

open-e

Open-E NAS 2.0

Manual (ver. 2.60)
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1 Before you get started

Congratulations on purchasing Open-E NAS 2.0, 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 2.0, make sure that the package contains the following items:

- Open-E NAS 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, indeed, missing, please contact your dealer.

1.2 System requirements

- x86-compatible PC (Pentium III or better)
- at least 128 MB main memory
- Hardware RAID Controller
- One or several suitable hard drives
- Network Interface Card (NIC)

Open-E NAS contains its own operating system, meaning that 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 system, we recommend 256 MB main memory or more.*

1.3 Supported clients

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

1.4 Supported network protocols

- TCP/IP
- NetBEUI

1.5 Supported network file protocols

- SMB / CIFS / Samba
- Apple Talk
- FTP

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, please backup all important data prior to installation. Adding a hard drive to Open-E NAS 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, please ensure you are grounded before opening the PC or the ESD package that contains Open-E NAS. 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, for instance, by touching a heater.

- Avoid unnecessary touching of the components inside the PC
- Please touch Open-E NAS 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 the server via a controller or host adapter. The term “storage,” here, generally refers 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 system.

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

To start working with Open-E NAS, all you need to do is assign an IP address on the network through an existing DHCP server. Alternatively, you can manually assign a set IP address. All other settings are handled via a Web front-end which can comfortably be accessed via the IP address of Open-E NAS.

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

2.3 Why Open-E NAS?

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, then, they are configured. In tedious work, data often have to be copied manually onto larger drives, costing a lot of time and money.

With Open-E NAS, you can add storage to your existing network quickly, easily, and, most importantly, 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 flash module. To store data, Open-E NAS uses IDE (ATA) and SATA harddrives.

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.

RAID 10 is a combination of RAID 1 and 0, hence the name. Data is written in a striped and mirrored configuration, providing high performance and robust security.

3 Hardware installation

3.1 Getting ready

Switch off the computer, remove the power supply, and open the PC's enclosure. In tower enclosures, 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 mainboard:

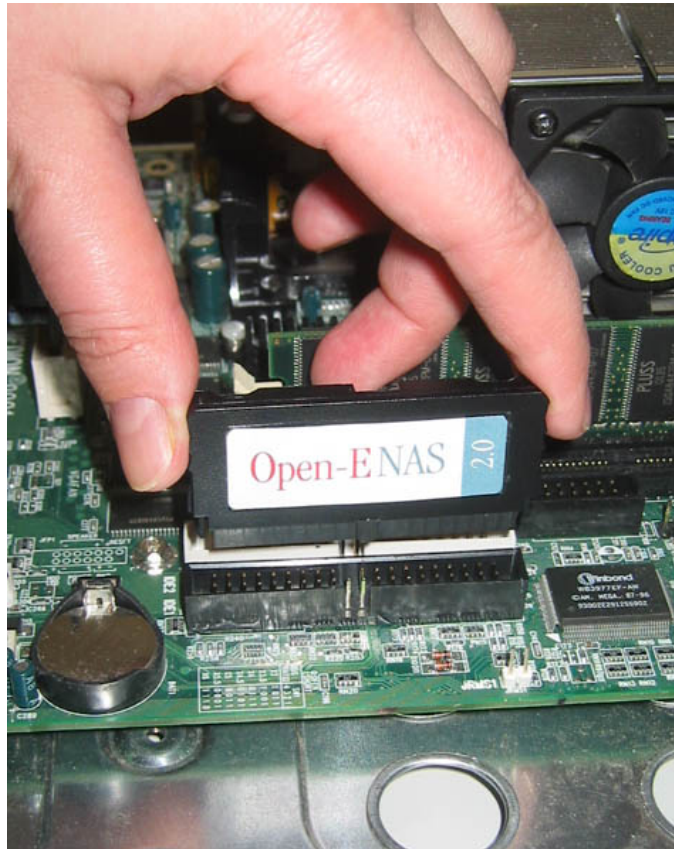


Every mainboard has at least two such ports. To install Open-E NAS, you have to use the first port because your computer “expects” this to be the position from which the booting process starts. In this example, this will soon be Open-E NAS.

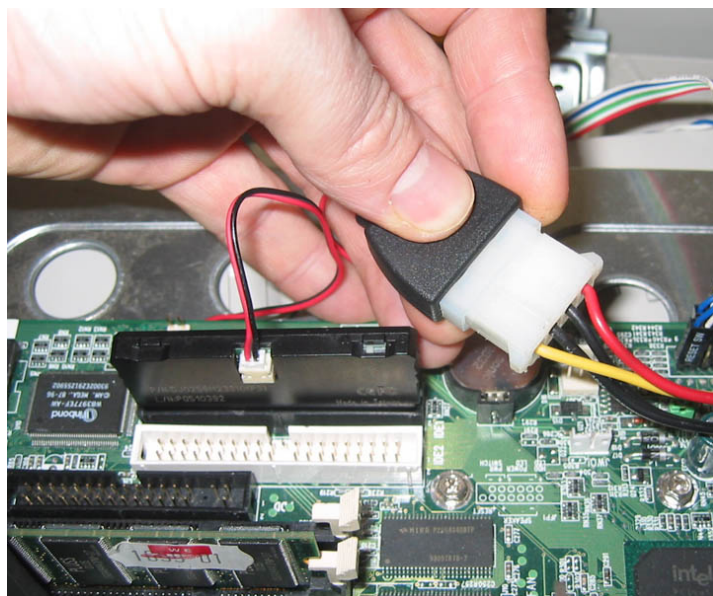
Often, the labeling on the IDE connectors may be tiny, but it is always there, on each board. Preferably look for “IDE 0.” If this connector does not exist, the first port is called “IDE 1.”

3.2 Installing Open-E NAS

If necessary, remove the flat band cable which, so far, connected your hard drive with the controller. Open-E NAS is now carefully inserted at the open sockets. As IDE ports can have a type of notch on their 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 with electricity. The little white plug corresponds with the matching connector on Open-E NAS. In a final step, the adapter has to be connected to the white power-supply plug (see photo):



That already concludes the installation! Before putting the enclosure on your computer again, do not forget to connect your hard drives to RAID controller. If you have a CD or DVD drive, you can remove it, as Open-E NAS does not support optical hard drives.

4 Configuration

4.1 The basic configuration of the NAS computer

Connect your keyboard and a monitor to the NAS computer. You will only need these devices for the basic 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

Now start your system. After booting is complete, Open-E NAS will provide you with information on the current software version and the network settings:

```
Welcome to Open-E NAS                                     (Press F1 for Help)
-----

Model:           Open-E NAS
Version:         2.60.000000000.886
Release date:    2005-05-06
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 should access the IP settings automatically. But if that is the case, you can proceed to 4.3. If your network does not have a DHCP server, Open-E NAS 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 then select a different IP address:

```
----- 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-H - to display hardware and drivers info
C-A-X - to display extended tools
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.

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

4.3 Logging into Open-E NAS

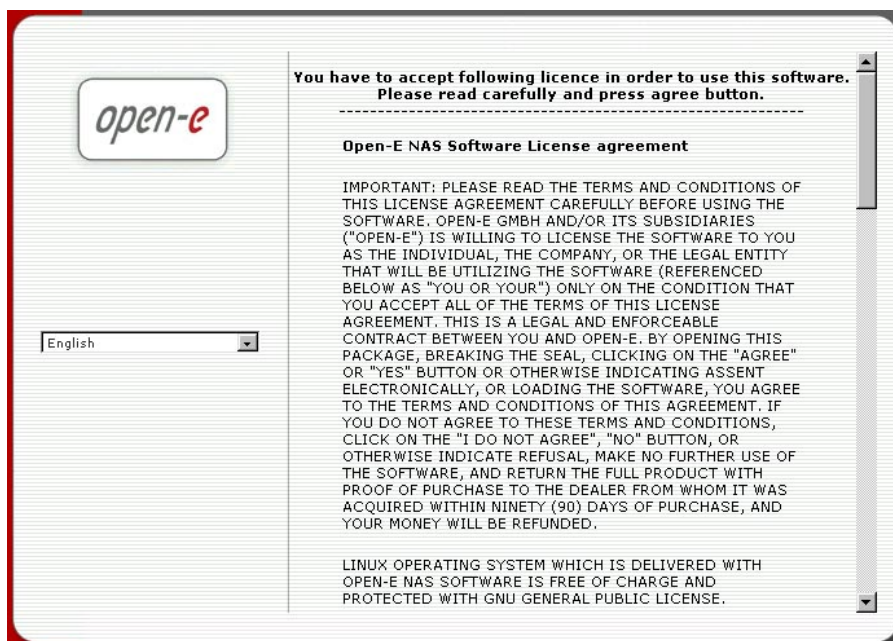
From another PC/Client PC or network terminal, you now establish a connection to Open-E NAS. To establish this connection, use a browser (e.g., Microsoft Internet Explorer) and enter the IP address or the name of the computer hosting the NAS server into the URL entry line: <https://192.168.0.220> (standard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



