ Load balancing (round-robin)  
☐ IEEE 802.3ad Dynamic link aggregation

IP Address:   
 NetMask:   
 Jumbo Frame: disable ▾

✓ Apply



### 1.9.4 Upload a Firmware File

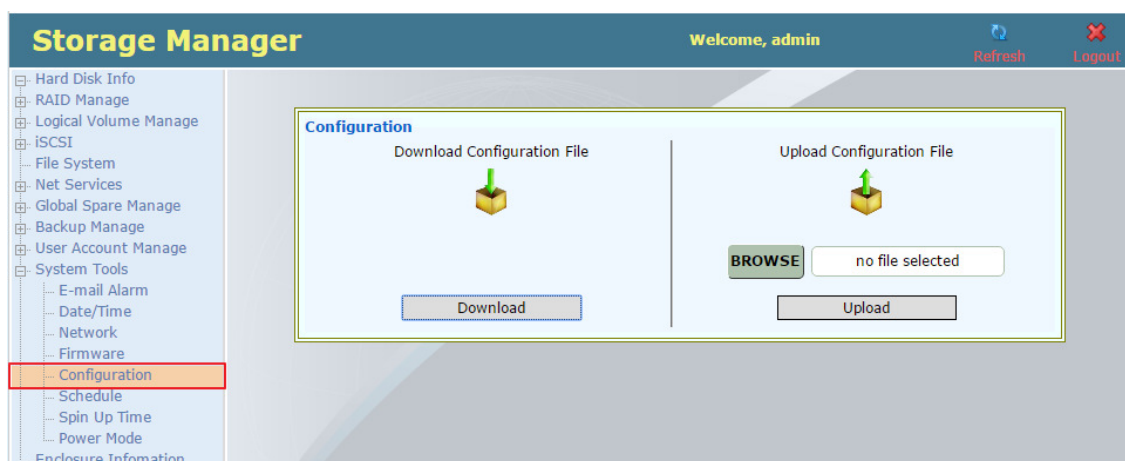
1. Click **Firmware**, and then click **Upload** after choosing a new firmware.



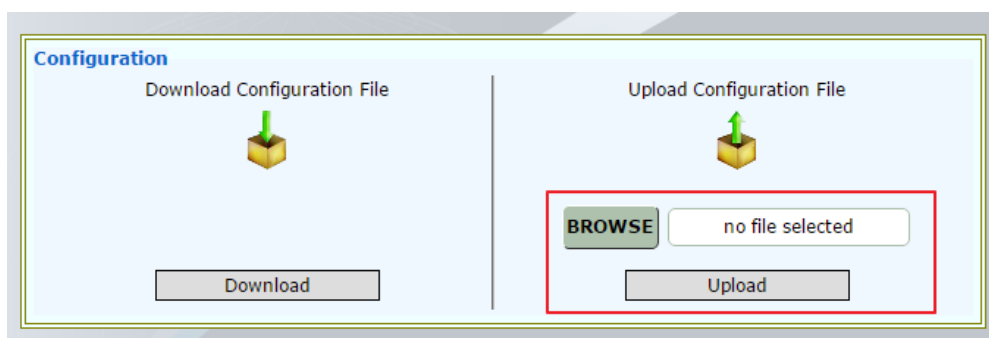
2. When uploading is done, restart Storage Manager to activate the new firmware.

### 1.9.5 Upload/Download the System Configuration

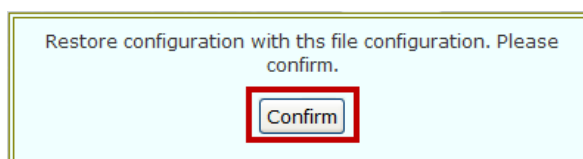
1. Click **Configuration** for the system configuration. To download the current configuration, click **Download**.



2. To upload a new system configuration, click **Upload** after choosing a new configuration.

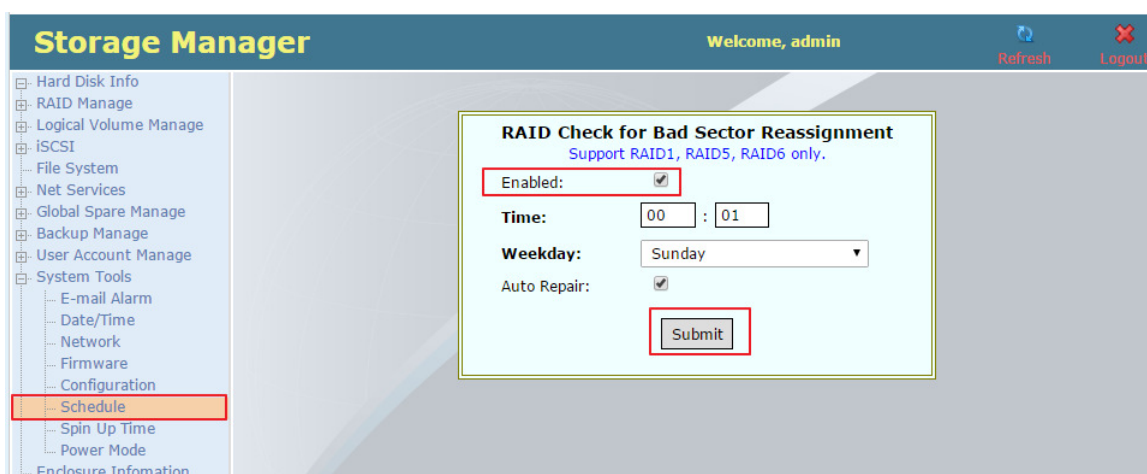


3. If you want to apply the new configuration, click **Confirm**. To activate the new system configuration, click **Reboot**.



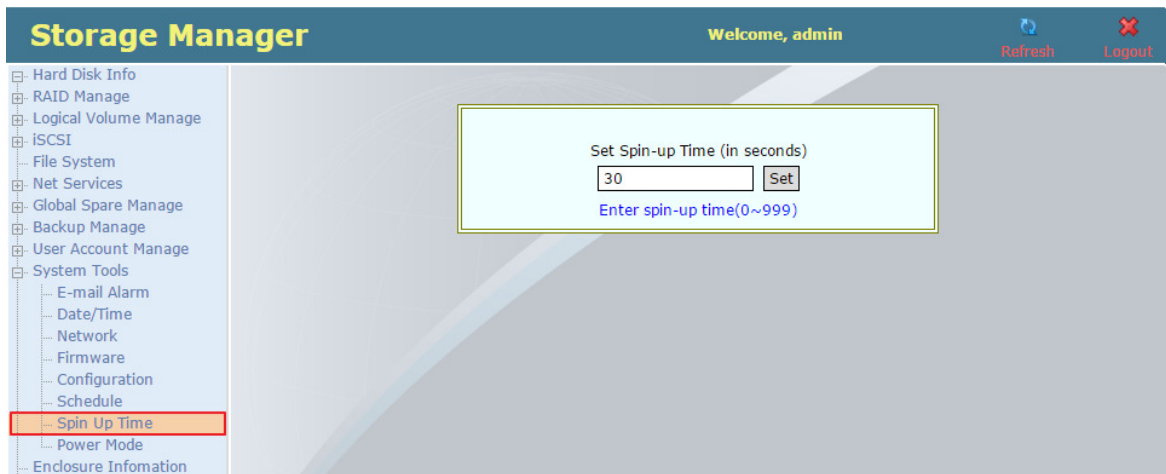
### 1.9.6 Schedule for RAID Check

To have regular scan on inconsistent data on your RAID1, RAID5, and RAID6 arrays, click **Schedule** and select the checkbox **Enabled**. Selecting the checkbox **Auto Repair** will automatically repair once inconsistent data was detected. Click **Submit** to save the configuration.



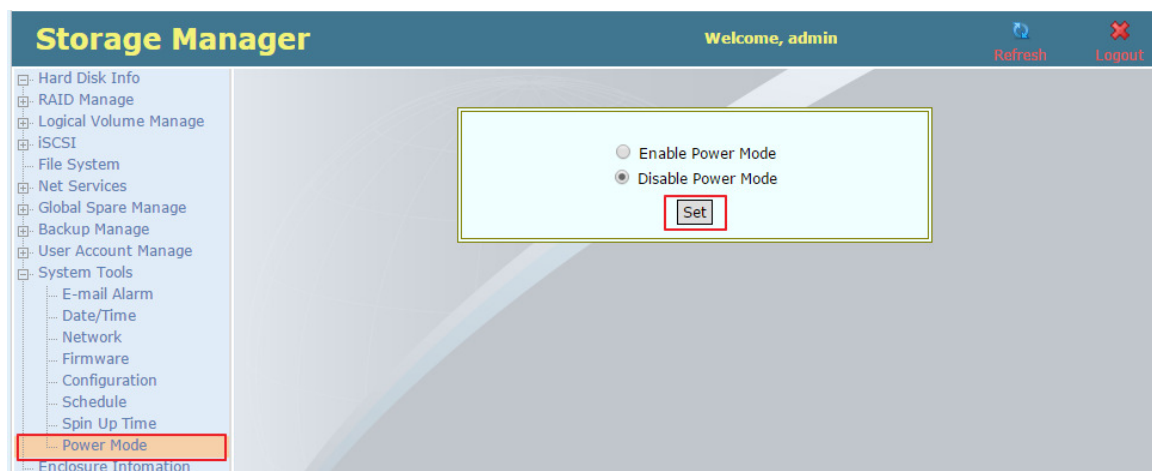
### 1.9.7 Configure Drive Spin-Up Time

A disk array can not function at the time some disk drives are not available. The period for each disk drive to be available after powering on Storage Manager varies. The spin-up time is the maximum waiting time for each disk drive to be available. Click **Spin Up Time** and then click **Set** after configuration.



### 1.9.8 Configure Drive Power Mode

A disk drive in the active mode with data access service consumes more power than one in the stop mode without data access service. While disabling power mode, all disk drives work in the active mode. While enabling power mode, all disk drives in a disk array with status "Good", "Degraded", or "Initializing" work in the active mode, and the other disk drives work in the stop mode for power saving. Click **Power Mode** and then click **Set** after configuration.



### 1.9.9 Configure SNMP

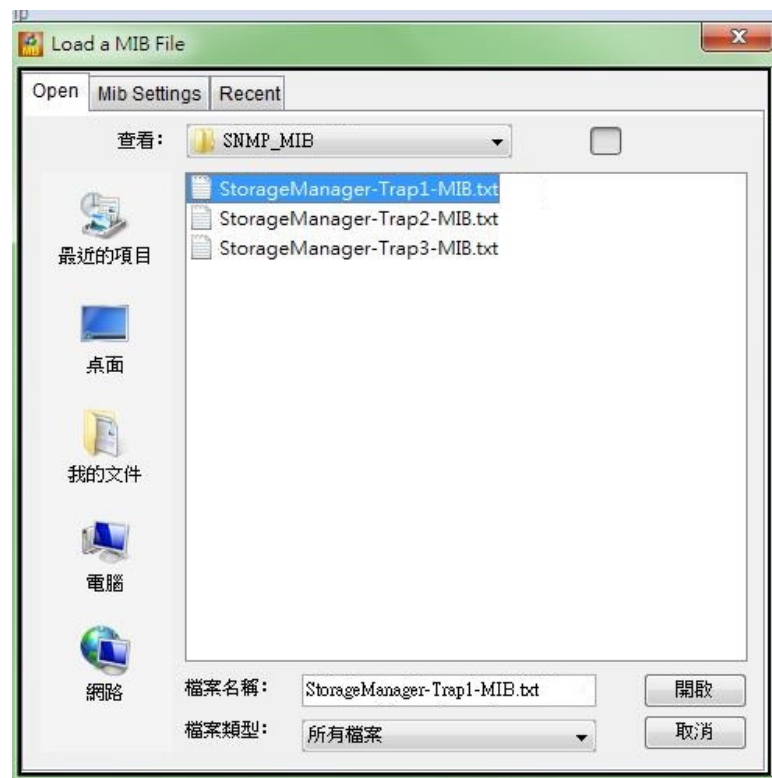
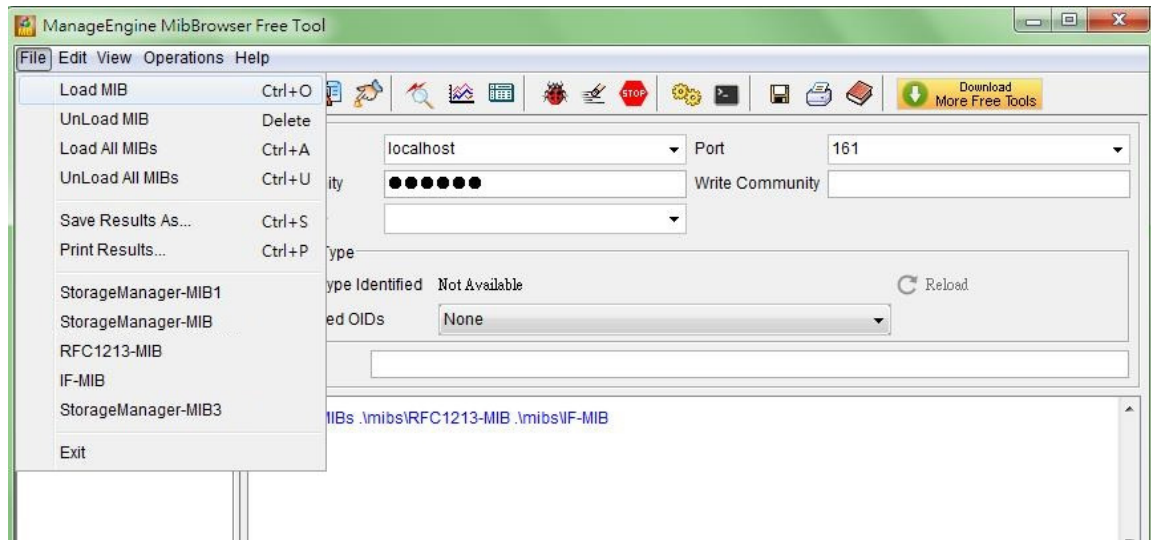
SNMPv1 and SNMPv2c are supported. Click **SNMP** for configuration. When done, click **Apply** to activate the new settings.

Description of fields:

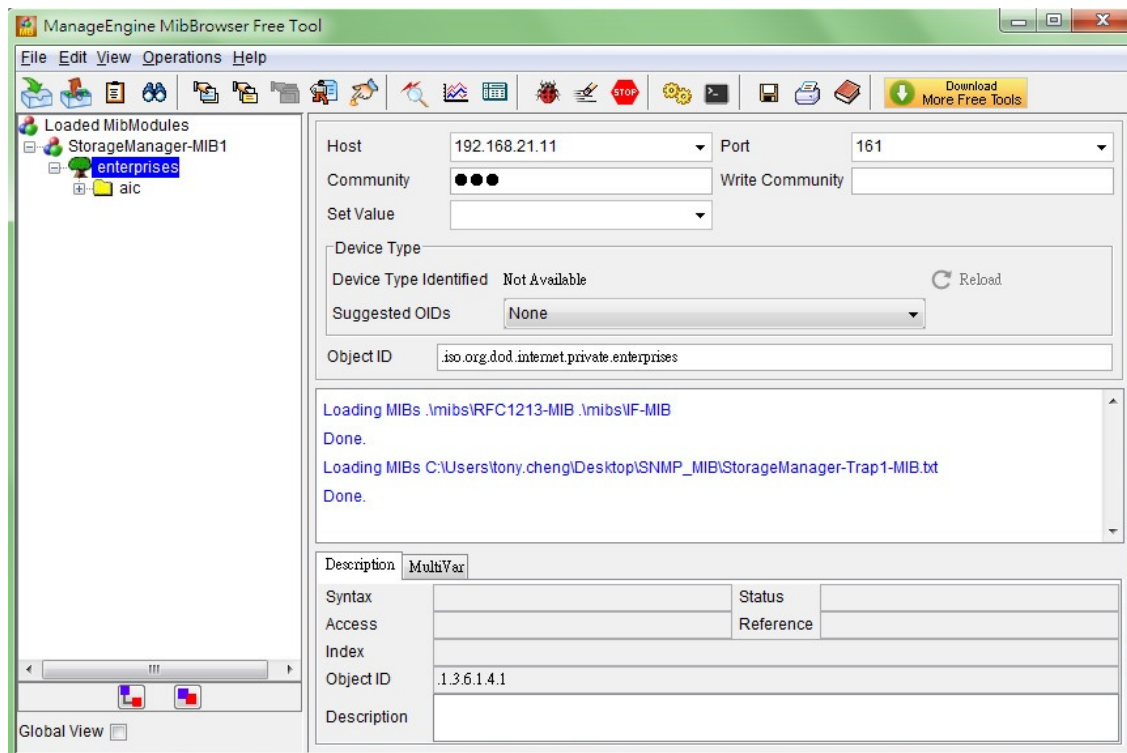
- **Enable SNMP**  
Enable/disable SNMP.
- **Notification for warning message**  
Enable/disable saving warning messages into SNMP MIB.
- **Notification for RAID Rebuild /Check /Recovery Termination /Completion**  
Enable/disable saving messages regarding RAID rebuilding, checking, recovery termination, and completion into SNMP MIB.
- **SNMP Port No**  
The UDP port (161 for its default) used by the SNMP agent for receiving requests
- **TRAP Address**  
There are up to three SNMP trap receivers supported. Each SNMP trap receiver has its respective OID.
- **Community**  
It is the password (community string) for SNMP authentication sent in clear text between a SNMP manager and agent.
- **SNMP MIB**  
Click **Download** to download a compressed file named "SNMP\_MIB.7z" which includes 3 MIB files, "StorageManager-Trap1-MIB.txt", "StorageManager-Trap2-MIB.txt", and "StorageManager-Trap3-MIB.txt". Those MIB files can be read by some applications like **ManageEngine MibBrowser**.

