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1 Before you get started

Congratulations on purchasing Open-E NAS-XSR SOHO, the ideal solution for network-based storage management. This manual will assist you as you install and configure the hardware.

In order to quickly reach the desired configuration, please read the following pages thoroughly. The time invested is well spent - after all, you have purchased this solution for your invaluable data.

1.1 Content of this package

Before you begin installing Open-E NAS-XSR SOHO, make sure that the package contains the following items:

- Open-E NAS-XSR flash module
- Power adapter
- Quick Start brochure
- A CD containing the manual (this document), brochures, images and additional information material
- Source CD.

If something is missing, please contact your dealer.

1.2 System requirements

- x86-compatible PC (Pentium III or better),
- at least 128 MB main memory,
- IDE port,
- One or several suitable hard drives,
- Network Interface Card (NIC).

Open-E NAS-XSR SOHO contains its own operating system, no additional software is required.

● note: In order to generate maximum performance, we recommend using a network card with 100 MBit/s or more, as well as a processor with at least 1 GHz. If several computers are accessing the NAS-XSR system, we recommend 256 MB main memory or more.

1.3 Supported clients

- Microsoft Windows (all versions)
- Linux
- Mac OS 8.0, 9.0 and OS X.

1.4 Supported network protocols

- TCP/IP,
- NetBEUI,
- SNMP.

1.5 Supported network file protocols

- SMB / CIFS / Samba
- Apple Talk
- FTP/sFTP

1.6 Required tools

- Grounding strap or mat in order to avoid electrostatic discharge (ESD)
- Tools for opening the computer's enclosure (typically, a screwdriver)

1.7 Safety precautions

1.7.1 Personal safety

- **caution** High voltages may occur inside computer equipment. Before removing the enclosure, please turn off the power switch and disconnect the power cords.

1.7.2 Safety for your data

If you are not using new hard drives for operating Open-E NAS-XSR, please backup all important data prior to installation. Adding a hard drive to Open-E NAS-XSR goes hand in hand with complete formatting of the hard drive, which can possibly delete existing data.

1.7.3 ESD precautions

In order to avoid damage to your computer or to Open-E NAS-XSR, please ensure you are grounded before opening the PC or the ESD package that contains Open-E NAS-XSR. Using grounding straps or mats is the best way to ensure this safety. If you don't have grounding equipment handy, please make sure you are grounded before working with Open-E NAS-XSR, for instance, by touching a heater.

- Avoid unnecessary touching of the components inside the PC
- Please touch Open-E NAS-XSR only on the edges

2 Features

2.1 What is NAS ?

Network Attached Storage (NAS) solutions are defined as storage systems that are directly hooked up to a network infrastructure. Also, they operate independently and do not have to be connected to a server via a controller or host adapter. The term “storage” here generally refers to all systems that either provide data storage or actually store or organize data. Currently, data storage is the most common and most widespread type of NAS systems.

NAS solutions are based on a separate operating system (and often also on special hardware), which operates independently from the servers on a network. Typically, this operating system is software that is optimized for providing data (file server).

NAS solutions allow users to add additional storage to existing networks quickly, easily, and cost-efficiently.

2.2 Description of the functions

Open-E NAS-XSR is one of the easiest ways of implementing an NAS-XSR server in your network. Through its simple architecture – in principal, it is a flash memory with IDE interface and Open-E NAS-XSR as its operating system – Open-E NAS-XSR can be used with all x86 PCs containing an IDE controller and additional SATA Controller.

To start working with Open-E NAS-XSR, all you need to do is assign an IP address to the NAS server – either automatically through an existing DHCP server or by assigning it manually. All other settings are handled via a web front-end which can comfortably be accessed via the IP address of Open-E NAS-XSR using the encrypted https protocol.

Open-E NAS-XSR allows users to create so-called shares (i.e., resources within a network that numerous users or user groups have certain access too). The access rights to the shares are controlled through the user and user group settings.

2.3 Why Open-E NAS-XSR ?

Often, storage in network environments is expanded the following way: File servers have to be shut down in order to install additional drives. In the next step, they need to be reconfigured. In tedious work, data often has to be copied manually onto larger drives, consuming a lot of time and causing costs.

With Open-E NAS-XSR, you can add storage to your existing network quickly, easily, and, most important, cost-efficiently. Expensive hardware is, therefore, no longer necessary. Take any computer – a new rack server or an old desktop PC – and exchange the system drive for the Open-E NAS-XSR flash module. To store data,

Open-E NAS-XSR uses IDE (ATA) and SATA hard drives, connected to ports on your main board or hardware RAID controller.

Additionally NAS-XSR support software RAID, so you can create software RAID over single hard drives.

For example, you can create software mirror over two hardware RAID5 for very high reliability.

Within a few minutes, you will have up to several hundred gigabytes available on your network – without much effort and any downtime.

2.4 RAID types

This manual is not intended to replace your RAID controller manual. But we want to provide you with an overview of common RAID types so that you can make an informed decision on which type to choose. Depending on whom you ask, RAID means either Redundant Array of Independent Disks or Redundant Array of Inexpensive Disks. Both are correct. In essence, you combine the capacity, speed and security of several disks into one.

RAID 0 forms one large hard disk by concatenating stripes from each member drive. Stripe size is configurable roughly between 64 KB and 1 MB. The result is a lightning-fast RAID, but with no added security. One failing drive may ruin the entire RAID.

RAID 1 mirrors hard drives. By writing identical data onto more than one drive, security is enhanced. A completely defective drive does not cause any loss of data. The drawback is reduced performance and capacity.

RAID 5 combines data striping from RAID 0 with parity checking, therefore combining speed and improved security. The loss of one drive is tolerable.

3 Hardware installation

3.1 Getting ready

Switch off the computer, remove the power supply, and open the PC's enclosure. In tower cases, the side parts often can be removed individually (on the backside of the enclosure you just need to remove a few screws). Many machines have U- or O shaped covers that have to be pulled off (either towards the front or the back). Should you need any assistance, please contact your dealer.

Now localize the IDE connectors on your motherboard:



Every motherboard has at least two such ports. To install Open-E NAS-XSR, you have to use the first (primary) port.

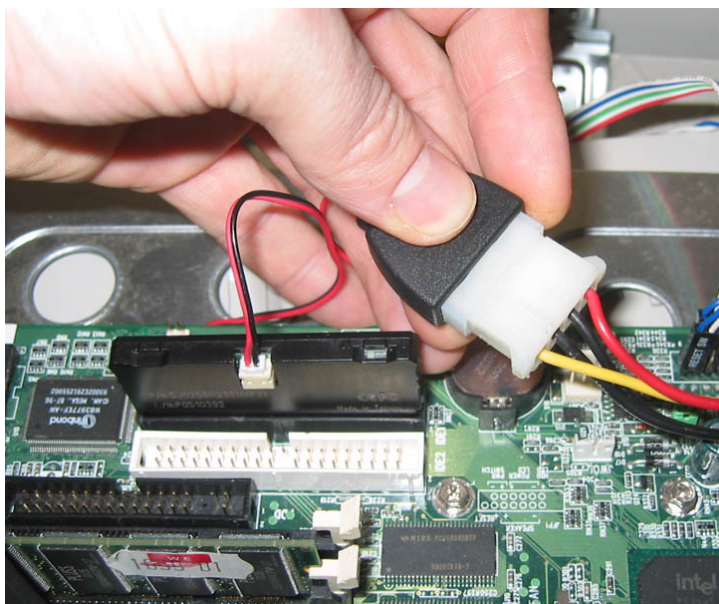
Often, the labeling on the IDE connectors may be tiny, but it is always there, on each and every board. Preferably look for "IDE 0" (if this connector does not exist, the first port is called "IDE 1" (with the second connector being 2)).

3.2 Installing Open-E NAS-XSR

If necessary, remove the flat band cable that connects your hard drive with the controller. Open-E NAS-XSR should now be carefully inserted into the connector. As IDE ports can have a notch on one side, you can only insert the connector at the preset position.



In the package you will find an adapter cable which provides Open-E NAS-XSR with power. The little white plug corresponds with the matching connector on Open-E NAS-XSR. As a final step, the adapter has to be connected to the white power-supply plug (see photo):



That should conclude the installation! Before putting the enclosure on your computer again, do not forget to connect your hard drives to the IDE second connector, SATA connector. If you have a CD or DVD drive, you can remove it, as Open-E NAS-XSR does not support optical hard drives, but if you want to make an ISO update it is not necessary to remove the CD drives (see 5.2.3.4)

4 Configuration

4.1 The basic configuration of the NAS-XSR computer

Connect your keyboard and a monitor to the NAS-XSR computer. You will only need those devices for the basic configuration or extended maintenance configuration.

- **note** You may have to change the function “Halt On: All Errors” in your PC's BIOS, so that the system starts even without the keyboard. The correct configuration is “Halt On: All But Keyboard.”

4.2 First-time operation of Open-E NAS-XSR

Now start your system.



After booting graphical screen is complete, Open-E NAS-XSR will provide you with information on the current software version and the network settings:

```

Welcome to Open-e NAS-XSR                                     (Press F1 for Help)
-----

Model:                Open-E NAS-XSR SOHO
Version:              3.00.XS00000000.1630
Release date:        2006-03-03
S/N:                 1357186427

Network settings:
interface 1:  eth0    ip: 192.168.0.220

Https settings:
                port      443
                allow from all
  
```

If the network has a DHCP server, Open-E NAS-XSR should gain access to the IP settings automatically. If that is the case, you can proceed at 4.3. If your network does not have a DHCP server, Open-E NAS-XSR will start with the default settings: IP address 192.168.0.220 and subnet mask 255.255.255.0.

You can change these values again by typing in the following key combination: left CTRL, left ALT and N. You can select a different IP address now. All other available functions on of the console will appear after pressing F1 key (see below).

```

-----Help-----
You can use below key sequences (C-means 'Left Ctrl',A-'Left Alt')
C-A-N   - to edit static IP addresses
C-A-P   - to restore default factory administrator settings
C-A-I   - to restore default factory IP configuration
C-A-T   - to run console tools
C-A-X   - to display extended tools
C-A-H   - to display hardware and drivers info
F2      - to display all network interface
F5      - to refresh console info
C-A-S   - to shutdown the system
----- (100 %) -----
  < EXIT >
  
```

After a connection has been established, all settings can also be changed remotely via the web browser. If your network requires it, the address of the standard gateway and the broadcast address can be changed.

● **note** For additional information, please read the chapter “Functions of the console display.”

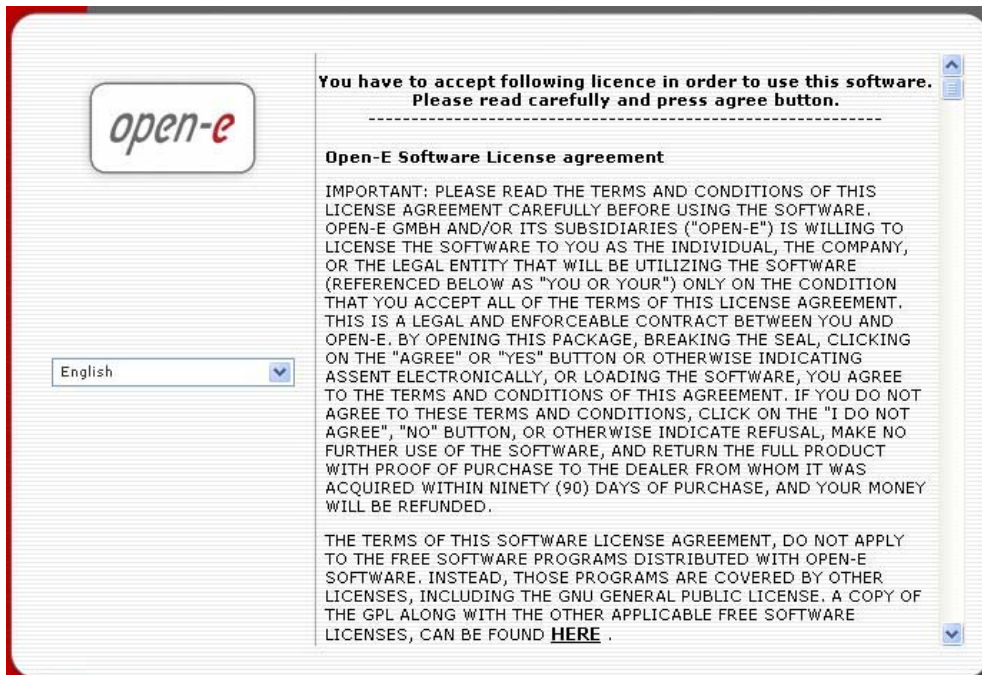
4.3 Logging into Open-E NAS-XSR SOHO

You can establish a connection to Open-E NAS-XSR from every network computer. To establish this connection, use a browser (e.g. Microsoft Internet Explorer) and enter the IP address or the name of the computer hosting the NAS-XSR server into the URL entry line: <https://192.168.0.220> (standard address) or <https://ancom> (this name can be changed in the installation of Open-E NAS-XSR).

● **note** For security reasons, Open-E NAS-XSR uses the encrypted SSL protocol (https).

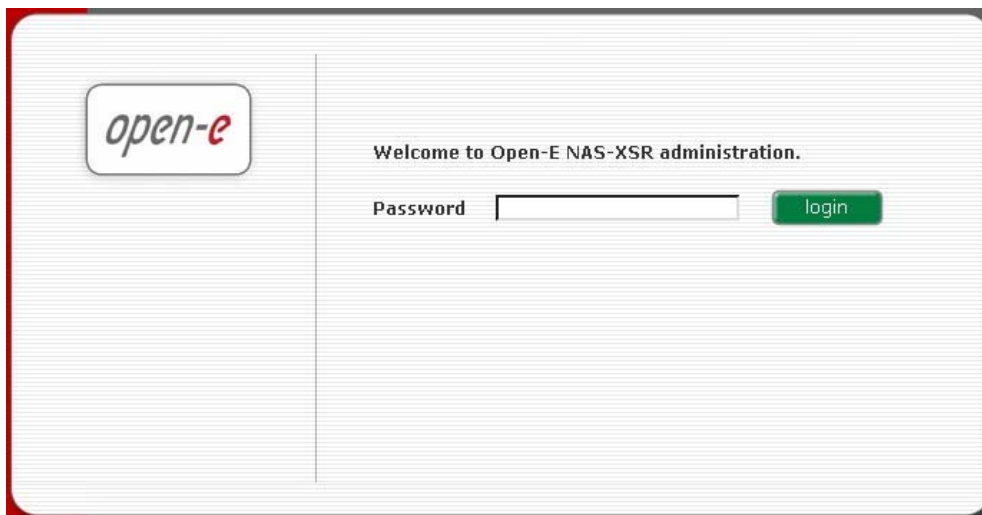
You will now be asked for verification of the encryption certification. Since Open-E NAS-XSR does not allow for creating shares on the Internet but only on the Intranet, there is no need for global certification by an authorized body. You can accept the certificate for the session only, but also for all future use.

Now you have to accept the license in order to use the Open-E software and you can choose the language you want to use



- **note** Page with the software agreement and available language option will be shown after first launching Open-E NAS-XSR. Later you can change the language you can change using Language Settings, which are located in “server” through “Setup”.

After accepting License agreement you can log into Open-E NAS-XSR using the standard password “ancom” (this can be changed later). In order to start working, you can now set all server parameters.