Notes: *For security reasons, Open-E NAS uses the encrypted SSL protocol.*

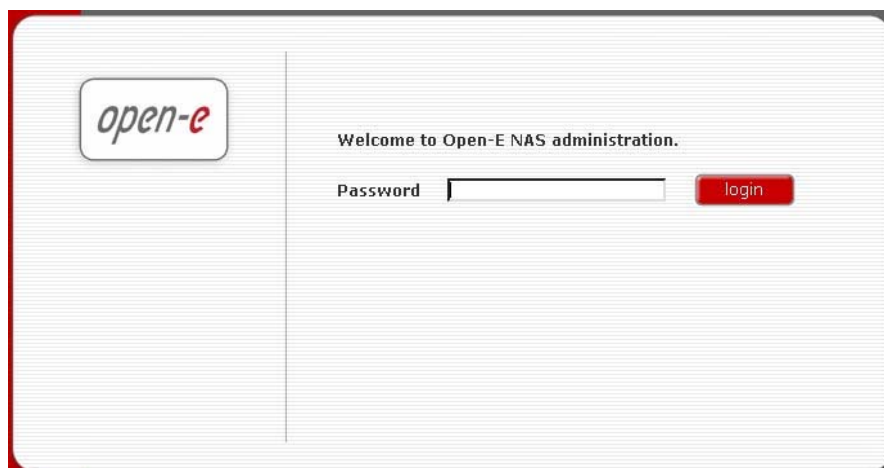
You will now be asked for verification of the encryption certification. Since Open-E NAS does not allow for creating shares on the Internet but only on the Intranet, there is no need for global certification by an authorized body. You can accept the certificate for the session only, but also for all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

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



Notes: *Page with software agreement and available language option will be shown after first launching Open-E NAS. Later language you can change using Language Settings which are located in NAS Server available through Setup.*

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



Notes: *Password checking is case-sensitive. If you cannot log into Open-E NAS, please check the status of the Shift and Shift Lock keys.*

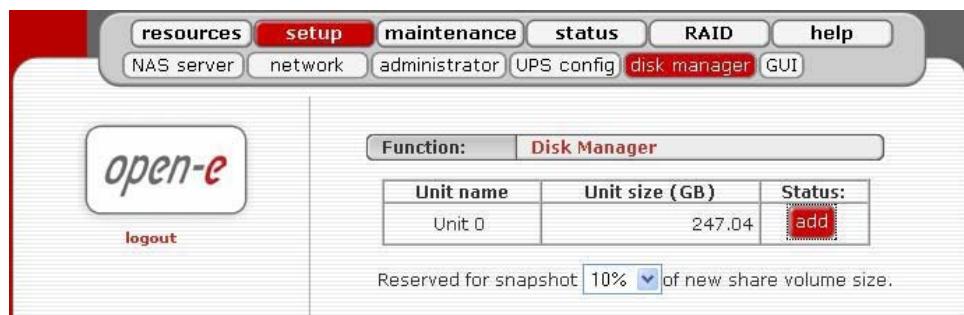


Notes: *In case your web browser will show something different then expected, please delete the cache & cookies in settings menu of your web browser.*

4.4 Adding RAID-Arrays

Please select in the menu “Setup” and then “Disk Manager”. After selecting “Disk Manager” you’ll find a list of all logical units (i.e. RAID array). To add a unit to the NAS, please click on “Add”. After the necessary formatting, the status of the unit will change from “Add” into “In use”.

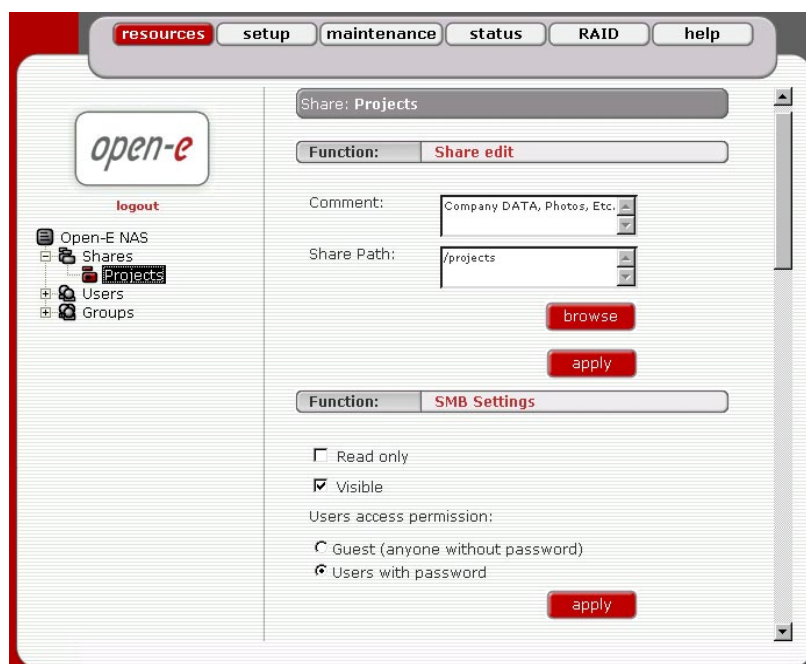
Please note that you can expand the storage capacity by adding new RAID arrays. In the “Disk Manager” Open-E NAS will show both ‘in use’ and new unformatted units. In order to add a new unit to the existing capacity, please click on ‘Add’.



4.5 Creating NAS shares

In the menu, please select “Setup,” followed by “NAS 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.

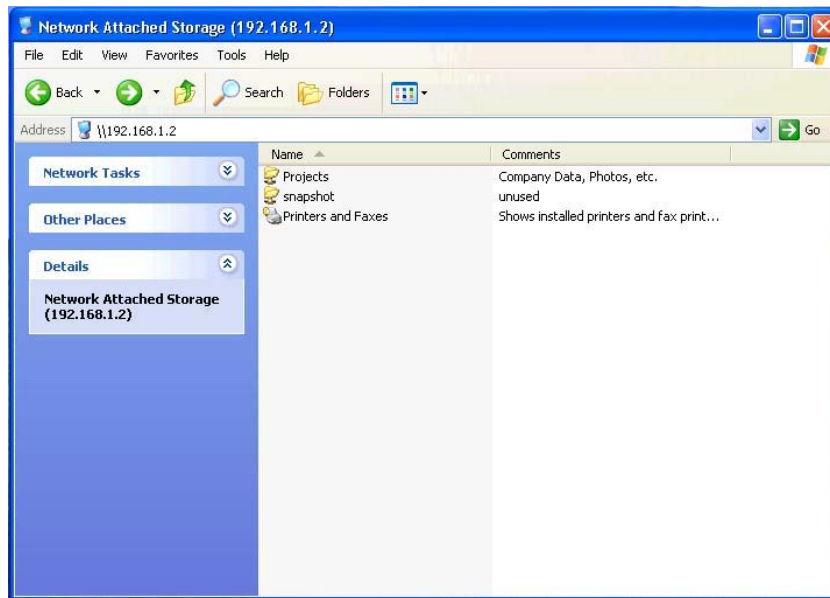




Notes: *The workgroup/domain name that was configured in Open-E NAS has to agree with the network settings. Otherwise, the configured shares are not visible in the network environment.*

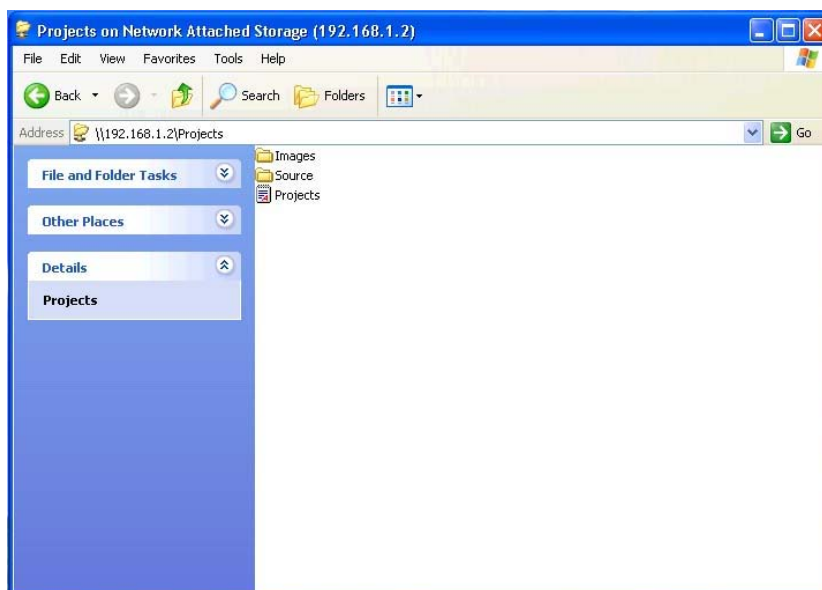


Notes: *If you made changes to the workgroup and server name in Open-E NAS configuration, it can take some time until each workstation computer in the Windows network detects the new name.*



The access to newly created shares is generated via the Windows Explorer. After entering the IP address of your Open-E NAS (in this example \\192.168.1.2), all visible shares should immediately be available. Please keep in mind that new shares or changes sometimes are only available after a few minutes.

