



# **JETNAS Appliance®**

## **Administrator Guide**

**For**

**JETNAS SAN Storage Manager™  
v3.0.4 or Higher Based Systems**

**Last Updated :** 2011-01-19

### Document Revision History

<b>Version</b>	<b>Date</b>	<b>Changes</b>
1	2010-08-05	Document Creation
2	2011-01-19	Initial scratch for New iSCSI method, add fibre channel configuration

Thank you for choosing **JETNAS Appliance** products! This user manual provides detailed instructions for using the JETNAS SAN Storage Manager. Please read carefully before start using the available options!

- This manual provides the description of all the functions of the JETNAS SAN Storage Manager. The model you purchased may not support certain options dedicated to specific models.

**Legal Notices**

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Backup your system periodically to avoid any potential data loss. JETNAS disclaims any responsibility of all sorts of data loss or recovery.

Should you return any components of the JETNAS Appliance package for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

**Notes and Warnings**

 <b>Note</b>	Notes are tips, shortcuts or alternative approaches to the task at hand. Ignoring a note should not have a negative impact, but you might miss out a trick that makes your life easier.
 <b>Important Info</b>	Important notes detail things that are easily missed: configuration changes, advanced options, etc. Ignoring Important notes won't cause data loss but could cause irritation and frustration.
 <b>Warning</b>	Warnings should never be ignored. Ignoring Warnings will mostly cause data loss.

 **Warning**

Please do not directly switch off the power when the JETNAS Appliance is running. This will make some data not correctly saved in the Appliance and may cause the JETNAS Appliance not work properly. To power off the Appliance use Text Console or Web Console.

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## **Introduction**

The User Guide for JETNAS SAN Storage Manager™ is designed to introduce you to JETNAS Appliance™.

Our Goals are:

- To configure JETNAS Appliance
- Storage Management
- Export NAS resources ( CIFS, NFS, FTP)
- Export SAN resources (iSCSI FC)
- Replication of NAS resources

This Guide is structured as a series of brief sections, each presenting a set of concepts and hands-on information that you will need to apply to JETNAS Appliance Server. These sections are intended to be read in sequence. Earlier sections provide the foundation concepts and configuration for later sections.

This is a section-by-section manual. You will receive the most benefit from this guide if you are working in parallel with the JETNAS SAN Storage Manager following the documented steps, and finding your own paths to explore. You may want to print this manual for easier reference, especially if you are working on a single-display system.

We assume that you are somewhat acquainted with basic concepts of Network Attached Storage Appliances, and Storage concepts. However, you do not need deep expertise in any specific technology, or system. If you know how to open a browser and navigate a web application, you can start using JETNAS Appliance today.

# CHAPTER 1 Requirements and Access

## 1.1 System Requirements and access

To use JETNAS SAN Storage Manager, the only requirement needed is a web browser. (Check Compatibility Guide for web browsers supported)

After boot your JETNAS Appliance, should be presented with the following screen:

```

Welcome to JETNAS NAS/SAN Storage Appliance
-----
:: System Information -----
Hostname : Demo.local
Uptime   : 43 minutes, 33 seconds
Model    : THS400          Serial   : BFB7070
Version  : 3.0.0 SE 100609  Firmware : 2.6.33-Sstor-BE  Encl   : N/A
:: Network Interfaces -----
eth0     192.168.1.19        255.255.255.0    00:0C:29:65:E9:1A  up
eth1     192.168.0.222      255.255.255.0    00:0C:29:65:E9:24  up
-----
Press ALT+F2 to Access Text Console
Press ALT+F3 to Access Shell Console

```

JETNAS SAN Storage Manager can be accessed by any IP address shown on your screen. To access point your browser to [http://IP\\_ADDRESS](http://IP_ADDRESS) (ex: <http://192.168.1.19>)

Will be prompted for admin username and password. To access manager provide the default username and password.

Default Username: **administrator**

Default Password : **admin**

For using additional resource like snapshots and iSCSI some additional software is needed. For snapshots is need "Shadow copy client" of Microsoft, and can be retrieved from: [Microsoft Shadow Copy Client](#)

For Windows XP SP2 or higher it has already shadow copy client built in.

To use iSCSI Storage, iSCSI initiator is needed and can be retrieved from: [Microsoft iSCSI Initiator](#)

Windows Vista/2008/7 already has included Microsoft iSCSI Initiator. For Linux, please check your distribution for iSCSI Initiator package.

## **CHAPTER 2 System Configuration**

### **2.1 Network configuration**

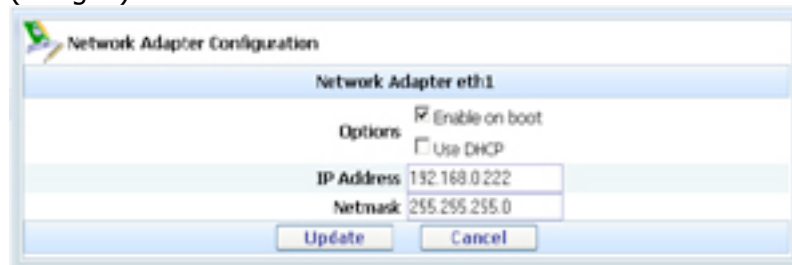
#### 2.1.1 Network Settings

All Appliances have 2 network interfaces (default), eth0 and eth1, during installation you can configure eth0 to have dynamic IP address or static address, the eth1 have by default static ip address (192.168.0.222).

To change interface settings go to **"System"** menu and click **"Network Settings"**.

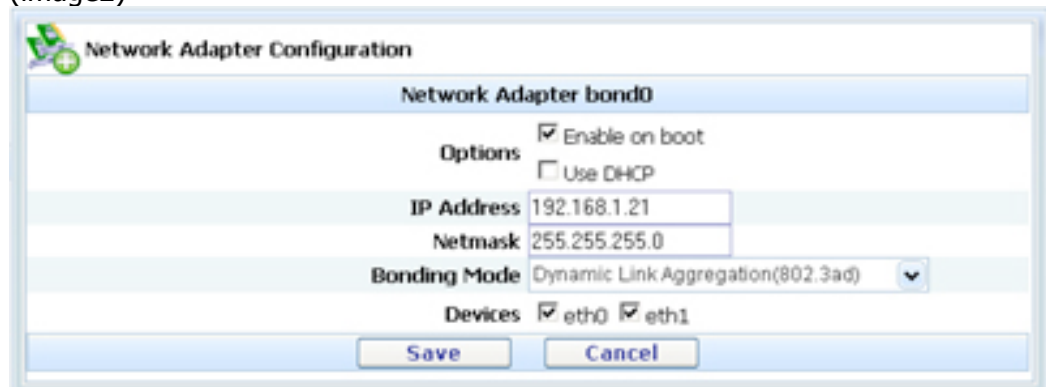
Double Click on interface you want change, and fill all required fields and click update.

(Image1)



If you want balance or fail over your network cards (teaming) click on button **"Add Bound Device"**, pick the desired network adapters, and bonding mode.

(image2)



Check option **"Enable on boot"**, fill IP address and net-mask.

In Bonding mode, choose the one that fits better to your infrastructure, pick the desired interfaces (eth0, eth1), and click **"save"**.

Available Network Bonding Modes:

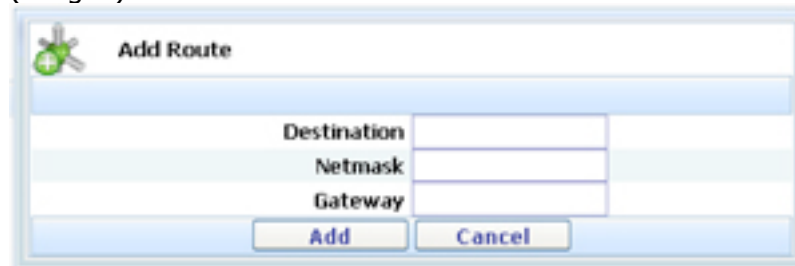
- Round-Robin
- Failover
- Dynamic Link Aggregation(802.3ad) (LACP)(Port Trunking)
- Adaptive Transmit Load Balancing
- Adaptive Load Balancing

### 2.1.2 Network Routes

To change interface settings go to **"System"** menu and click **"Network Settings"**.