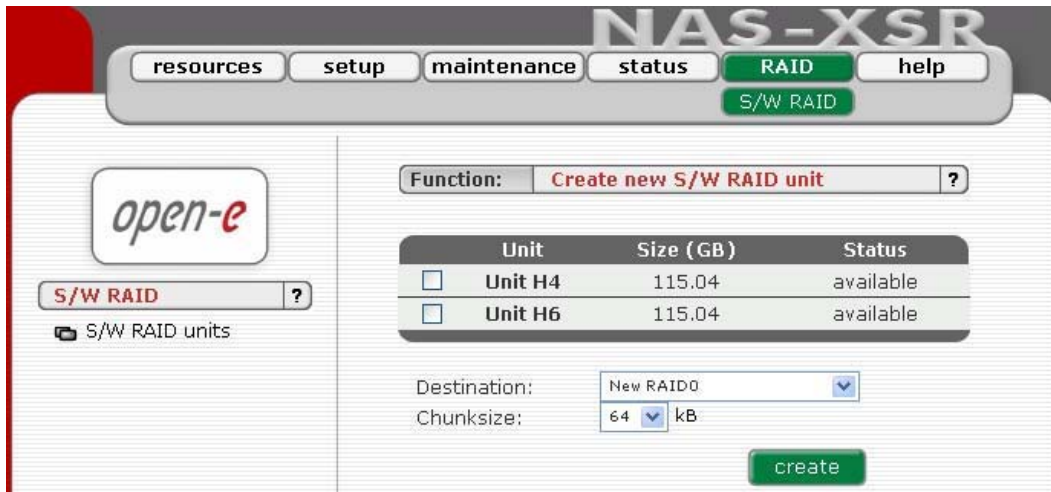


- **note** Password checking is case-sensitive. If you cannot log into Open-E NAS-XSR, please check the status of the Shift and Caps Lock keys.
- **note** In case your web browser will show something different then expected, please delete the cache & cookies in settings menu of your web browser.

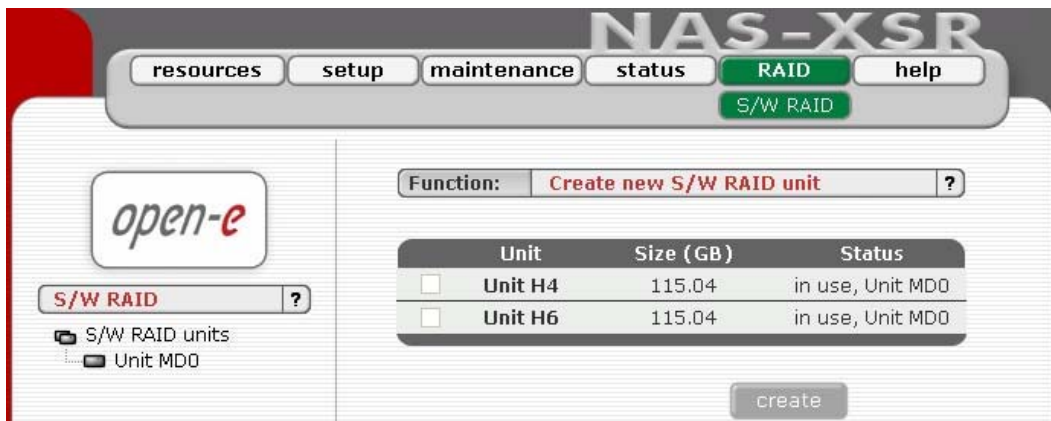
4.4 Create software RAID Units (optional)

In the Open-E NAS-XSR SOHO, you can use disk drives as single, adding them to the Volume Group. However, for the better security of your data, you can use software RAID with single drives or even. In order to do it, please go to menu “RAID” → “S/W RAID” first.

You will find the list of available units. Software RAID can be created with single hard disks or hardware disk arrays. To create a software RAID, please select the units, choose the RAID level and click on “create” button.



After clicking “create” button, the status will change to “in use” with additional information describing the kind of a disk array (e.g. MD0 is RAID 0).

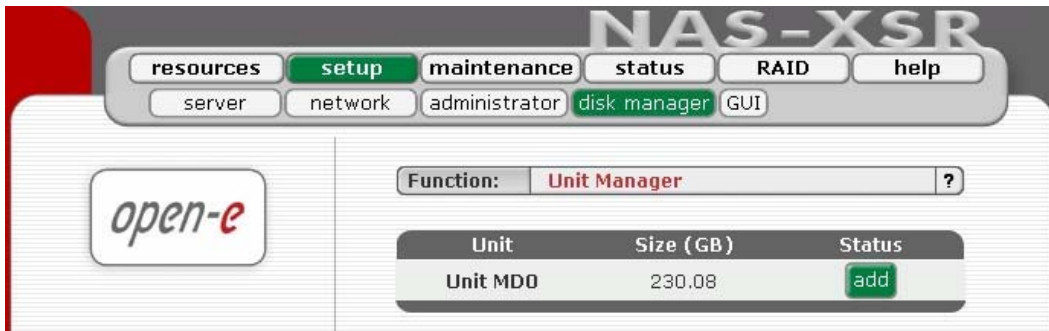


4.5 Adding Disk Units

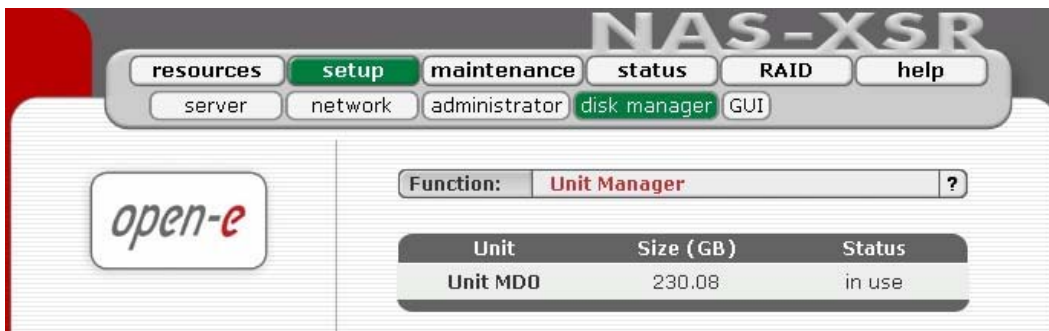
Now, please go to menu: “setup” → “disk manager”. In the Function Unit Manager you will see list of available units.

In order to partition/format the unit, please click on “add” button.

To add a new unit to the NAS-XSR, please click “Add”. After the initializing procedure, the status of the unit will change from the “Add” button into “In use”.

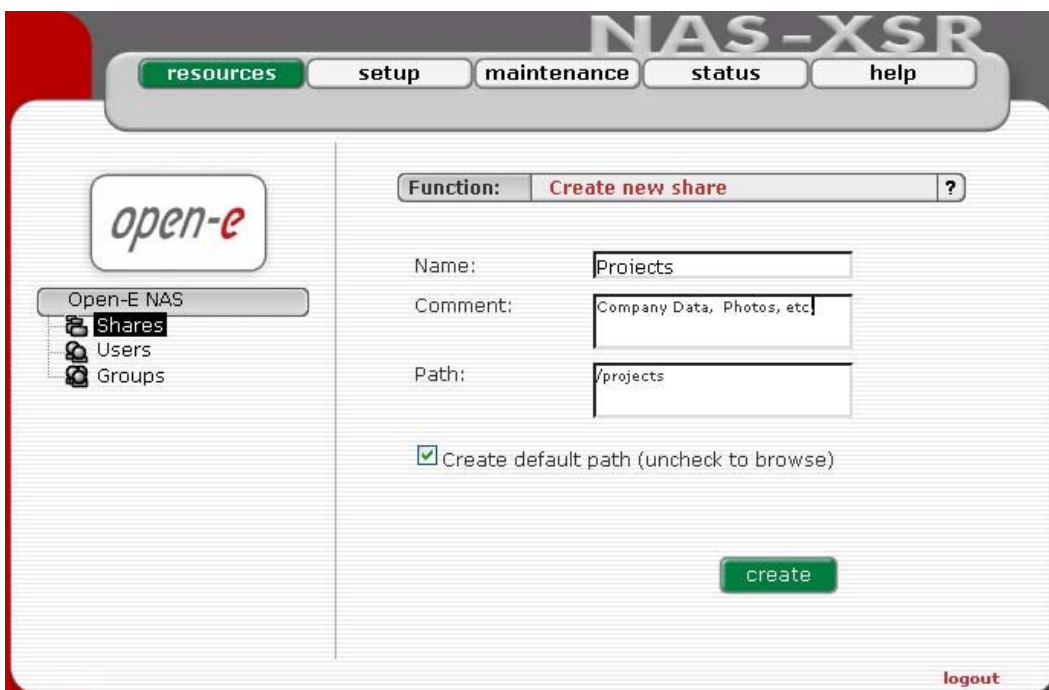


Please note that you can expand the storage capacity by adding new disk drives. In the “Unit Manager” Function Open-E NAS-XSR will show both 'in use' and new units.



4.6 Creating NAS-XSR shares

In the menu, please select “Setup,” followed by “server.” Here, you select the type of authentication. In smaller networks, this should be done via the used workgroup name, which has to correspond with the workgroup name of the client PC.

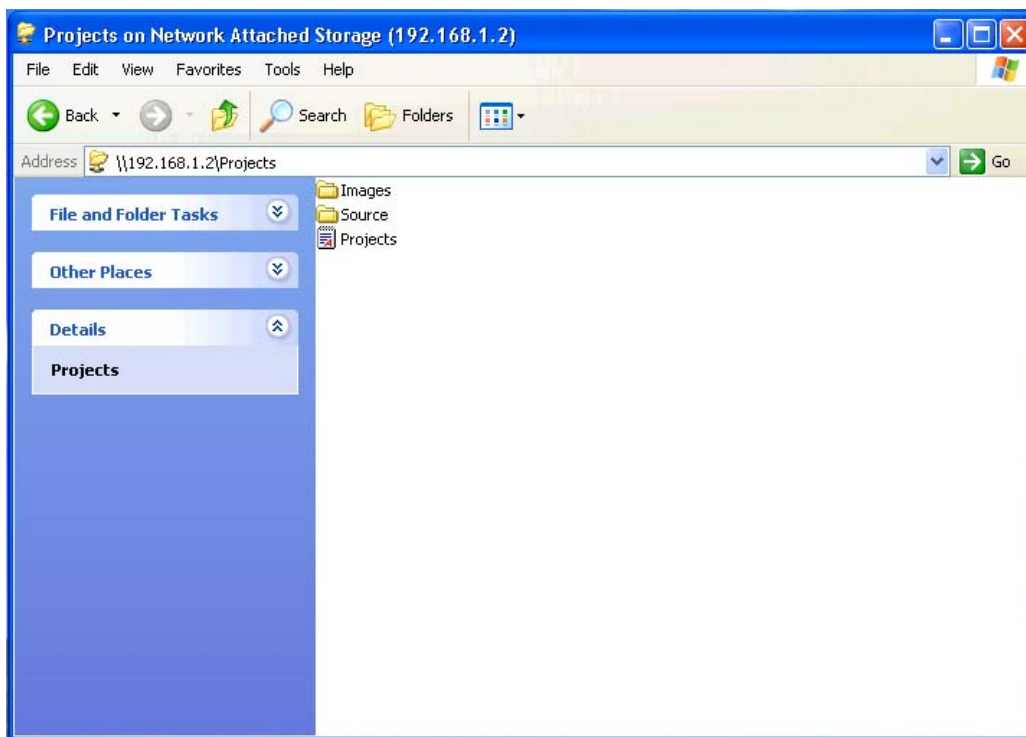


In the menu “Resources,” select “Shares” on the right-hand side of the tree diagram. Now create the first share.

- **note** The workgroup/domain name that was configured in Open-E NAS-XSR has to match with the network settings. Otherwise, the configured shares are not visible in the network environment.
- **note** If you made changes to the workgroup and server name in Open-E NAS-XSR configuration, it can take some time until each workstation computer in the Windows network detects the new name.

4.6.1 Access to Windows Shares

The access to newly created shares is generated via the Windows Explorer. After entering the IP address of your Open-E NAS-XSR (in this example \\192.168.1.2), all visible shares should be available immediately. Please keep in mind that sometimes it takes a few minutes for the new shares or changes to become accessible. When accessing invisible shares, you need to know beforehand the corresponding share name and attach it to the IP address with a backslash (\):



4.6.2 Access NAS-XSR Shares under Linux

Please use following line to mount an NFS share:

```
mount -t nfs 192.168.0.220:/nfs /mnt/nfs
```

where:

192.168.0.220 is the Open-E NAS-XSR IP and /mnt/nfs your local mount point

Please use following line to mount an SMB share:

In a shell:

```
mount -t smbfs -o username=root,password=12345 //192.168.0.220/test /mnt-smb
```

where 'test' is the share name

In X-windows:

```
Smb://root@192.168.0.220/
```

5 Description of functions

5.1 Functions of the console display

While Open-E NAS-XSR can be fully administered remotely through a secure Web interface, some of the functions you can access on the console. Open-E NAS-XSR constantly displays following basic parameters:

- IP address,
- Https settings

CTRL+ALT+n

If you press the left CTRL key + the left ALT key + n, you will be asked for the new IP address and the subnet mask. The DHCP server will be shut down.

CTRL+ALT+p

If you press the left CTRL key + the left ALT key + p, the access restrictions are lifted by entering the administrator password (in addition, there is a reset to the standard https port 443).

CTRL+ALT+i

By pressing a combination of left CTRL key, left ALT key and i, you can reset the original IP address (192.168.0.220) and the subnet settings (255.255.255.0). In this process, the DHCP server support is turned on.

CTRL+ALT+t

By pressing a combination of left CTRL key, left ALT key and t, you can run Console Tools. The menu will appear, with choice of following functions: Ping, DHCP Ping, Hardware info, Memory info, Time configuration and DNS configuration.

CTRL+ALT+h

By pressing the left CTRL key, left ALT key and h, it will display hardware and driver information.

CTRL+ALT+x

By pressing the left CTRL key, left ALT key and x, it will display extended tools.

F1, F2 and F5

Function key F1 is available to display help information while F5 will reset the console display to default. If you press F2 key all network interface will be displayed.

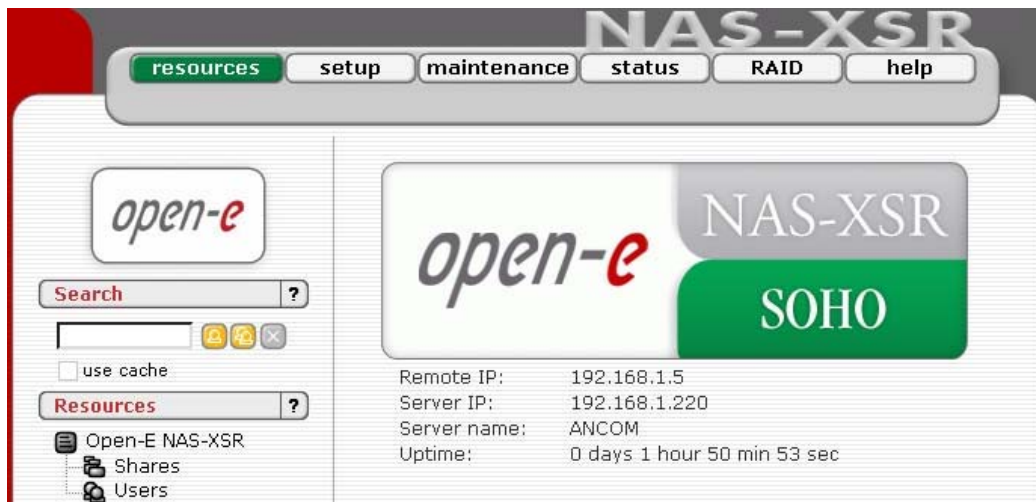
Shutting down and restarting

With Ctrl + ALT + DEL the Open-E NAS-XSR host computer will be shut down and restart, while CTRL + ALT + S shut it down. Please be careful with this option when users are connected.