Use **ManageEngine MibBrowser** for example:

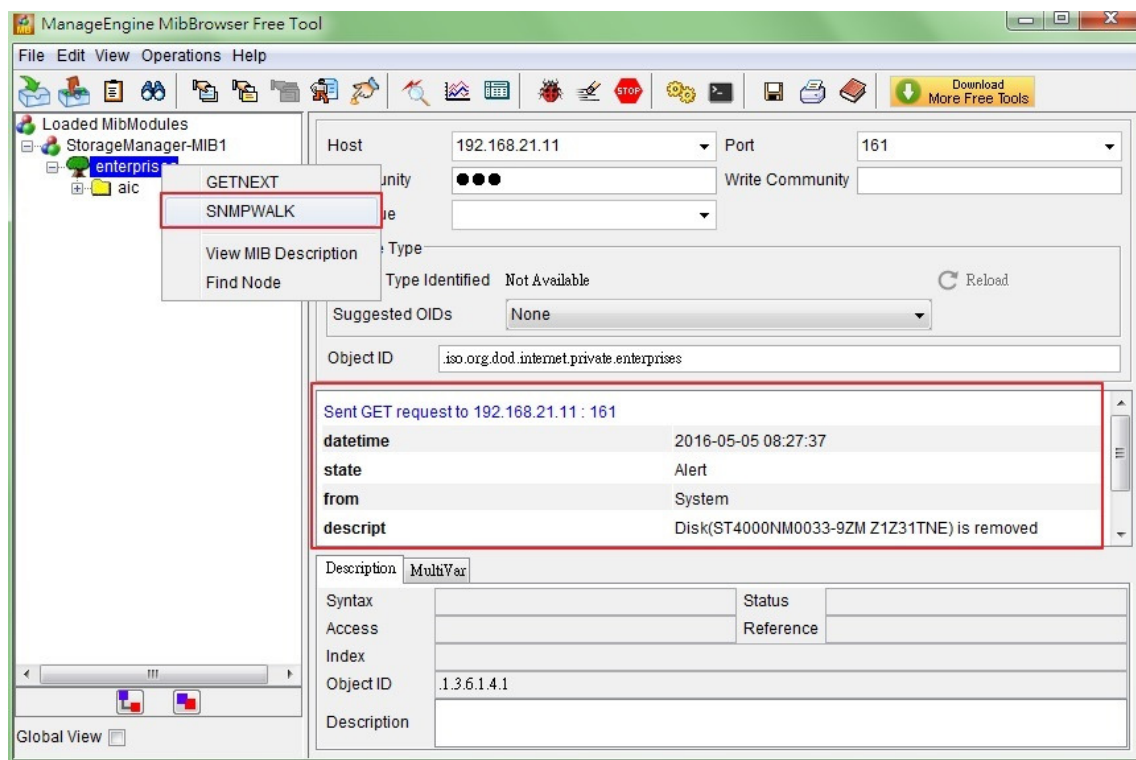
1. Select **Load MIB** to load a MIB file "StorageManager-Trap1-MIB.txt".



2. Configure the field **Host** with the IP address of Storage Manager and the field **Community** with SNMP Community.



3. Right click **enterprise** and select **SNMPWALK** to receive SNMP messages. There is a SNMP message received below.



### 1.9.10 Join AD (Active Directory) Domain



1. Click **Domain Security** and then the tab **Active Directory**. Select the checkbox **Join AD Domain**, input data into the following fields, and click **Apply**.

2. After joining AD domain, there are additional options, **AD User** and **AD Group**. With both options, the privilege on shared folders can be configured.

[AD Domain] User Name	Description	Email
DOMAIN\administrator		
DOMAIN\aduser		
DOMAIN\guest		
DOMAIN\krbtgt		
DOMAIN\nfs-client		
DOMAIN\nfs-server		

### 1.9.11 Bind LDAP (Lightweight Directory Access Protocol) Server

Click **Domain Security** and then the tab **LDAP Authentication**. The following fields with **DN** (distinguished name) should be input by the LDAP Data Interchange Format (LDIF) which is a standard plain text data interchange format for representing LDAP directory content and update requests.

Description of LDAP Data Interchange Format (LDIF):

- **dn (distinguished name)**  
This refers to the name that uniquely identifies an entry in the directory.
- **dc (domain component)**  
This refers to each component of the domain. For example [www.google.com](http://www.google.com) would



be written as dc=www,dc=google,dc=com.

- **ou (organizational unit)**

This refers to the organizational unit (or sometimes the user group) that the user is part of. If the user is part of more than one group, you may specify as such, e.g., ou=Lawyer,ou=Judge.

- **cn (common name)**

This refers to the individual object (person's name; meeting room; recipe name; job title; etc.) for whom/which you are querying.

The screenshot shows a system configuration window for LDAP Authentication. The left sidebar lists various system tools, with 'Domain Security' highlighted. The main window has two tabs: 'Active Directory' and 'LDAP Authentication'. The 'LDAP Authentication' tab is active, showing a 'Bind LDAP Server' checkbox (checked), a dropdown menu for 'LDAP Server Type' (set to 'External LDAP Server'), and several text input fields: 'LDAP Server' (192.168.1.80), 'Base DN' (dc=example,dc=com), 'Root DN' (cn=admin,dc=example,dc=com), 'Password' (masked with dots), 'Confirm Password' (masked with dots), 'User Base DN' (ou=people,dc=example,dc=com), and 'Group Base DN' (ou=groups,dc=example,dc=com). An 'Apply' button is located at the bottom right of the configuration area.

Description of fields:

- **LDAP Server Type**

The available options are “**External LDAP Server**”, “**Local LDAP Server**”, and “**Remote LDAP Server**”.

- **LDAP Server**

IP address of the LDAP server

- **Domain**

LDAP domain name (Example: example.com)

- **Base DN**

It's referred to the search base. (Example: dc=example,dc=com)

- **Root DN**

It's referred to the directory manager. (Example: cn=admin,dc=example,dc=com)

- **Password**

Password for the directory manager

- **Confirm Password**

Password for the directory manager

- **User Base DN**

It's used when searching for user entries on the LDAP server. (Example: ou=people,dc=example,dc=com)

- **Group Base DN**

It's used when searching for group entries on the LDAP server. (Example: ou=people,dc=example,dc=com)

### 1.9.11.1 Connect External LDAP Server

Select the checkbox **Bind LDAP Server**, and then choose "**External LDAP Server**" in the field **LDAP Server Type**. Input other fields as the following figure, and click **Apply**.

The screenshot shows a configuration window for LDAP. At the top left, the checkbox **Bind LDAP Server** is checked. Below it, the **LDAP Server Type** dropdown menu is open, showing three options: **External LDAP Server** (highlighted in blue), **Local LDAP Server**, and **Remote LDAP Server**. Below the dropdown, there are several text input fields, all of which are enclosed in a red rectangular box. These fields are: **LDAP Server** (containing 192.168.1.70), **Base DN** (containing dc=example,dc=com), **Root DN** (containing cn=admin,dc=example,dc=com), **Password** (containing six dots), **Confirm Password** (containing six dots), **User Base DN** (containing ou=people,dc=example,dc=com), and **Group Base DN** (containing ou=groups,dc=example,dc=com). At the bottom right of the window, there is a button labeled **Apply**, which is also enclosed in a red rectangular box.

### 1.9.11.2 Connect Local LDAP Server

Select the checkbox **Bind LDAP Server**, choose "**Local LDAP Server**" in the field **LDAP Server Type**, and then click **Apply**.

☒ Bind LDAP Server

LDAP Server Type: External LDAP Server  
Local LDAP Server  
Remote LDAP Server

LDAP Status:

Apply

### 1.9.11.3 Connect Remote LDAP Server

1. Select the checkbox **Bind LDAP Server**, and then choose “**Remote LDAP Server**” in the field **LDAP Server Type**. Input other fields as the following figure, and click **Apply**.

☒ Bind LDAP Server

LDAP Server Type: External LDAP Server  
Local LDAP Server  
Remote LDAP Server

LDAP Status:

LDAP Server: 192.168.1.80

Domain: example.com

Password: .....

Confirm Password: .....

Apply

2. After successful connection with the LDAP server, the field **LDAP Status** reports “LDAP service is active”.

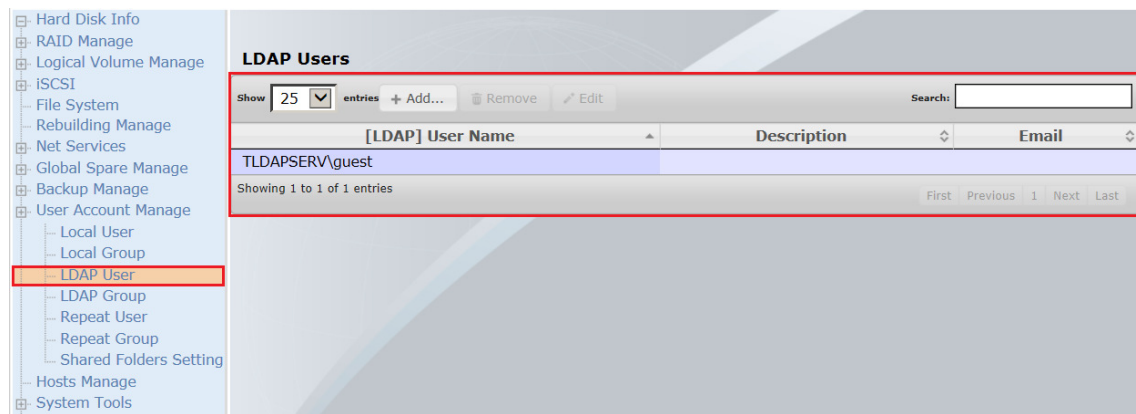
☒ Bind LDAP Server

LDAP Server Type: Local LDAP Server

LDAP Status: LDAP service is active

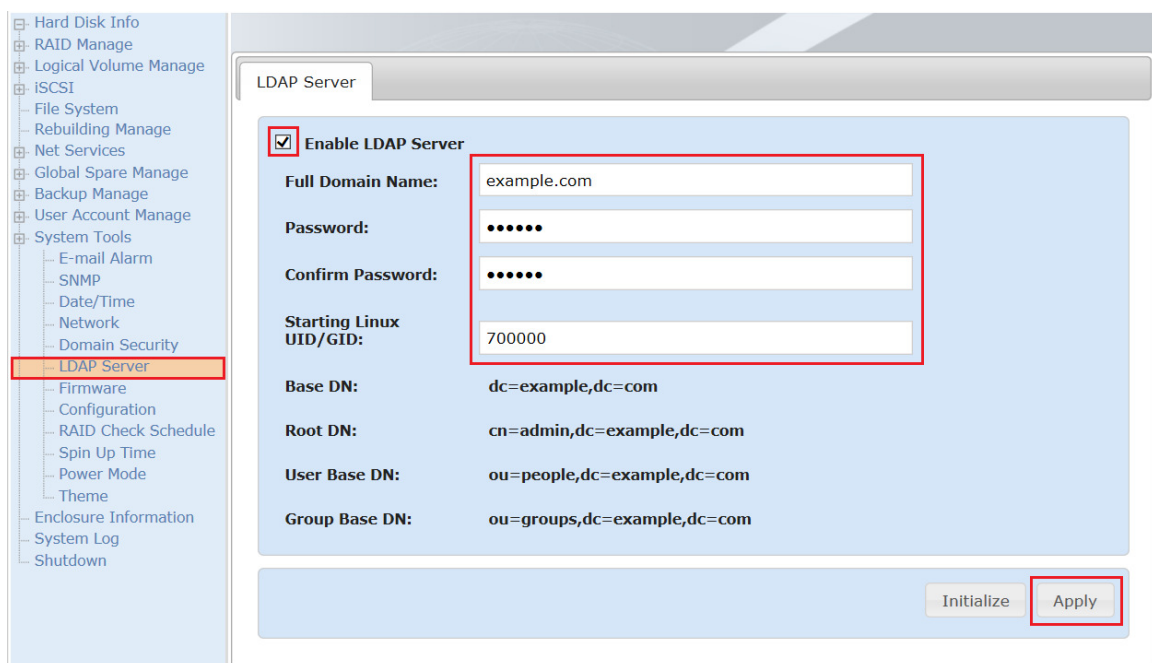
Apply

3. After successful connection with the LDAP server, there are additional options, **LDAP User** and **LDAP Group**. With both options, the privilege on shared folders can be configured.



### 1.9.12 Configure LDAP (Lightweight Directory Access Protocol) Server

1. Click **LDAP Server**, and then select the checkbox **Enable LDAP Server**. Input other fields, and click **Apply**.



2. Click **Initialize** to initialize the setting of the LDAP server. It will remove all LDAP users and groups. In the dialog box, click **OK**.

LDAP Server

☒ Enable LDAP Server

Full Domain Name:

example.com

Password:

••••••

Confirm Password:

••••••

Starting Linux UID/GID:

700000

Base DN:

dc=example,dc=com

Root DN:

cn=admin,dc=example,dc=com

User Base DN:

ou=people,dc=example,dc=com

Group Base DN:

ou=groups,dc=example,dc=com

Initialize

Apply

Confirm Delete

Are you sure you want to initialize the LDAP Server? (!!!LDAP account will be clear!!!)

OK

Cancel

## 1.10 View Enclosure Information

Click **Enclosure Information** for SAS Enclosure information.

Storage Manager

Welcome, admin

Refresh

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- ISCSI
- File System
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information**
- System Log
- Shutdown

Enclosure

- AIC CORP SAS 6G Expander 50015b2078b3293f
  - Power supply0
  - Temperature sensor0 (34 C)
  - Voltage sensor0 (12.08 volts)
  - Voltage sensor1 (5.17 volts)
  - Voltage sensor2 (3.30 volts)
  - Voltage sensor3 (1.79 volts)



There is a tree view per SAS enclosure which includes the items below.

- **SAS Enclosure Node**

It is composed of the model name and the SAS address.

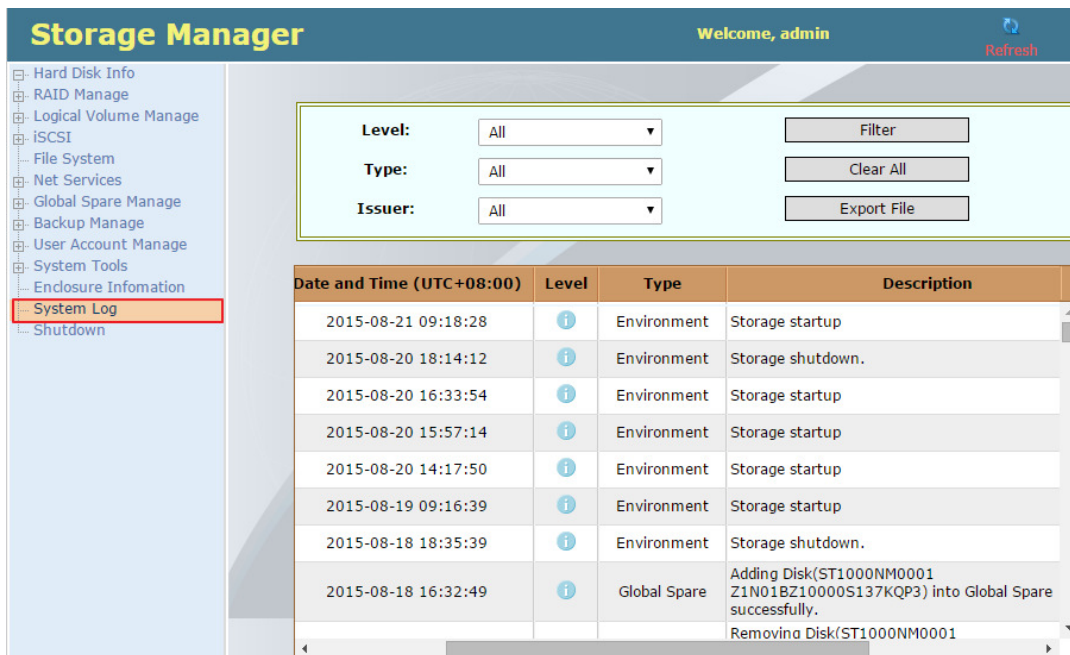
- **SAS Enclosure Element**

There could be multiple element types in a SAS enclosure node which include Enclosure, Temperature sensor, Cooling, Power supply, Voltage sensor, Audible alarm, etc. Each element has a status report.