Click on tab **routes** to configure network routes, you can add as many routes you want. If no route exists the first one is always the default route.

(image3)



### 2.1.3 Hostname and DNS Servers

To configure host name and DNS go to **"System"** menu, click on **"Network Settings"**, and click on tab **"Hostname & DNS & SNMP"** fill hostname, domain and at least one DNS server. Click on button **"Update"** to apply.

(image4)



### 2.1.4 Hosts File

If you need to add entries in Hosts file, go to **"System"** menu and click **"Network Settings"**, click on **"Hosts File"** tab. Click **"Add"** button, fill Hostname FQDN and IP Address, and click **"save"**.

## 2.2 Authentication

### 2.2.1 Windows Workgroup and Domain

Exist 2 types of authentication, Local or Active Directory. JETNAS can authenticate users locally, choose authentication mode to **workgroup** and set windows workgroup name.

If you want to integrate JETNAS in your Active Directory choose **Active Directory**

**mode**, fill domain name and domain server's and click **update**. Now click **"join domain"** enter Domain Administrator and password and click **"save"**.

If you want to Join to a specific OU, please provide OU name to Join to.

(image5 workgroup mode)

The screenshot shows a configuration window with a light blue header. Below the header, there are three rows of input fields. The first row is labeled 'Authentication Mode' and contains two radio buttons: 'Workgroup' (which is selected) and 'Active Directory'. The second row is labeled 'Workgroup / Domain' and contains a text box with the value 'MYLAN'. The third row is labeled 'Domain server(s)' and contains three stacked empty text boxes. At the bottom of the window, there are three buttons: 'Update' (highlighted in blue), 'Join Domain', and 'Leave Domain'.

(image6 Domain mode)

The screenshot shows a configuration window similar to the one above. The 'Authentication Mode' section now has 'Active Directory' selected. The 'Workgroup / Domain' text box still contains 'MYLAN'. The 'Domain server(s)' section now has the first text box filled with 'srv01', while the other two are empty. A yellow warning triangle icon is positioned above the text 'Not Joined to Domain'. The 'Update' button remains highlighted in blue.

### 2.2.2 Local Users and Groups

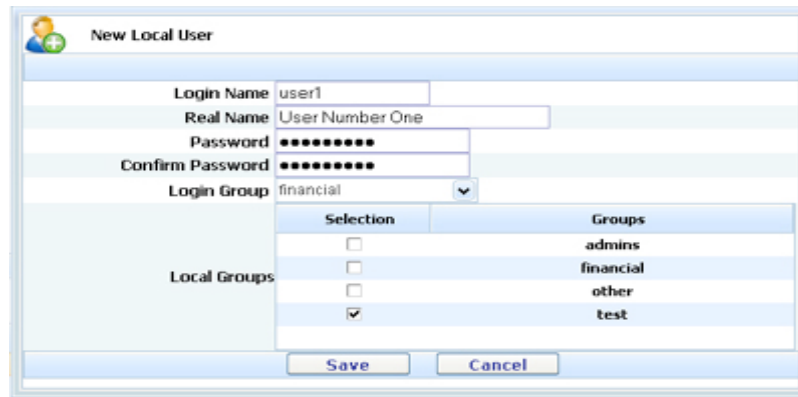
Local Users and Local Groups are only available when using Workgroup Authentication Mode.

You can create/delete/edit users and groups, to accomplish this task, go to **"System"** menu, **"Authentication"**, and click **"Local Users and Groups"**.

To create group, click **"Add group"**, specify group name, and click **"save"**.

To create an user, click "Add user", and fill all fields, the Login Group is Primary group, the others are secondary groups.

(image7 Local User)



For editing user or group, you should Double click on user or group and change the necessary fields and click **"Update"**.

To delete user or group, you must select object and click on button delete, can be **"Delete User"** or **"Delete Group"**.

## 2.3 Storage Management

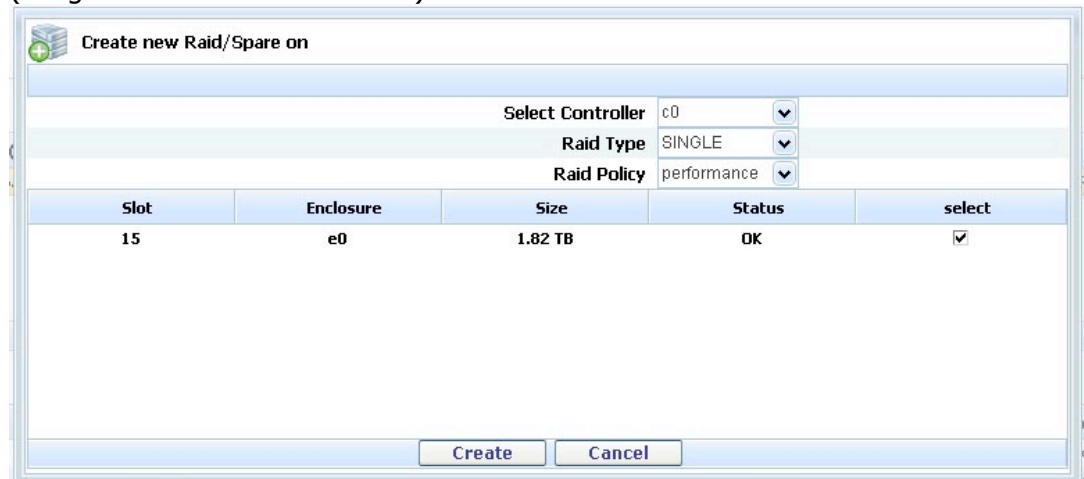
### 2.3.1 Hardware RAID

To configure and manage Hardware RAID, go to **"System"** menu and click **"Storage Management"**, and click on **"Hardware RAID"** tab.

For new RAID, click **"Create New RAID"** button, choose RAID Level, select the disks to include in array and click **"Create"** button.

The RAID levels available are RAID 0, 1, 5, 6, 10, 50, Single disks and global spares.(depends on JETNAS models)

(image8 create Hardware RAID)



To delete an Hardware RAID, on **"Hardware RAID"** tab, in Raid List, just click on **"delete"** button.

(image9 Hardware RAID List)

Auto verify	In use by	Action	
off	PRIMARY	Start Id	Delete
off		Start Id	Delete



**Important Info**

Hardware RAID (array) can only be deleted if not in use by any Storage Group or if is JETNAS OS does not reside on that RAID array.

RAID Growing and Migration can be done if you have additional available disks, check APPENDIX B. for details.

To Grow or Migrate double click on RAID array, select available disk and select the RAID type, (if the same as actual will grow, if different will migrate) and click **“Grow / Migrate”** button.

(image 10 Grow and Migrate Array)

Edit RAID

---

Controller c0  
Actual Raid Type RAID-5  
New Raid Type RAID-5

Slot	Enclosure	Size	Status	select
15	e0	1.82 TB	OK	<input type="checkbox"/>



**Warning**

When Growing or Migrating an array is highly recommended to **BACKUP ALL YOUR DATA FIRST!!**



**Important Info**

The Growing or Migrating task can take up to 48 hours to finish. To Start using the new available space you should wait until task finishes.

2.3.2 Software RAID

To configure and manage Software RAID, go to **“System”** menu and click **“Storage Management”**, and click on **“Software RAID”** tab.

For new RAID, click **“Create New”** button, choose RAID Level, select the disks to include in array and click **“Create Now”**.

To Repair a faulty Array, click on **"Repair"** button, and select the new available disk to repair the array.

The RAID levels available are RAID 0, 1, 5, 5+1, 1+1.