5.2 Functions of Open-E NAS-XSR via browser access

On the following pages, we will thoroughly describe every function of Open-E NAS-XSR. The functions are divided by menu options, which are located at the top part of the screen.

5.2.1 Menu “Resources”



Here, you can find important data status (IPs, server name, uptime), and you can configure NAS-XSR operations. All that may be accomplished by using tree diagrams on the left side. This will help you manage all shares, users, user groups in a structured manner and in addition control search.

The search control can be enabled in the Open-E NAS-XSR menu->setup->GUI in the Search preferences Function.

The search control allows to lookup users or groups in the remote or local user database that NAS-XSR server is currently attached to. To apply a criterion put a string into the 'search' textbox and click on the play button. All found entries, containing the search string typed-in, would be listed. Note that the first time you use the search facility, your query will be sent back to the server for processing. All the subsequent searches will access only the locally cached data to save the time. To query the database directly again, set out the 'use cache' checkbox.

You can use regular expressions to look for users, for example:

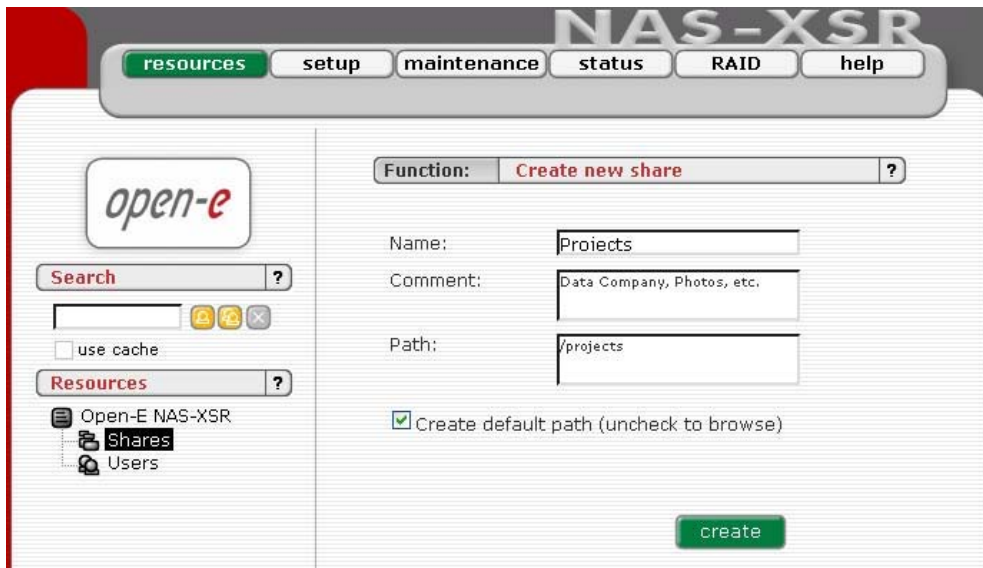
- to lookup users' ID beginning with the word 'beg' type `^ beg`,
- similarly, append '\$' to the string if you want to lookup entries ending with that text,
- to lookup users or groups ending with 'frog' type-in `frog$`.

● note By default the search textbox is empty which does not impose any criteria as to what groups or users are shown in the tree. After you hit the play button the first found users/groups will be shown (up to the limit given).

Adding elements to the tree can be a time consuming task – especially when the criteria are not tight enough and limit is set up to more than 300 entries. To cancel the operation before it is finished, click on the stop button.

5.2.1.1 Shares

Here, all shares on your Open-E NAS-XSR are listed. By clicking on the branch “Shares,” with Function “Create new share” you can define a new share or comment it (optional) or set the path .



Organized below, you will find all existing shares, which you can edit with a simple click. With the exception of the name, you may alter all parameters. If, however, you must change a name, delete it and assign a new name. Windows users will see the name of the share in the folders of their network environment when they click on the icon for the NAS-XSR server. The comment is only visible if the users take a look at the share properties, or if shares are listed in detail.

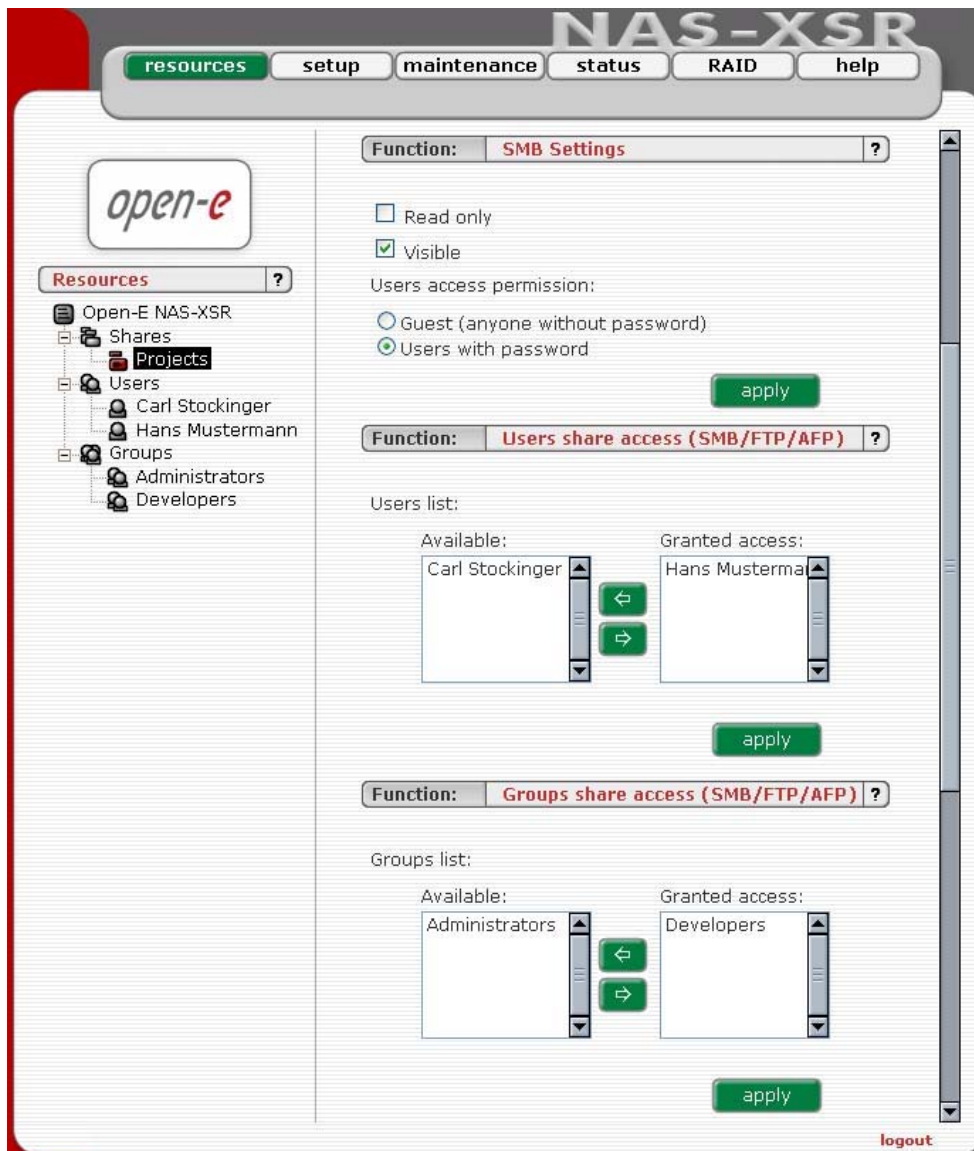
The path represents the physical location of the data on the share volume of the NAS-XSR server. The user does not know this information. In order to simplify navigation through the directories, you can use the browser function.

After clicking “create” button on left page, below on branch shares, will appear the name of earlier established share, in this case “Projects”. Then by clicking on name “Project”, you will see all available functions helpful for setting the share:

Function “SMB Settings”

Shares can be marked as “Read only,” and they can also be hidden (see below). Invisible shares are not displayed in the network environment, but they may still be used. The last parameter is “User access permission”. Either all users can be granted access (even without a password for enabling access to public folders) or only registered users with password.

Please note that the entered users (user and password) have to correspond with the Windows login data.



In Functions “Users share access (SMB/FTP)” and “Groups share access (SMB/FTP)” you can set the access to the shares to available users and/or groups.

Function: “NFS share access”

Using this function you activate access to particular share via NFS. In order activate NFS on NAS-XSR server, you must enable usage of NFS in menu setup->NAS-XSR server in Function NFS settings.

In order to mount this share via NFS, please use following syntax:

- `mount -t nfs IP_addr:/share/share_name /local_mount_point`
or
- `mount -t nfs IP_addr:/vol/share_name /local_mount_point`

Please fill-in the NFS options fields:

- **Allow access IP:** Please enter an IP or address range that is allowed to access NFS. You can enter single IP or multiple IP separated with semicolon or IP address range. IP addresses that will not be added to allow write list will have read only access.

- **Allow write IP:** Please enter an IP or address range that is allowed to write to NFS. You can enter single IP or multiple IP separated with semicolon or IP address range.
- **note** When you leave allow access IP and allow write IP fields blank, then all computers in subnet will have write access to NFS. When you set allow access and leave allow write IP field blank, then specified computers will have read only access and none will have write access. When you set allow write IP without allow access IP, then specified IPs will have write access and all computers in the subnet will have read only access.
 - xxx.xxx.xxx.xxx
 - xxx.xxx.xxx.xxx;xxx.xxx.xxx.xxx;
 - xxx.xxx.xxx.xxx/network_prefix_length.
- **insecure:** allows incoming connection to originate from ports > 1024
- **insecure locks:** disables authorization of locking requests, Some NFS clients don't send credentials with lock requests, and hence work incorrectly with secure_locks, in which case you can only lock world-readable files. If you have such clients you can use the insecure_locks option.
- **all squash:** Map all users id to nobody user and all groups id to nogroup group.
- **no root squash:** Please select this option to grant user root from a client machine, the same level of access to the files on the NAS-XSR server . Otherwise user root from a client machine will be mapped to user nobody on the NAS-XSR server.

How to enter Ip address

In order to enter specific computers enter the desired IP addresses separated by semicolons, in example: 192.168.0.1; 192.168.0.2; 192.168.0.222; etc.

In order to assign the entire address area between 192.168.0.1 and 192.168.0.254 writing privileges enter: 192.168.0.0/24

In order to assign the entire address area between 192.168.0.1 and 192.168.255.254 writing privileges enter: 192.168.0.0/16

There are possible many more combinations. You may find details on IP calculation in Internet.

Just search for "ipcalc". For example: 192.168.0.1/28 will set range from 192.168.0.1 to 192.168.0.14 192.168.0.100/29 will set range from 192.168.0.97 to 192.168.0.102

You can easy calculate the network IP range using an IP Address Calculator like: http://www.camtp.uni-mb.si/books/Internet-Book/IP_AddressCalculator.html

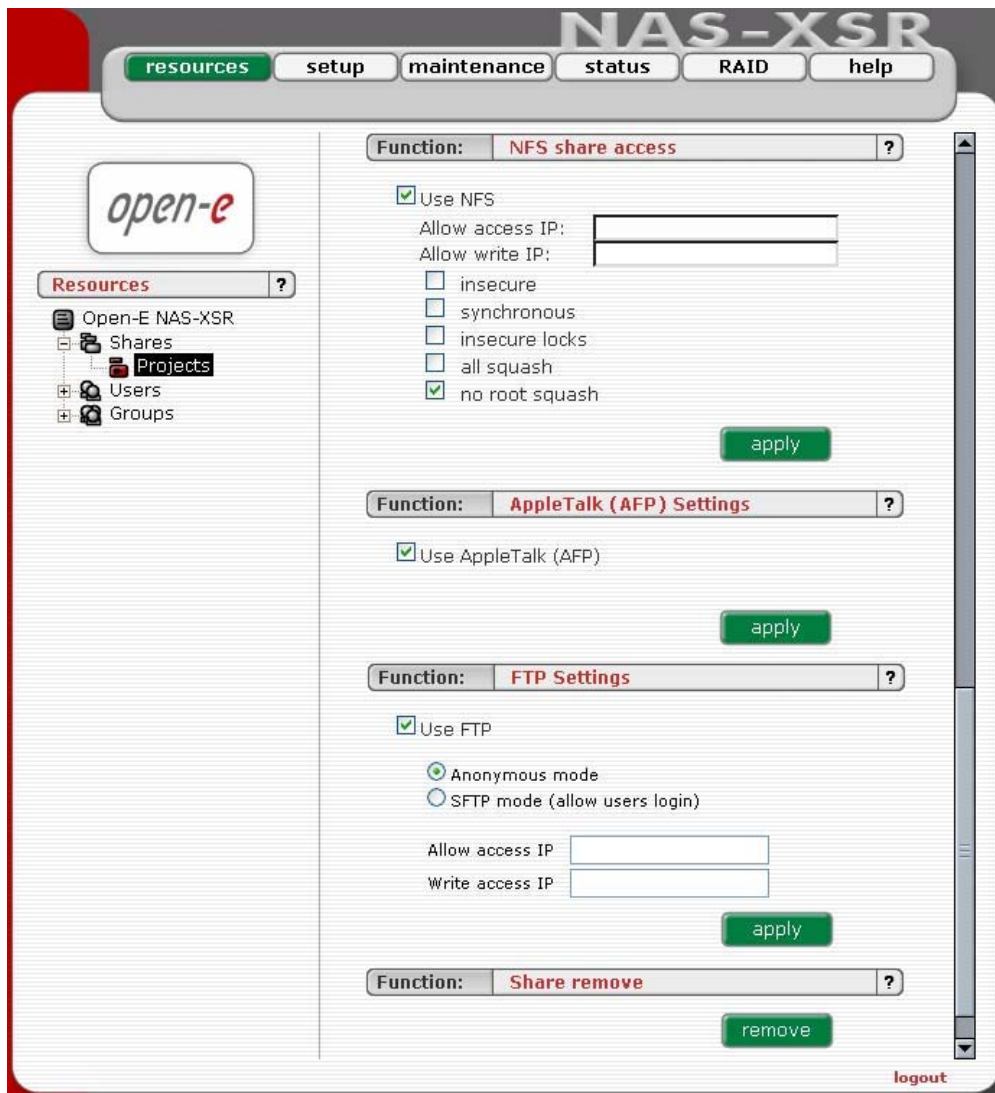
Function “FTP Settings”

Open-E NAS allows sharing files over FTP and SFTP protocols. FTP sends users' IDs, passwords and files over the network as a raw, not encrypted data. SFTP is encrypted FTP and therefore it is much more secure. SFTP allows passwords and files encryption (depending on ftp client configuration).

How to share files over FTP?

First enable the ftp server. To enable FTP go to “Sstup->server->Function: FTP settings”, check “Use FTP” and click the apply button.

Next, create/select share that will be accessible over the FTP protocol.



Go to the share configuration in “FTP Function settings” and check “Use FTP” – Anonymous and SFTP modes will appear.

1. Selecting Anonymous mode will enable FTP sharing with anonymous user. For all IPs the access is set to READ+WRITE by default. To change that, activate “Allow access IP” and “Write access IP” options. Clicking apply will make the share available over FTP.