Icon	Status
	Normal
	Abnormal

## 1.11 View System Log

Click **System Log** for log messages. After setting the filter conditions, click **Filter** to list the log messages you prefer. To remove all log messages, click **Clear All**. To save the log messages into a file, click **Export File**.



The screenshot shows the 'Storage Manager' web interface. On the left is a sidebar with a tree view containing items like 'Hard Disk Info', 'RAID Manage', 'Logical Volume Manage', 'iSCSI', 'File System', 'Net Services', 'Global Spare Manage', 'Backup Manage', 'User Account Manage', 'System Tools', 'Enclosure Information', 'System Log' (highlighted with a red box), and 'Shutdown'. The main content area has a header 'Welcome, admin' and a 'Refresh' button. Below this is a filter section with three dropdown menus: 'Level' (set to 'All'), 'Type' (set to 'All'), and 'Issuer' (set to 'All'). To the right of these are three buttons: 'Filter', 'Clear All', and 'Export File'. Below the filter section is a table of log messages.

Date and Time (UTC+08:00)	Level	Type	Description
2015-08-21 09:18:28	i	Environment	Storage startup
2015-08-20 18:14:12	i	Environment	Storage shutdown.
2015-08-20 16:33:54	i	Environment	Storage startup
2015-08-20 15:57:14	i	Environment	Storage startup
2015-08-20 14:17:50	i	Environment	Storage startup
2015-08-19 09:16:39	i	Environment	Storage startup
2015-08-18 18:35:39	i	Environment	Storage shutdown.
2015-08-18 16:32:49	i	Global Spare	Adding Disk(ST1000NM0001 Z1N01BZ10000S137KQP3) into Global Spare successfully.
			Removing Disk(ST1000NM0001




Description of fields:

- **Date and Time**

The timestamp when the message was logged

- **Level**

Icon	Level	Description
------	-------	-------------

	Information	General Information
	Warning	Warning message
	Error	Error message

- **Type**

It could be "Disk", "RAID", "Logical Volume", and "Environment".

- **Description**

Content of the message

- **Issuer**

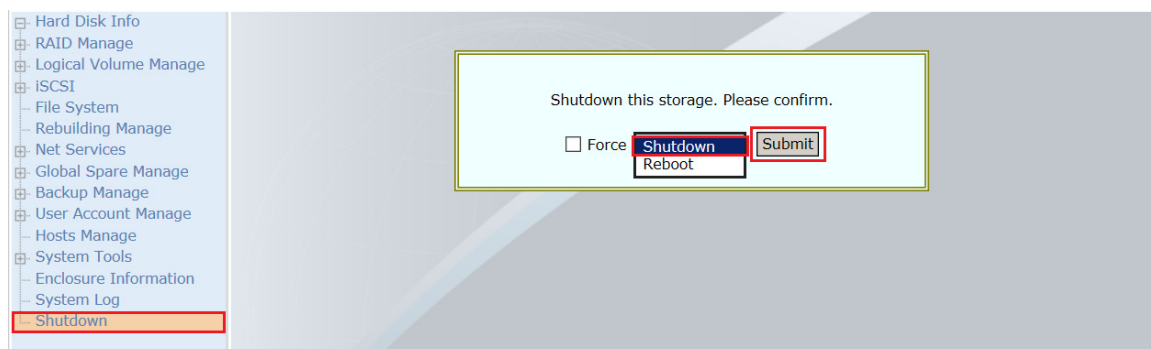
The source which generates the message includes "Operation" and "System".

- **Username**

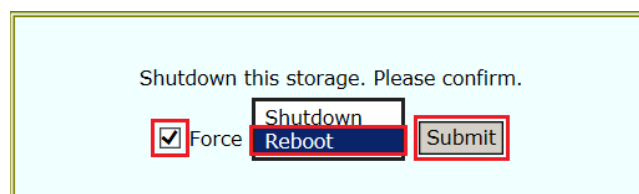
The message was logged because of the username's configuration.

## 1.12 Shutdown

1. Click **Shutdown**, select "**Shutdown**" or "**Reboot**" to power off or reboot Storage Manager.



2. To power off or reboot Storage Manager while it is busy, select the field **Force** and click **Submit**.



## 1.13 How to Create a RAID5 Array

3. Click **Add RAID** to start a disk array creation in this example. Click **Continue** after input as the following dialog box.

RAID Name:

Initialization:

QoS:

Level:

Chunk Size:

Disk:

4. Select 3 disk drives at least for a RAID5 array and click **Create RAID**.

RAID Name:  Initialization:

Level:  Read Cache:

Chunk Size:  Write Cache:

QoS:

	Status	Product Serial#	QoS	Vendor
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0256791	n/a	ATA
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0256440	n/a	ATA
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0257107	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0257094	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0279633	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0279681	n/a	ATA

5. Click **RAID Manage** for the field **Progress** for the new RAID5 array.

Status	Progress	Name	Active Unit	Spare Unit
	recovery=1.4% = 3.3min	RAID5-array	3	0

## 1.14 How to Create a RAID50 Array

1. This example uses two RAID5 arrays to create a RAID50 array.
2. Click **Add RAID** to start the first RAID5 array creation named "RAID5-array01". Click **Continue** after input as the following dialog box. And then select 3 disk drives at least for the RAID5 array and click **Create RAID**.



RAID Name:

Initialization:

QoS:

Level:

Chunk Size:

Disk:

RAID Name:  Initialization:

Level:  Read Cache:

Chunk Size:  Write Cache:

QoS:

	Status	Product Serial#	QoS	Vendor
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0256791	n/a	ATA
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0256440	n/a	ATA
<input checked="" type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0257107	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0257094	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0279633	n/a	ATA
<input type="checkbox"/>	✓	WDC WD1002FBYS-0 WD-WMATV0279681	n/a	ATA

3. Create the second RAID5 array named "RAID5-array02" as the previous step.
4. After both RAID5 array statuses become "Good", create a RAID0 array on them for a RAID50 array.

Status	Progress	Name	Unit	Size (GB)
<input checked="" type="checkbox"/>	resync=0.3% = 204.8min	RAID5-array01		1863.023
<input checked="" type="checkbox"/>	resync=0.2% = 429.1min	RAID5-array02		1863.023

5. Create a RAID0 array named "RAID50-array" with the following input.

RAID Name:

Initialization:

QoS:

Level:

Chunk Size:

Disk:

RAID Name:  Initialization:

Level:  QoS:

Chunk Size:

	On	Status	Name	Size (GB)	QoS	Level	RAID Disk
<input checked="" type="checkbox"/>			RAID5-array01	1863.023	Mix	raid5	3
<input checked="" type="checkbox"/>			RAID5-array02	1863.023	Mix	raid5	3

6. Click **RAID Manage** for the field **Progress**.

Status	Progress	Name	Unit	Size (GB)	Free (GB)
<input checked="" type="checkbox"/>	n/a	RAID50-array		3726.044	3726.044
<input checked="" type="checkbox"/>	resync=4.6% = 191.3min	RAID5-array01		1863.023	n/a
<input checked="" type="checkbox"/>	resync=4.7% = 183.1min	RAID5-array02		1863.023	n/a

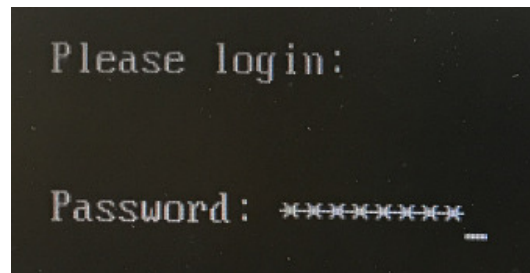
### 1.15 Initialize/Recover Storage Manager via VGA

1. After booting Storage Manager, the information below is shown on your VGA.

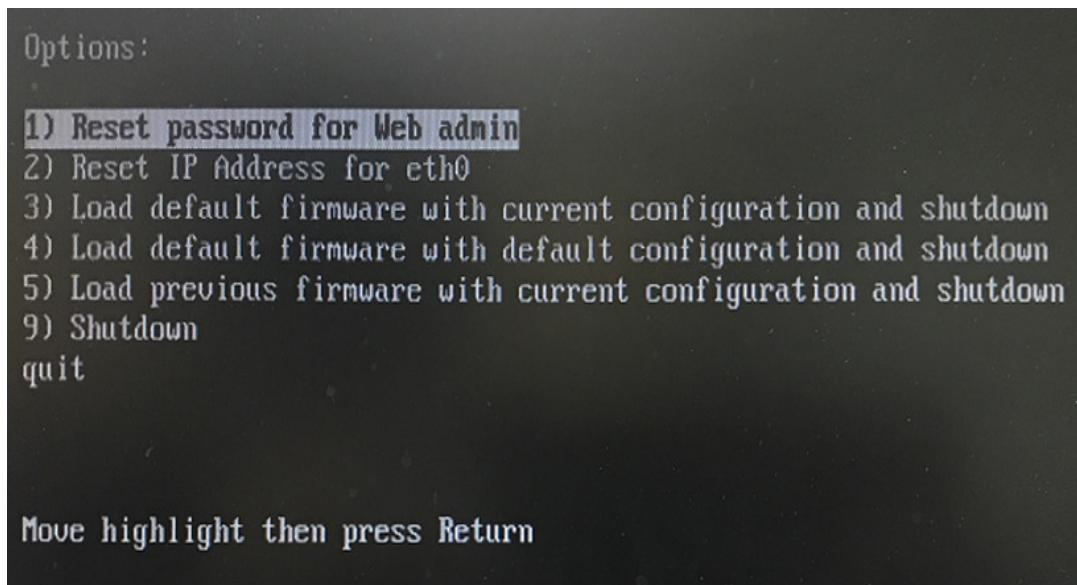
```
Welcome to Storage Manager (F1: Function menu  F5: Refresh)
-----
Network Settings:

eth0 addr:192.168.1.90  Mask:255.255.255.0
eth1 addr:192.168.21.21  Mask:255.255.255.0
```

2. Press **F1** on your keyboard and input the password "**password**".



3. In the menu below, there are selective options.



Description of fields:

- **Reset password for Web admin**

Reset the administrator's password in Storage Manager with the default password.

- **Reset IP Address for eth0**

Reset the IP address and subnet mask of the LAN interface "eth0" with the default IP address and default subnet mask.

- **Load default firmware with current configuration and shutdown**

Storage Manager will run with the factory's default firmware and current system configuration in the following booting, and then shutdown Storage Manager.

- **Load default firmware with default configuration and shutdown**

Storage Manager will run with the factory's default firmware and default system configuration in the following booting, and then shutdown Storage Manager.

- **Load previous firmware with current configuration and shutdown**

Storage Manager will run with the previous firmware and current system configuration in the following booting, and then shutdown Storage Manager.

- **Shutdown**

Shutdown Storage Manager.

- **quit**

Quit this menu.

### 1.16 LED Status on a Drive Tray

Condition	Blue LED	Red LED
No drive is detected.	OFF	OFF
The drive is detected, but not being accessed.	ON	OFF
The drive is being located.	Slow blink	OFF
The drive is being accessed.	Fast blink	OFF
1. The SMART data in the drive indicates a possible imminent drive failure or reports warning(s). 2. The detected drive is part of a disk array with status " <i>Degraded</i> " or " <i>Failed</i> ".	ON	Slow blink
The drive is part of a disk array which is on initialization, growing, or migration.	Fast blink	Fast blink
The drive which can not be detected is part of a disk array with status other than " <i>Good</i> ", " <i>Offline</i> ", or " <i>Stopped</i> ".	OFF	ON

# Chapter 2.

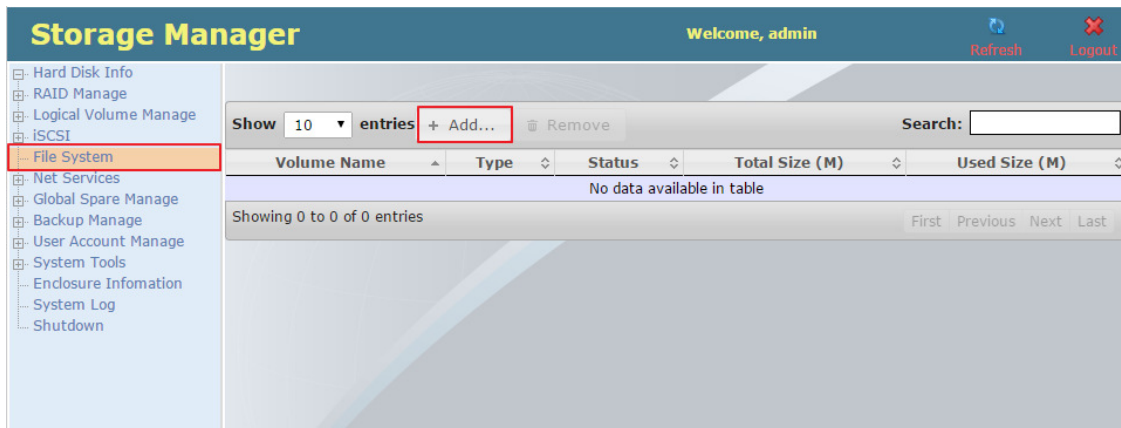
## NAS Configuration

### 2.1 Manage File Systems

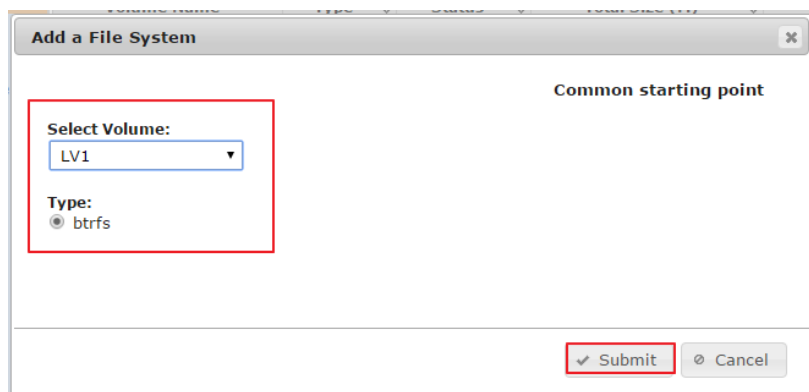
1. Create a File System
2. View File System
3. Remove a File System

#### 2.1.1 Create a File System

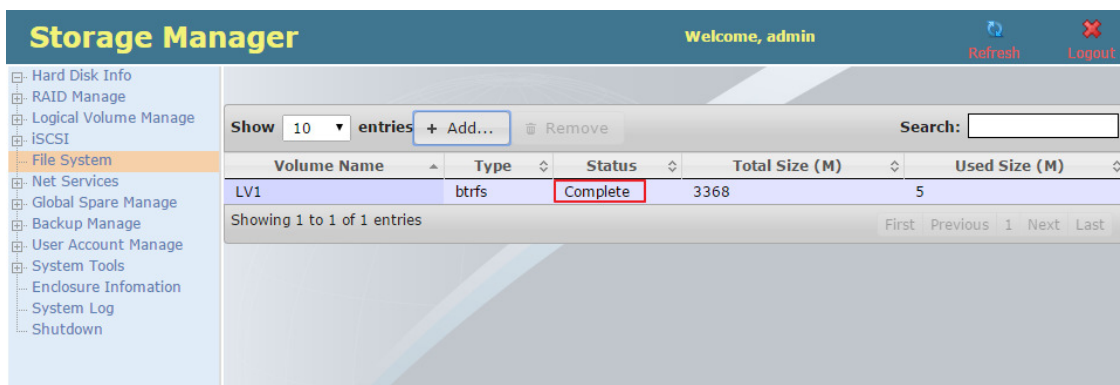
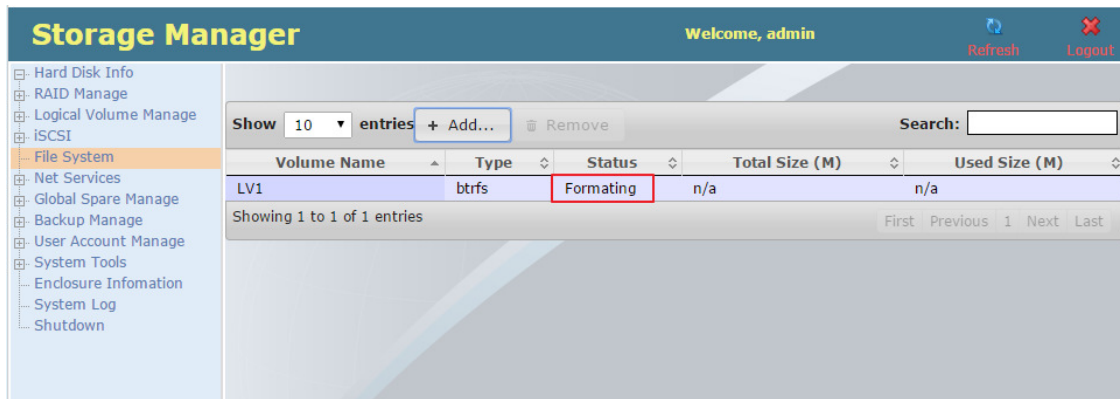
1. Click **File System** and then click **+ Add...** to start a file system creation.