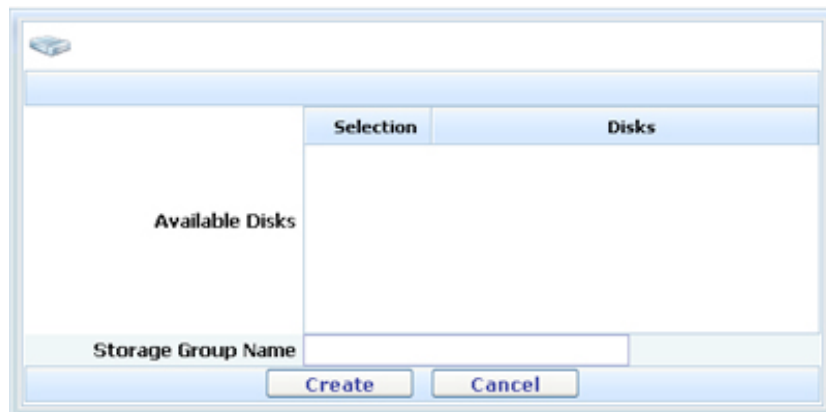
**Note**

Software RAID is only available in **"Standard Edition"** Series. Software RAID cannot be expanded or migrated.

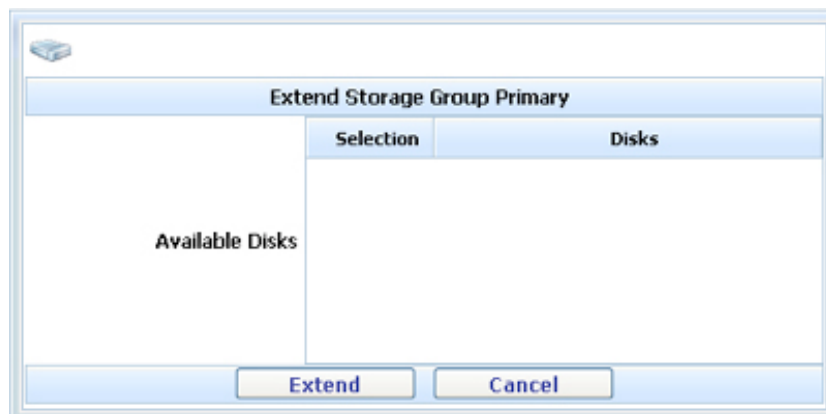
2.3.3 Storage Groups

To manage Storage Groups go to **"System"** menu and click **"Storage Management"**, click on **"Storage Groups"** tab.

To create a new Storage Group you must have available Disks/Arrays, to accomplish task. Click **"Create New"**, select new Disk/Array and assign a name to new Storage Group, then click create.



To Extend Storage Groups, select an existing Storage Group, and click **"Extend"** button, then select new Disk/Array and click **"Extend"**, to finish.



**Warning**

You Should use Disk Arrays instead of Disks, in case of disk failure can lose all your Data.(Disk Arrays can be Software/Hardware RAID arrays)

## 2.4 System Advanced Settings

### 2.4.1 System Services

You can manage services, events alert, and date & time.  
 On services you can set "on boot" on service you want be started in server start up. You can Start/Stop/Restart any service.  
 Stopping services incorrectly may cause data corruption.

Status	Active on Boot	Action	
Stopped	<input type="checkbox"/>	Start	Restart
Stopped	<input type="checkbox"/>	Start	Restart
Stopped	<input type="checkbox"/>	Start	Restart
Stopped	<input type="checkbox"/>	Start	Restart
Started	<input checked="" type="checkbox"/>	Stop	Restart
Stopped	<input type="checkbox"/>	Start	Restart
Stopped	<input type="checkbox"/>	Start	Restart

### 2.4.2 Alerts and Notifications

To configure Alert notification go to "**System**" menu and click "**System Adv settings**" then click on "**Alerts Configuration**" tab, and fill required fields.

On alerts you can monitor H/W Raid, S/W Raid, Storage, Fans, CPU, Quotas, e.t.c. If using internal SMTP server, TLS and Authentication is not needed, but if using external SMTP server, you should consider using Authentication, and if server supports TLS, select checkbox "use TLS".

**Notification**

Enable alerts:

Sender Email Address:

SMTP Server: (FQDN)

Require Authentication:

Use TLS:

Username:

Password:

Administrator Email:

---

**Alert Events**

Hardware RAID Events:

Software RAID Events:

Shares capacity:  Capacity greater than:  %

Over Quota warnings:  Administrator Notification

User Notification User Notification only av.

---

**Schedule**

Hourly

Check events:  Daily

Weekly

### 2.4.3 Date and Time

To set date and time go to **"System"** menu and click **"System Adv settings"** then click on "Date & Time" tab to set time and date of JETNAS. You can set it manually or synchronize with a time server (ntp), can also set your local time zone. Click "Apply" button to update settings settings.

## **CHAPTER 3 Resources Management**

### **3.1 NAS Resources**

#### 3.1.1 CIFS / NFS / FTP Shares

To manage your shares, go to **"Resources"** menu, select **"NAS"**, and **"Shares"**.

To create a share click **"Add"** button, choose the Storage Group, and fill Share Administrator, Share name, and Share Size fields, select writable option and share type(ex: CIFS (windows)) and click **"Save & Next"**.

To edit double click on share, change the desired parameter and click **"Save"** button.

To delete share double click on share and click **"Delete Share"** button.

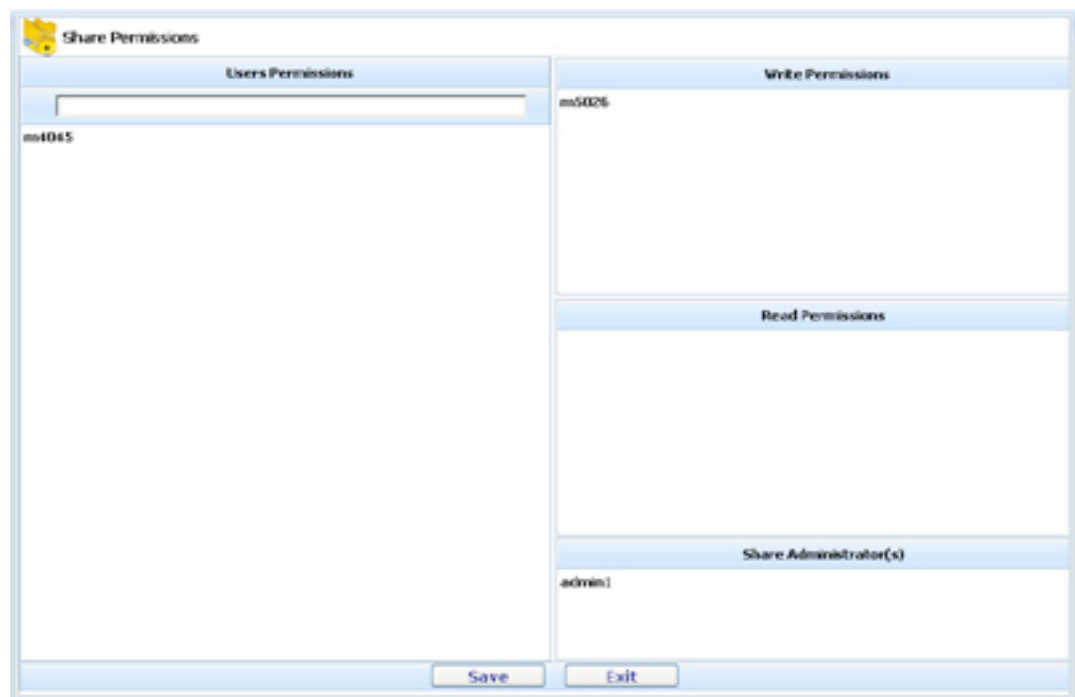
For share expansion just double click on share and set the new share size on **"New Share Size"** field, click **"Save"** to expand.

Setting share access ACL's, double click on share and click **"User Permissions"** for users or **"Group Permissions"** for groups. From left pane drag and drop the users or groups to access levels. If you have larger Active directory, insert username to lookup in search field.