When accessing invisible shares, you need to already know the corresponding share name, attaching it to the IP address with a backslash (\):



4.5.1 Access NAS Shares under Linux

Please use following line to mount 'nfs' share:

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

Where 192.168.0.220 it is Open-E NAS IP and /mnt/nfs your local mount point

Please use following line to mount SMB share:

Under shell:

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

where "test" is the share name

In X-window Smb://root@192.168.0.220/

5 Description of functions

5.1 Functions of the console display

While Open-E NAS can be fully administered remotely through a secure Web interface, it is sometimes more comfortable to configure on the console. Open-E NAS 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, Open-E NAS 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.

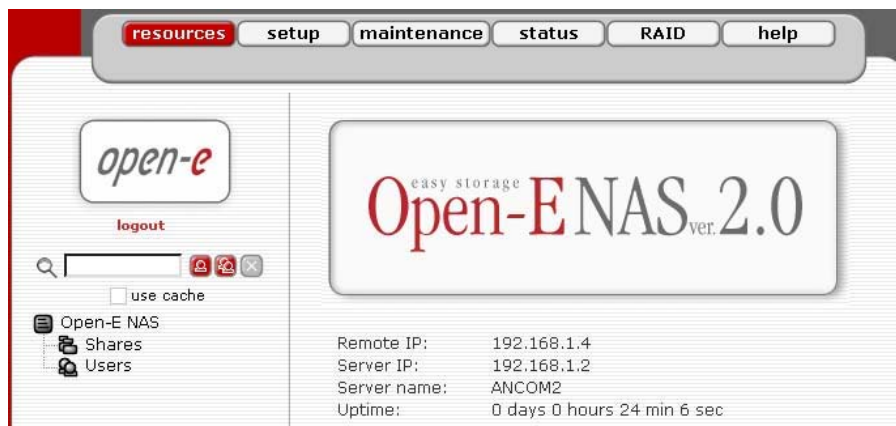
Shutting down and restarting

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

5.2 Functions of Open-E NAS via browser access

On the following pages, we will thoroughly describe every function of Open-E NAS. 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 status data (IPs, server name, uptime), and you can configure NAS 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 or disabled in the Open-E NAS 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 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\$.



Notes: *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).*

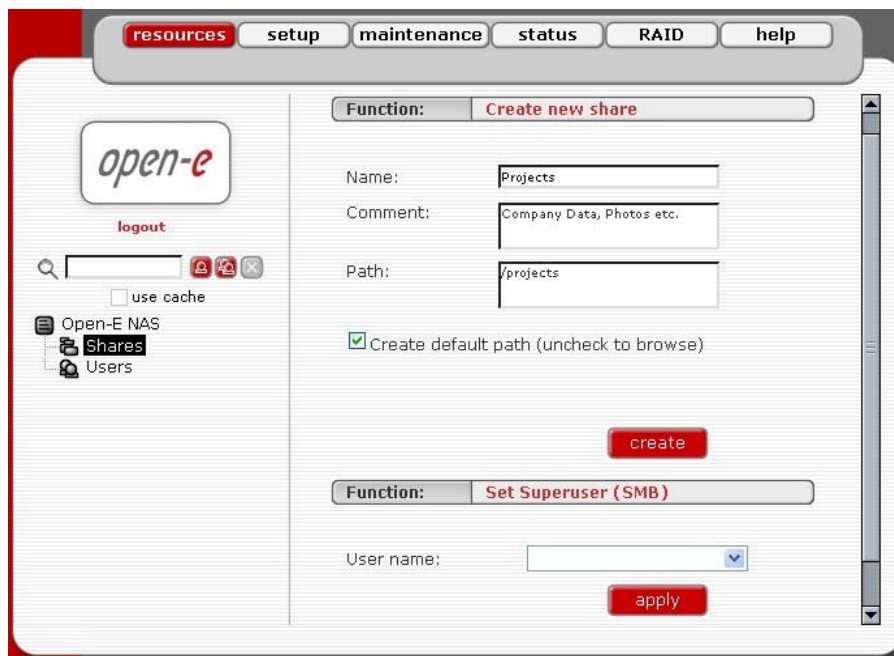
Adding elements to the tree can be a time consuming task – especially when the criteria are not tight enough and limit is set up to more than 300 entries. To cancel the operation before it is finished, click on the stop button.

5.2.1.1 Shares

Here, all shares on your Open-E NAS are listed. By clicking on the branch “Shares,” you can define a new share. 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 server. The comment is only visible if the users view the properties, or if shares are listed in detail.

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

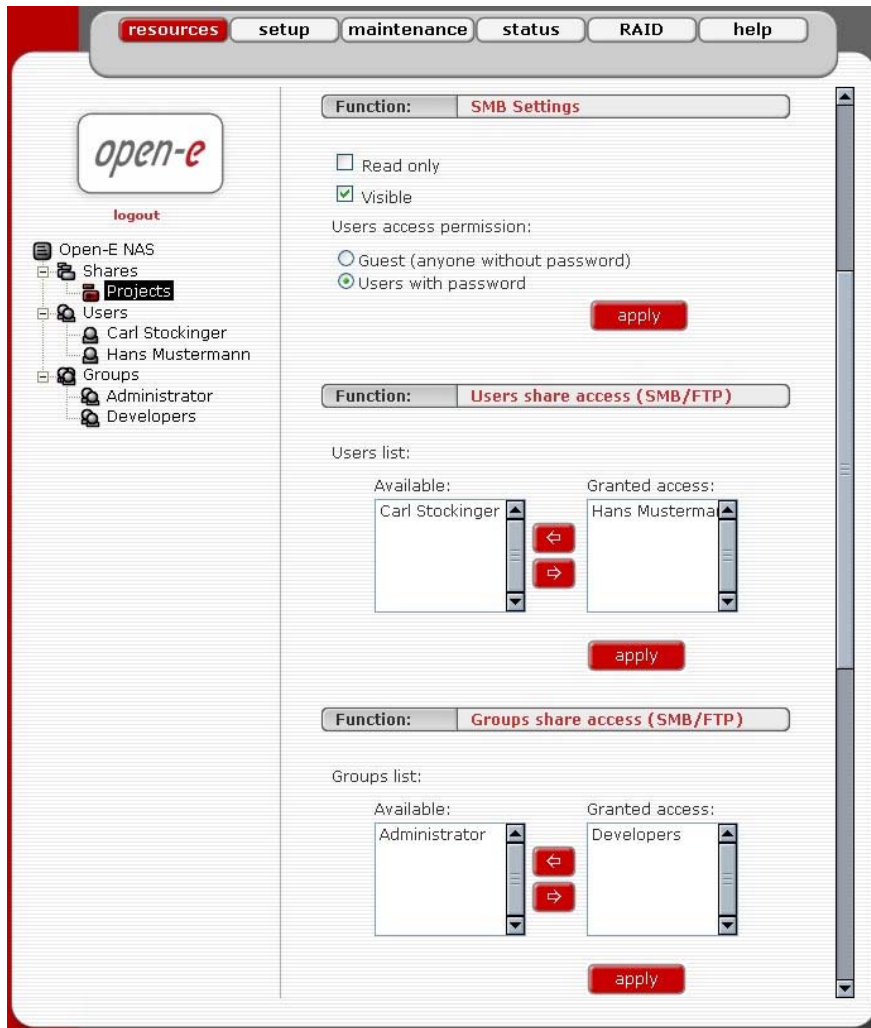


Function “Set Superuser (SMB)”

Superuser is a user, who has permission to take ownership of directory, which belong other users. It can be useful when administrator can change access right for directory established by other users. This function works only with SMB protocol.

Function “SMB Settings Function”

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.