2. In the dialog box below, select an available logical volume for the new file system and click **Submit**.



3. The new created file system has "Formating" in its field **Status**. When done, the field **Status** reports "Complete".



## 2.1.2 View File Systems

Click **File System** to view file systems.

Volume Name	Type	Status	Available Size(M)	Used Size(M)
LV1	btrfs	Good	100292	1

Description of fields:

- **Volume Name**  
The logical volume name
- **Type**  
File system type
- **Status**

Status	Description
Good	The file system functions normally.
Formating	The file system is being formatted.
Complete	The format is complete.

Checking	The file system is checking all directories and files on it, and will repair any inconsistency.
Offline	The file system status is “Offline” when the logical volume status is “Offline” or “Stopped”.
Failed	The file system status is “Failed” when the logical volume status is “Failed”.

- **Available Size (M)**

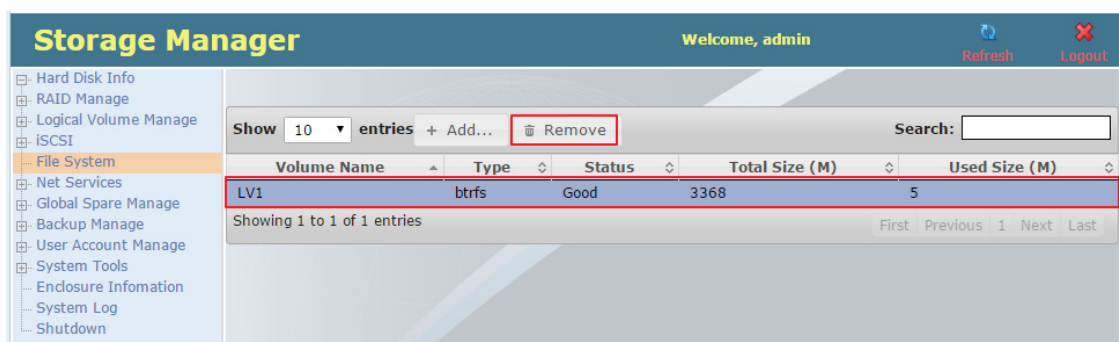
Total size of the file system (MB)

- **Used Size (M)**

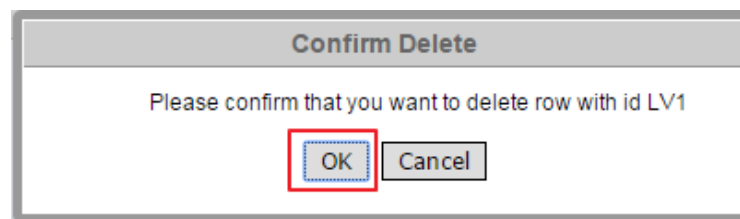
Used size of the file system (MB)

### 2.1.3 Remove a File System

1. Select the file system and then click **Remove**.



2. Click **OK** in the dialog box below.



## 2.2 Rebuilding Manage

It is mandatory for two features, “Online RAID Level Migration” and “Reshape RAID Chunk Size Online”. Have the following steps well configured before starting either one feature.

1. Create a RAID0 array.

**Storage Manager** Welcome, admin Refresh

- Hard Disk Info
- RAID Manage**
  - Add RAID
- Logical Volume Manage
- iSCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Configure	Status	Name	Active Unit	Spare
<input type="text" value="RAID0"/> <input type="button" value="Execute"/>	✓	RAID0	1	0
<input type="text" value="RAID5"/> <input type="button" value="Execute"/>	✓	RAID5	3	1

2. Create a logical volume with the newly created RAID0 array.

**Storage Manager** Welcome, admin Refresh

- Hard Disk Info
- RAID Manage
- Logical Volume Manage**
  - Add Logical Volume
- iSCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Configure	Status	Name	Configured Size (GB)
<input type="text" value="RAID0LV"/> <input type="button" value="Execute"/>	✓	RAID0LV	3725.896
<input type="text" value="RAID5LV"/> <input type="button" value="Execute"/>	✓	RIAD5LV	7.998

3. Create a file system with the new logical volume.

**Storage Manager** Welcome, admin Refresh Logout

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- iSCSI
- File System**
  - Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Show  entries

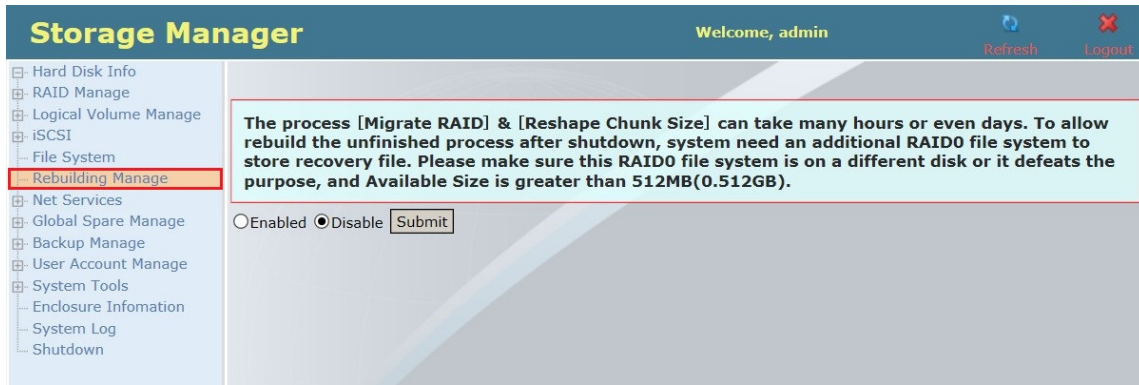
Search:

Volume Name	Type	Status	Available Size(M)	Used Size(M)
RAID0LV	btrfs	Good	3813220	1

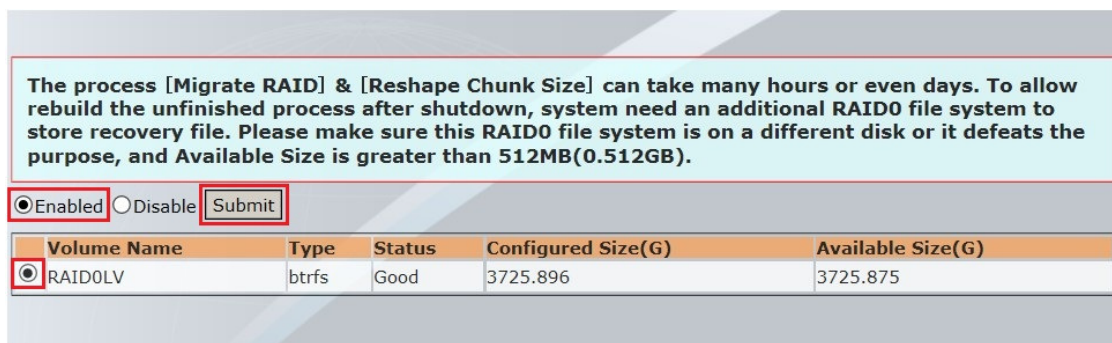
Showing 1 to 1 of 1 entries First Previous 1 Next Last

4. Click **Rebuilding Manage**.





5. Select the field **Enable** and the new file system, and then click **Submit** to create a temporary file system for RAID level migration or reshaping RAID chunk size.



6. When the RAID level migration or reshaping RAID chunk size is done, the temporary file system can be removed.

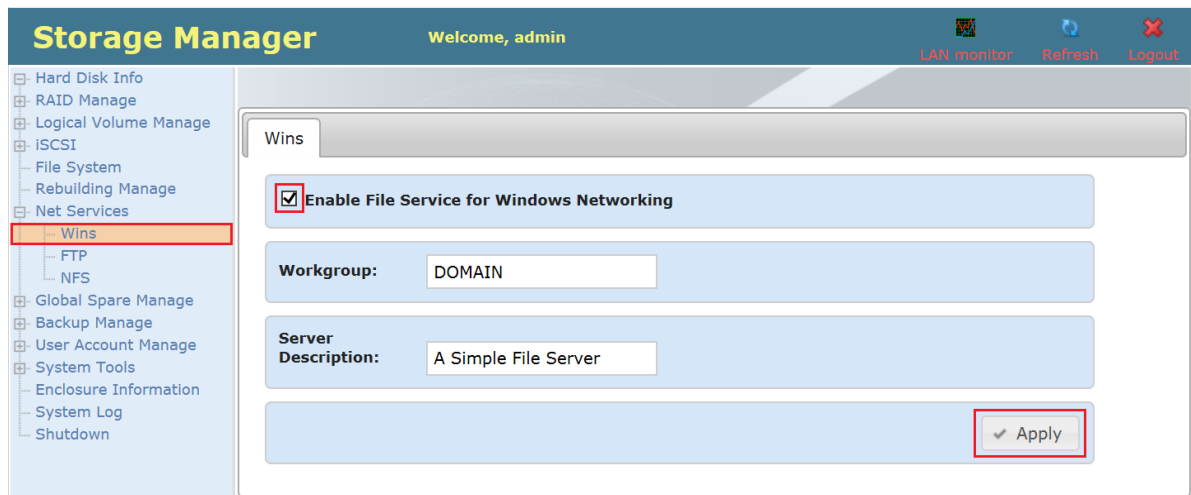
## 2.3 Manage Network File Service

The **Net Services** includes the following services.

1. Wins Service
2. FTP Service
3. NFS Service

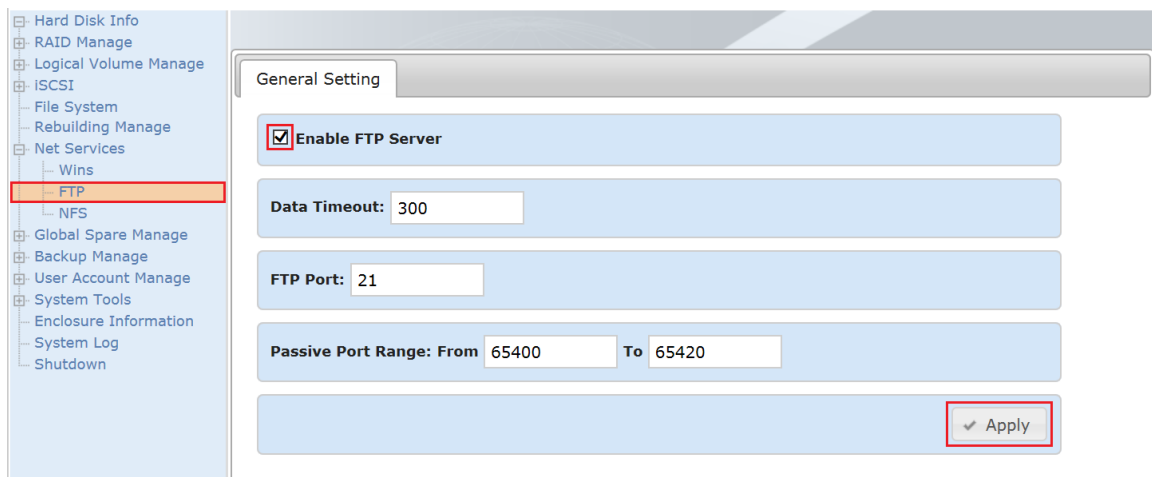
### 2.3.1 Wins Service

Click **Wins** and select the checkbox **Enable File Service for Windows Networking**. After inputting the other fields, click **Apply** to immediately apply the new setting.



### 2.3.2 FTP Service

Click **FTP** and select the checkbox **Enable FTP Server**. After inputting the other fields, click **Apply** to immediately apply the new setting.



### 2.3.3 NFS Service

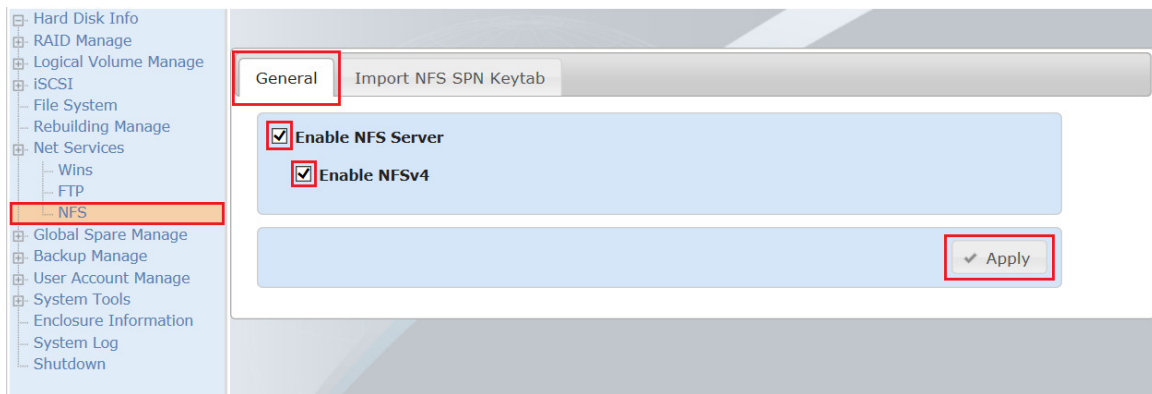
The **NFS** supports the following configurations.

1. NFS General Configuration
2. Import NFS SPN Keytab

#### 2.3.3.1 NFS General Configuration

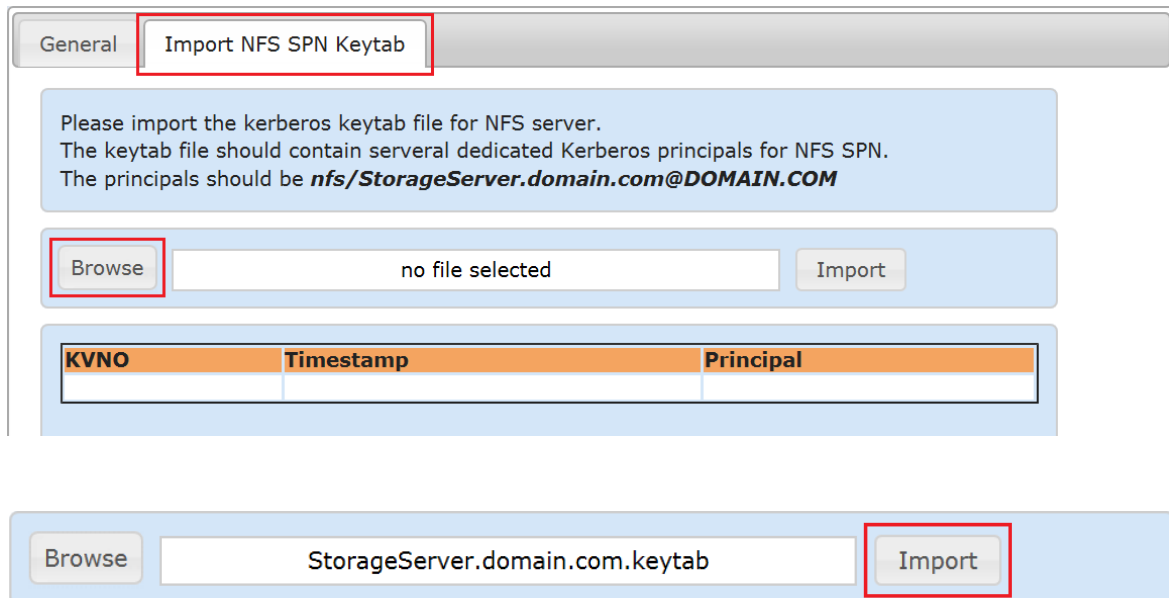
Click **NFS** and select the checkbox **Enable NFS Server**. If NFSv4 is needed, select the checkbox **Enable NFSv4**. And then click **Apply**.

(Note: This NFS server is not compatible with Windows NFS client.)