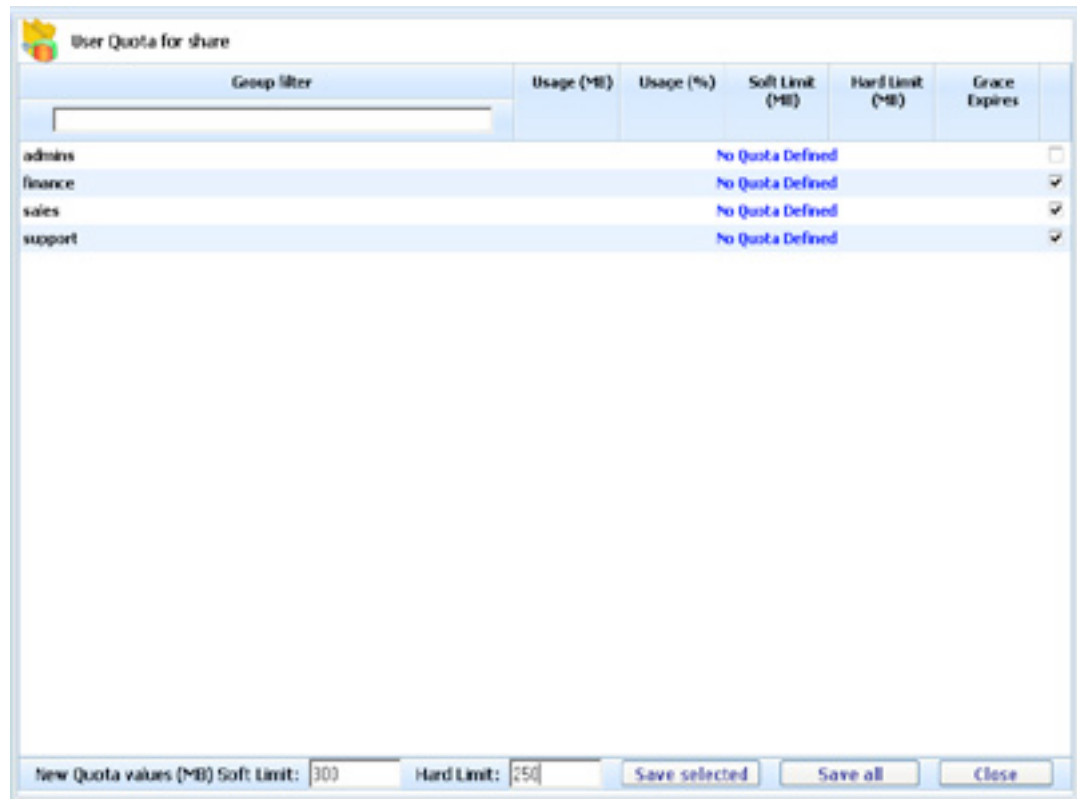
Write Permissions -> Can Read and Write to Share

Read Permissions -> Read Only Share access

Share Administrator -> Full Control (Full Admin in share)



To setting up share quota, double click on share and click **"User Quotas"** for users or **"Group Quotas"** for groups. Set Soft limit and Hard limit field, select User/s or Group/s, and click **"Save selected"**.



### **Accessing share via SMB/CIFS**

To access share type SMB/CIFS can be via Windows Explorer in Windows environment (ex: `\\NAS_IP_ADDRESS`), can be mapped too. From Linux environment can be accessed via command line or X-Windows.

Example via command line:

```
mount -t cifs -o username=USER,password=12345 //NAS_IP /SHARE_NAME /MOUNTPOINT
```

Example via X-Windows:

```
smb://USER@NAS_IP/SHARE_NAME
```

### **Accessing share via NFS**

To access share type NFS can be via Linux command line.

Example:

```
mount -t nfs NAS_IP:/shares/SHARE_NAME /MOUNTPOINT
```

### **Accessing share via FTP**

Shares SMB/CIFS or/and NFS can be exported as FTP. To access share exported as FTP, can be via windows or linux.

Windows/Linux command line:

```
ftp NAS_IP (in domain use DOMAIN\USER)
```

Internet explorer or browser:

[ftp://NAS\\_IP](ftp://NAS_IP)

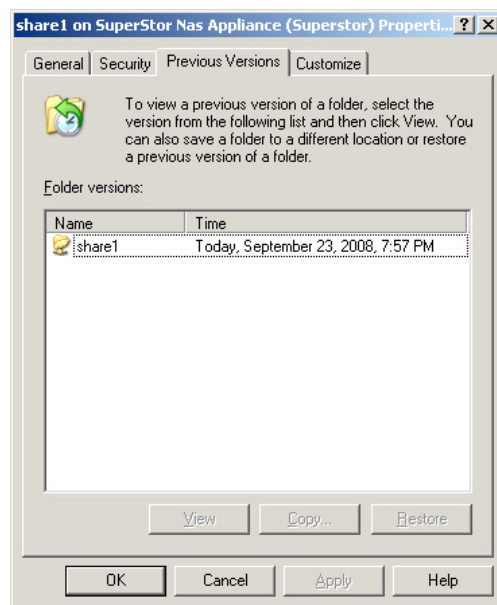
## 3.1.2 CIFS Shares Snapshots

To provide share snapshots, go to **"Resources"** menu, select **"NAS"**, and **"Snapshots"**.

Share snapshots can be *"in time"* or scheduled with rotation.

Max. Snapshots	15	
In use Snapshots		
Reserved		
Available	15	
Snap Size (GB)	10	(Max Size 466 GB)
Max Rotate Count	3	
At Max Rotate Count	<input checked="" type="radio"/> Stop Snapshotting <input type="radio"/> Delete Oldest	
<input checked="" type="radio"/> Hourly		
<input type="radio"/> Daily   00:00		
<input type="radio"/> Weekly   Sunday   00:00		
Save schedule		Cancel

To access existing snapshots open Windows Explorer and browse to JETNAS CIFS Shares, then right click on share that have snapshots, click on "previous versions" tab.



Windows XP SP1 and lower need to install "**Shadow Copy Client**" package.



**Warning**

Snapshots is not a Backup System, use Backup System instead.

## 3.2 SAN Resources

### 3.2.1 iSCSI Target Management

Before using iSCSI Target system start **STS** service.

To manage iSCSI portals, volumes and luns go to "**Resources**" menu, and choose "**SAN**", and "**iSCSI Target Manager**".

iSCSI Management consists in 3 parts, portals, volumes, and target groups(aka lun masking).

To create iSCSI Target Portal, in "**iSCSI Target Manager**" tab, click on button "**New**", give some portal name, and choose state of to online, and click "**Save**".

To refresh portal sessions, "right click on portal".

To edit "double click" on portal, you can change portal state, available on ports, or assign username and password to portal.

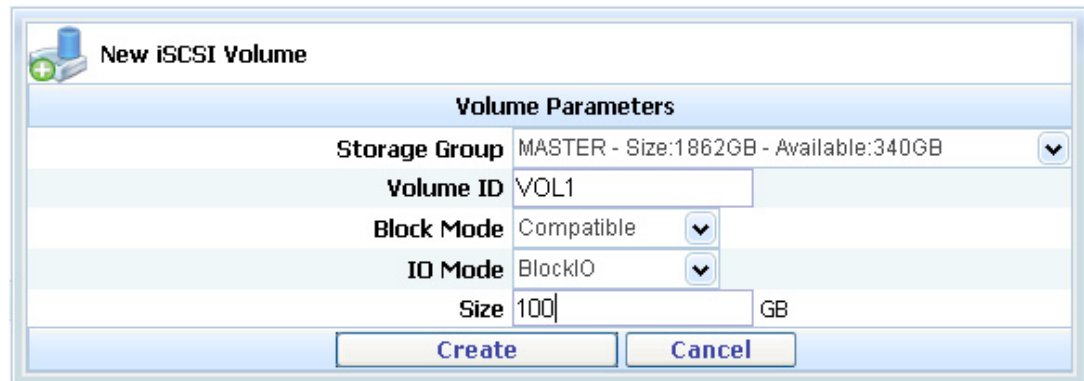
- \* Portal state can be "Online/Offline", Offline portal will not be exported.
- \* Available on Ports, can assign IP addresses separated by comma, where portal will be exported.(blank field will export on all ports) ex: 192.168.1.19,10.0.0.1
- \* Username and password will protect portal with authentication, and must be configured on initiator.