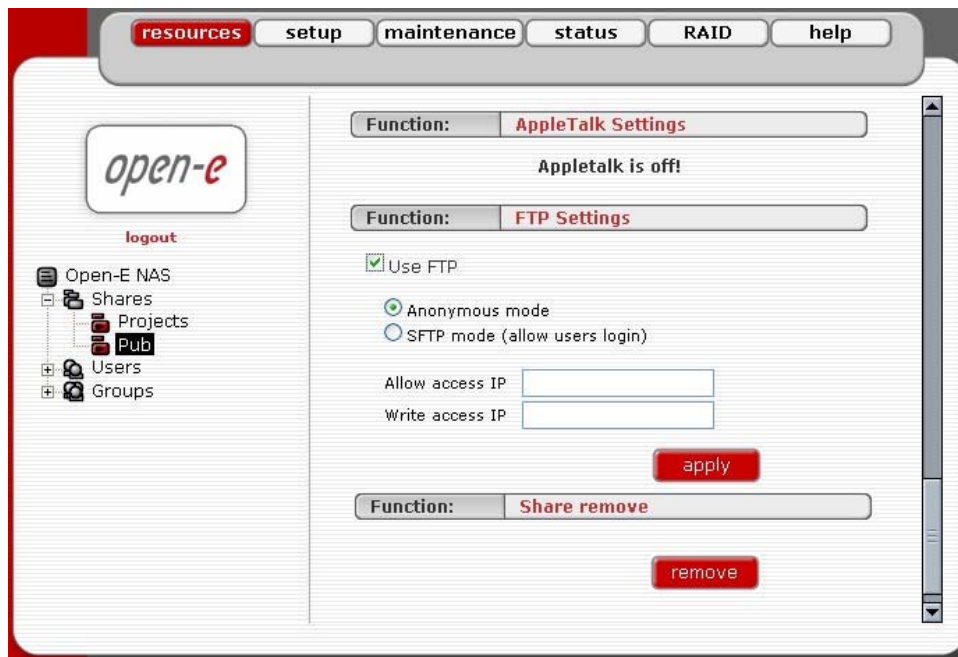
Function “FTP Settings”

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 “Setup->NAS 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 “Function: FTP 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.

Hint: 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.

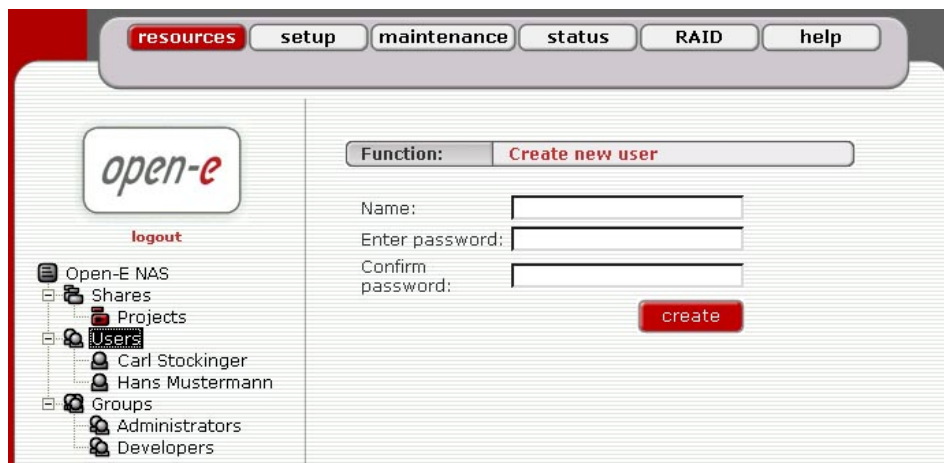
Hint: If the NAS server uses Windows domain authorization then a short name of the domain must precede a user name – connected with a plus sign, i.e. “DOMAIN+Administrator”.

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”.

5.2.2 User

In the mode “Workgroup internal LDAP” the category “user” 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.



The screenshot shows the Open-E NAS web interface. At the top, there are navigation tabs: resources, setup, maintenance, status, RAID, and help. The 'open-e' logo is on the left. Below the logo is a 'logout' link and a tree view of the system structure: Open-E NAS, Shares, Projects, Users (selected), Carl Stockinger, Hans Mustermann, Groups, Administrators, and Developers. On the right, the 'Function:' dropdown is set to 'Create new user'. Below this are three input fields: 'Name:', 'Enter password:', and 'Confirm password:'. A red 'create' button is positioned below the 'Confirm password:' field.

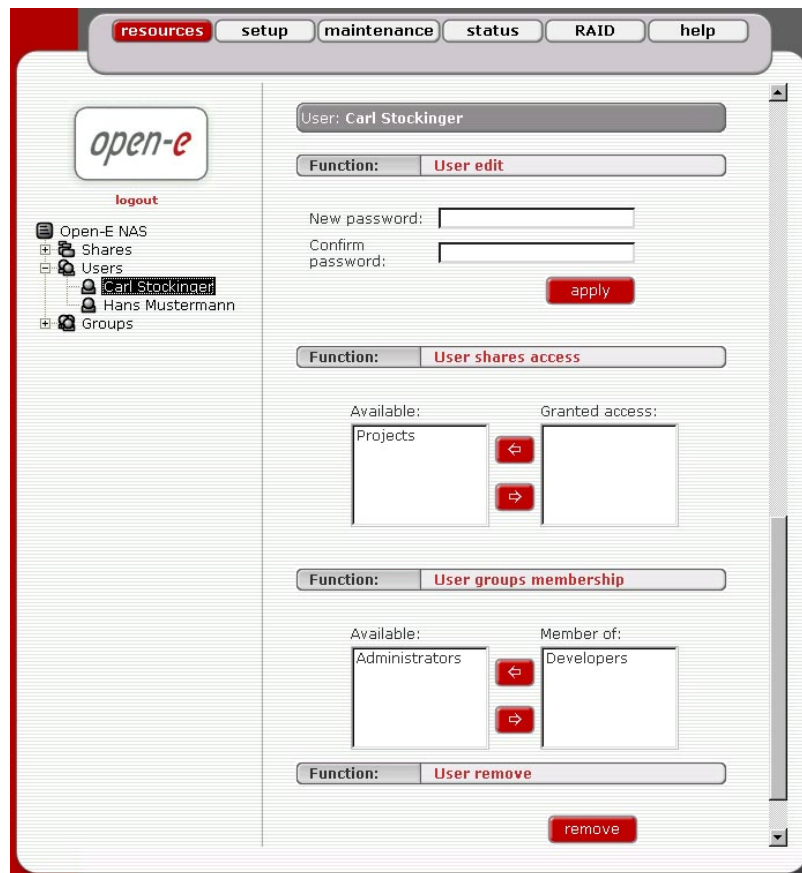


Notes: If users forget their password, there is no way to retrieve it. You can only set a new password.

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.

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:



5.2.3 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.).

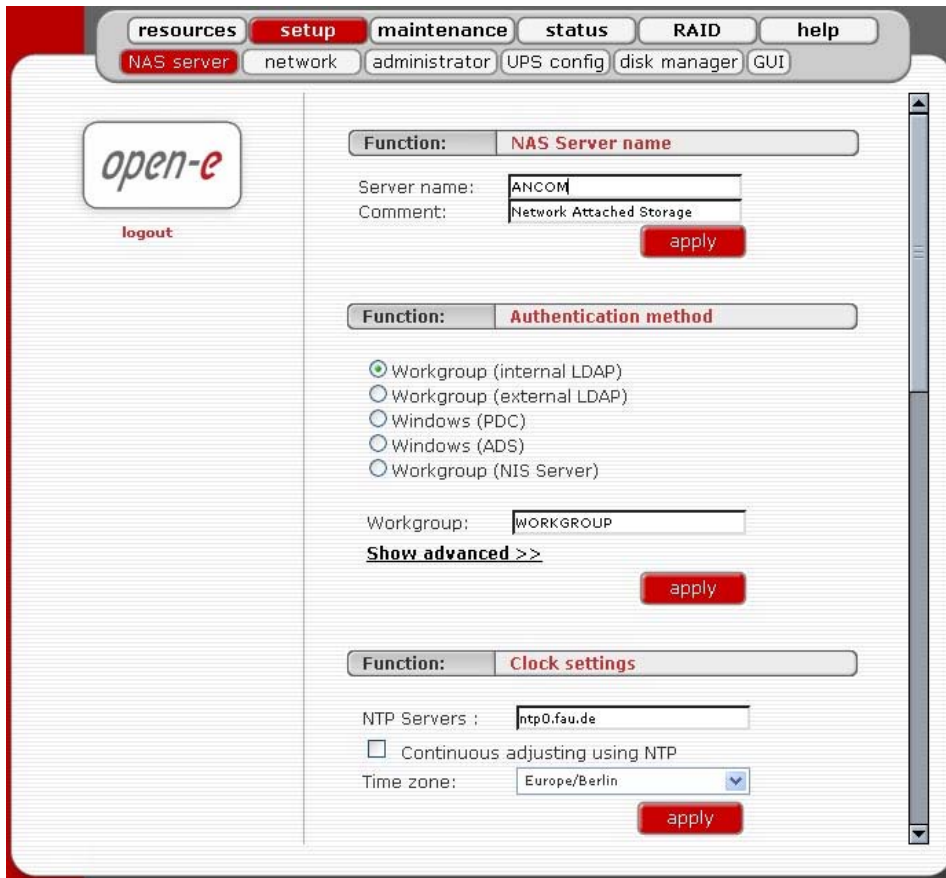
In the modes “Workgroup external LDAP” and “Windows (PDC)” the groups are automatically synchronized with the external server.