### 2.3.3.2 Import NFS SPN Keytab

1. Click the tab **Import NFS SPN Keytab**. Click **Browse** to select a keytab file, and then click **Import**.



2. Re-click the tab **Import NFS SPN Keytab** to verify the content of the imported keytab file.

General

Import NFS SPN Keytab

Please import the kerberos keytab file for NFS server.  
The keytab file should contain several dedicated Kerberos principals for NFS SPN.  
The principals should be ***nfs/StorageServer.domain.com@DOMAIN.COM***

Browse

no file selected

Import

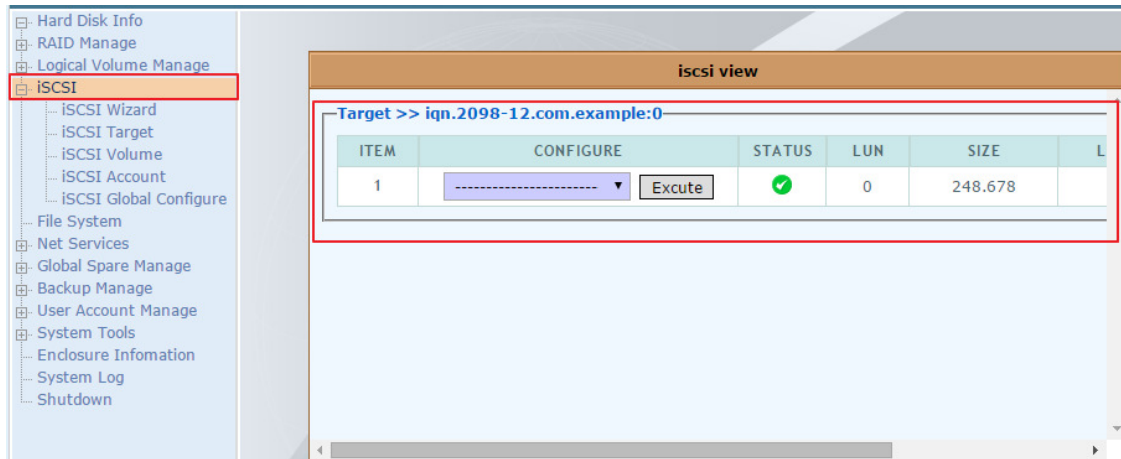
KVNO	Timestamp	Principal
53	11/04/2016 08:40:57	nfs/StorageServer.domain.com@DOMAIN.COM (des-cbc-crc)
53	11/04/2016 08:40:57	nfs/StorageServer.domain.com@DOMAIN.COM (des-cbc-md5)
53	11/04/2016 08:40:57	nfs/StorageServer.domain.com@DOMAIN.COM (arcfour-hmac)
53	11/04/2016 08:40:57	nfs/StorageServer.domain.com@DOMAIN.COM (aes256-cts-hmac-sha1-96)
53	11/04/2016 08:40:57	nfs/StorageServer.domain.com@DOMAIN.COM (aes128-cts-hmac-sha1-96)

# Chapter 3.

## iSCSI Configuration

### 3.1 View iSCSI Volumes

Click **iSCSI** to view iSCSI volumes.



Description of fields:

- **Configure**

The functions include **Delete**, **iSCSI On**, and **iSCSI Off**.

- **Status**

Icon	Status	Description
✓	Good	The iSCSI volume functions normally.
⊖	Offline	When the iSCSI volume status is "Good", select <b>iSCSI Off</b> and click <b>Execute</b> to make it offline.
⊖	Stopped	The logical volume used by the iSCSI volume has status other than "Good".

- **LUN**

Logical unit number for the iSCSI volume

- **Size**

Total size of the iSCSI volume (GB)

- **LV Name**

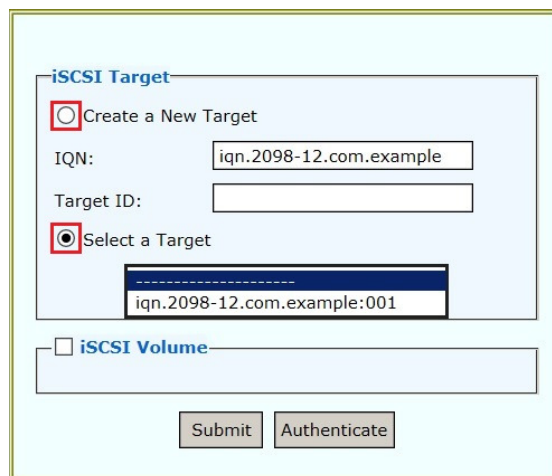
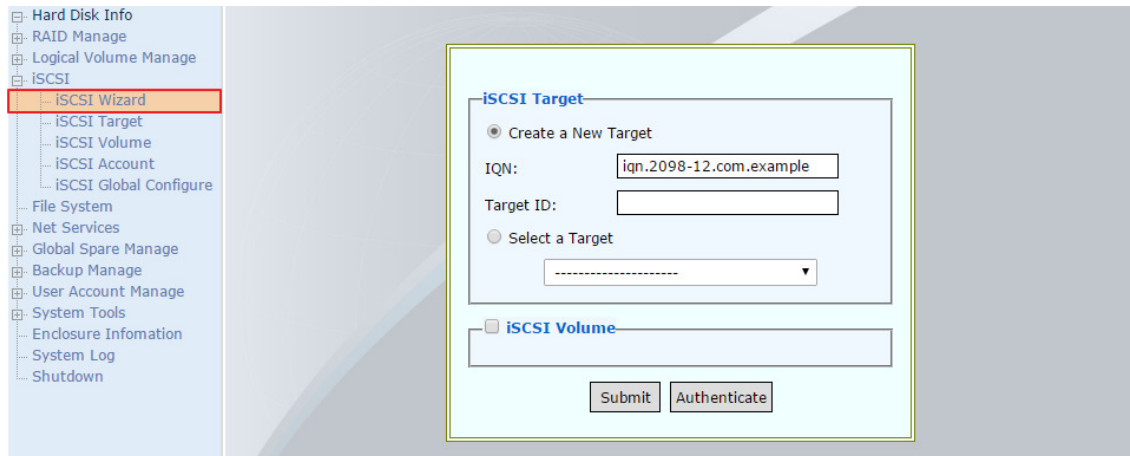
Name of the logical volume used by the iSCSI volume

- **IO Mode**

It could be “Read/Write” or “Read Only”.

### 3.2 iSCSI Wizard

1. Click **iSCSI Wizard**. In the section **iSCSI Target** there are two options, **Create a New Target** and **Select a Target**. To create a new iSCSI target without any volume, select the field **Create a New Target**, input both fields **IQN** and **Target ID**, and click **Submit**.



2. To add a logical volume into an iSCSI target for an additional iSCSI volume, select the checkbox **iSCSI Volume** and select a preferred logical volume from the field **Select volume** before clicking **Submit**.

**iSCSI Target**

☐ Create a New Target

IQN:

Target ID:

☒ Select a Target

☒ **iSCSI Volume**

Select volume:

3. To set up authentication for an iSCSI target in the section **iSCSI target**, click **Authenticate**.

**iSCSI Target**

☐ Create a New Target

IQN:

Target ID:

☒ Select a Target

☒ **iSCSI Volume**

Select volume:

4. In the dialog box below, click **Submit** after input.

**iSCSI Auth**

☒ CHAP (For Incoming AUTH)

Username:

Password:

☐ Mutual CHAP (For Incoming and Outgoing AUTH)

Username:

Password:

Description of fields:

- **CHAP (For Incoming AUTH)**

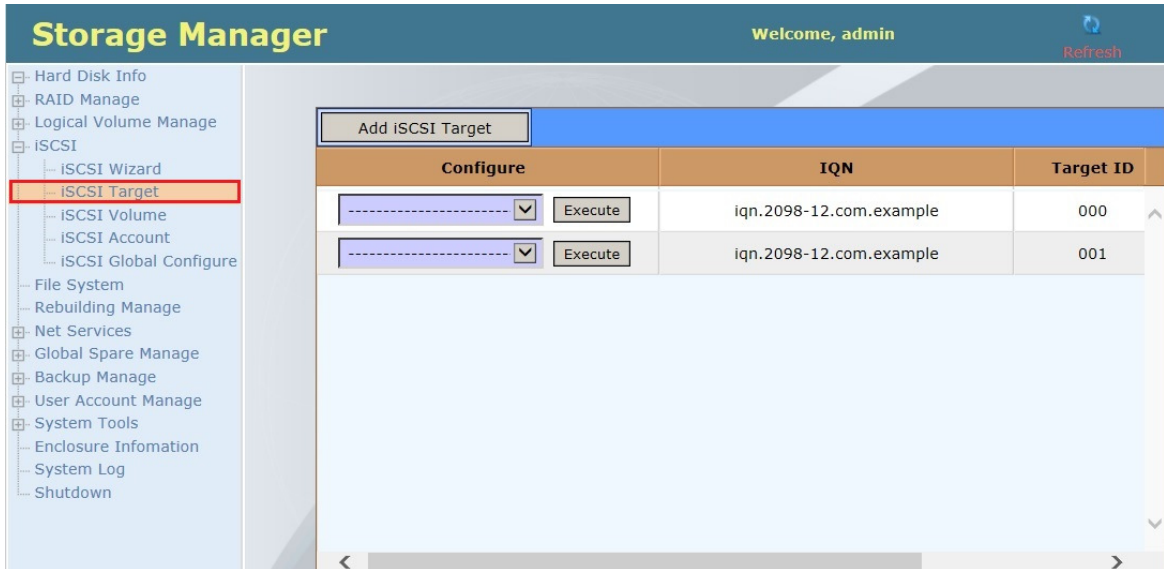
The iSCSI target can authenticate an initiator.

- **Mutual CHAP (For Incoming and Outgoing AUTH)**

The iSCSI target and the initiator authenticate each other.

### 3.3 Create an iSCSI Target

1. Click **iSCSI Target** for all iSCSI targets.



Description of fields:

- **Configure**

The functions include **Delete** and **Edit**.

- **IQN**

The iSCSI qualified name for the iSCSI target which is unique and permanent in an iSCSI network has the following format.

iqn.<yyyy-mm>.<naming-authority>

- <yyyy-mm>: The year and month when the naming authority was established
- <naming-authority>: Reverse syntax of the Internet domain name of the naming authority

- **Target ID**

A name specified by the naming authority is unique in an iSCSI target.

- **Status**

Icon	Status	Description
	Good	The iSCSI target functions normally.
	Failed	The iSCSI target can not function.



- **Auth Type**

It could be “Disable”, “Enable” (CHAP), or “Mutual” (Mutual CHAP).

2. To create an iSCSI target, click **Add iSCSI Target**. In the dialog box below, click **Submit** after inputting both fields **IQN** and **Target ID**. The default authentication for the field **Auth Type** is “Disable”.

Add iSCSI Target		
Configure	IQN	Target ID
<div>----- ▾</div> <div>Execute</div>	iqn.2098-12.com.example	000
<div>----- ▾</div> <div>Execute</div>	iqn.2098-12.com.example	001

**IQN:**

**Target ID:**

Submit

### 3.4 Add an iSCSI Volume

1. Click **iSCSI Volume** for the available logical volumes.

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- iSCSI
  - iSCSI Wizard
  - iSCSI Target
  - iSCSI Volume**
  - iSCSI Account
  - iSCSI Global Configure
- File System
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Add iSCSI Volume

	Name	Configured Size (GB)	Available Size (GB)	Physical Block
<input type="radio"/>	LV0	248.678	248.656	1
<input type="radio"/>	LV1	11.711	11.688	1

2. Select a logical volume and click **Add iSCSI Volume** after an iSCSI target has been created. In the dialog box below, click **Submit** after inputting both fields **Select target** and **Block size**.

Add iSCSI Volume				
	Name	Configured Size (GB)	Available Size (GB)	Physical Block
<input checked="" type="radio"/>	LV0	248.678	248.656	1
<input type="radio"/>	LV1	11.711	11.688	1

Select target:

0

Block size::

512

Submit

Description of fields:

- **Select target**

Select a unique target ID for an iSCSI target.

- **Block size**

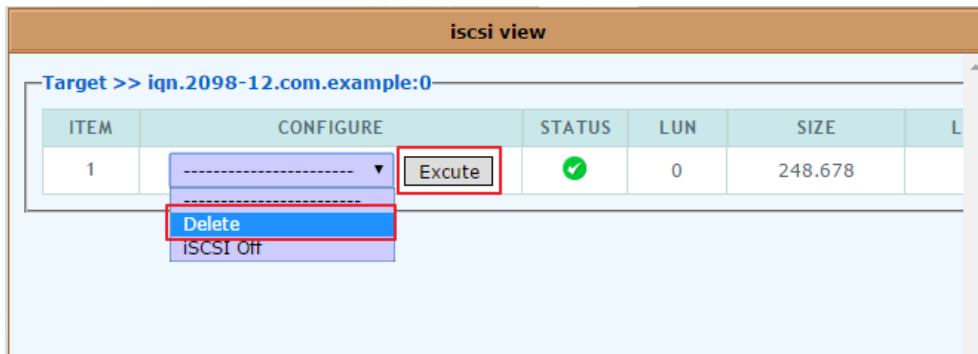
The available options are “**512**” (default), “**1024**”, “**2048**”, and “**4096**”.

### 3.5 Remove an iSCSI Volume

1. Click **iSCSI** to view all iSCSI volumes.

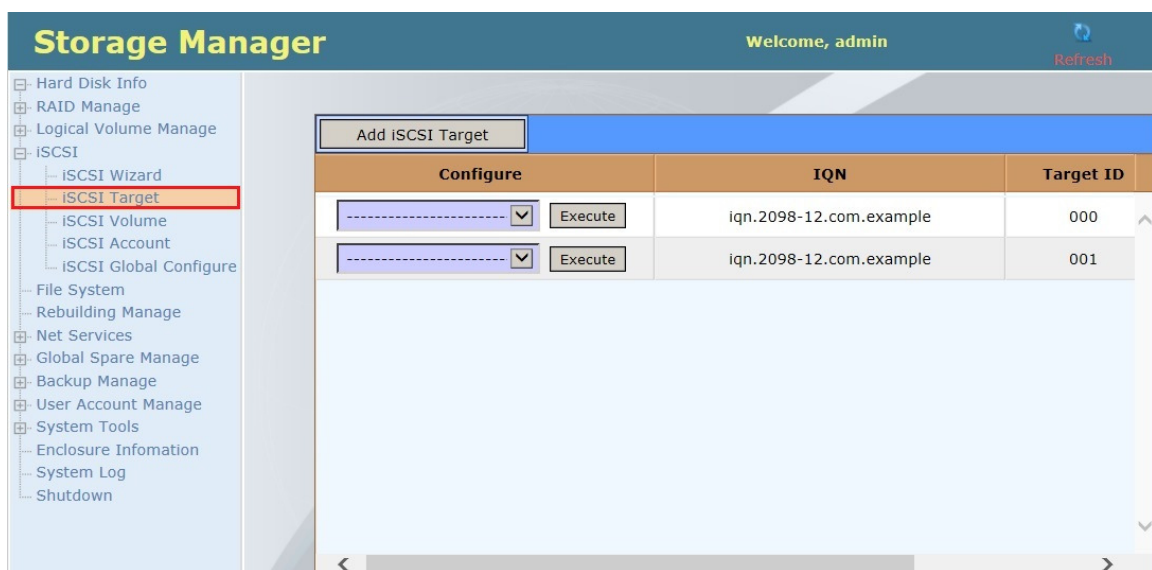
The screenshot shows the 'iscsi view' window. On the left, a sidebar lists various system management options, with 'iSCSI' highlighted. The main window displays a table for the target 'iqn.2098-12.com.example:0'. The table has columns: ITEM, CONFIGURE, STATUS, LUN, SIZE, and L. There is one row with ITEM '1', CONFIGURE set to a dropdown menu, STATUS as a green checkmark, LUN '0', and SIZE '248.678'. An 'Excute' button is next to the CONFIGURE dropdown.