To connect to this share FTP client software is required – i.e. Internet Explorer has the FTP support. To connect from IE, enter address ftp://<NAS IP>/pub/, (e.g. ftp://192.168.0.220/pub/).

Many FTP client programs need a user name and a password to establish connection. In the Anonymous mode the user name is “anonymous” and there is no password (empty field).

All anonymous shares are in the “pub” directory. Any user connecting from the IP without a full access will see all shares but will not be able to see any directories that are prohibited.

● **note** Anonymous user will see only files and directories that he owns.

2. Selecting SFTP mode will enable secure FTP sharing with the user and password authorization. Only few FTP clients support SFTP, and even fewer SFTP clients support SSL/TLS encryptions.

Here is a list of the tested software:

- CoreFTP (Windows)
- FileZilla (Windows)
- IgloFTP (Windows and Linux)
- SSLFTP (linux console client)

When SFTP is enabled, the user has the access to the share through the authorized user name and password.

● hint If the menu -> "server" uses Windows domain authorization then a short name of the domain must precede a user name – connected with a plus sign, i.e. "DOMAIN+Administrator".

To connect to a share via SFTP in the selected encryption, type in SFTP client NAS support SSL and TLS explicit encryption. All SFTP shares are in the "shares" directory. Users see only the allowed shares.

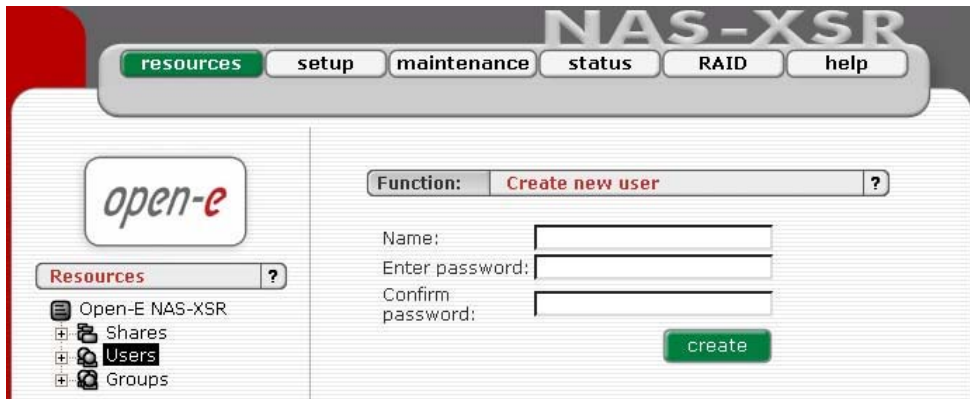
● hint Most FTP clients have bookmarks allowing setting up IP, port home directory, etc. Suggested home directory for the Anonymous is "pub" and for SFTP is "shares".

5.2.1.2 User

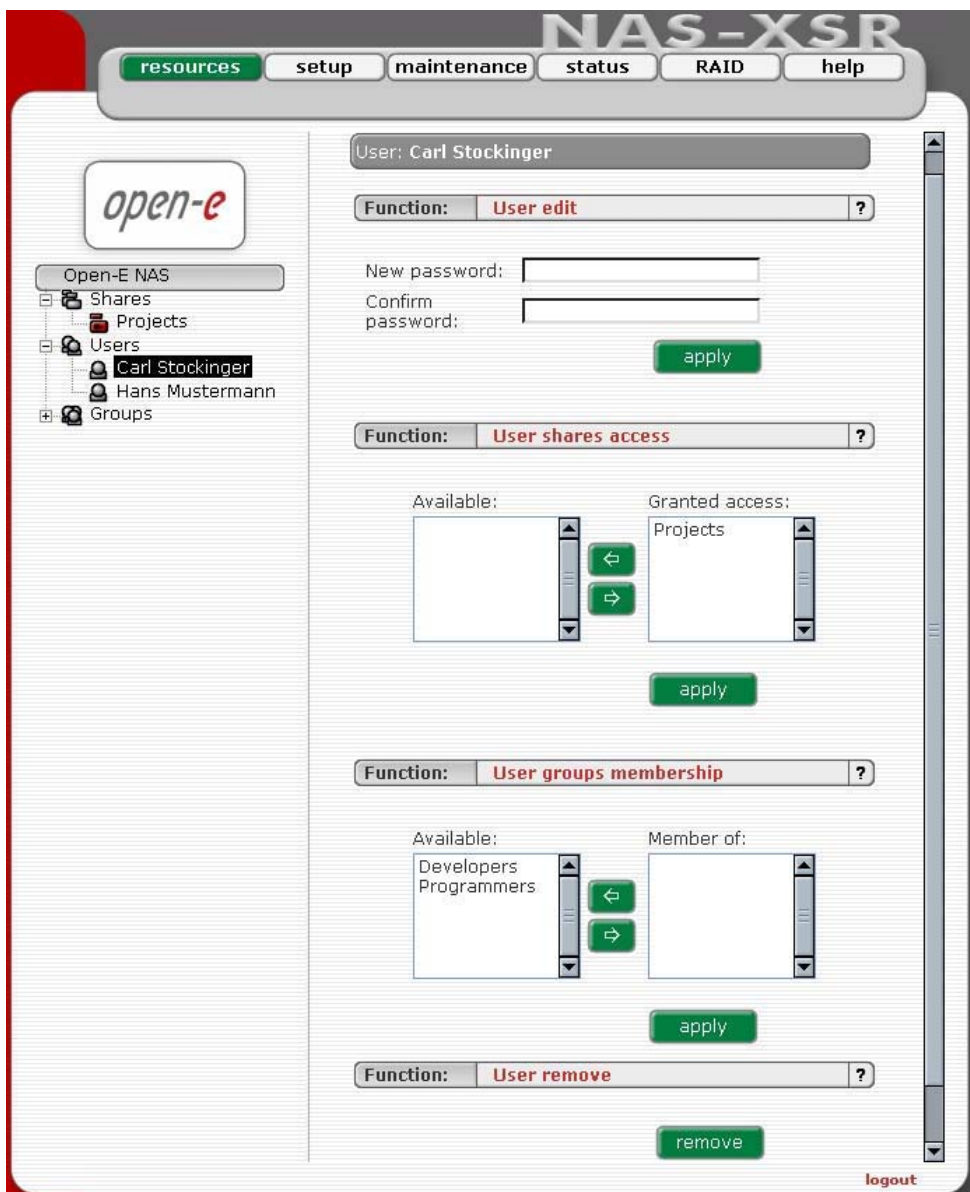
In the mode "Workgroup internal LDAP" the category "Users" serves as data entry mask for user accounts. In principal, the process is the same as when you create shares. Enter new users here and assign each of them a name and a password. For security reasons, you have to enter the passwords twice.

● note If users forget their password, there is no way to retrieve it. You can only set a new password.

As with all other functions, you open the entire list and select a certain user. In addition, you can remove certain users from the list. In the mode "Windows (PDC)" all users are automatically synchronized with the external server.



In the mode “Windows (PDC)”, all users are automatically synchronized with the external server. If you want detailed control over which shares users are allowed to access, simply assign the corresponding privileges, or add those users to an already existing user group holding the rights you want to assign to that person:



5.2.1.3 Groups

In the mode “Workgroup internal LDAP,” you can define entire groups consisting of different users. In addition, you can assign these groups certain access rights. By clicking on “Groups,” a data entry mask opens up, allowing you to create a new group. Assigning the access rights is done the same way as for users (see 5.2.1.2.).



In the mode s “Workgroup (internal LDAP)” and “Windows (PDC)” the groups are automatically synchronized with the external server.

5.2.2 Setup

In this menu option, you will find the following sub-functions: Server, Network, Administrator, Disk Manager and GUI.

5.2.2.1 Server

This is a key component of the Setup menu, as some of the most crucial parameters are defined here.

Function: “NAS Server Name”

Select a server name that clearly identifies your new server. In the field “Comment,” you can add text describing the function and the location of the PC.

Server Name and Comment rules:

1. Please make sure the server name is unique in your network.
2. Select a server name that clearly identifies your new server.
3. Please do not use spaces and special characters like: ~ ! @ # \$ ^ & () + [] { } * ; " , % | < > ? / \ = ` _
4. Server Name can not consist of digits only.
5. Comment is not displayed in some systems.

Function: Authentication method

You have to select a type of following authentication method for users:

- Workgroup (internal LDAP)

In this case you must create all users/groups accounts in “resources” menu. In the field Workgroup please enter your network workgroup name.

- **Workgroup (external LDAP)**

In case of external LDAP, the NAS-XSR server will use users/groups from external LDAP server. Please fill-in all fields accordingly.

- **Windows (PDC)**

In this case NAS-XSR server will use Windows Primary Domain Controller user database for user authentication. This method can be used for NT4/2000/2003 servers.

In case Windows 2000/2003 server run ADS native mode, please use Windows (ADS) method.

- **note** In case of PDC server running under NT4, please use following procedure if you experience problem to get connection:
Run Server Manager program from Menu Start->Programs -> Administrative Tools (Common)->Server Manager
From Server Manager menu select Computer->Add to Domain
WARNING: If NAS-XSR Server is already added, you must remove it
In Computer Name field enter NAS-XSR Server-Name (NetBIOS name)
Click Add button Set Windows (PDC) in NAS
Next, in NAS-XSR server web administration: choose Setup-> Server
Choose Windows (PDC) as Authentication method
In Server IP field enter NT server IP address
In Name & Password fields enter NT4 administrator account name and password
Click apply button **WARNING:** If connection fails, the next try you must restart from point 1.

- **Windows (ADS)**

This option can be used for Windows 2000/2003 ADS servers.

- **Workgroup (NIS server)**

Please choose this option in case you want to use user/group database from Network Information Service server.

- **note:**

Workgroup name cannot begin/end with space and can not contain special characters like: ~!@#\$%^&()+[]{}*;"',%|<>?/\= `

Changing the authentication method may cost loss of ACL (Access Control Lists) In such a case please set users/groups access rights for every share and reset ACLs.

If SMB authentication is enabled, please edit windows registry:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanworkstation\parameters\ and change the value of the key Dword 'enableplaintextpassword' to '1' hexadecimally.

- **note** Changing the authentication method can be a security risk. It is only safe to do that before permissions, quotas and owners are set. In other

case, permissions like access to shares, quotas, ACL, can be mixed between users and groups.

Function: “Clock Settings”

Here you define an NTP server (Network Time Protocol) to synchronize your Open-E NAS-XSR SOHO with a time server on the Internet.

- **note** Time and date display are static. What is shown are the time and date at which the setup menu was accessed.

Function: “Set time”

With this function, date and time can be entered manually. Alternatively, take the route via an NTP server, which has to be defined in the previous function.

Function: „NFS Setting“

Click "use nfs" to enable access to shares and/or snapshot via NFS.

Network File System (NFS) is a protocol for distributed file system which allows a computer to access files over a network as easily as if they were on its local disks.

Function “FTP settings”

The option to also access NAS via FTP (File Transfer Protocol) offers additional flexibility, as users can access storage either from the Intranet or from the Internet. An FTP client is ideal (e.g., SmartFTP), but the Internet Explorer or a similar browser are also suitable.

To enable FTP services check "use ftp". With "port" you provide port the FTP service listens to.

Max Clients

limits the total number concurrent ftp connections.

Max client per host

limits the total number connections originating from a single host. Write access to ftp area is granted on per IP basis. If you want to grant write access to a share provide the IP address or the ip address range. You can specify separate addresses - use semicolon as delimiter (e.g. 192.168.1.13; 192.168.1.12 or 192.168.1.0/8 ; 192.168.4.0/8)

● note The option to access Server via FTP (File Transfer Protocol) offers additional flexibility, as users can access storage either from the Intranet or Internet. An FTP client is ideal (e.g., SmartFTP), but the Internet Explorer or a similar browser are also suitable.

To establish a connection, the FTP client needs several pieces of data:

IP address: 192.168.0.220 (this is the standard address)
 Port: 21
 User: anonymous
 Password: 123.

The allocation of access rights is done via the IP address of the PC currently in the process of accessing. A read access is, therefore, granted with these generally typical and anonymous login data. As a standard, server for FTP uses port 21, which can be changed in the configuration menu (under “Setup” - >”server”)

If you use the Internet Explorer when accessing, you need to enter the following data into the entry line: ftp://192.168.0.220.

You are not prompted to enter the user name and password, as the Internet Explorer first establishes an anonymous connection. If you changed the FTP port, add this information to the entry line the following way:
 ftp://192.168.0.220:4711 (in this example, 4711 represents the new port number).

In order to grant specific computers write access to the FTP area, enter the desired IP addresses into the line "IP address complete access"

Function “AppleTalk (AFP) Settings”

Here you may activate the AppleTalk protocol in the network.

How to use AppleTalk with the Open-E NAS-XSR server:

Using the Open-e WEB interface:

- a. In the "NAS" Server Setup enable AppleTalk.
- b. In Resources select a share that you want to be shared with Apple Talk.
- c. Enable AppleTalk for this share.

How to connect to the NAS AppleTalk server:

In MAC OS 9

- a. Open the Chooser (APPLE MENU->Chooser)
- b. Click on AppleShare
- c. If the Server "NAS" does not appear in the fileserver list click "Server IP address" and enter the Open-E NAS-XSR server IP
- d. Click "OK" and choose a login type. Enter a user name and password if you want to login as a specified user.
- e. From available options select shares that you want to mount.
- f. The icon of the mounted share will appear on the desktop.
- g. To open the share click on its icon.
- h. To unmount the share drop its icon onto the trash.

In MAC OSX 10.3.

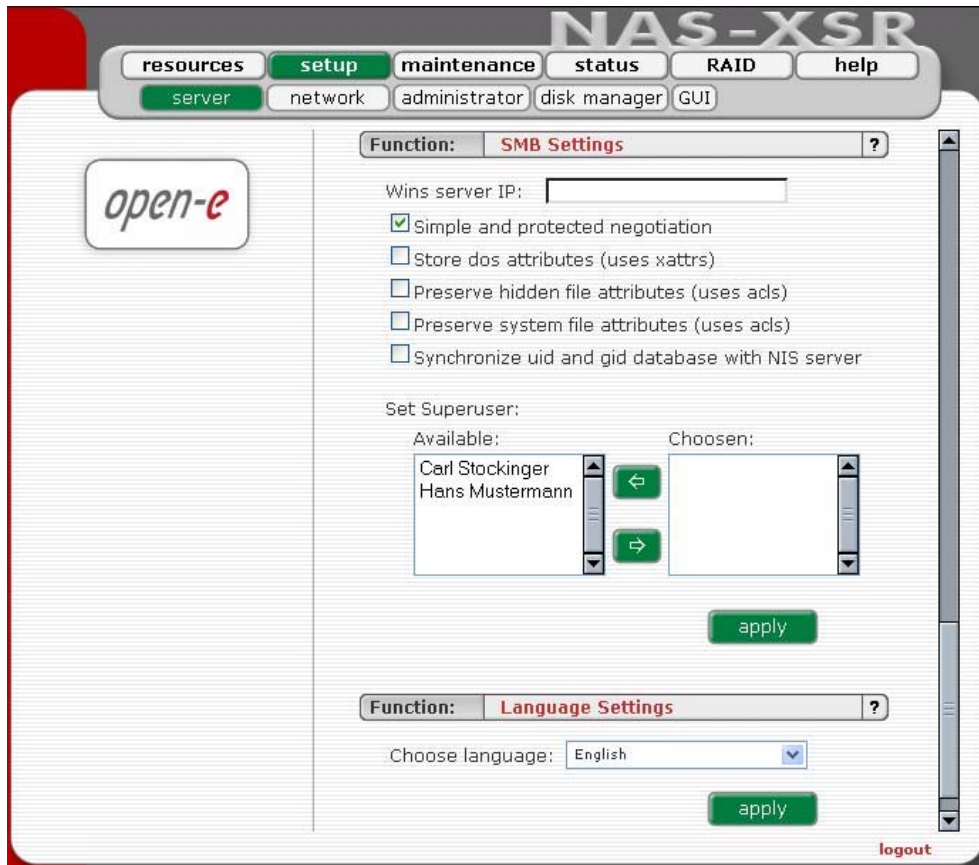
- a. Click on the MAC HD, then Applications then Utilities.
- b. From the Directory Access check if AppleTalk is active; if not -> activate it.
- c. If the server "NAS" does not appear in the Network list, open a web browser and enter the IP address of the AppleTalk server.

afp://192.168.1.220 (very important --> "afp://")

- d. Choose a login type. Enter a user name and password when you want to login as a specific user.
- e. If you can not log in, click on the Directory Access/Authentication and change the path to search for authentication information.
- f. From available shares select all you want to mount.
- g. The icon of any mounted share will appear on the desktop.

or second example is:

- a. Click on "Connect to server" from the Finder (GO submenu).
- b. Enter: afp://address_ip
- c. You can add a link to the afp server by clicking on the "+" sign. This adds a link to the computer in the Favorite Servers field.
- d. Choose a login type, enter a password if you want to login as a specific user.
- e. From available shares select all you want to mount.
- f. The icon of the mounted share will appear on the desktop.