5.2.4 Setup

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

5.2.4.1 NAS 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.

Function: “Authentication method”

You have to select a type of authentication. Options are “Workgroup internal LDAP” “Windows (PDC)” and “Windows (ADS)” The former is the easiest option – it is suited for beginners or useful for simple storage solutions (e.g., backup servers).

The administrator has to create all users in the menu “Resources” and grant them access to the desired shares. Via “Windows (PDC)” and “Windows (ADS)” the user database is imported from the active directory of a Windows server (with access data provided and with the necessary access rights). The administrator has to fill out the following entry fields:

Domain name: Entry of the NetBIOS domain name
Server IP: Entry of the Windows server’s IP address

Name: Entry of a user name with administrator rights
Password: Entry of a password corresponding to the user

On NT 4.0 server add NAS Server to Domain

- a. Run Server Manager program from Menu Start->Programs->Administrative Tools (Common)->Server Manager
- b. From Server Manager menu select Computer->Add to Domain
- c. WARNING: If NAS Server is already added, you must remove it
- d. In Computer Name field enter NAS Server-Name (NetBios name)
- e. Click Add button

Set Windows (PDC) in Open-E NAS

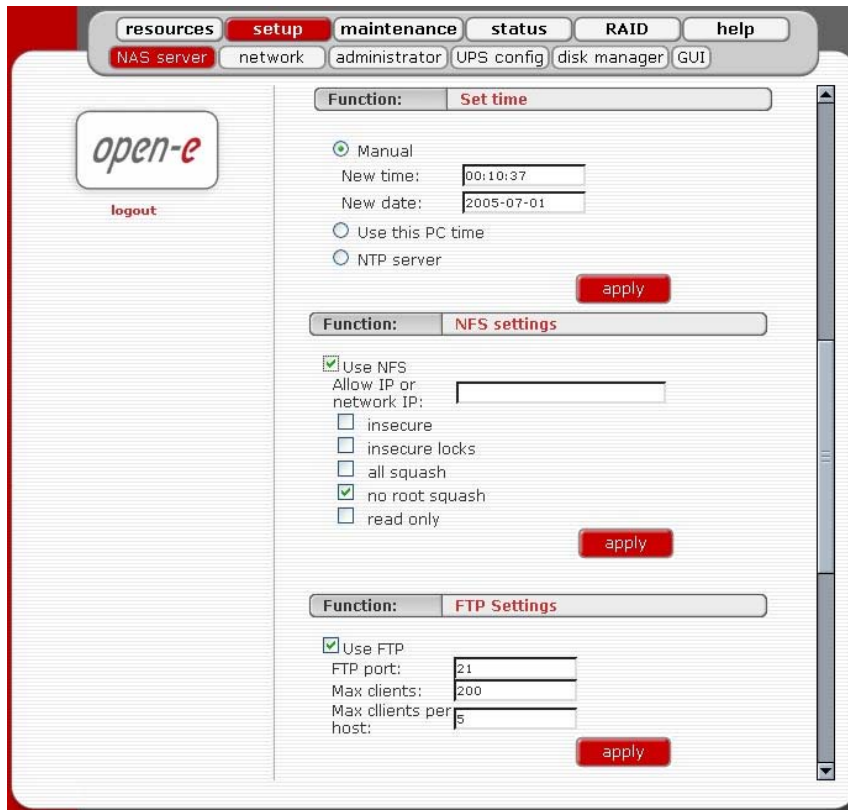
- a. From Open-E NAS web interface choice Setup-> NAS-Server-Setup
- b. In Function - Authentication method choose “Windows (PDC)” option
- c. In Server IP field enter NT server IP address
- d. In Name & Password fields enter administrator account name and password of NT server.
- e. Click apply button
WARNING: If connection fails, the next try you must restart from point a (setting NT)

Function: “Clock Settings”

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



Notes: *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“

In NFS settings you can define the NFS options. The IPs-settings (addresses or networks) are like those of the FTP settings (see below).

- All squash: Map all users id to nobody user and all groups id to nogroup group.
- No root squash: If unchecked, maps root user id and group id to nobody/nogroup id OR(prevents, mapping root user id and group id to nobody/nogroup id)
- Read only: Sets read-only access right to the NFS volume
- Insecure: This option allows internet connections to NFS volume via port number above 1024.

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 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

In Open-E NAS, 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, the NAS server for FTP uses port 21, which can be changed in the configuration menu (under “Setup – NAS 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 also grant specific computers write access to the FTP area, enter the desired IP addresses into the line “IP address complete access” (IP addresses should be separated by semicolons):

192.168.0.1; 192.168.0.2; 192.168.0.222; etc.

In order to assign the entire address area between 192.168.0.0 and 192.168.255.255 writing privileges enter:

192.168.0.0/8

In order to assign the entire address area between 192.168.0.0 and 192.168.255.255 writing privileges enter:

192.168.0.0/16

You may find details on IP calculation in internet. Just search for “ipcalc”.

Function: “AppleTalk Settings”

Here you may activate the AppleTalk protocol in the network.

How to use AppleTalk with the Open-E NAS 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:

1. 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 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 shares drop its icon onto the trash.

2. 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://192.168.1.5 (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“

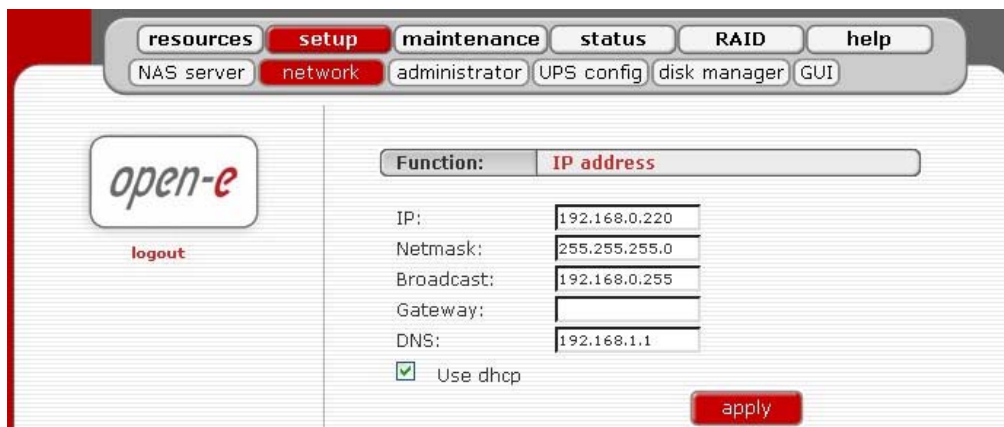
These options enable preserving of MS-DOS attributes: hidden and system. These attributes are mapped to X (EXECUTE) attributes for group and for others in Linux POSIX ACL. Windows

ACL permissions are also mapped to Linux attributes. In order to avoid attribute mismatch you should disable these options.

Function: “Language Settings”

English and German are supported.

5.2.4.2 Network



The screenshot shows the Open-E network configuration web interface. At the top, there is a navigation menu with buttons for 'resources', 'setup', 'maintenance', 'status', 'RAID', and 'help'. Below this, a secondary menu includes 'NAS server', 'network', 'administrator', 'UPS config', 'disk manager', and 'GUI'. The 'network' button is highlighted in red. On the left side, there is a logo for 'open-e' and a 'logout' button. The main content area is titled 'Function: IP address' and contains several input fields: 'IP:' with the value '192.168.0.220', 'Netmask:' with '255.255.255.0', 'Broadcast:' with '192.168.0.255', 'Gateway:' (empty), and 'DNS:' with '192.168.1.1'. There is a checked checkbox for 'Use dhcp' and a red 'apply' button at the bottom right.

If you want to select an address instead of being assigned an IP address automatically via DHCP, you can do so here. During activation, you will lose your connection to NAS and will have to log in again.

In the URL entry line of your browser, please enter the new IP address. In addition, please open the field “Network” (listed in the menu option “Setup”), then check the new settings. If you do not get access, you need to operate Open-E NAS in the console mode and set up the new IP address (as described in 4.2.)