2. To remove an iSCSI volume, select **Delete** in the field **Configure** and click **Execute**.

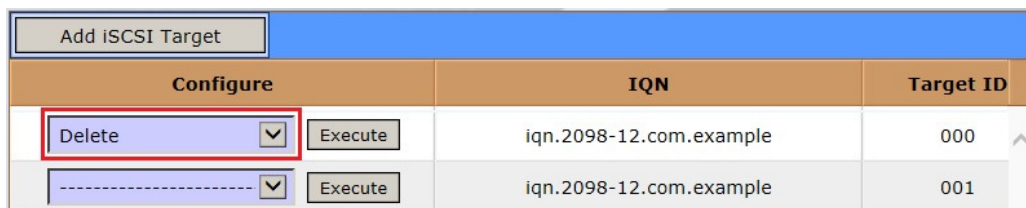


### 3.6 Remove an iSCSI Target

1. Click **iSCSI Target** to view iSCSI targets.

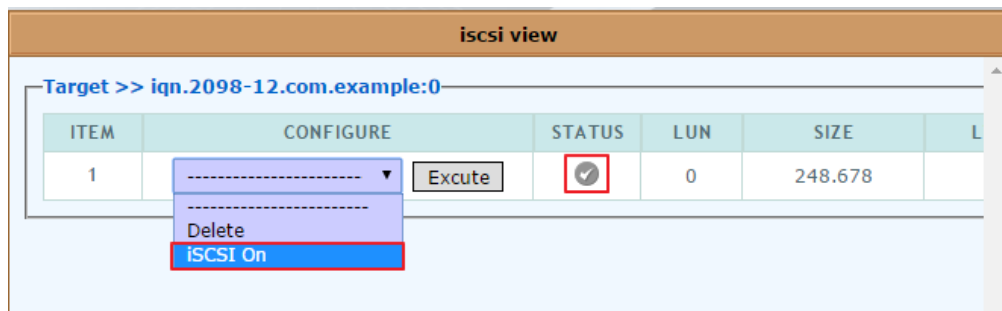
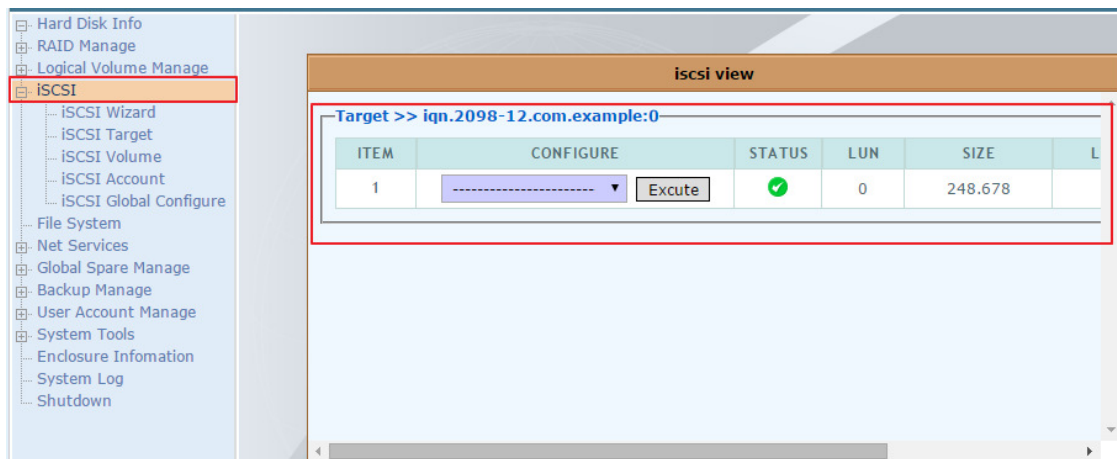


2. If there is no iSCSI volume in the iSCSI target, select **Delete** in the field **Configure** for the iSCSI target and click **Execute** to remove it.

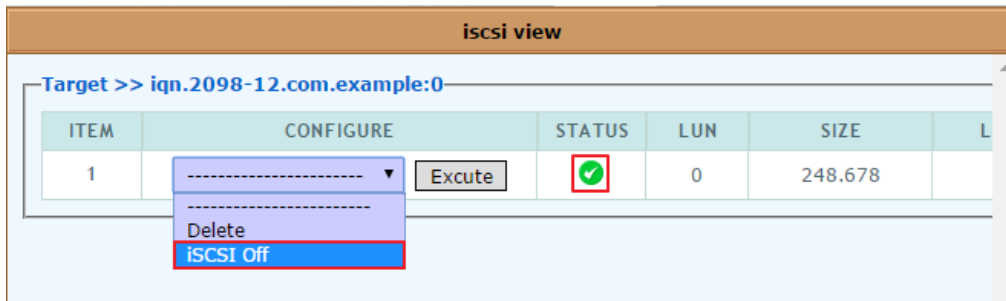


### 3.7 Start/Stop an iSCSI Volume

1. Click **iSCSI** to view all iSCSI volumes. When an iSCSI volume status is "Offline", select **iSCSI On** in the field **Configure** and click **Execute** to start the iSCSI volume.



2. When an iSCSI volume status is "Good", select **iSCSI Off** in the field **Configure** and click **Execute** to stop the iSCSI volume.

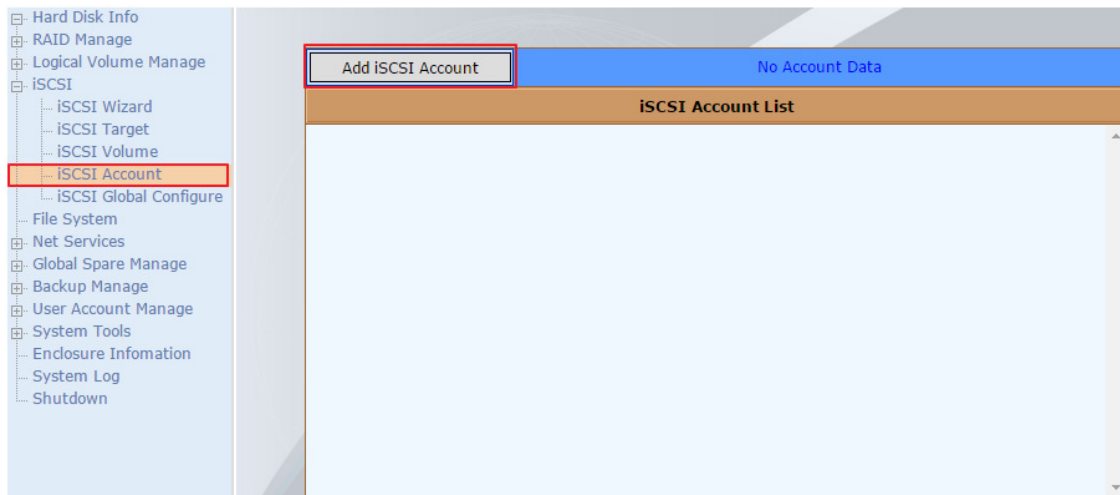


### 3.8 iSCSI Authentication

There are two iSCSI authentications, discovery authentication and target authentication. The discovery authentication applies to all iSCSI targets and each iSCSI target has its own target authentication. Each iSCSI authentication can work alone and both can also work together. Each iSCSI authentication supports multiple incoming user accounts and one outgoing user account.

#### 1. Discovery authentication

Step1. Click **iSCSI Account**, and then click **Add iSCSI Account**. In the dialog box below, select "**Discovery Auth**" in the field **Auth subject** and click **Submit** after input to create incoming and outgoing user accounts for the discovery authentication.



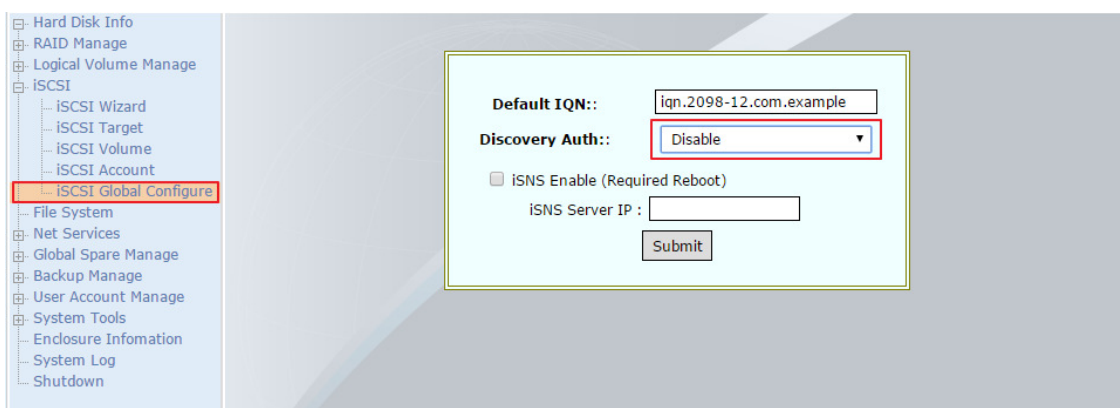
Username:

Password:

Auth type:

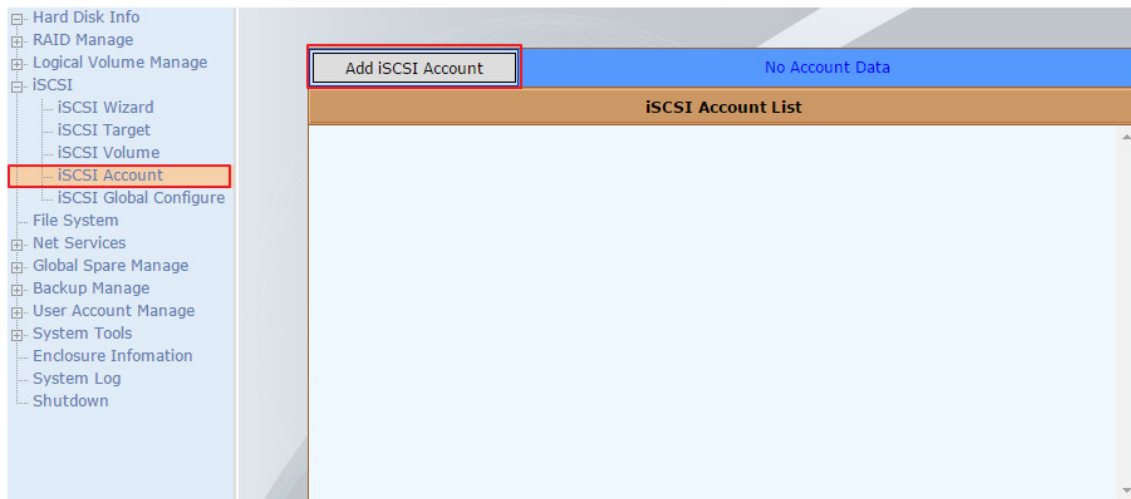
Auth subject:

Step2. Click **iSCSI Global Configure** and click **Submit** after selecting “**Enable**” or “**Mutual**” in the field **Discovery Auth** to enable the discovery authentication. If selecting “**Enable**”, only incoming user accounts are applied to the authentication. If selecting “**Mutual**”, both incoming and outgoing user accounts are applied to the authentication.



## 2. Target authentication

Step1. Click **iSCSI Account**, and then click **Add iSCSI Account**. In the dialog box below, select an iSCSI target in the field **Auth subject** and click **Submit** after input to create incoming and outgoing user accounts for authentication for the iSCSI target.



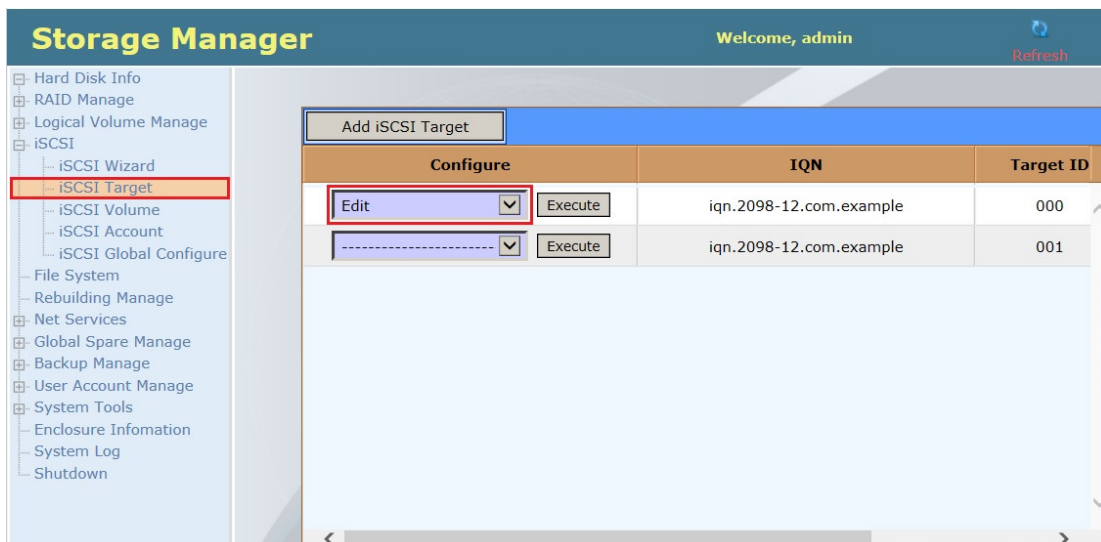
Username:

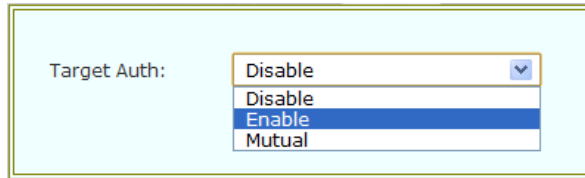
Password:

Auth type:

Auth subject:

Step2. Click **iSCSI Target**. Select **Edit** in the field **Configure** and click **Execute** to configure its own target authentication. In the dialog box below, select “**Enable**” or “**Mutual**” in the field **Target Auth** to enable the target authentication. If selecting “**Enable**”, only incoming user accounts are applied to the authentication. If selecting “**Mutual**”, both incoming and outgoing user accounts are applied to the authentication.



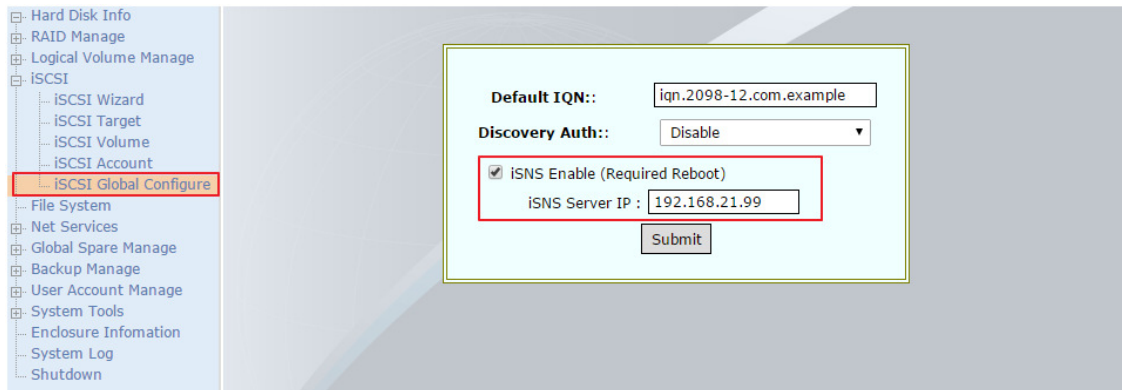


Target Auth:

- Disable
- Disable
- Enable
- Mutual

### 3.9 iSNS Server Setting

Click **iSCSI Global Configure** and click **Submit** after selecting the checkbox **iSNS Enable (Required Reboot)** and inputting the field **iSNS Server IP**.



Navigation menu:

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- iSCSI
  - iSCSI Wizard
  - iSCSI Target
  - iSCSI Volume
  - iSCSI Account
  - iSCSI Global Configure**
- File System
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Configuration fields:

- Default IQN::
- Discovery Auth::
- ☒ iSNS Enable (Required Reboot)
- iSNS Server IP :
-

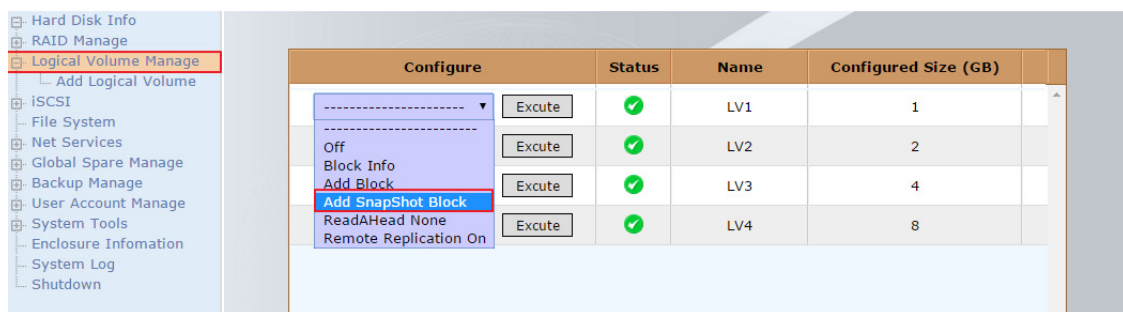
# Chapter 4.

## Backup Configuration

### 4.1 Add a Snapshot Block

To support snapshot, some space on a logical volume is required for a snapshot block when configuring the volume.

1. Click **Logical Volume Manage**. When a logical volume status is "Good", select **Add SnapShot Block** in the field **Configure** and click **Execute** for the configuration.