Function „SMB settings“

With this function you can edit SMB protocol specific parameters.

There are several options you can change:

- Wins server IP If you have a WINS server on your network then you should set this to the WINS server's IP
- Simple and protected negotiation Simple and Protected NEGotiation (SPNEGO) is a negotiation protocol. If you use PDA Device to access shares on NAS please uncheck it.

● **note** For connect to your PDA Device use netbiosname, not IP address.

- Store dos attributes (uses xattrs) This option enables preserving all MS-DOS attributes using Linux xattrs attributes. It cannot be set when you are using option Preserve hidden file attributes or Preserve system file attributes
- Preserve hidden file attributes and Preserve system file attributes These options enable preserving of MS-DOS attributes: hidden and system. These attributes are mapped to x (EXECUTE) attributes for group and for others in Linux POSIX ACL. Windows ACL permissions are also mapped to Linux attributes. In order to avoid attribute mismatch, it is strongly recommended to disable these options. They cannot be set when you are using Store dos attributes option.
- Synchronize UID and GID database with NIS server This option allows synchronization UIDs/GIDs between NAS-XSR Server and NIS Domain. To have an properly working synchronization please fill: NIS serverdomain name, NIS server IP and Synchronize interval,
- Superuser Superuser is a user, who has permission to take ownership of folder and files which belong to other users. It can be useful when administrator want to change access right (ACL) for folder or file established by other users.

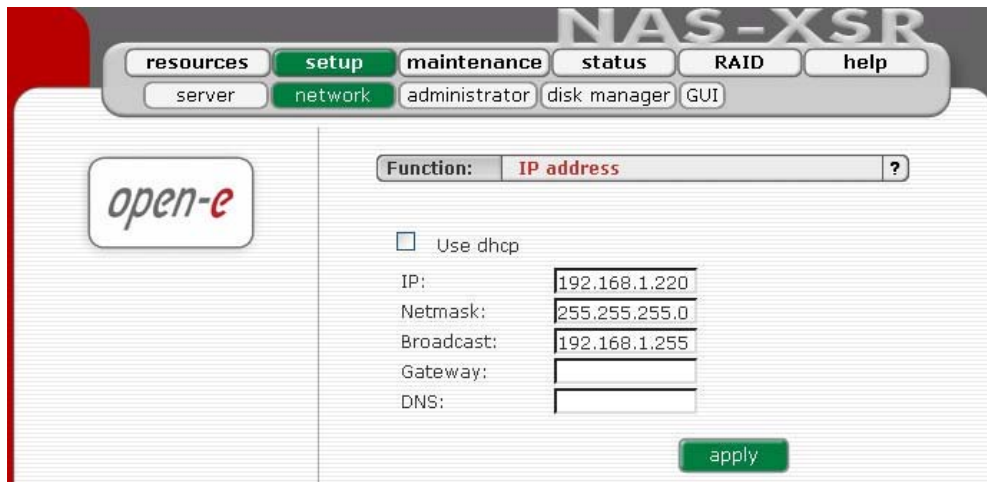
Function: “Language Settings”

English and German are supported.

5.2.2.2 Network

Function “IP address”

If you want to select an address instead of being assigned an IP address automatically via DHCP, you can do it here.



It is strongly recommended to use static IP for the server (please uncheck Use DHCP box).

If you set new IP address, during activation, you will lose your connection to the server and you will have to log in again. In the URL entry line of your browser, please enter the new IP address.

If you do not get access, please try the console to set new IP address. In order to access servers in another subnet, you need to enter the address of a router as Gateway.

● **note** In case you use NTP server to maintain proper time & date, please make sure you have proper Gateway and DNS settings.

5.2.2.3 Administrator

Function: “Administrator password”

Using this function, you can change the password for administering Open-E NAS. For security reasons, please make sure you change the standard password and select a new one.

● **note** Password-checking is case-sensitive. For security reasons, the password that you enter will not be displayed. Please check the status of the Shift and Shift Lock keys.

The screenshot shows the Open-E NAS-XSR web administration interface. The top navigation bar includes tabs for resources, setup, maintenance, status, RAID, and help. Below this, there are sub-tabs for server, network, administrator, disk manager, and GUI. The main content area is titled 'Administrator access' and contains the following configuration options:

- Function:** Administrator access
- Set port:** 443
- IP address:** (empty field)
- Lock console without password:**
- Lock console with password:** (password field)
- Unlock console:**

Below these options is an 'apply' button. The next section is titled 'E-mail notification' and includes:

- Function:** E-mail notification
- Send errors
- Destination e-mail:** js@ixpn.a.com
- Send test message
- Show advanced >>**

Below this is another 'apply' button. The final section is titled 'SSL Certificate Authority' and includes:

- Function:** SSL Certificate Authority
- Download SSL Certificate for your browser [SSLCert.crt](#)

A 'logout' link is visible in the bottom right corner of the interface.

Function “Administrator Access”

Use this function to restrict access to the server administration.

- Set port: you can change https port (default 443)
- IP address: you can assign IP addresses (separated by a semicolon) that are allowed to access the Open-E NAS-XSR Web administration. This field left blank means no restriction.
- Lock console without password: disables access to the console
- Lock console with password: to get access to the console you need to type in a password. Note that this password should be exactly 8 characters long and include only 1-4 digits.
- Unlock console: the unrestricted access to the console

● **note** Please exercise caution with this function when all computers in the network have assigned IP addresses via DHCP: any current IP can be replaced by a new one only after the lease ends. Please use Lock console feature carefully in case of any erroneous IP address settings you will not be able to reset default administrator access from the console. To restore default settings you have to re-update software in the Open-E NAS-XSR module or contact technical support.

Function “E-mail notification”

The NAS server can send a notification email to the administrator in case of significant events, critical errors, warnings, etc. To enable this feature check Send errors.

Destination e-mail:

please enter the administrator e-mail address.

E-mail server:

optionally you can provide email server address for the NAS internal mail server (full qualified domain name).

- **note** Some SMTP server, uses monitoring functions of IP address and domain name. It compares domain name of sender SMTP server with IP number of a computer from which email was sent, if they do not suit, this email may be treated as "spam" and will not be accepted. If you don't use full qualified domain name for NAS then it is **not** recommended to change the default settings.

Function “SSL Certificate Authority”

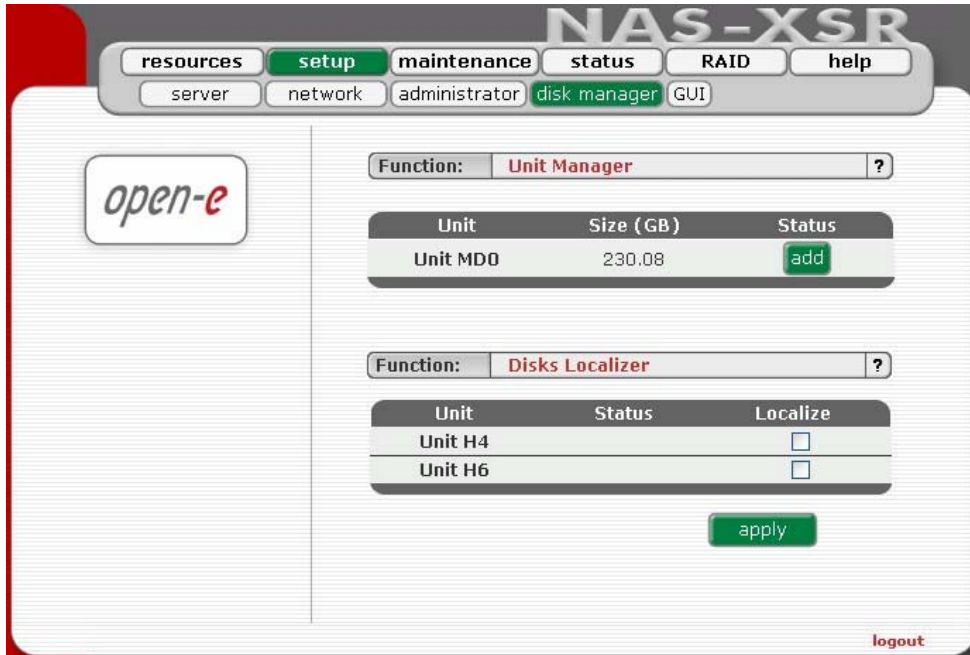
If you want to install Certificate Authority (CA) to your web browser, click on the SSLCert.crt link. Download CA on Desktop, click on it and "Install Certificate". Browser will show you warning, that CA is not trusted and it is normal. Following the instructions, you will install CA to your web server.

- **note** If you want to delete or view CA go to: Tools → Internet Preferences → Content → Certificates → Trusted Root Certification Authorities and OPEN-E GMBH which should be there.

5.2.2.4 Disk Manager

Here, you will find a list of all available drives. Each newly installed drive will be displayed as an available unit.

In order to integrate an available drive into the share volume, just add it using the green button. While this happens, the drive will be formatted in any case.



In order to integrate an available drive into the share volume, just add it using the button. While this happens, the drive will be formatted in any case.

Function: Unit Manager

This function enables you to manage physical storage devices - units (hard drives or software RAID arrays).

Disk notations:

- S0, S1, ..., S[x] - every disk with S notation is one of SATA / JBOD / RAID units.
- H0, H1, ..., H[x] - units with H letter are IDE units.
- Md0, Md1, ..., Md[x] - this way are soft RAIDs denoted.

● **note** If the unit is already added, it can not be removed.

Function: Disks Localizer

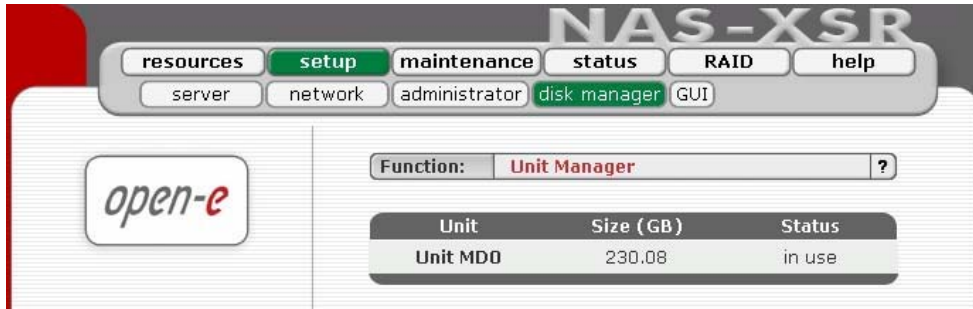
This function helps find disks in cage in your NAS server.

If you connect hard drives to hardware RAID controller then you may not be able to determine which unit is which disk using S.M.A.R.T. tool or hardware RAID management tool (depends on manufacturer of RAID controller).

When you click on "start" button then appropriate disk will start reading and you can determine which disk is it by watching "disk-activity LEDs".

For proper operation of this function there should be no other activity on hard drives.

● **note** Localization will stop automatically after one minute if you not stop it before (by unsetting appropriate checkbox and applying form). Using this function during normal operation is highly not recommended and will cause slowing down your server.

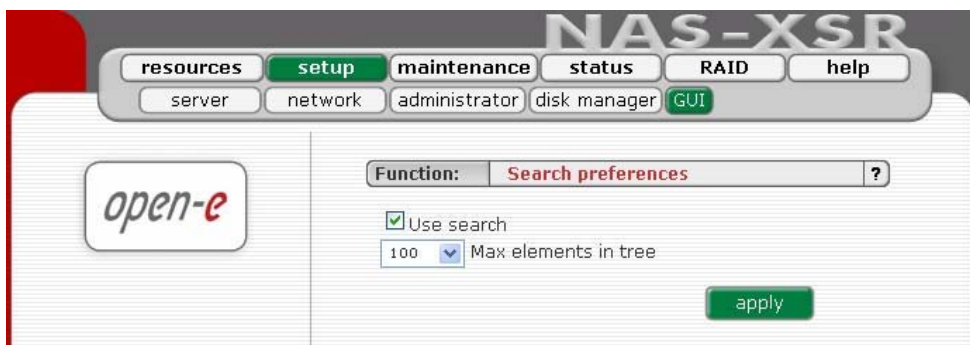


Next, the page will be reloaded and the status field should show your drives as “in use.”

5.2.2.5 GUI

Function; “Search preferences“

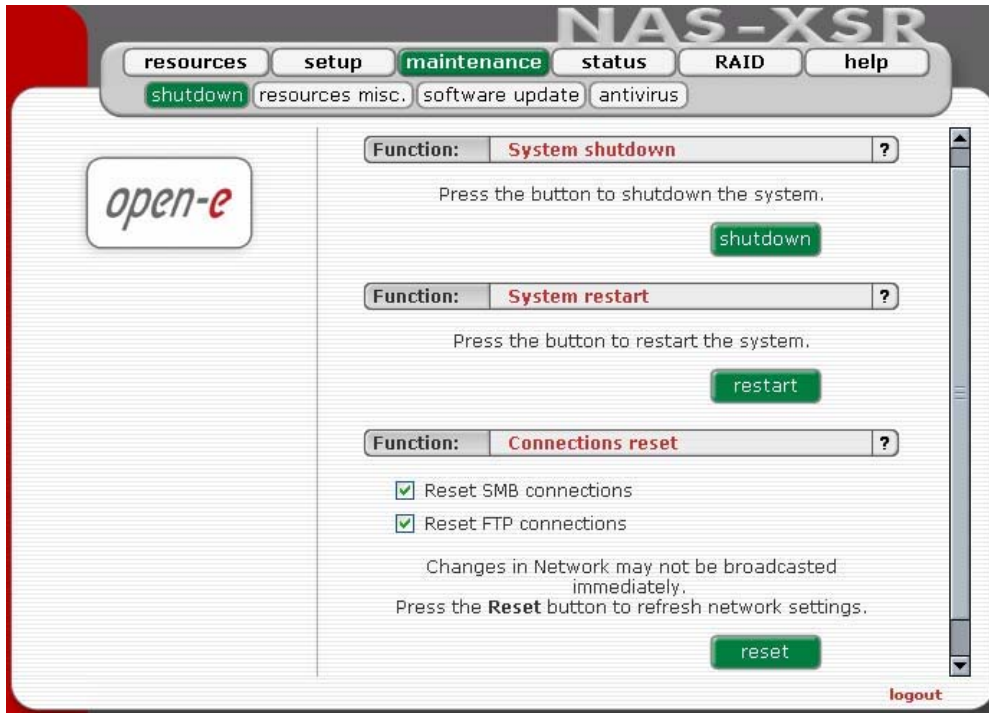
With this function you can enable or disable searching option in “resources” menu. Also you can set up to 500 elements in tree of users or groups



5.2.3 Maintenance

This page accessed with the Maintenance tab contains settings and functions pertaining to general management operations.