In order to access servers in another subnet, you need to enter the address of a fitting router as “Gateway.” This will not be the case in smaller networks, however.

5.2.4.3 Administrator:

The screenshot displays the Open-E Administrator web interface. At the top, there is a navigation menu with tabs for 'resources', 'setup', 'maintenance', 'status', 'RAID', and 'help'. Below this, a secondary menu shows 'NAS server', 'network', 'administrator', 'UPS config', 'disk manager', and 'GUI'. The 'administrator' tab is selected. On the left side, there is a logo for 'open-e' and a 'logout' button. The main content area is divided into four sections, each with a 'Function:' header and an 'apply' button:

- Administrator password:** Fields for 'Enter password:' and 'Confirm pass.:', followed by an 'apply' button.
- Administrator access:** Fields for 'Set port:' (value: 443) and 'IP address:', a checkbox for 'Lock console', and an 'apply' button.
- E-mail notification:** Checkboxes for 'Send errors' and 'Send test message', a 'Destination e-mail:' field, a 'Hide advanced <<' link, an 'E-mail server:' field (value: open-e.com), and an 'apply' button.
- SSL Certificate Authority:** A link to 'Download SSL Certificate for your browser [SSLCert.crt](#)'.

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.



Notes: *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.*


Function: “Administrator access”

The administrator can precisely assign IP address (separated by a semicolon) that is granted authorization to access to Open-E NAS Web administration. Please exercise caution with this function, if all computers in the network receive IP addresses via DHCP: Today’s IP can be replaced by a new one after the lease ends.

Open-E NAS can assign a total of nine IP address, meaning that you should enter all nine when in doubt (192.168.0.0 to 192.168.0.8.).

Function: “E-mail notification”

In case of significant events, critical errors, warnings, etc., system can send an email to the administrator. Please enter administrator email address.

 **Notes:** *When SMTP server receiving mail, uses the monitoring function of IP numbers, it compares IP number from SMTP server (for example open-e.com) with IP number of a computer from which email was sent. This email may be treated as “spam” and will not be accepted. To avoid the above problem, use different SMTP server then the computer currently uses. The best solution for a correct email distribution is to use your local mail server.*

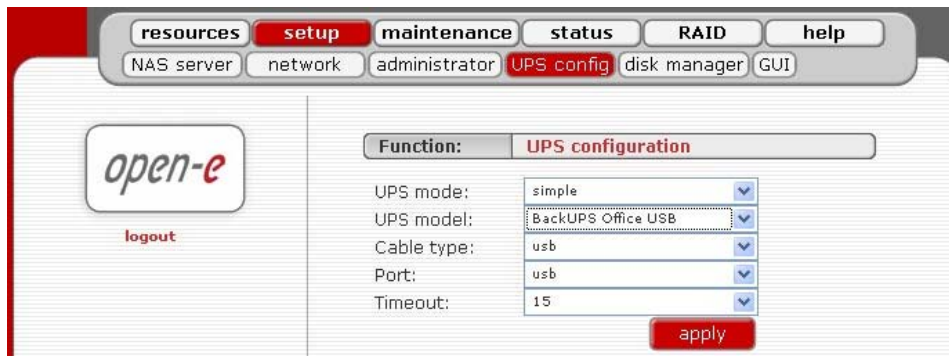
Function “SSL Certificate Authority”

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.



Notes: *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.*

5.2.4.4 UPS Config



In the UPS Configuration function you can select a UPS device desired (Uninterrupted Power Supply). For the connection of the UPS device to the NAS server, the USB port is most frequently used. In the settings you can select the UPS model, cable type, connection port and the length of the time out. The time-out defines the time between a power failure and the moment the system will shut down. UPS support 3 modes:

Simple means, that Open-E NAS is the only system attached to this UPS and that there is no action necessary to do remote shutdown for other systems in the network.

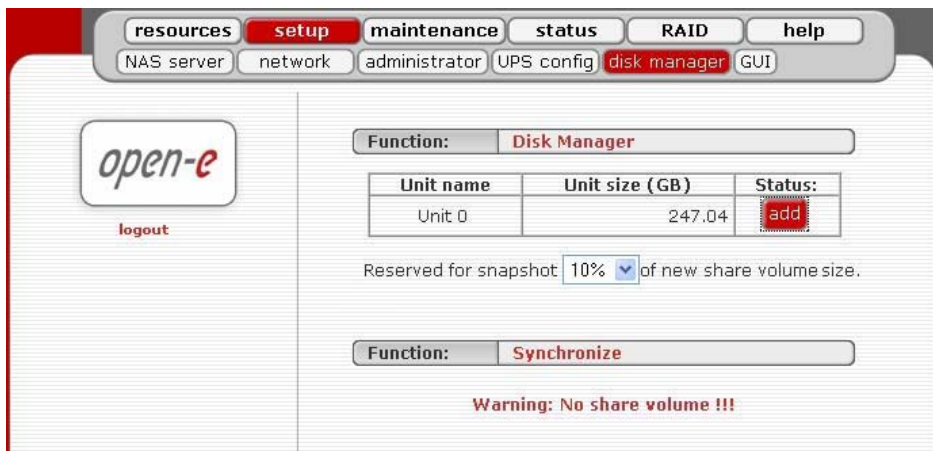
Master means, that Open-E NAS is connected to the UPS and sends an signal through the network to shutdown other systems in the network.

Slave means, that Open-E NAS is reacting on a "power down-signal" from an UPS master.



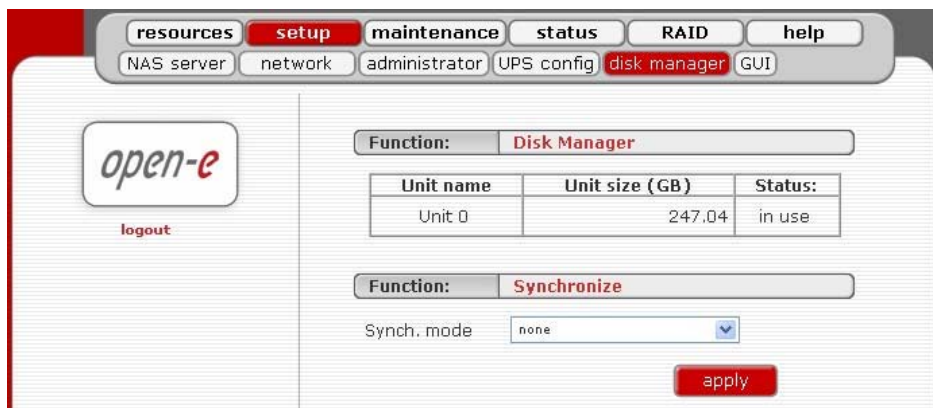
Notes: *During a power failure you cannot log into the Open-E NAS server. Users, who are connected to the Open-E NAS server during the UPS-time, remain full access to all files on the NAS server.*

5.2.4.5 Disk manager



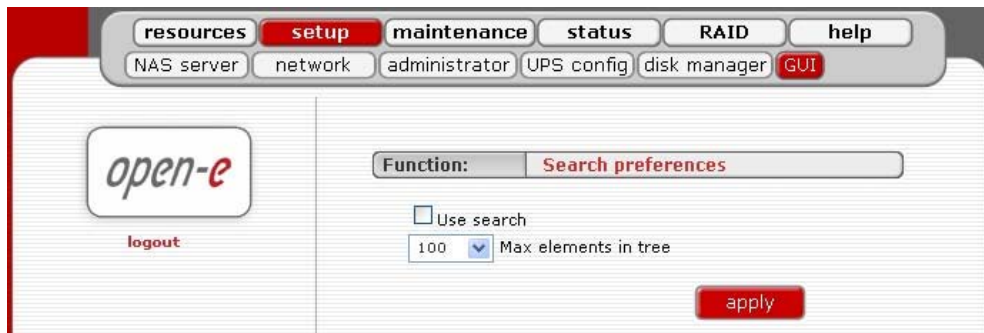
Here, you will find a list of all available drives. Each newly installed drive will be displayed as an available unit.

In order to integrate an available drive into the share volume, just add it using the red button. While this happens, the drive will be formatted in any case. Next, the page will be reloaded and the status field should show your drives as "in use."