2. Select the disk array which you prefer to put the snapshot block on, input the size for the block in the field **Reserved Capacity (MB)**, and click **Add Block**. If successful, verify the size in the field **Snapshot (GB)** for the logical volume.

**LV Name:** LV1  
**LUN:** n/a  
**Interface:** Mix

**Configured Size:** 1.0 (GB)  
**Available Size:** 0.969 (GB)  
**Physical Block:** 1

Add Block

	Reserved Capacity (MB)	Name	Block Type	Partition	Capacity
<input checked="" type="checkbox"/>	1024	TRaid1	Partition	5	4

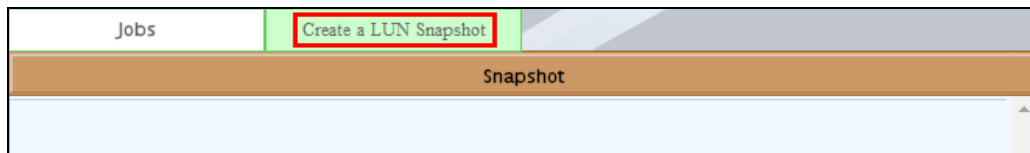
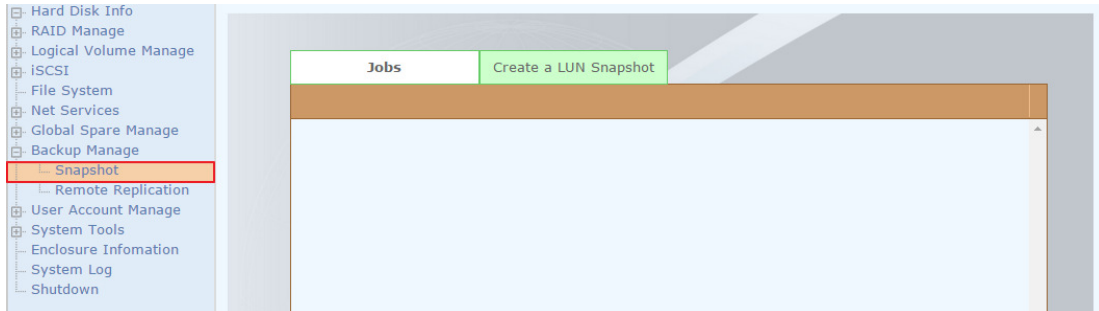
ReadAhead	I/O Policy	Access Policy	Snapshot (GB)	Progress
Auto	Cached I/O	Write Back	0.96875	n/a



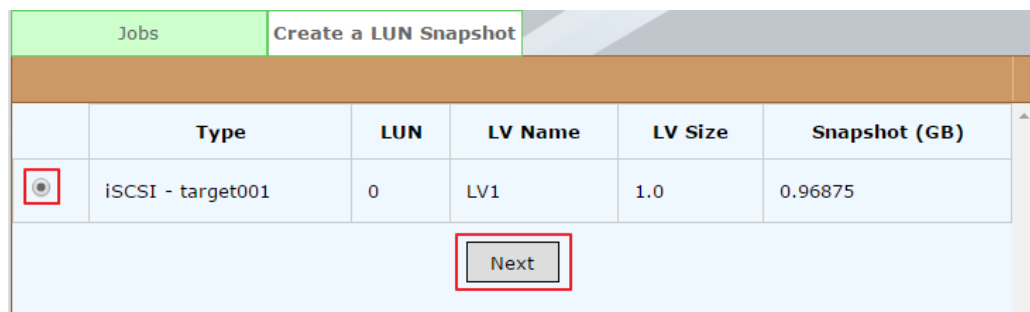
## 4.2 Create a Snapshot

To create a snapshot, a logical volume with a snapshot block must be configured as an iSCSI volume with status "Good".

1. Click **Snapshot** and then click the tab **Create a LUN Snapshot**.



2. Select an iSCSI volume for the snapshot and click **Next**.



3. Select one or several snapshot blocks in the field **Reserved Size**, select the field **Confirm**, and click **Submit**.



Jobs		Create a LUN Snapshot
<b>Reserved Size</b>		
	Partition	Size
<input checked="" type="checkbox"/>	2	0.96875 (GB)
<input type="checkbox"/>	3	0.96875 (GB)
<input type="checkbox"/>	4	0.96875 (GB)
<input checked="" type="radio"/> Confirm		
<input type="button" value="Submit"/>		

4. Click the tab **Jobs** for the job for the newly created snapshot, and then click the job for the size for this snapshot.

Jobs

Create a LUN Snapshot

LV0\_once\_20160428\_17\_50\_40

Status	LV Name	Sanpshot Name	Snapshot Total Size	Snapshot Used(%)	Configure
	LV0	SS_LV0_20160428_17_50_40	2.91g	0.00	<div>---Select---</div> <div>Execute</div>


### 4.3 View Snapshots

Click **Snapshot**, click the tab **Jobs**, and then click a job for details.

Jobs



Create a LUN Snapshot

LV1\_once\_20150922\_05\_49\_10

Status	LV Name	Sanpshot Name	Snapshot Total Size	Snapshot Used(%)	Configure
	LV1	SS_LV1_20150922_05_49_10	992.00m	0.00	<div>---Select--- ▼</div> <div>Excute</div>

Description of fields:

- **Status**

Icon	Description
	The snapshot functions normally.
	The snapshot is offline.

- **LV Name**

Name of the logical volume

- **Snapshot Name**

Snapshot device name

- **Snapshot Total Size**

Total size for the snapshot

- **Snapshot Used (%)**

Percentage of used space

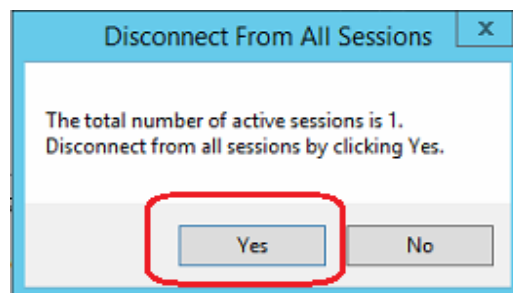
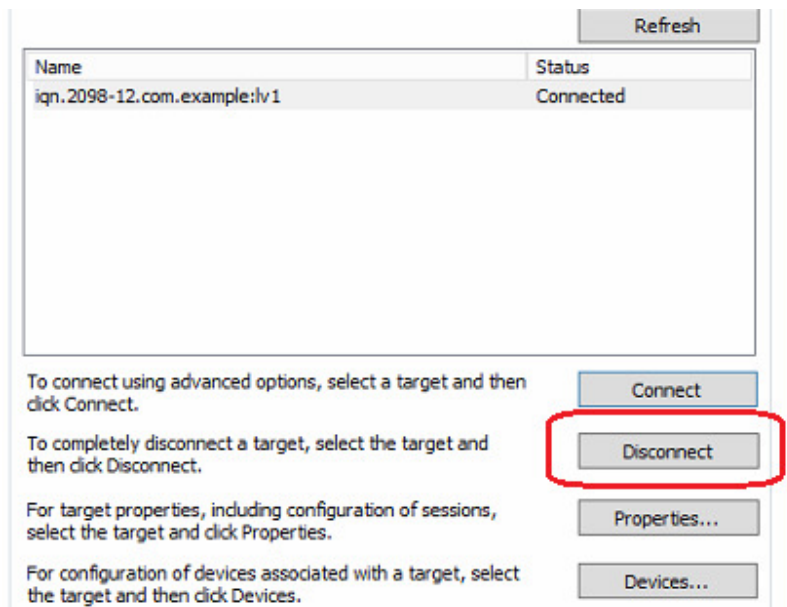
- **Configure**

The functions include **Restore**, **Delete**, and **Extend**. Both functions, **Restore** and **Extend**, are available when the percentage of used space is less than 100%.

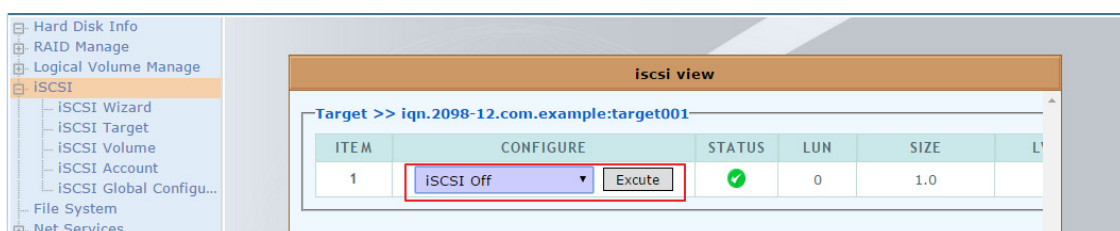
#### 4.4 Restore a Snapshot

This function is available when the percentage of used space is less than 100%.

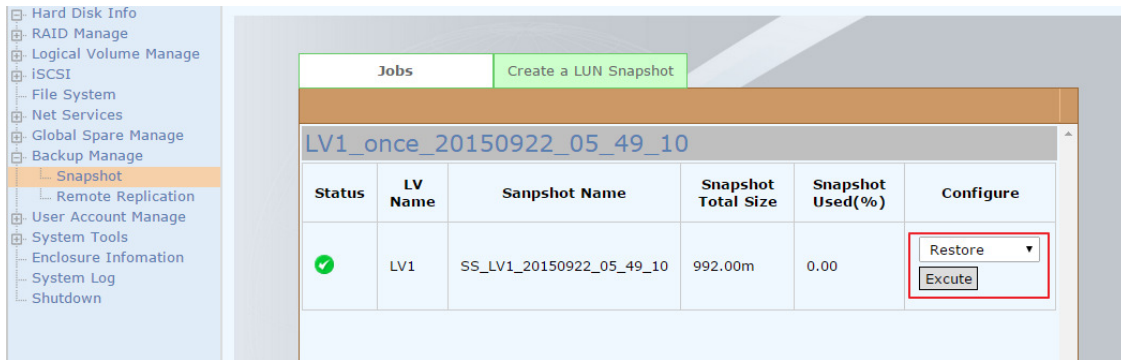
1. Before restoring a snapshot on an iSCSI volume, disconnect all iSCSI initiators to the volume.



2. To restore a snapshot on an iSCSI volume, the iSCSI volume status must be "Offline". Click **iSCSI**, select **iSCSI Off** in the field **Configure** for the iSCSI volume, and click **Execute** to make it offline.



3. Click **Snapshot**, select **Restore** in the field **Configure** in a job, and then click **Execute** to restore the snapshot of the iSCSI volume.

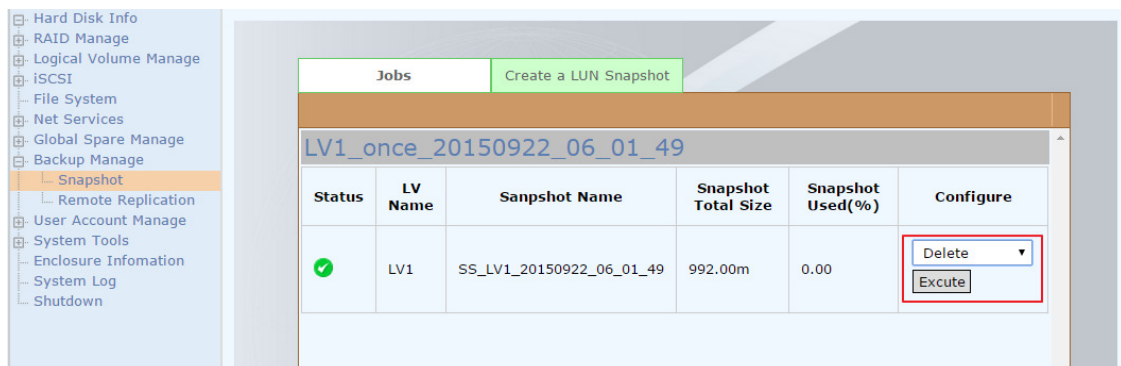


4. After done on restoring the snapshot, the job for the snapshot is removed.

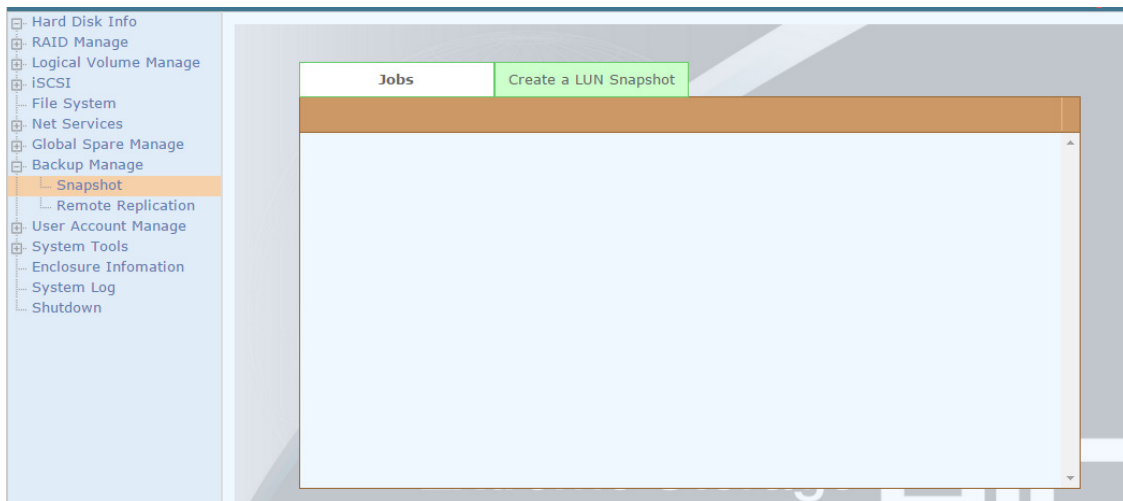


## 4.5 Delete a Snapshot

1. Click **Snapshot**, select **Delete** in the field **Configure** in a job, and then click **Execute** to delete the snapshot of the iSCSI volume.



2. After the deletion is done, the job for the snapshot is removed.



## 4.6 Extend a Snapshot


This function is available when the percentage of used space is less than 100%.

1. To extend a snapshot on an iSCSI volume, click **Snapshot**, select **Extend** in the field **Configure** in the job for the iSCSI volume, and then click **Execute**.

Jobs

Create a LUN Snapshot

LV0\_once\_20160428\_17\_50\_40

Status	LV Name	Sanpshot Name	Snapshot Total Size	Snapshot Used(%)	Configure
	LV0	SS_LV0_20160428_17_50_40	992.00m	0.00	<div>Extend</div> <div>Execute</div>

2. Select one or several snapshot blocks in the field **Reserved Size**, select the field **Confirm**, and click **Submit** to extend the snapshot.

Jobs		Create a LUN Snapshot	Extend Snapshot
<b>Reserved Size</b>			
	Partition	Size	
<input checked="" type="checkbox"/>	3	0.96875 (GB)	
<input checked="" type="checkbox"/>	4	0.96875 (GB)	
<input checked="" type="radio"/> Confirm			
<input type="button" value="Submit"/>			

## 4.7 Remote Replication

### 4.7.1 Configure a Logical Volume to Support Remote Replication

1. Click **Logical Volume Manage**, select **Remote Replication On** in the field **Configure**, and then click **Execute** to support remote replication. The selected logical volume can't be used by any service like iSCSI or NAS at this stage.

**Storage Manager**
Welcome, admin
Refresh

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- Add Logical Volume
- iSCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

Configure	Status	Name	Configured Size (GB)	Available
Remote Replicat ▾	<input checked="" type="checkbox"/>	RM1	9.766	9.7
Off	<input checked="" type="checkbox"/>	RM2	9.766	9.7
Block Info	<input checked="" type="checkbox"/>	RM3	9.766	9.7
Add Block	<input checked="" type="checkbox"/>			
Add SnapShot Block	<input checked="" type="checkbox"/>			
ReadAhead None				
Remote Replication On				

2. Confirm the field **Remote Replication** reports "On".

**Storage Manager**
Welcome, admin
Refresh
Logout

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
  - Add Logical Volume
- iSCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

I/O Policy	Access Policy	Remote Replication	Snapshot (GB)	Progress
Cached I/O	Write Back	On	0.0	n/a
Cached I/O	Write Back	Off	0.0	n/a
Cached I/O	Write Back	Off	0.0	n/a

## 4.7.2 View Remote Replication

Click **Remote Replication**.

- Hard Disk Info
- RAID Manage
- Logical Volume Manage
- iSCSI
- File System
- Rebuilding Manage
- Net Services
- Global Spare Manage
- Backup Manage
- Snapshot
- Remote Replication
- User Account Manage
- System Tools
- Enclosure Information
- System Log
- Shutdown

### Remote Replication Device List

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	Connected	UpToDate/UpToDate		NAS iSCSI	
2		No Use	No Use			
3		No Use	No Use			
4		No Use	No Use			
5		No Use	No Use			
6		No Use	No Use			
7		No Use	No Use			
8		No Use	No Use			

Description of fields:

- **ID**

Support 8 connections (ID) for remote replication. Each ID supports a one-on-one connection with a remote machine.