Advanced button will set advanced parameters to portal.(Default parameters is the best for all initiators)

To create iSCSI Volumes, click on tab "**iSCSI Storage Management**", then click "**New Volume**" button.

Choose Storage Group where iSCSI Volume will be created, give a name to volume choose Block mode, IO Mode, and size of volume and click "**create**" button.

- \* Storage Group will be where iSCSI Volume will be created.
- \* Volume name will be the name chosen plus suffix string (ex: VOL1-5B)
- \* Block Mode can be "**Compatible**" or "**Windows Only**", compatible will work on all initiators, windows only will work only with windows initiators.
- \* IO Mode is how data is written on volume can be FileIO or BlockIO.
- \* Size can be any capacity in GB that is available on Storage Group.



To expand Volume “double click” on volume, and set new size.(ex: 500) volume will grow to 500GB.



**Note**

Volume parameters cannot be changed!  
Linux Initiators must be disconnected and reconnected after volume expansion.( SCSI linux driver does not implement UA in driver yet , you must disconnect and reconnect again)

To delete an iSCSI volume just click on “**delete**” button.  
To create target groups (aka: lun masking), click on “**New Group**” button, choose target portal where group will be assigned, and choose group name and click “**create**” button.



After group is create, to assign luns click on “**Manage Luns**” button, then click “**Add**” button and assign lun to Volume and click “**Save**”.  
To remove lun just select lun radio button and click “**remove**” button.  
To remove all assigned volumes click “**remove all**” button.

To assign initiators click on “**Manage Initiators**” button, then click “**Add**” button and insert initiator *iqn* or alias name click “**Save**”.

To remove initiator just select initiator radio button and click “**remove**” button.

To remove all assigned initiators click “**remove all**” button.

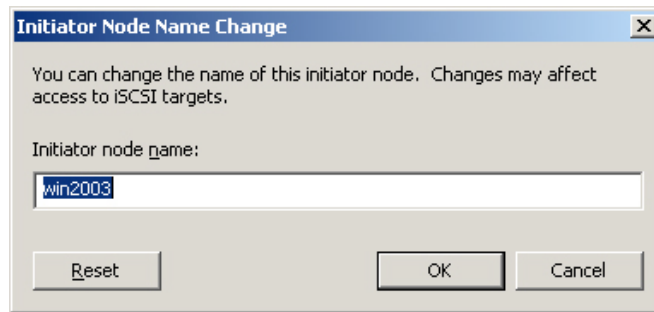
Deleting Target Group all assigned initiators will loose access to all exported luns.



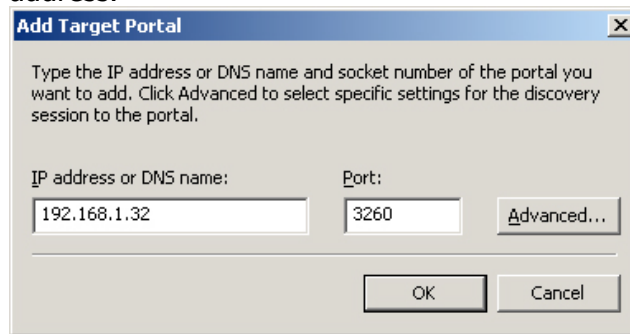
**Note**

iSCSI initiators iqn must be equal to client that will connect to portal otherwise initiator will not see any luns.

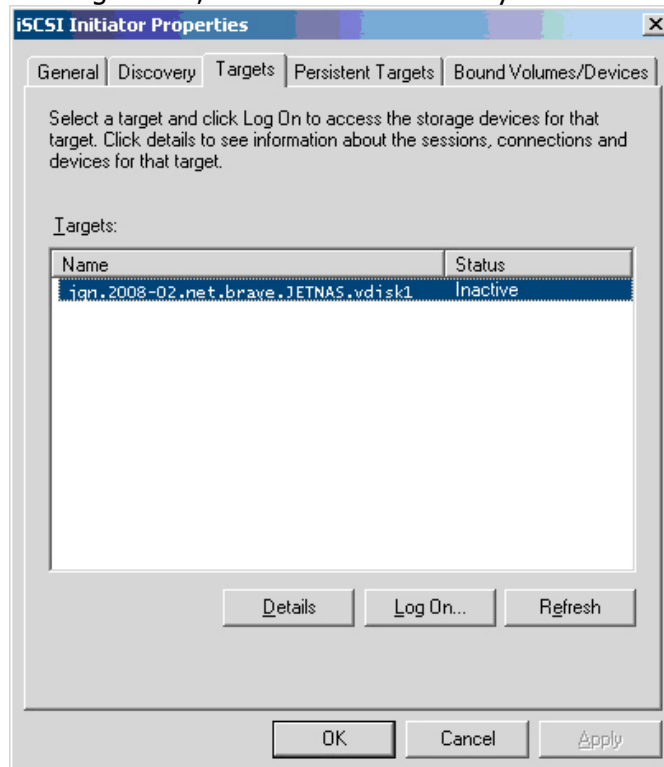
Accessing iSCSI with Microsoft iSCSI Initiator. Install MS iSCSI Initiator on server you want to access iSCSI disks.  
Double click on Microsoft iSCSI Initiator icon, on general tab click change, and choose a initiator name. (here a choose name instead of iqn formatted name)



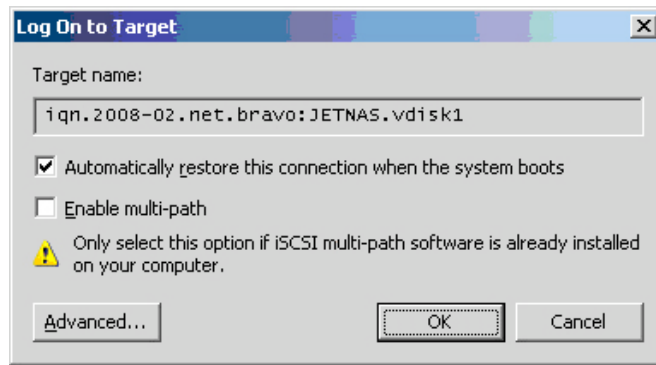
Next select Discover tab and click add in target portals, and enter JETNAS IP address.



On targets tab, click refresh to check your iSCSI Disks.



Click Log On button and choose **"Automatically restore this connection when system boots"**, if you want the connection to be restored after a reboot click OK.