Notes: *When the added unit is integrated, it cannot be remove in Web management. You need to use extended tools in console.*

5.2.4.6 GUI



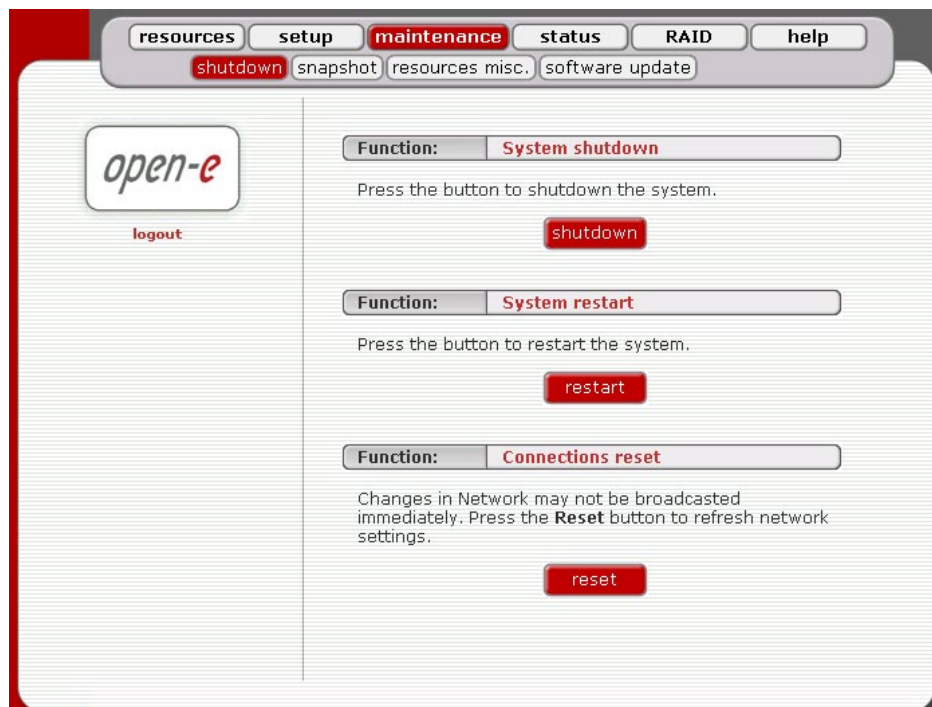
Function „Search preferences “

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

5.2.5 Maintenance

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

5.2.5.1 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.



Notes: *The NAS 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”

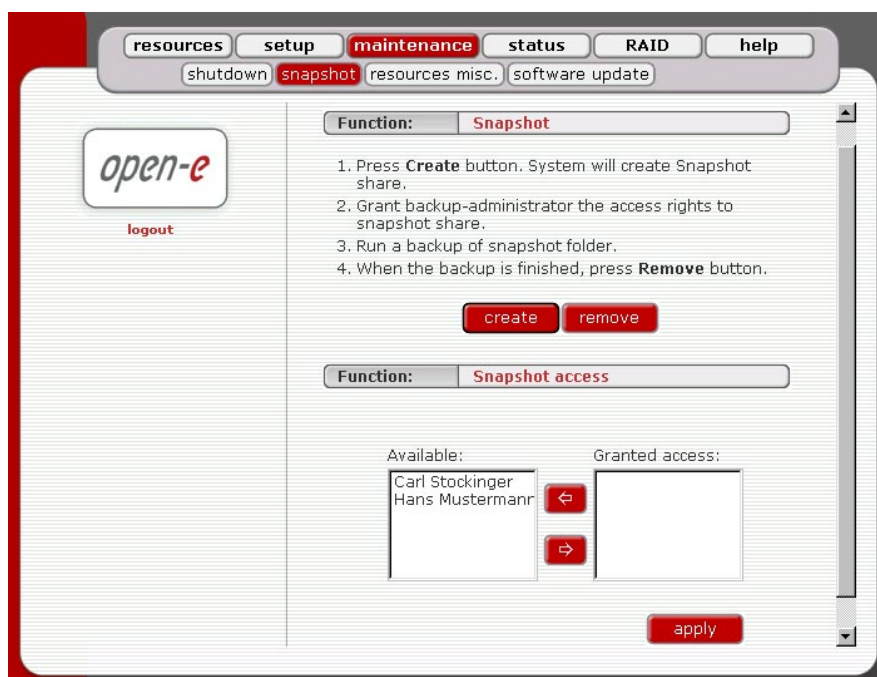
When you use this function, you can update all network settings (for example, changes that you made previously). The function also allows you to directly inform all clients about the changes you made to shares and access rights. This receive the information immediately. Otherwise, it can take several minutes before all clients are informed about the changes.



Caution: *If you disconnect your users, this can lead to data loss if any files are open.*

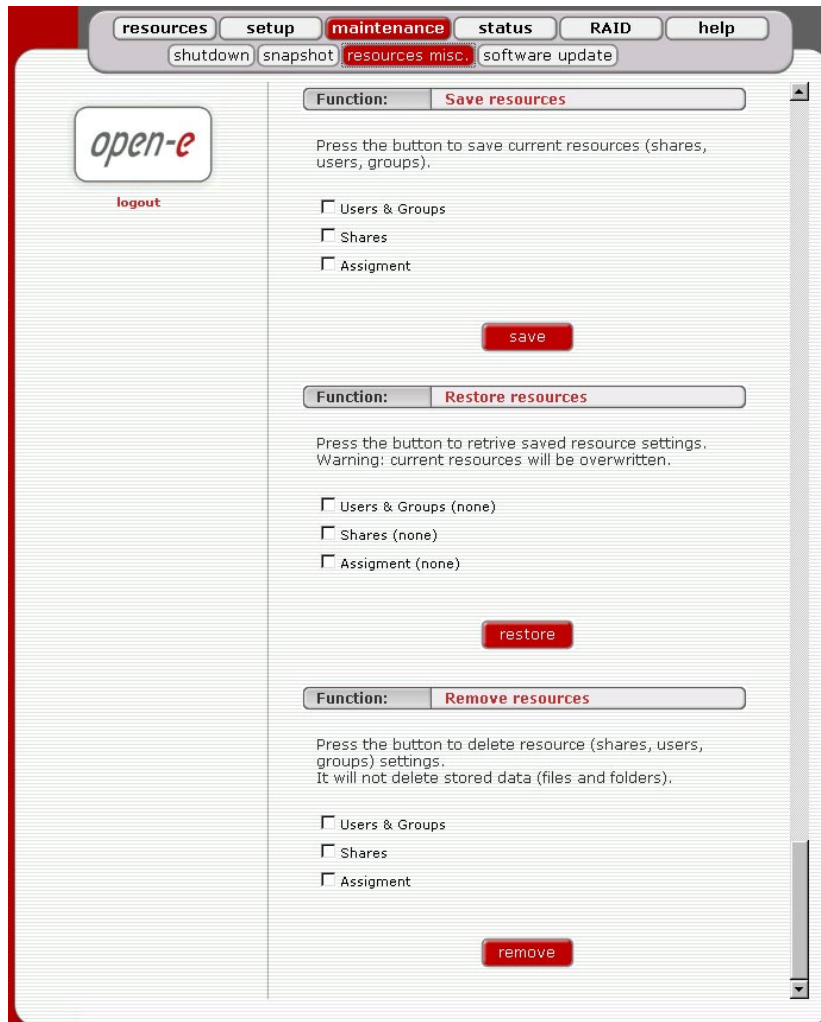
5.2.5.2 Snapshot

Here you can instantly create and remove snapshots share. This can be useful if you need to make considerable changes to your data while you don't know if these changes are supposed to be permanent.



5.2.5.3 Miscellaneous Resources

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



Function: “Save”

With this function, you easily store the settings of your resources.

Function: “Restore”

With this function, you restore your settings.

Function: “Remove”

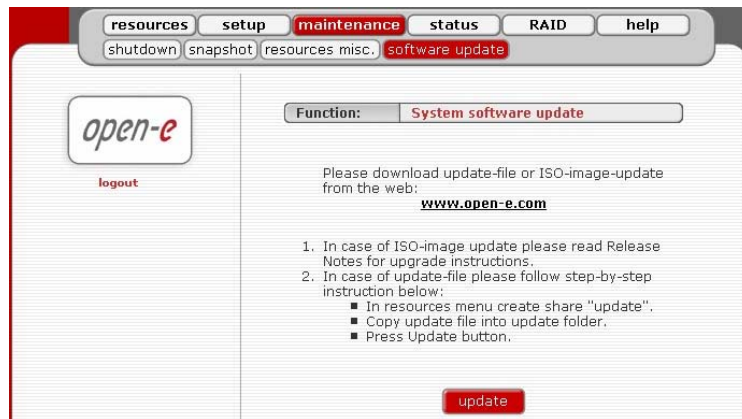
With “Remove Resources,” you remove all resources (shares, users and groups). That’s why this function should only be used with extreme caution. At the same time, it is important to point out that this function will not delete other data such as your files or folders. After you

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 all users and resources. Please only use this function if you really want to delete all users and resources, because the data loss cannot be reversed.*

5.2.5.4 Software Update



With ISO-image-update option:

The ISO-Files includes update file which must be burned on a CD with your favorite Burning software (for example: Nero Burning ROM - option: “Burn Image”, etc.).