5.2.3.1 Shutdown



Function: “System Shutdown”

When using this function, you shut down the NAS server. If any of your users are currently connected, you will be asked to confirm the shutdown. If no users are connected, the process will be executed immediately without delay.

● **note** The NAS-XSR server can only be turned on again manually.

Function “System Restart”

This function is self-explanatory: It allows you to restart your system.

Function: “Connection Reset”

When using this function, you can update all network settings including all changes previously made. This function also allows informing all clients directly about any changes made to shares and access rights. All clients will receive the update immediately. Otherwise, it may take several minutes before all clients are informed about any changes.

You can choose to reset SMB and/or FTP connection.

● **caution** Disconnecting your users while any files are open may lead to data loss.

5.2.3.2 Resources Miscellaneous

The next menu option is “Resources Miscellaneous” This function allows you to save shares, users and groups, to retrieve them, and to remove them.

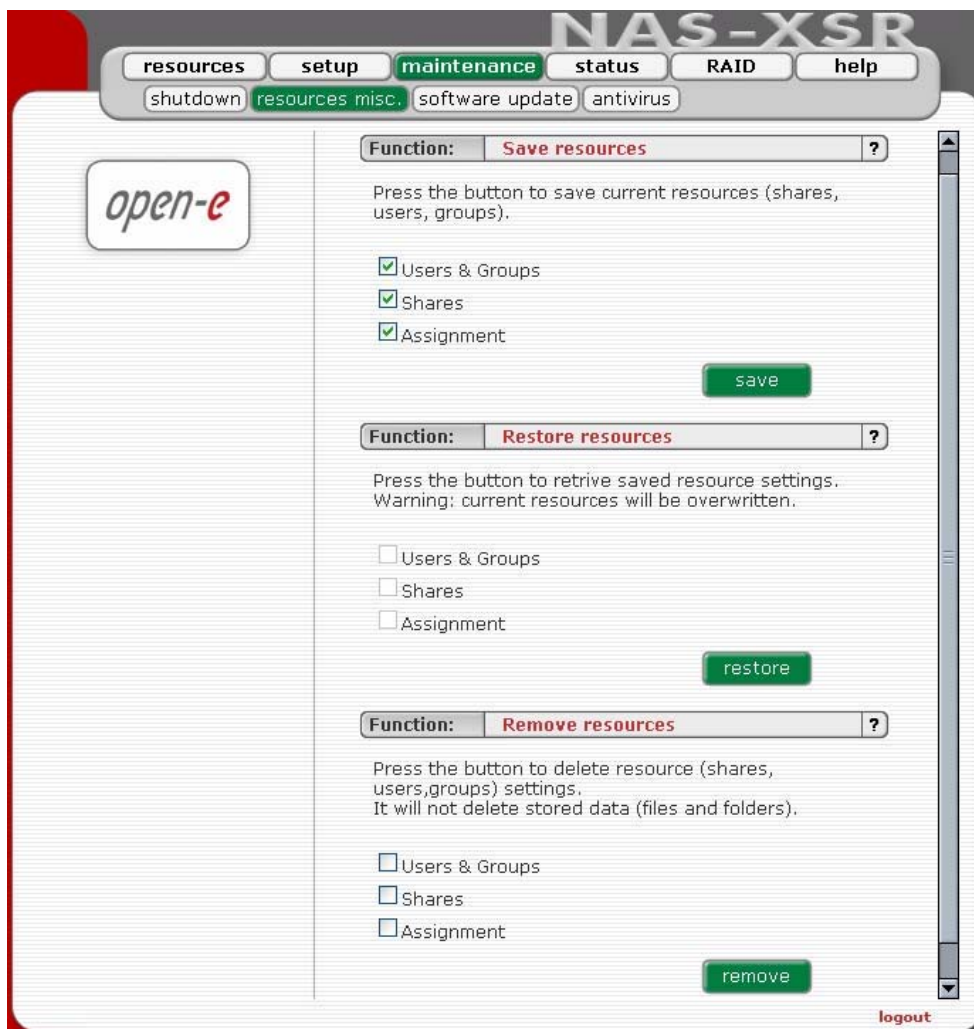
Function “Save resources”

With this function you easily store the settings of your resources. System will save the settings in the settings folder on logical volume. You can restore this settings in the future.

- **note** If you want to have access to the settings via FTP, NFS or Network Neighborhood please create a share "settings" with default path.

Function “Restore resources”

With this function you restore previously saved settings. Be aware that settings are saved on logical volume in "settings" folder.



Function: “Remove resources”

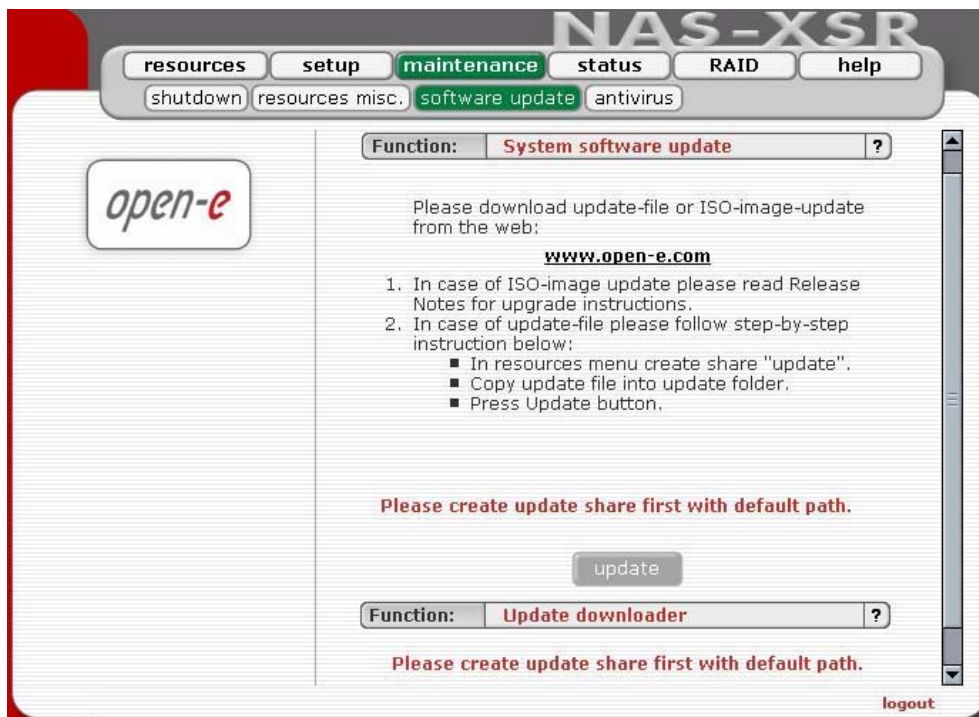
With “Remove Resources,” you remove all resources (shares, users and groups). That’s why this function should only be used with extreme caution. At the same time, it is important to point out that this function will not delete other data such as your files or folders. After you have selected the remove function, you will be prompted to confirm your choice. That is a safety mechanism to ensure you didn’t hit the key by accident.

- **caution** The "Remove" button irrevocably deletes resources settings. Please only use this function if you really want to delete all users and

resources settings. In case you have saved the resources settings before, you can restore all resource settings back.

5.2.3.3 Software Update

This function allows you to update the system software. There are two ways of updating NAS-XSR software.



During updating from share please follow this steps:

1. In resources menu create share "update" with default path.
2. .Copy update file into update folder.
3. .Press Update button.
4. .Confirm update when you will be asked.

● **note** Some updates need a system restart. In this case you will be informed about needed restart in confirmation message.

During update from CD please follow this steps:

1. All existing snapshots should be removed. There might be troubles to access volumes after updating when the snapshots were left on the server.
2. To be sure, that no snapshot is active, please deactivate synchronization as well.
3. Write down the actual NAS server IP address and NAS server name. After having updated NAS, please re-enter both.
4. Write down authorization settings. Before Updating, please save "User", "Groups", "Shares" and
5. under Menu: "Maintenance -> Resources Misc -> Save resources".

6. Download and save NAS Server Logs: Menu "Status -> Hardware" in Function Logs click on "Download", then save on your local HDD.
7. The ISO-Files which include in update file must be burned on a CD with your favorite Burning software. (For example: Nero Burning ROM - option: "Burn Image", etc.)
8. In order to re-flash the module, please install CD-ROM as Secondary-Master and DOM (disk-on-module) as Primary-Master.

● **note:** USB CD-ROM can be used as well.

9. Set the BIOS to boot from CD-ROM drive.
10. Boot from the ISO-CD and wait until prompt: "Update complete, Please Remove CD and restart"
11. After re-fleshing, please reset the BIOS to boot from Primary-master HDD.

Updating the system may take about 10 minutes.

● **caution** Please remember that making an update is activity that cannot be stopped in any way. We strongly recommend to update system when UPS is connected.

Function: Update downloader

With this function you can check if there is new update available and download it. In order to download a new update you need to be registered at Open-e.com. You also have to remember to setup correct DNS and Gateway address in Setup->Network branch.

5.2.3.4 Antivirus

Function "Antivirus setup"

This function gives Antivirus protection for your data.

The feature "quarantine" allows to choose, whether you want to move the infected files to default folder (`quarantine_dir`), automatically created in shares, or option "manual" witch allows you to choose the place of quarantine, in previously created share (in example share named "Quarantine").

● **note** If there is no option "quarantine" you will be only informed about the infected file.

To verify the information about the infected files look in logs. You will get the info witch files is infected and with what viruses.

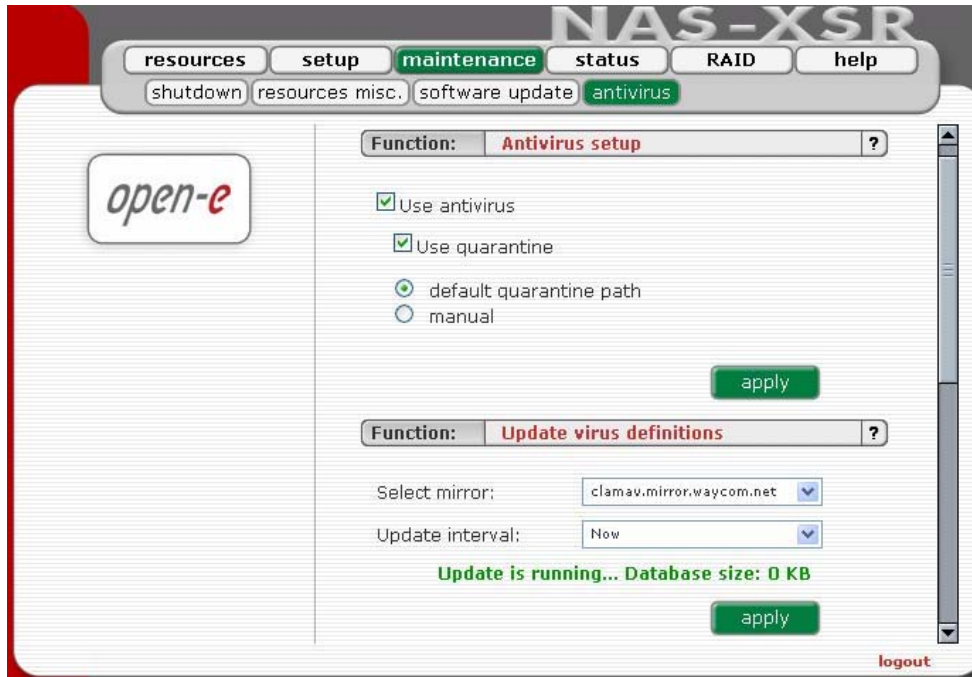
Function: Update virus definitions

This function allows downloading the antivirus database. Thanks to option "Select mirror" you can choose one of the mirror servers nearest to your localization.

Option "Update interval" allows updating the virus database:

- Now
- Now and every hour
- Now and every 12 hours at 0:00,12:00
- Now and every 24 hours at 0:00

For maximum antivirus protection and security we recommend to set the update time every hour.

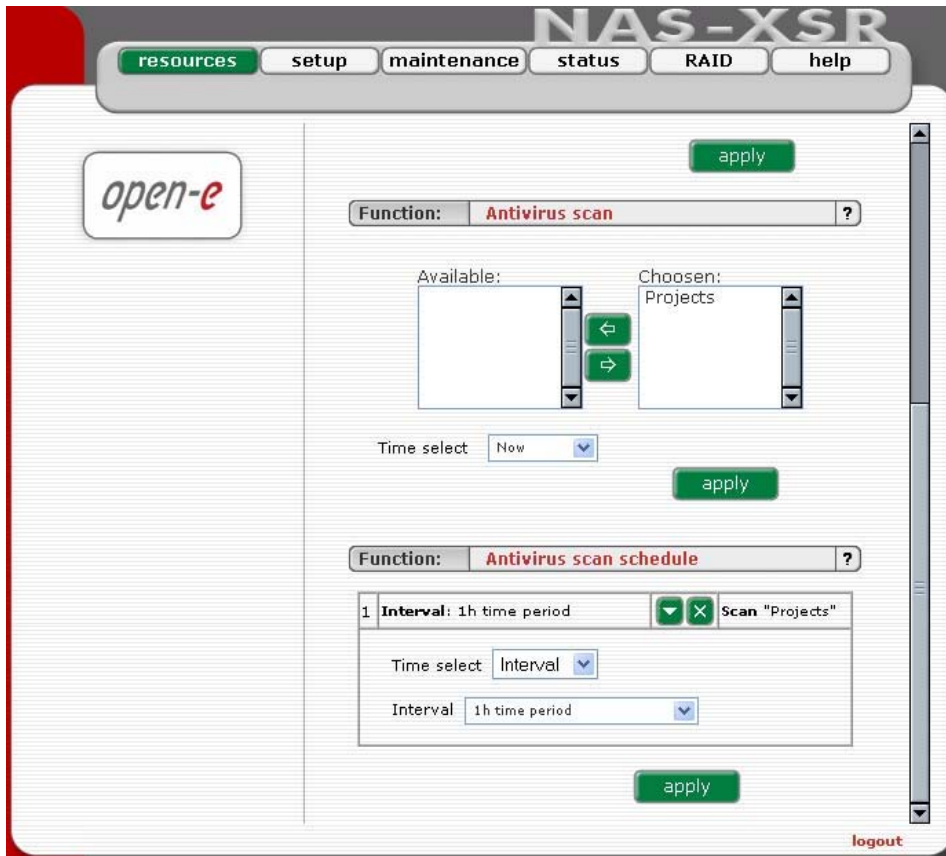


Function: Antivirus scan

This function allows you to add shares to antivirus scan.

You can run antivirus scan now by selecting "Now" from "Time select" combo box. It is also possible to add scanning to schedule.

- **note** If you set manual quarantine path then share chosen as quarantine will not be available to scan.



Function: Antivirus scan schedule

This function allows you to edit previously saved antivirus scan schedules. There are available 2 types of schedule: weekly and interval.

Interval: Scan will be made every "selected time". E.g. if you choose interval 1 h. - each one hour share will be scanned.