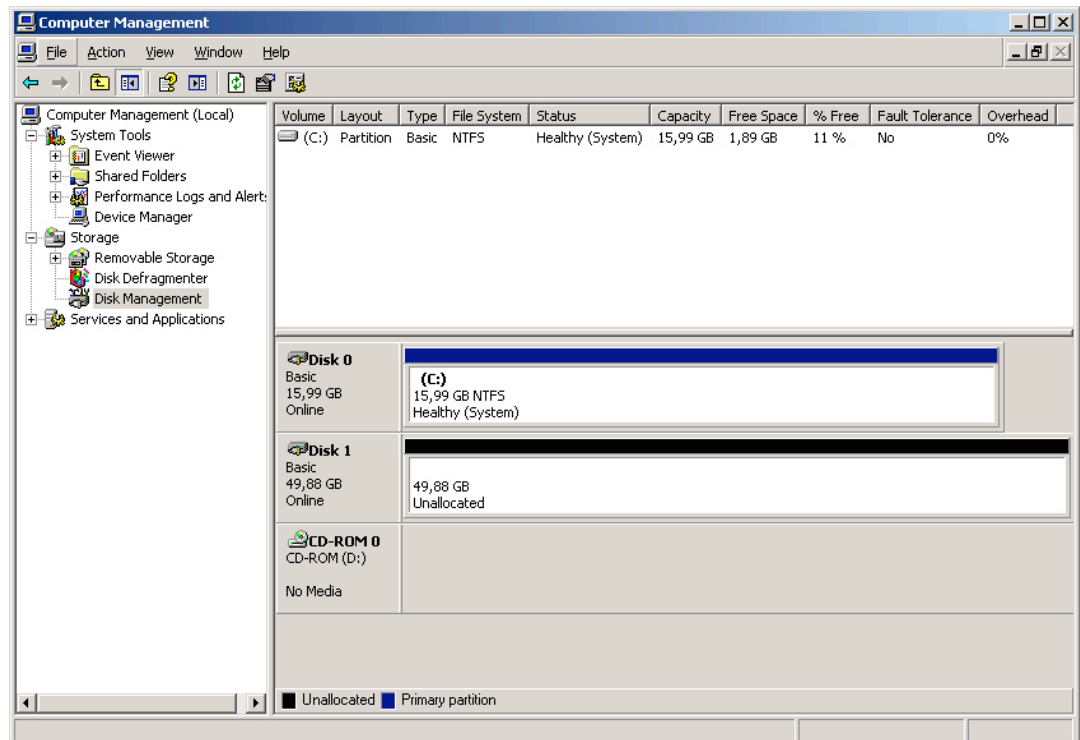
To finish go to windows Disk Management and you should see the new disk. If using iSCSI Disks in Windows 2000, the disks should be 2TB max only, with Windows 2003 or higher you should convert disk to GPT to support large sizes.



**Note**

Basic disks should be used instead of dynamic, because the disks at logon may stay in Offline mode, some issues reported in Microsoft KB about dynamic disks.

Now format and assign a letter. Ready to use!



### 3.2.2 Fiber Channel Target Management

Before using Fiber Channel Target service **STS** must be started.

To manage Fiber Channel Ports, volumes and luns go to **"Resources"** menu, and

choose **"SAN"**, and **"Fiber Channel Target Manager"**.

Fiber Channel Management consists in 3 parts, ports, volumes, and target groups (aka lun masking).

To enable an port to serve Fiber Channel Luns you must enable target mode on port by click on column **"Mode"** and choose **"Target"**.

Link Status	Mode
Link Up - Loop	Initiator
Link Up - Loop	Target
	Initiator



**Note**

Fiber Channel Port must be in target mode to create target groups associated to that port.

To create FC Volumes, click on tab **"FC Storage Management"**, then click **"New Volume"** button.

Choose Storage Group where FC Volume will be created, give a name to volume choose Block mode, IO Mode, and size of volume and click **"create"** button.

- \* Storage Group will be where FC Volume will be created.
- \* Volume name will be the name choosed plus suffix string (ex: VOL1-5B)
- \* Block Mode can be **"Compatible"** or **"Windows Only"**, compatible will work on all initiators, windows only will work only with windows initiators.
- \* IO Mode is how data is written on volume can be FileIO or BlockIO.
- \* Size can be any capacity in GB that is available on Storage Group.

To expand Volume "double click" on volume, and set new size.(ex: 500) volume will grow to 500GB.



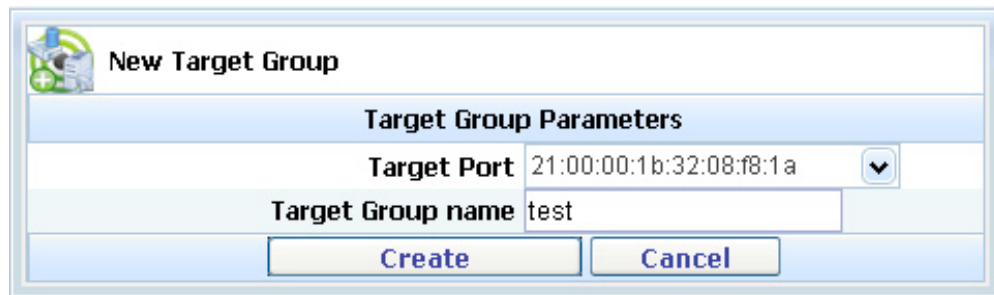
**Note**

Volume parameters cannot be changed!  
Linux Initiators must be disconnected and reconnected after volume expansion.( SCSI linux driver does not implement UA in driver yet , you must disconnect and reconnect again)

To delete an FC volume just click on **"delete"** button.

To create target groups (aka: lun masking), click on **"New Group"** button,

choose target port where group will be assigned, and choose group name and click **"create"** button.

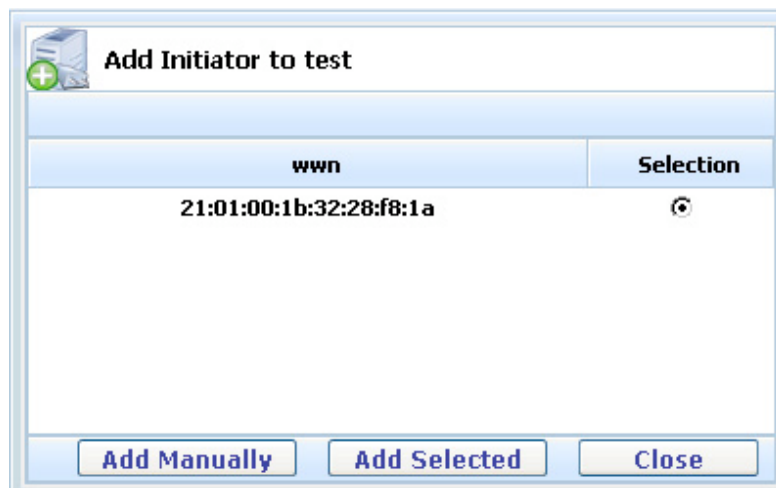


After group is create, to assign luns click on **"Manage Luns"** button, then click **"Add"** button and assign lun to Volume and click **"Save"**.

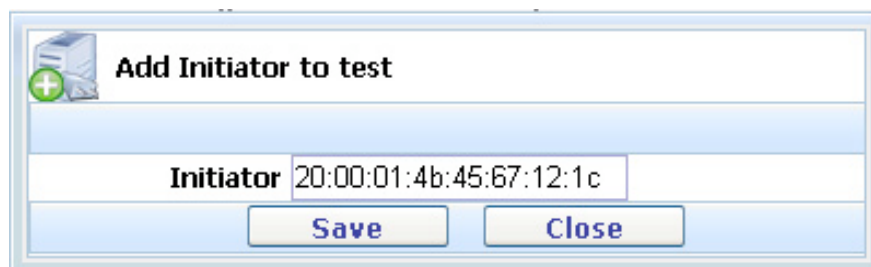
To remove lun just select lun radio button and click **"remove"** button.

To remove all assigned volumes click **"remove all"** button.

To assign initiators click on **"Manage Initiators"** button, then click **"Add"** button will show auto detected wwn's, just select radio button on desired wwn and click **"Add Selected"**.



If wwn you want to add, was not auto detected click on button **"Add Manually"** and fill initiator wwn (ex: 20:00:01:4b:45:67:12:1c) and click **"Save"**.



To remove initiator just select initiator radio button and click **"remove"** button.

To remove all assigned initiators click **"remove all"** button.