- **P/S**

It reports "P" for data source (primary) or "S" for data backup (secondary).

- **Connect State**

Icon	Status	Description
	Good	The connection between the data source and data backup is normal.
	Stopped	The connection failed because of remote replication configuration, and is stopped to try again. Click  for the instruction for this status.





	Warning	The connection failed, but will retry every 60 seconds. Click  for the instruction for this status.
	Synchronizing	The connection is on synchronization from the data source to the data backup.

- **Data State**

The data status for the data source and data backup is reported. If it is "UpToDate/UpTpDate", it means the data status between the data source and data backup is synchronous.

- **Parameter**



Icon	Status	Description
	Edit	Configure remote replication.
	Delete	Remove the remote replication configuration.


- **Function**

Data source (primary) can be configured to provide NAS or iSCSI, but data backup (secondary) has no such a service.

Icon	Status	Description
<b>NAS</b>	No NAS service	No NAS service.
<b>NAS</b>	NAS in service	The NAS service is running.
<b>iSCSI</b>	No iSCSI service	No iSCSI service.
<b>iSCSI</b>	iSCSI in service	The iSCSI service is running.



- **Manage**

Icon	Description
	Start remote replication.
	Stop remote replication.

	Get status of a remote backup.
---	--------------------------------

### 4.7.3 Configure Remote Replication

1. Click  in the data source (primary) to configure remote replication.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1		 No Use	No Use			

Global Setting			
Syncer-Transfer Rate	5 ▼	MB/Sec (B = Bytes)	
Net-Timeout	60 ▼	Default:6 seconds (unit = 0.1 seconds)	
Net-Connect-Int	10 ▼	Default=10 seconds (unit = 1 second)	
Net-Ping-Int	10 ▼	Default=10 seconds (unit = 1 second)	
Net-Ping-Timeout	5 ▼	Default=500 ms (unit = 0.1 seconds)	

Primary		Secondary	
IP Address	eth0-192.168.21.11 ▼	IP Address	<input type="text"/>
Disk Device	RM1-/dev/vg0/lv0 ▼	Disk Device	<input type="text"/> <input type="button" value="Get"/>

Description of fields:

- **Syncer-Transfer Rate**  
Data transfer rate for synchronization
- **Net-Timeout**  
Timeout for the network response
- **Net-Connect-Int**  
The period between network connection checks
- **Net-Ping-Int**  
The period between PING commands
- **Net-Ping-Timeout**  
Timeout for the PING command
- **Primary IP Address**  
IP address of the data source
- **Primary Disk Device**

The logical volume for the data source

- **Secondary IP Address**

IP address of the data backup

- **Secondary Disk Device**

The logical volume for the data backup

2. Input the IP address of the data backup (secondary), click **Get** to retrieve the available logical volumes from the data backup, and then select the logical volume for the data backup.

192.168.21.11 顯示 :  
Get Disk Device Success  
確定

English 中文  
Refresh

Global Setting	
Syncer-Transfer Rate	5 MB/Sec (B = Bytes)
Net-Timeout	60 Default:6 seconds (unit = 0.1 seconds)
Net-Connect-Int	10 Default=10 seconds (unit = 1 second)
Net-Ping-Int	10 Default=10 seconds (unit = 1 second)
Net-Ping-Timeout	5 Default=500 ms (unit = 0.1 seconds)

Primary		Secondary	
IP Address	eth0-192.168.21.11	IP Address	192.168.21.12
Disk Device	RM1-/dev/vg0/lv0	Disk Device	RM1-/dev/vg0/lv0 <b>Get</b>

Build Cancel

3. After clicking **Build** to save the configuration, the field **P/S** in the data source reports "P" and the field **P/S** in the data backup reports "S".

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P		No Use			

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	S		No Use			

4. When clicking in the data backup (secondary), all fields below are not changeable.







Global Setting		
Syncer-Transfer Rate	5 ▼	MB/Sec (B = Bytes)
Net-Timeout	60 ▼	Default:6 seconds (unit = 0.1 seconds)
Net-Connect-Int	10 ▼	Default=10 seconds (unit = 1 second)
Net-Ping-Int	10 ▼	Default=10 seconds (unit = 1 second)
Net-Ping-Timeout	5 ▼	Default=500 ms (unit = 0.1 seconds)

Primary		Secondary	
IP Address	eth0-192.168.21.11 ▼	IP Address	192.168.21.12
Disk Device	RM1-/dev/vg0/lv0 ▼	Disk Device	RM1-/dev/vg0/lv0 ▼

#### 4.7.4 Remove Remote Replication Configuration







Click , and then click **Confirm** to remove the remote replication configuration.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 No Use	No Use	 		  

**All data will lost when remove parameter,Please confirm....**







#### 4.7.5 Start Remote Replication







1. Click  in the data source (primary) and data backup (secondary).

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 No Use	No Use	 		  



2. The possible statuses follow.

- **Connect State: Good**







ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 Connected	UpToDate/UpToDate	 	NAS iSCSI	  







ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	S	 Connected	UpToDate/UpToDate	 		  

- **Connect State: Warning**


ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 WFCConnection	UpToDate/DUnknown	 	NAS iSCSI	  







- **Connect State: Synchronizing**






ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 SyncSource	UpToDate/Inconsistent	 	NAS iSCSI	  

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	S	 SyncTarget	Inconsistent/UpToDate	 		  

#### 4.7.6 Stop Remote Replication

Click  to stop the remote replication.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 Connected	UpToDate/UpToDate	 	NAS iSCSI	  

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 No Use	No Use	 		  

#### 4.7.7 How to Handle Stopped

Click  to get the recommendation for "Stopped" handling.







ID	P/S	Connect State	Data State	Parameter	Function	Manage
1		 No Use	No Use			

Repair Remote Repication Device

Remote Replication Device No Use, Please Edit Parameter then run device.  
[Edit Remote Replication Parmeter](#)

#### 4.7.8 How to Handle Warning

Click  to get the recommendation for "Warning" handling.







ID	P/S		Connect State	Data State	Parameter		Function		Manage	
1	P		WFConnection	UpToDate/DUnknown			NAS	iSCSI	  	

Repair Remote Repication Device

Connect Error,Please check secondary connect status.  
[Run Secondary Remote Replication](#)

#### 4.7.9 Get Status of a Remote Backup

Click  to get status of a remote backup which is refreshed every 5 seconds.







ID	P/S		Connect State	Data State	Parameter		Function		Manage	
1	P		Connected	UpToDate/UpToDate			NAS	iSCSI	  	

Data Source (Primary)	Data Backup (Secondary)
-----------------------	-------------------------

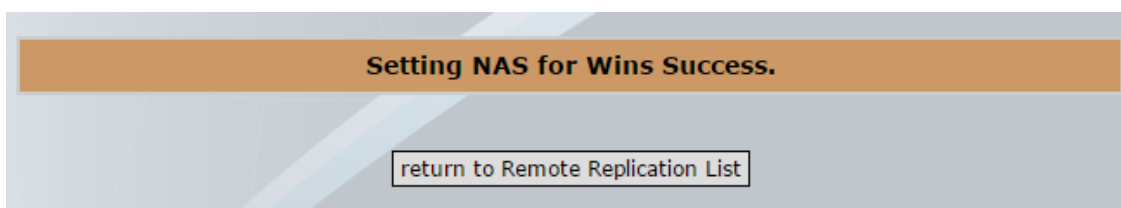
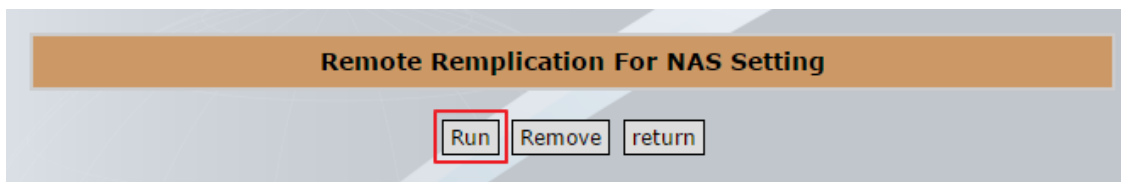
Remote Replication <b>Primary</b> Status	Remote Replication <b>Secondary</b> Status
<b>[States]</b> Connect State = SyncSource Data State = <b>UpToDate/Inconsistent</b>  <b>Remote Replication Data abnormal</b>  <b>[Data Synchronizing]</b> Synchronous Progress = 2.2% (9476/9684) Synchronous Remain Times = 0:17:58 Synchronous Speed Rate = 8,992 (9,308) K/sec  <b>[Device State]</b> Device Available Size = 8.8G Device Use Size = 288K Device Usage = 1%	<b>[States]</b> Connect State = SyncTarget Data State = <b>Inconsistent/UpToDate</b>  <b>Remote Replication Data abnormal</b>  <b>[Data Synchronizing]</b> Synchronous Progress = 2.1% (9488/9684) Synchronous Remain Times = 0:16:05 Synchronous Speed Rate = 10,056 (10,056) K/sec

#### 4.7.10 Configure NAS on a Logical Volume with Remote Replication Support




1. Click **NAS** in the data source (primary). The data backup (secondary) has no such a service.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 Connected	UpToDate/UpToDate	 	<b>NAS</b> iSCSI	  

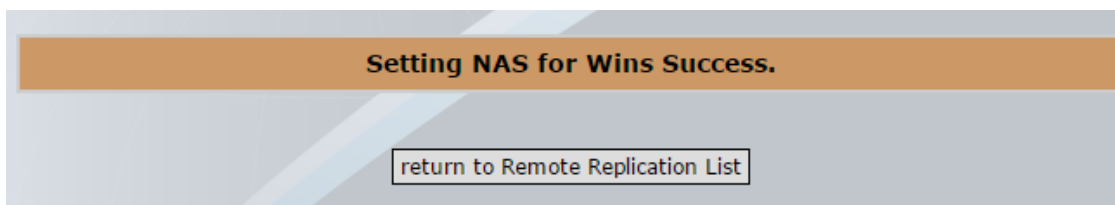
2. To enable NAS service, click **Run**. If successful, the dialog box with the message "Setting NAS for Wins Success" is shown below.



3. The NAS service is running.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	 Connected	UpToDate/UpToDate	 	<b>NAS</b> iSCSI	  

4. To disable NAS service, click **Remove**. If successful, the dialog box with the message "Remove NAS Success" is shown below.



#### 4.7.11 Configure iSCSI on a Logical Volume with Remote Replication Support

1. Click **iSCSI** in the data source (primary). The data backup (secondary) has no such a service.

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	Connected	UpToDate/UpToDate		NAS <b>iSCSI</b>	

2. Click **Build** to save the iSCSI configuration after inputting the fields in the dialog box below. There are two options, full capacity and user-defined capacity. Using the full capacity for iSCSI means that no space is available for NAS. In order to provide both iSCSI and NAS on a logical volume, first select the user-defined capacity with part of the total size inputted and click **Build** for iSCSI, and then configure NAS with the remaining space.

Remote Replication For iSCSI Setting

iSCSI IQN

iqn.2098-12.com.example

iSCSI TargetID

801

iSCSI Disk Capacity

☐ Full Capacity
 ☒ User Define
  MB
 

Remain Size: 9011 MB

Build

return

3. To enable iSCSI service, click **Run**. The iSCSI service is running.



Remote Replication For iSCSI Setting

iSCSI IQN	<input type="text" value="iqn.2098-12.com.example"/>
iSCSI TargetID	<input type="text" value="801"/>
iSCSI Disk Capacity	<input checked="" type="radio"/> <b>Full Capacity</b> <input type="radio"/> <b>User Define</b> <input style="width: 80px;" type="text"/> MB <span style="float: right;">Remain Size: 45.0 MB</span>

ID	P/S	Connect State	Data State	Parameter	Function	Manage
1	P	Connected	UpToDate/UpToDate		NAS <span style="border: 2px solid red; padding: 2px;">iSCSI</span>	

4. To disable iSCSI service, click **Stop**.

Remote Replication For iSCSI Setting

iSCSI IQN	<input type="text" value="iqn.2098-12.com.example:drbd1"/>
iSCSI TargetID	<input type="text" value="801"/>
iSCSI Disk Capacity	<input checked="" type="radio"/> <b>Full Capacity</b> <input type="radio"/> <b>User Define</b> <input style="width: 80px;" type="text"/> MB <span style="float: right;">Remain Size: 45.0 MB</span>

5. Click **Remove** to remove the iSCSI configuration.

Remote Replication For iSCSI Setting

iSCSI IQN	<input type="text" value="iqn.2098-12.com.example:drbd1"/>
iSCSI TargetID	<input type="text" value="801"/>
iSCSI Disk Capacity	<input checked="" type="radio"/> <b>Full Capacity</b> <input type="radio"/> <b>User Define</b> <input style="width: 80px;" type="text"/> MB <span style="float: right;">Remain Size: 45.0 MB</span>

Remove iSCSI Setting and Disk....

# Chapter 5.

## Technical Support



<http://www.geovision.com.tw/>

### **Taiwan**

#### **GeoVision, Inc. Headquarter**

9F., No. 246, Sec. 1, Neihu Rd.,  
Neihu District, Taipei 114, Taiwan  
Tel: +886-2-8797-8376  
Fax: +886-2-8797-5861  
[Email: sales@geovision.com.tw](mailto:sales@geovision.com.tw)

### **USA | New York**

#### **USA Vision Systems Inc. Sales Office**

333 Westchester Ave. White Plains,  
NY 10604, USA  
Tel: +1-845-661-0443  
Fax: +1-949-583-1522  
[Email: sales@usavisionsys.com](mailto:sales@usavisionsys.com)

### **USA | Texas**

#### **USA Vision Systems Inc. Sales Office**

1555 Valwood Parkway Ste.  
150 Carrollton, TX 75006, USA  
Tel: +1-949-583-1519  
Fax: +1-949-583-1522  
[Email: sales@usavisionsys.com](mailto:sales@usavisionsys.com)

### **USA | California**

#### **USA Vision Systems Inc.**

9235 Research Drive,  
Irvine, CA 92618, USA  
Tel: +1-949-583-1519  
Fax: +1-949-583-1522  
[Email: sales@usavisionsys.com](mailto:sales@usavisionsys.com)

### **USA | Indiana**

#### **USA Vision Systems Inc. Sales Office**

12550 Promise Creek Lane Suite 106  
Fishers, IN 46038, USA  
Tel: +1-949-583-1519  
Fax: +1-949-583-1522  
[Email: sales@usavisionsys.com](mailto:sales@usavisionsys.com)

### **Canada | Quebec**

#### **USA Vision Systems Inc. Sales Office**

3353 Rue Griffith Saint-Laurent  
QC H4T 1W5, Canada  
Tel: +1-514-687-9970  
Fax: +1-949-583-1522  
[Email: GVCanada@usavisionsys.com](mailto:GVCanada@usavisionsys.com)

## **Europe | Czech**

### **Europe Vision Systems s.r.o**

Pod vinicí 2028/20 143 01 Praha 4,

Česká Republika

Tel: +420-225-371-121

Fax: +420-225-371-131

[Email: sales@geovision.eu](mailto:sales@geovision.eu)

## **Europe | France**

### **French Office**

2 Allée Ernest NOUEL 41100 VENDÔME

Tel: +33-2-5480-1692

[Email: sales@geovision.eu](mailto:sales@geovision.eu)

## **Brazil**

### **GeoVision do Brazil**

Av. Brigadeiro Luis Antônio, 2729 Sl.910

Jardins, São Paulo, SP. Brasil Cep: 01401-000

Tel: +55-11-24767919 Ext:101

Fax: +55-11-24767918

[Email: contatos@geovision.com.tw](mailto:contatos@geovision.com.tw)

## **Japan**

### **GeoVision Japan Inc.**

Tomiokabashi Bldg. 5F, 2-6-11 Fukagawa

Koto-ku, Tokyo 135-0033 Japan

Tel: +81-3-5639-9355

Fax: +81-3-5639-9356

[Email: sales@geovision.co.jp](mailto:sales@geovision.co.jp)

## **China**

### **GeoVision Technology (Shanghai) Co., Ltd**

Rm 607 ,Building 4, No.123, Juli Road,

Pudong Zhangjiang Hi-tech Park, Shanghai,

China

Tel: +86-21-6217-3366

Fax: +86-21-6217-0023

[Email: sales@geovision.com.cn](mailto:sales@geovision.com.cn)

Submit Support Form: [http://www.geovision.com.tw/support\\_SubmitForm.php](http://www.geovision.com.tw/support_SubmitForm.php)