Weekly: Scan will be made in selected days at specified time.

To edit properties of schedule please click at



To delete schedule please click at



You can also delete a schedule by setting interval to "not set" or deselecting all days and unset time when using weekly schedule.

- **note** It is possible to edit time of scans. If you want to edit shares to scan please delete this schedule and add new. It is possible to perform one scan at once. If you schedule few scans at the same time, only one will be done (the rest will be enqueued).

5.2.4 Status

This function provides you with a quick overview of the most important system parameters of your Open-E NAS-XSR. The corresponding sub-functions are network, share volume, connections, and devices.

5.2.4.1 Network

This function provides information on the IP address and the NAS date and time.

The screenshot shows the NAS-XSR web interface. The 'status' tab is selected, and the 'network' sub-tab is active. The 'Function: IP address info' section displays the following network configuration:

Use dhcp:	dhcp is off
IP:	192.168.1.220
Netmask:	255.255.255.0
Broadcast:	192.168.1.255
Gateway:	
DNS:	not set

The 'Function: NAS date & time' section displays the current date and time:

Current:	2006-03-02 23:35:02
----------	---------------------

5.2.4.2 Logical Volume

This function contains any statistical data on the logical volume statistic and antivirus scan status.

The screenshot shows the NAS-XSR web interface. The 'status' tab is selected, and the 'logical volume' sub-tab is active. The 'Function: Logical volume statistics' section displays the following volume statistics:

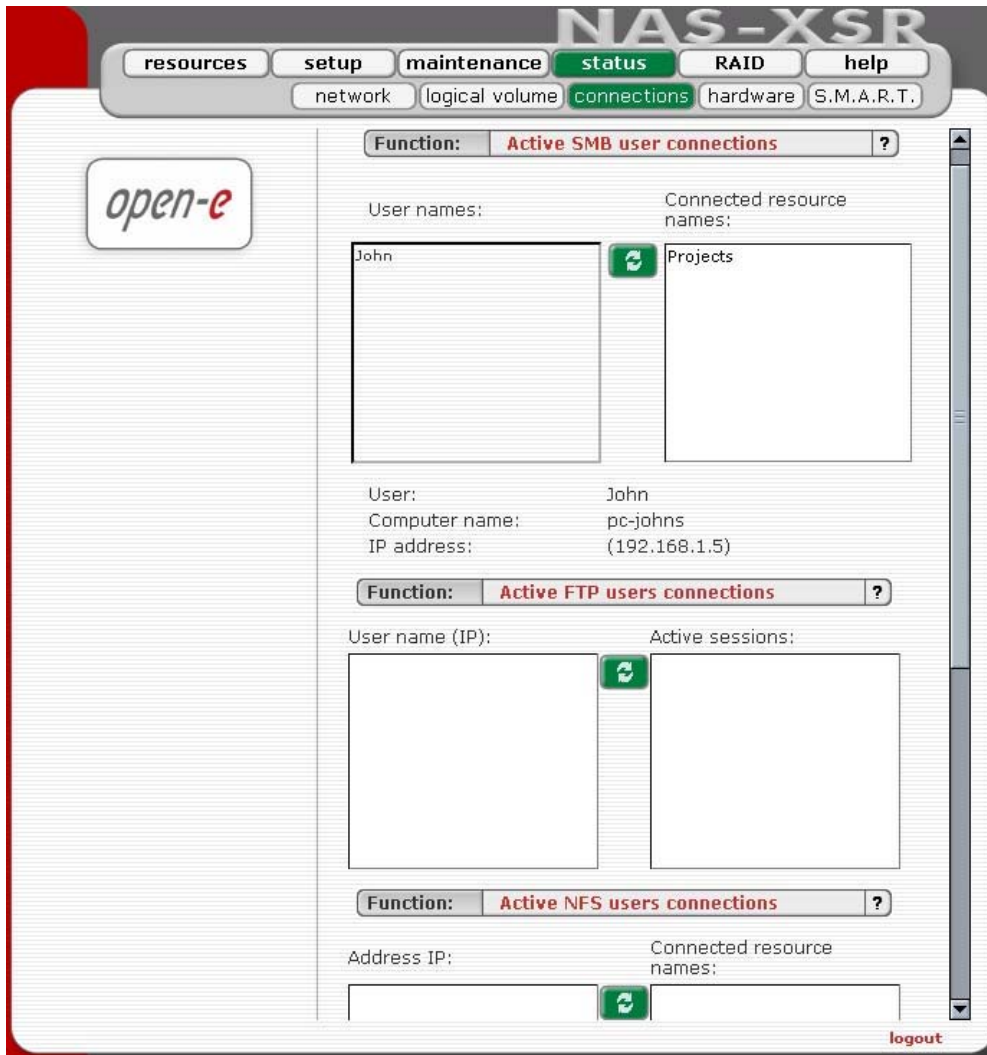
Total volume size (GB):	228.92
Used volume size (GB):	2.16
Free volume size (GB):	226.76
Volume usage (%):	0.94

A progress bar is shown below the volume usage percentage, indicating a very low level of usage. The 'Function: Antivirus scan status' section displays the current scanning status:

Scanning : no

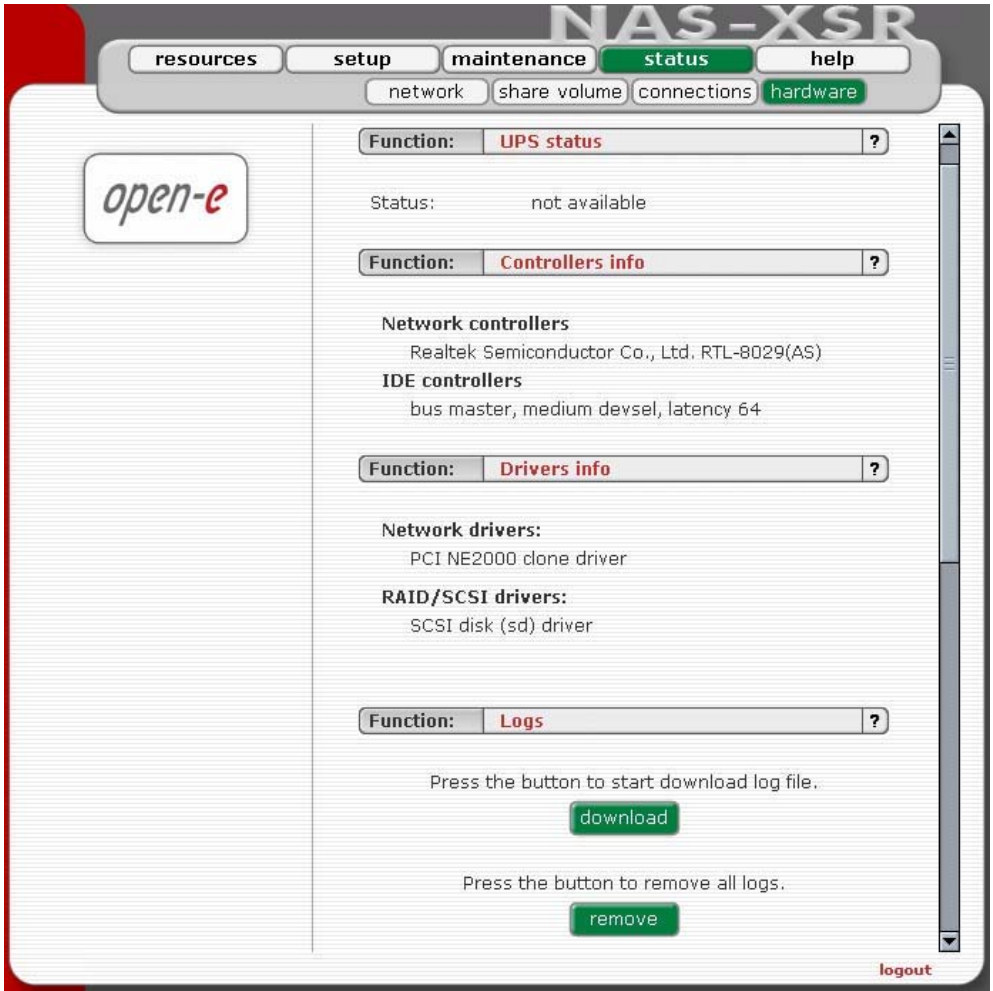
5.2.4.3 Connections

This function displays which user connections are currently active.

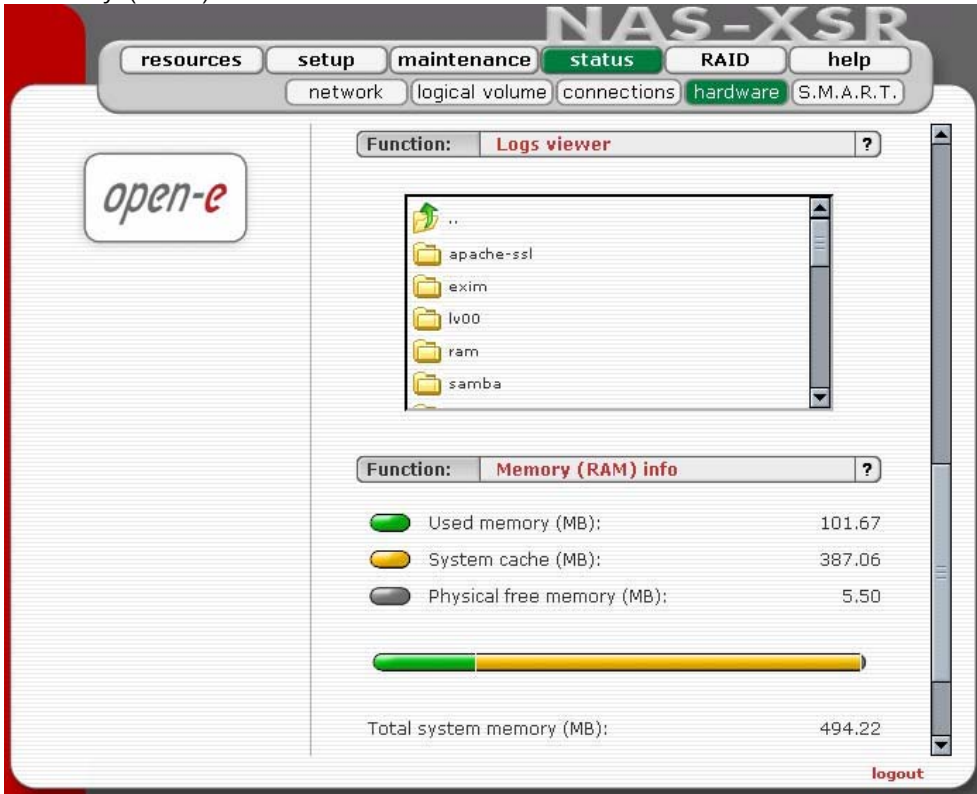


5.2.4.4 Hardware

The “Devices” option provides you with information on IDE and network controller and the drivers (e.g., network driver and IDE driver). In addition, you may also download the latest Open-E NAS-XSR log files and check memory (RAM) usage.



In addition, you may also download the latest Open-E NAS-XSR log files, to view specified log file without downloading all log files in compressed form and check memory (RAM).



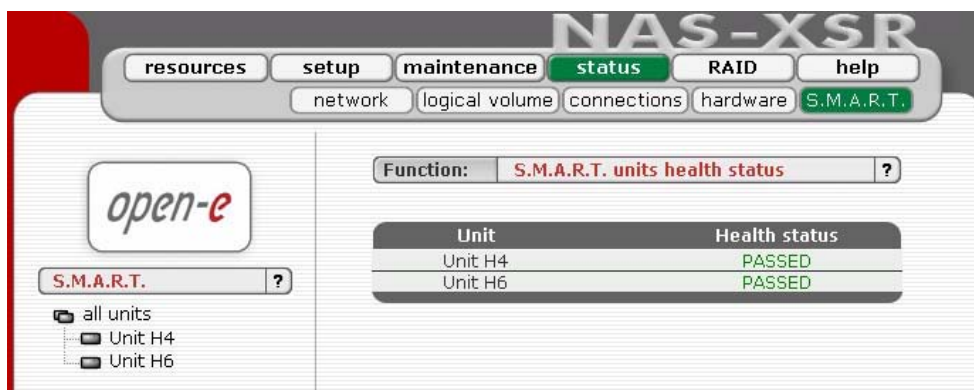
5.2.4.5 S.M.A.R.T.

Through the S.M.A.R.T. system, modern hard disk drives incorporate a suite of advanced diagnostics that monitor the internal operations of a drive and provide an early warning for many types of potential problems. When a potential problem is detected, the drive can be repaired or replaced before any data is lost or damaged.

Here you can find tree with hard drives for which you can view S.M.A.R.T. information.

It is possible to view information about separate hard drive or summary for all drives in the system.

- To view S.M.A.R.T. information for a hard drive - please click on appropriate drive name.
- To view summary please click on "all units"



Function: S.M.A.R.T. units health status

This function allows you to check S.M.A.R.T. status of hard disks. S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) is a monitoring system for computer hard disks to detect and report on various indicators of reliability, in the hope of anticipating failures.

To enable S.M.A.R.T. checks you need to use console tools and enable it in "special options"

- **note** It will be possible to enable S.M.A.R.T. when all hard disks support it and it is enabled in BIOS settings.

When S.M.A.R.T. is enabled you will see all detected hard drives with information if specified drive has passed health checks. To view more information and/or do more advanced test click on drive in drives tree on left side.

Function: S.M.A.R.T. info

This function allows you to view S.M.A.R.T. parameters which this disk is able to return.

In the upper part of this function you can see elementary parameters of hard drive such as device model or serial number. Below there is a table with S.M.A.R.T. attributes. In first column you will find an attribute name, in second -

minimum threshold value of this parameter, then current value, next worst value and after the status.

- **note** If value of attribute have ever exceeded worst of this value then the status will be "failed". If value of attribute is on the edge of worst value then the status can be "pre-failed". On some hard drives part of attributes can be displayed as "Unknown Attribute" - this can happen when producer of that hard drive have done some modifications in S.M.A.R.T. and this changes are not yet supported by our software.

Button "view errors" provide you ability to view S.M.A.R.T. log of that drive which is generated automatically.

The screenshot shows the NAS-XSR web interface. The main content area is titled "Unit H4" and displays the following information:

Function: **S.M.A.R.T. info** ?

Device Model: HDS722512VLAT80
 Serial Number: VN633ECCD8MMXD
 Firmware Version: V330A6EA
 ATA Version is: 6
 ATA Standard is: ATA/ATAPI-6 T13 1410D revision 3a

HEALTH STATUS: **PASSED**

attribute name	t	v	w	s
Raw_Read_Error_Rate	060	100	100	ok
Throughput_Performance	050	100	100	ok
Spin_Up_Time	024	103	103	ok
Start_Stop_Count	000	100	100	ok
Reallocated_Sector_Ct	005	098	098	ok
Seek_Error_Rate	067	100	100	ok
Seek_Time_Performance	020	100	100	ok
Power_On_Hours	000	100	100	ok
Spin_Retry_Count	060	100	100	ok
Power_Cycle_Count	000	100	100	ok
Power-Off_Retract_Count	050	100	100	ok
Load_Cycle_Count	050	100	100	ok
Temperature_Celsius	000	134	134	ok
Reallocated_Event_Count	000	095	095	ok
Current_Pending_Sector	000	100	100	ok
Offline_Uncorrectable	000	100	100	ok
UDMA_CRC_Error_Count	000	200	200	ok

view errors...

Function: **S.M.A.R.T. test** ?