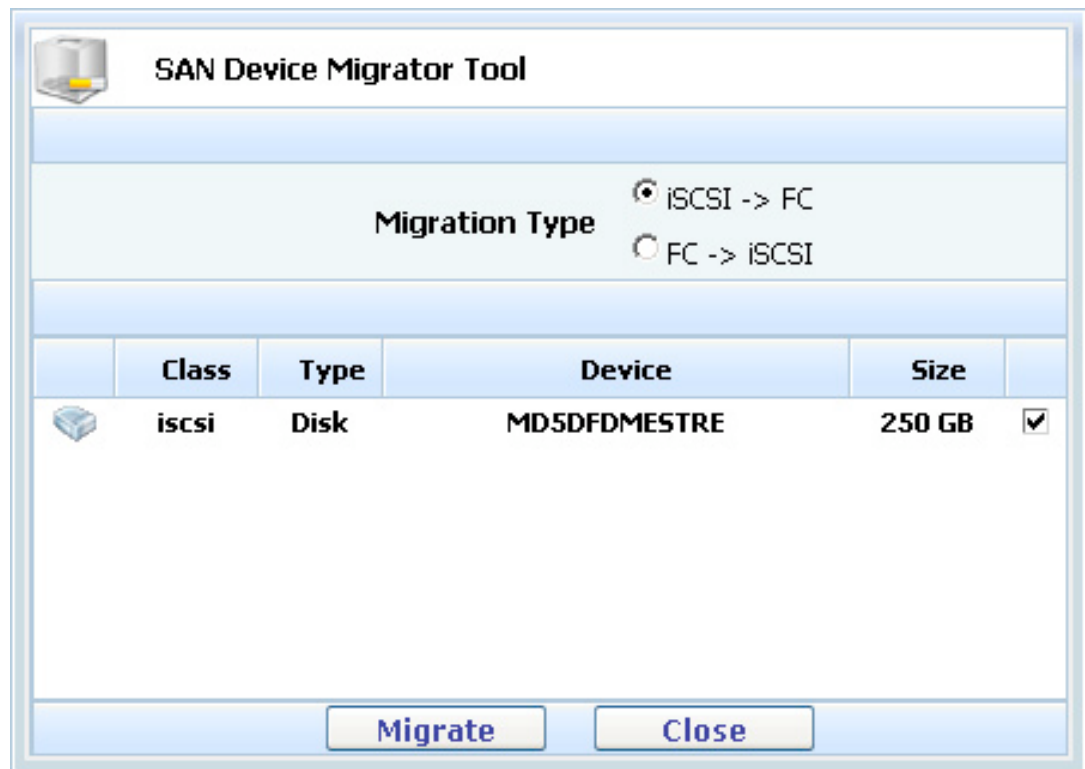
Deleting Target Group all assigned initiators will loose access to all exported luns. FC volume must be shown on registered wwn initiator.

### 3.2.3 Device Migrator Tool

Migrator tool is used to migrate iSCSI Volumes to Fiber Channel or Fiber Channel Volumes to iSCSI.

To migrate an Volume go to **"Resources"** menu, and choose **"SAN"**, and **"Device Migrator Tool"**.

Select Migration Type (iSCSI to FC / FC to iSCSI), and select checkbox of desired volumes to migrate and click **"Migrate"**.



After migration is complete you can check iSCSI/FC volumes table to assign to any group you want!



**Important Info**

To migrate iSCSI or Fiber Channel Volumes, this Volumes cannot be in use by any Target Group. Migrating Volumes does not allow Volume Properties.

## 3.3 Replication Resources

### 3.3.1 Replication Hosts

File Share Replication can be made between 2 or more JETNAS Appliances. JETNAS can replicate (byte level) files and folders of a CIFS/NFS share from an Appliance to another.

Go to **"Resources"** menu, and choose **"Replication"**, and click on **"Replication Hosts"** tab.

To add a replication pair click **"New Server"** button, fill server name, server ip address, and click **"add server"** button.

To delete just press **"delete"** button that belongs to server removal.

### 3.3.2 Replication Tasks

To replicate files and folders we need at least two JETNAS Appliances, one is the source, and the other the destination.

First add a replication pair (see 3.3.1).

Go to **"Resources"** menu, and choose **"Replication"**, and click on **"File Replication Tasks"** tab.

To create a new replication task click on **"New Task"** button, fill task ID number, on **source** browse file/folder and check to replicate. On destination, select destination folder (CAN ONLY BE ONE).

Next on schedule choose desired task frequency (Hourly, Daily, Weekly), and click **"Add Task"** button.

## **CHAPTER 4 Maintenance & Backup**

### **4.1 Maintenance**

#### 4.1.1 Server Maintenance

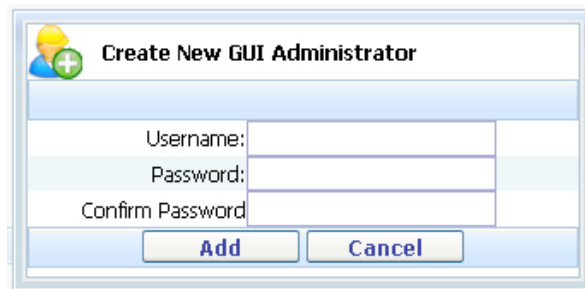
To do some appliance maintenance you can reboot, or shutdown Appliance, to accomplish task, go to **"Maintenance"** menu, and choose **"Server Maintenance"**, and click on desired option (reboot, shutdown).

#### 4.1.2 JETNAS Manager (Administrators)

To access **"JETNAS user Manager"**, go to **"Maintenance"** menu, and choose **"Manager settings"** option, click on **"JETNAS user Manager"** tab.

On **"JETNAS user Manager"**, you can have as many administrators as you want, to access JETNAS SAN Storage Manager.

You can add, edit or delete any registered user, only the default Administrator account cannot be deleted, only password change.



#### 4.1.3 Software Updates & Configuration Backup

To access Software Updates, for updating propose, go to **"Maintenance"** menu, and choose **"Manager settings"** option, click on **"Software Updates / Conf Backup"** tab.

To proceed with update, you should have a file provided by Manufacturer, click on browse button, select file and click **"Update"**.



#### **Warning**

Before Updating System, is strong recommend to Backup all your DATA first and backup your configuration.

To Backup your configuration you must click on **"backup"** button, and save the file in a safe place.



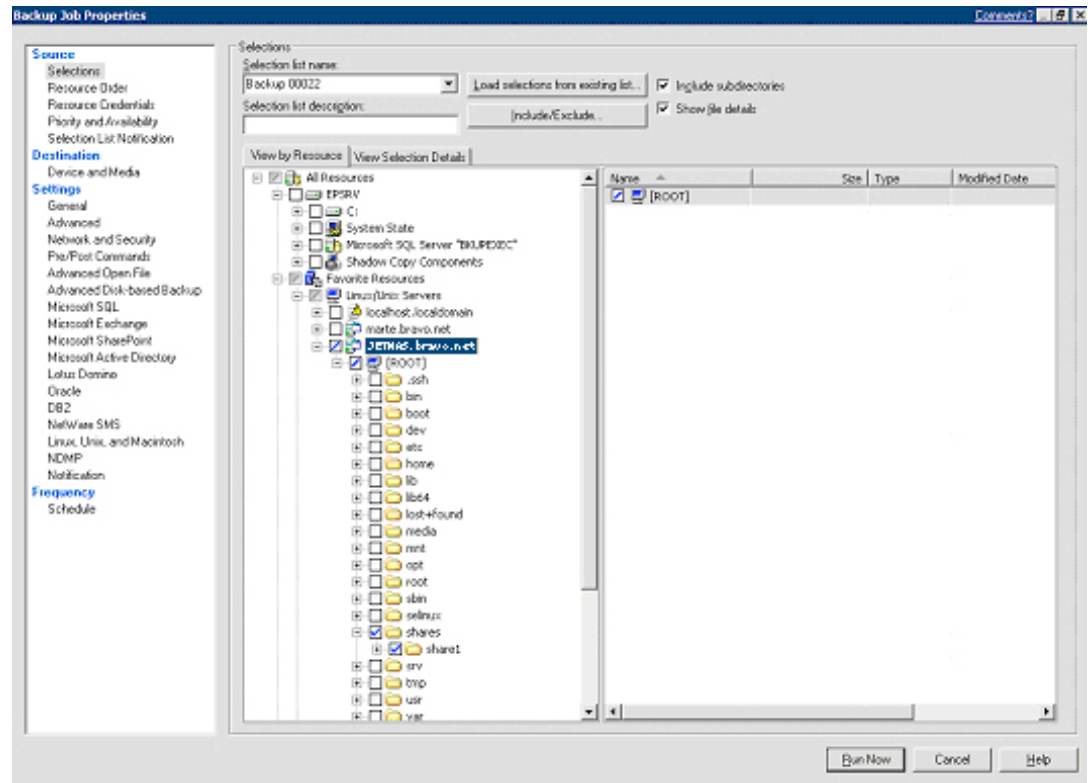
#### **Important Info**

When you change some configuration option, create a CIFS share, or iSCSI lun, or change anything in JETNAS Appliance is always recommended to Backup your Configuration.

## 4.1.4 Backup Agents

JETNAS Appliance™ has already pre-installed Backup Agents for:  
Backup Exec™ 11/12/2010 (Need to buy additional RALUS license)

To configure Backup Exec™ RALUS Agent for 11/12/2010 fill Backup Exec™ Server name / ip address and password for user **"bkagnt"** and click **"Save"**. Go to **"System"** menu, click on **"System adv settings"** and start **BE RALUS** service. In Backup Exec under Favorites->Linux should appear JETNAS Server. See screenshots below:



## **APPENDIX A. RAID Levels**

	<b>RAID 0</b>		
	<p>RAID Level 0 requires a minimum of 2 drives to implement</p> <ul style="list-style-type: none"> <li>▪ RAID 0 implements a striped disk array, the data is broken down into blocks and each block is written to a separate disk drive</li> <li>▪ I/O performance is greatly improved by spreading the I/O load across many channels and drives</li> <li>▪ Best performance is achieved when data is striped across multiple controllers with only one drive per controller</li> <li>▪ No parity calculation overhead is involved</li> <li>▪ Not a "True" RAID because it is NOT fault-tolerant</li> <li>▪ The failure of just one drive will result in all data in an array being lost</li> <li>▪ Should never be used in mission critical environments</li> </ul>		
	<b>RAID 1</b>		
	<p>RAID Level 1 requires a minimum of 2 drives to implement</p> <ul style="list-style-type: none"> <li>▪ One Write or two Reads possible per mirrored pair</li> <li>▪ Twice the Read transaction rate of single disks, same Write transaction rate as single disks</li> <li>▪ 100% redundancy of data means no rebuild is necessary in case of a disk failure, just a copy to the replacement disk</li> <li>▪ Transfer rate per block is equal to that of a single disk</li> <li>▪ Under certain circumstances, RAID 1 can sustain multiple simultaneous drive failures</li> </ul>		
	<b>RAID 5</b>		
	<p>RAID Level 5 requires a minimum of 3 drives to implement</p> <ul style="list-style-type: none"> <li>▪ Highest Read data transaction rate</li> <li>▪ Medium Write data transaction rate</li> <li>▪ Low ratio of ECC (Parity) disks to data disks means high efficiency</li> <li>▪ Good aggregate transfer rate</li> <li>▪ Disk failure has a medium impact on throughput</li> <li>▪ Most complex controller design</li> </ul>		
	<b>RAID 6</b>		
	<p>RAID Level 6 requires a minimum of 5 drives to implement</p> <ul style="list-style-type: none"> <li>▪ RAID 6 is essentially an extension of RAID level 5 which allows for additional fault tolerance by using a second independent distributed parity scheme (dual parity)</li> <li>▪ Data is striped on a block level across a set of drives, just like in RAID 5, and a second set of parity is calculated and written across all the drives; RAID 6 provides for an extremely high data fault tolerance and can sustain multiple simultaneous drive failures</li> <li>▪ RAID 6 protects against multiple bad block failures while non-degraded</li> <li>▪ RAID 6 protects against a single bad block failure while operating in a degraded mode</li> <li>▪ Write performance can be brought on par with RAID Level 5 by using a custom ASIC for computing Reed-Solomon parity</li> <li>▪ Requires N+2 drives to implement because of dual parity scheme</li> </ul>		
	<b>RAID 10</b>		
	<p>RAID Level 10 requires a minimum of 4 drives to implement</p> <ul style="list-style-type: none"> <li>▪ RAID 10 is implemented as a striped array whose segments are RAID 1 arrays</li> <li>▪ RAID 10 has the same fault tolerance as RAID level 1</li> <li>▪ RAID 10 has the same overhead for fault-tolerance as mirroring alone</li> <li>▪ High I/O rates are achieved by striping RAID 1 segments</li> <li>▪ Under certain circumstances, RAID 10 array can sustain multiple simultaneous drive failures</li> <li>▪ Very expensive / High overhead</li> <li>▪ All drives must move in parallel to proper track lowering sustained performance</li> <li>▪ Very limited scalability</li> </ul>		

	<b>RAID 50</b>			
	<p>RAID Level 50 requires a minimum of 6 drives to implement</p> <ul style="list-style-type: none"> <li>▪ RAID 50 should have been called "RAID 03" because it was implemented as a striped (RAID level 0) array whose segments were RAID 3 arrays (during mid-90s)</li> <li>▪ Most current RAID 50 implementation is illustrated above</li> <li>▪ RAID 50 is more fault tolerant than RAID 5 but has twice the parity overhead</li> <li>▪ High data transfer rates are achieved thanks to its RAID 5 array segments</li> <li>▪ High I/O rates for small requests are achieved thanks to its RAID 0 striping</li> <li>▪ All disk spindles must be synchronized, which limits the choice of drives</li> <li>▪ Failure of two drives in one of the RAID 5 segments renders the whole array unusable</li> </ul>			

## **APPENDIX B. RAID GROWING TABLE**

The RAID Growing and Migration is only available on **Business Edition Series**.

For RAID growing just select the same RAID type, to migrate select the new RAID Type.

Check Migration table below:

<b>To</b>	<b>Single</b>	<b>Raid 0</b>	<b>Raid 1</b>	<b>Raid 5</b>	<b>Raid 6</b>	<b>Raid 10</b>	<b>Raid 50</b>
<b>From</b>							
<b>Single</b>	No	Yes	Yes	Yes	Yes	Yes	Yes
<b>Raid 0</b>	No	Yes	No	Yes	Yes	Yes	Yes
<b>Raid 1</b>	No	Yes	No	Yes	Yes	Yes	Yes
<b>Raid 5</b>	No	Yes	No	Yes	Yes	Yes	Yes
<b>Raid 6</b>	No	Yes	No	Yes	Yes	Yes	Yes
<b>Raid 10</b>	No	Yes	No	Yes	Yes	Yes	Yes
<b>Raid 50</b>	No	Yes	No	Yes	Yes	Yes	Yes



### **Warning**

Rapid RAID Recovery will be disabled on any Unit that is migrating! BACKUP ALL YOUR DATA FIRST!



### **Important Info**

RAID growing or Migrating can take up to 48 hours to finish.

## **APPENDIX C. PERMISSIONS TABLE**

JETNAS has Windows ACL (Access Control List) for read, write and execute based on POSIX standard written by SGI. Access Control Lists can be assigned by using Microsoft Windows® explorer. Check table 1 for mapping details.

Table 1(**Linux Rights in Windows**):

Permissions	rwX	-wx	Rw-	r-x	-w-	r--	--X
Full Control	ü						
Traverse Folder / Execute File	ü	ü		ü			ü
List Folder / Read Data	ü		ü	ü		ü	
Read Attributes	ü	ü	ü	ü		ü	ü
Read Extended Attributes	ü		ü	ü		ü	
Create Files / Write Data	ü	ü	ü		ü		
Create Folders / Append Data	ü	ü	ü		ü		
Write Attributes	ü	ü	ü		ü		
Write Extended Attributes	ü	ü	ü		ü		
Delete Subfolders and Files	ü						
Delete	ü						
Read Permissions	ü	ü	ü	ü	ü	ü	ü
Change Permissions	ü						
Take Ownership	ü						

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