Please select type of test and press **start** button.

short test
 long test

start stop results...

logout

Function: S.M.A.R.T. test

This function allows you to perform short and long test of hard drive. You will be informed about progress of test. After finish of test please click on "results" button to view test log.

Performing a test is not recommended during normal (daily) usage of that hard drive.

● **note** On some motherboards and controllers S.M.A.R.T. tests can not work.

5.2.5 Raid

5.2.5.1 S/W Raid

Here you will find functions with which you can create software RAID units.

Function: Create new S/W RAID unit

In this function you can create software RAIDs from free (not used) units. To create an RAID select units in column Status, then from ListBox select what type of RAID it will be. After setting all demanded parameters press Create button.

The screenshot shows the 'NAS-XSR' web interface. At the top, there is a navigation bar with buttons for 'resources', 'setup', 'maintenance', 'status', 'RAID', and 'help'. The 'RAID' button is highlighted in green, and a sub-menu is open showing 'S/W RAID'. On the left side, there is a logo for 'open-e' and a 'S/W RAID' menu item with a question mark. The main content area is titled 'Function: Create new S/W RAID unit'. It features a table with the following data:

Unit	Size (GB)	Status
<input type="checkbox"/> Unit H4	115.04	available
<input type="checkbox"/> Unit H6	115.04	available

Below the table, there are input fields for 'Destination:' (set to 'New RAID0') and 'Chunksize:' (set to '64 kB'). A green 'create' button is located below these fields. Below the table, there is another 'Function:' dropdown set to 'S/W RAID E-mail notification'. Underneath, there are three checkboxes: 'Send array events' (checked), 'Include resyncing/recovering progress' (unchecked), and 'Include array status' (unchecked). A green 'apply' button is at the bottom right of this section.

Available RAID5:

RAID 0: it is stripe array and requires [minimum] 2 units. In RAID 0 you can set the Chunksize 4k - 256k. The destination size of the RAID Array will be the sum of each drive size in array.

RAID 1: mirror array requires 2 units. Destination size will be equal: (SINGLE)UNIT_SIZE, where (SINGLE) UNIT_SIZE is the size of the smallest unit in array.

RAID 5: stripe + parity algorithm array (required [minimum] 3 units - with the same capacity). You can choose from the ListBoxes: (layout)parity-algorithm [left/right] [symmetric/asymmetric]. DESTINATION SIZE:

$(NR_OF_UNITS-1)*(SINGLE)UNIT_SIZE$, where (SINGLE) UNIT_SIZE is the size of the smallest unit in array.

The (layout) parity-algorithm in RAID 5 is described below.

To remove RAID, if previously added to Volume Group please enter Console Tool and first delete Volume Group of the RAID. Then the Remove button will be enabled. Otherwise simply press Remove button.

- **note** You can add spare units to RAID1 and RAID5 arrays. Please remember that after creation of a RAID, in Function: 'MD[x] Info' will show the progress of Synchronization. Till the end of this process all actions done on this array will be performed very slowly.

RAID 5 (layout) parity-algorithm

It is possible to set one of four algorithms of placement data blocks and parity blocks in matrix. Our default option is left-symmetric, which is the best for large reads. Other recommended value is left-asymmetric.

- **note** Software RAID 5 is not a good choice for writing a lot of very small files!

Left-Asymmetric Algorithm

Unit S0	Unit S1	Unit S2	Unit S3
0	1	2	Parity
3	4	Parity	5
6	Parity	7	8
Parity	9	10	11
12	13	14	Parity

Left-Symmetric Algorithm

Unit S0	Unit S1	Unit S2	Unit S3
0	1	2	Parity
4	5	Parity	3
8	Parity	6	7
Parity	9	10	11
12	13	14	Parity

Right-Asymmetric Algorithm

Unit S0	Unit S1	Unit S2	Unit S3
Parity	0	1	2
3	Parity	4	5
6	7	Parity	8
9	10	11	Parity
Parity	12	13	14

Right-Symmetric Algorithm

Unit S0	Unit S1	Unit S2	Unit S3
Parity	0	1	2
5	Parity	3	4
7	8	Parity	6
9	10	11	Parity
Parity	12	13	14

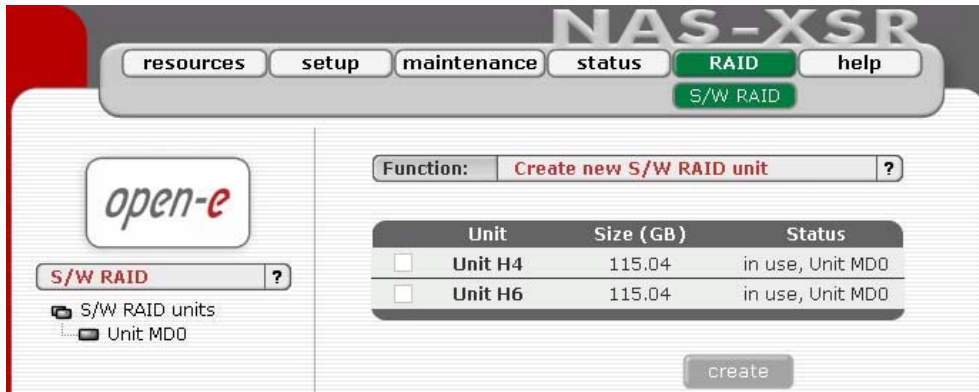
Function: "S/W RAID E-mail notification "

To send notification by e-mail about events on software RAID arrays (e.g. rebuild started, rebuild finished, span is active). To do this please check Send array events.

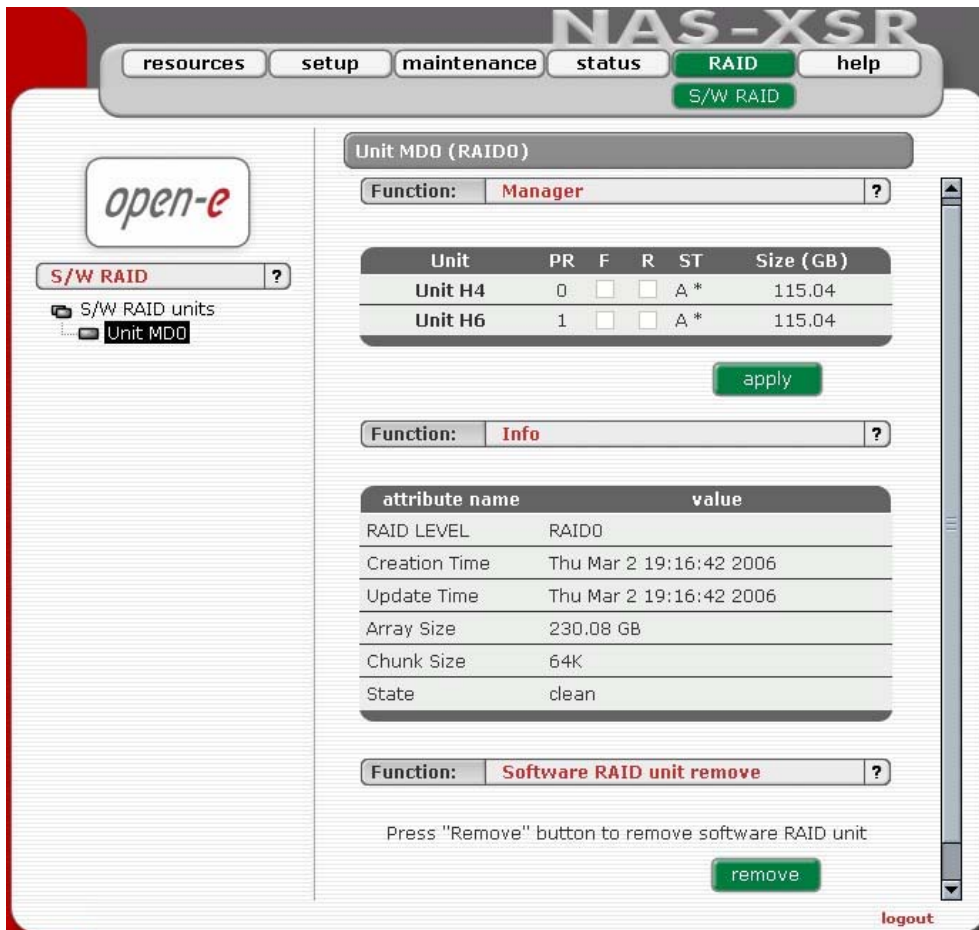
- **note** To be able to enable "Send array events" you must enable "E-mail notification" in setup → administrator.
- If you check "Include resyncing/recovering progress" - you will be informed about progress of resync/rebuild if it is currently running. An e-mail will be send for every 20 % completed.

- If you check "Include array status" - to every event will be added the status of event-related array.

After choice Raid Levels and by clicking "apply" button appear in field "Status" "in use" (see below)



By clicking on the branch "MDO" appears new page, with Functions Manager, Info and Software RAID unit remove.



Function: „Manager“

In this function you can manage RAID array

Available operations:

RAID 0:

Construction of this RAID does not allowed to manage it anyway. Every unit must not be Failed. If any would be the whole array would be destroyed.

RAID 1:

- To set unit as a Faulty one mark proper checkbox (in the column F) and click on Apply button.
- To delete any unit form an array mark proper checkbox (in the column R) and click on Remove button.

RAID 5:

- To set unit as a Faulty one mark proper checkbox (in the column F) and click on Apply button.
- To delete any unit form an array mark proper checkbox (in the column R) and click on Remove button.

RAIDs notation:

- PR - priority in array,
- F - faulty column,
- R - hot remove,
- ST - state of unit in array.

Limitations:

- There is no possibility to set any unit as faulty if the matrix is degraded or during resync/rebuild.
- While using RAID 1 and RAID 5 there is possibility to set only one disk from active as faulty. This regulation is not valid for Spare units in array.

● **note** Only one disk form Active in Array can be set as Faulty or Removed

Function: „Info“

From this function you can obtain information like Creation Time, RAID Level, Array and Device Size, Update Time and state

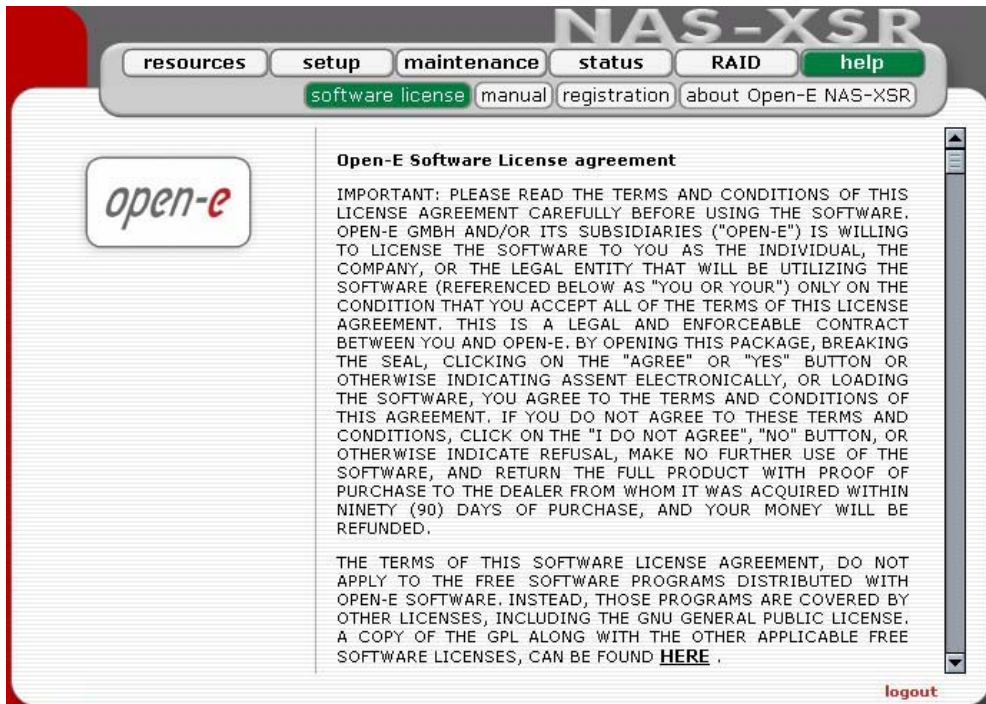
Function: „Software RAID unit remove“

This function allows you to remove Software RAID unit (MD[x]).

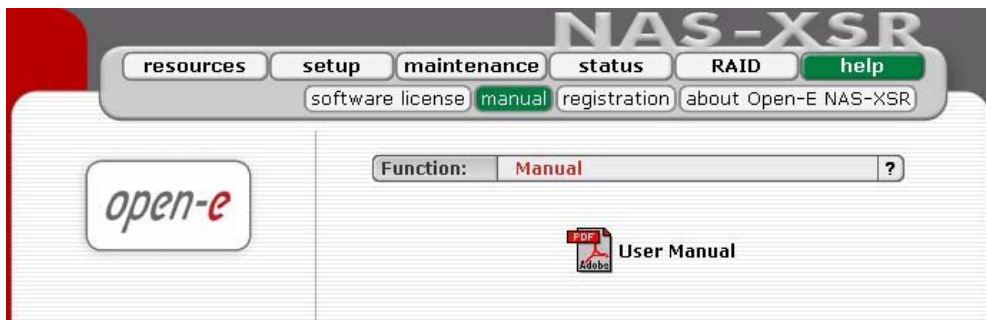
● **note** This function is available only when no Logical Volume is created on appropriate MD[x] and unit is not resyncing. If you want to remove software RAID unit with Logical Volume please use console tools and remove Logical Volume first.

5.2.6 Help

When accessing Help - "Software License" you can get acquainted with license for software included in Open-E NAS-XSR



You can download a PDF version of this manual. In order to read the manual, you need a PDF viewer such as the Acrobat Reader (<http://www.adobe.com>).



By clicking on “Registration” in the “Help” menu you can register yourself at <http://www.open-e.com>.



“About Open-E NAS-XSR” indicates which system version you are currently working with.

In addition, you find contact information regarding Open-E NAS-XSR; for instance how you can reach Open-E’s technical hotline when you have problems.



You log out by closing the browser window.

6 Troubleshooting Guide

Here is a list of common error messages and their meanings as well as corresponding tips on how to resolve the underlying problem. If your error message is not listed here please contact Open-E's support and service team (see section "help" above). Our staff will help you find a solution.

Open-E NAS-XSR does not boot, keyboard LEDs are flashing

This problem arises when you installed Open-E NAS-XSR into the secondary IDE slot by mistake. Open-E NAS-XSR is configured for and will only run in the primary IDE connector. Shut down the computer, remove Open-E NAS-XSR from secondary and place it into primary IDE slot. That solves the problem.

Error: values are not valid

You have entered an invalid parameter. IP addresses have the form aaa.bbb.ccc.ddd: All four parameters range between 0 and 255 and are always separated by periods.

Error: passwords do not match

Make sure that you type the same password in each entry field. For safety reasons, the passwords are not displayed. Type slowly. Check the status of the Shift, Caps Lock, Control, and Alt-keys.

Error: No pendrive detected

You instructed Open-E NAS-XSR to perform a systems update, but did not supply a valid Open-E NAS-XSR update file. Download the latest Open-E NAS-XSR update file from the www.open-e.com Web site. Next, copy the upgrade file into pendrive and connect them to USB port. Please spell upgrade lower case. Finally, press update button.

Error: invalid administrator password

Administrator password cannot begin or end with a space. Spaces are not legitimate characters at the beginning and end of a password. Maybe you inadvertently hit the space bar during password entry. Reenter your password.

7 Appendix A

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8 Appendix B

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Version 2, June 1991

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