In order to re-flash the module, please install CD-ROM as Secondary-Master and DOM (disk-on-module) as Primary-Master.

Please set the BIOS to boot from CD-ROM drive. Then boot from the ISO-CD and wait until prompt: “Update complete, Please Remove CD and restart” After re-fleshing, please reset the BIOS to boot from Primary-master HDD. Updating the system may take about 10 minutes.

Before updating please do:

- write down the actual NAS server IP address and NAS server name. After having updated Open-E NAS, please re-enter both,
- write down authorization settings,
- save “User”, “Groups”, “Shares” and “Assignments” under Menu: “Maintenance” → “Resources Misc.” → “Save resources”,
- download and save NAS Server Logs: Menu “Status” → “Hardware” in Function Logs click on “Download”, then save on your local HDD.

With update-file option:

With “Update-file” you can install the most up-to-date version of the Open-E NAS software. Copy the new software to the /update directory of Open-E NAS and then update it. The new version will be installed immediately.



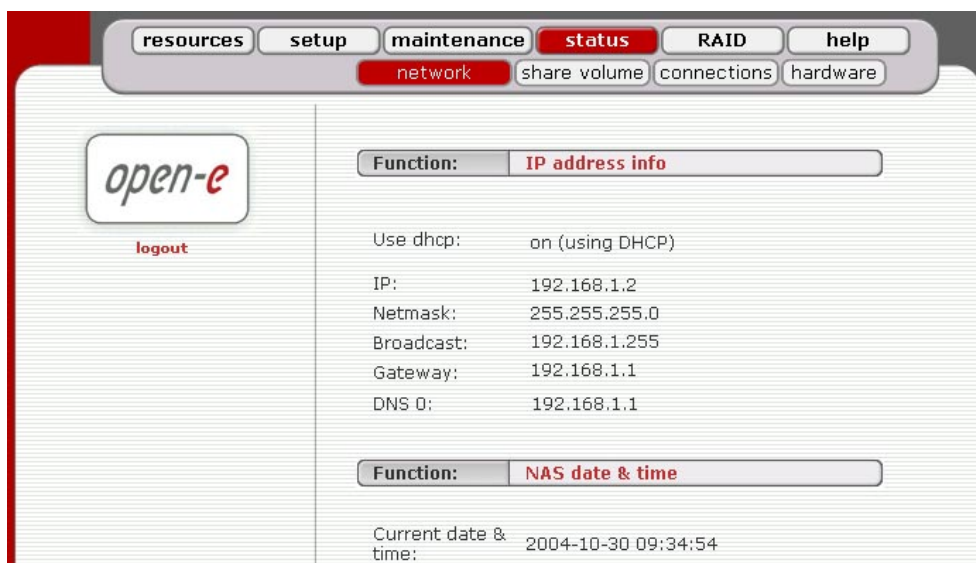
Notes: *When you create the share “update” use small characters only!*

5.2.6 Status

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

5.2.6.1 Network

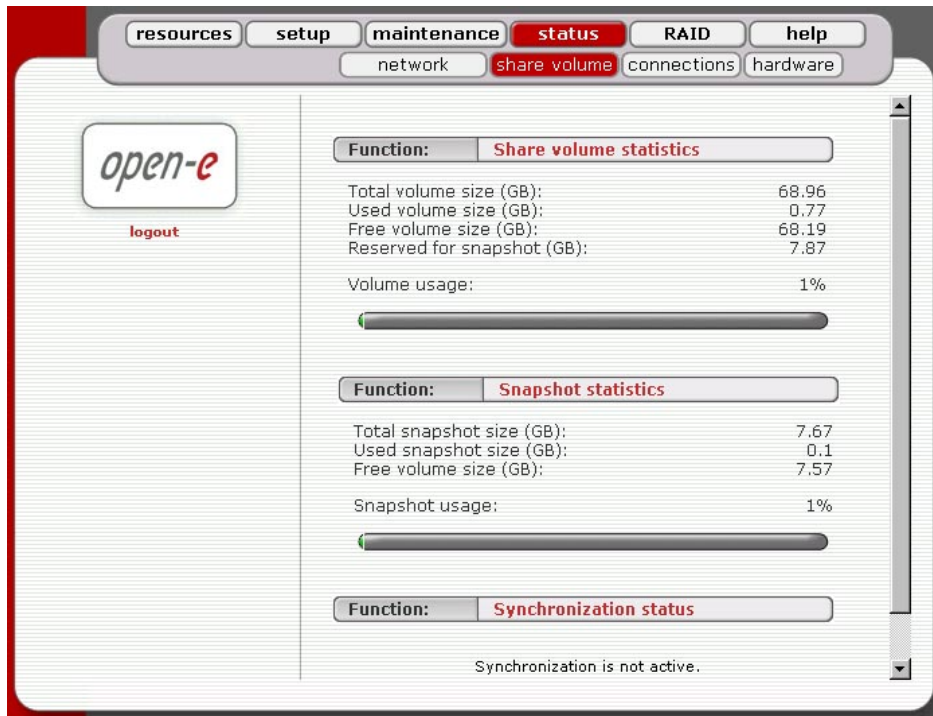
This function provides information on the IP address and the NAS date and time.



The screenshot displays the Open-E NAS web interface. At the top, there is a navigation bar with buttons for 'resources', 'setup', 'maintenance', 'status' (highlighted in red), 'RAID', and 'help'. Below this, a sub-navigation bar contains 'network' (highlighted in red), 'share volume', 'connections', and 'hardware'. On the left side, there is a logo for 'open-e' and a 'logout' button. The main content area is divided into two sections. The first section, titled 'Function: IP address info', lists the following network parameters: 'Use dhcp: on (using DHCP)', 'IP: 192.168.1.2', 'Netmask: 255.255.255.0', 'Broadcast: 192.168.1.255', 'Gateway: 192.168.1.1', and 'DNS 0: 192.168.1.1'. The second section, titled 'Function: NAS date & time', shows 'Current date & time: 2004-10-30 09:34:54'.

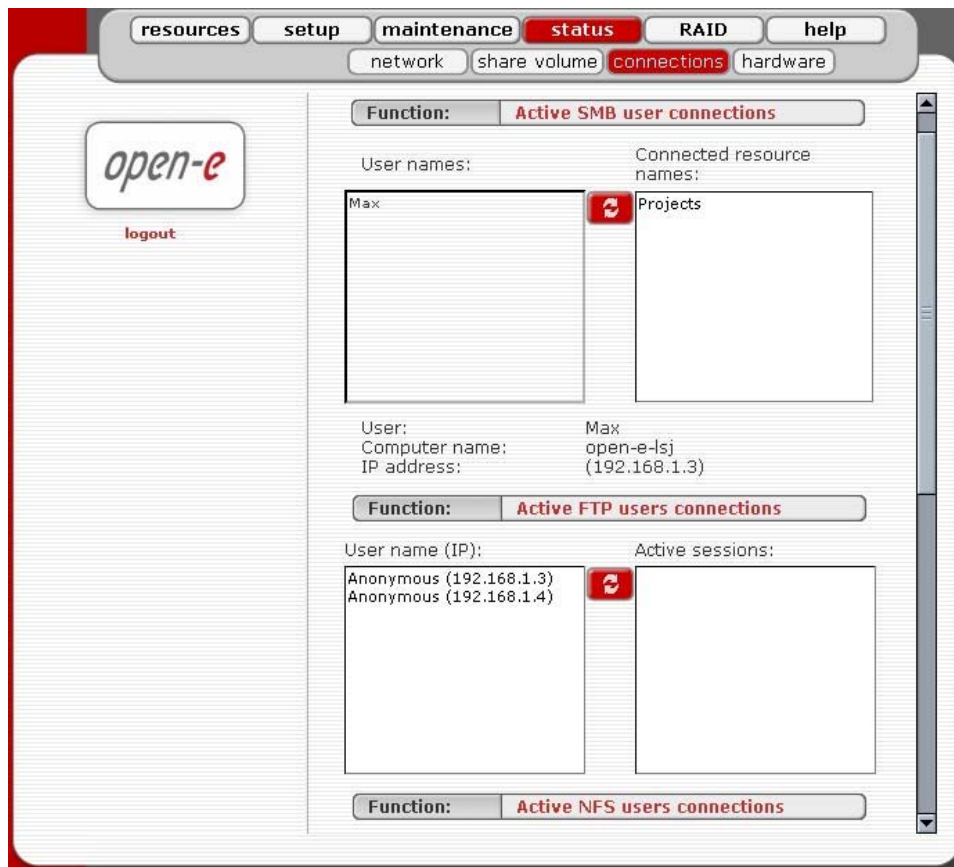
5.2.6.2 Share Volume

This function contains statistical data on the share volume.



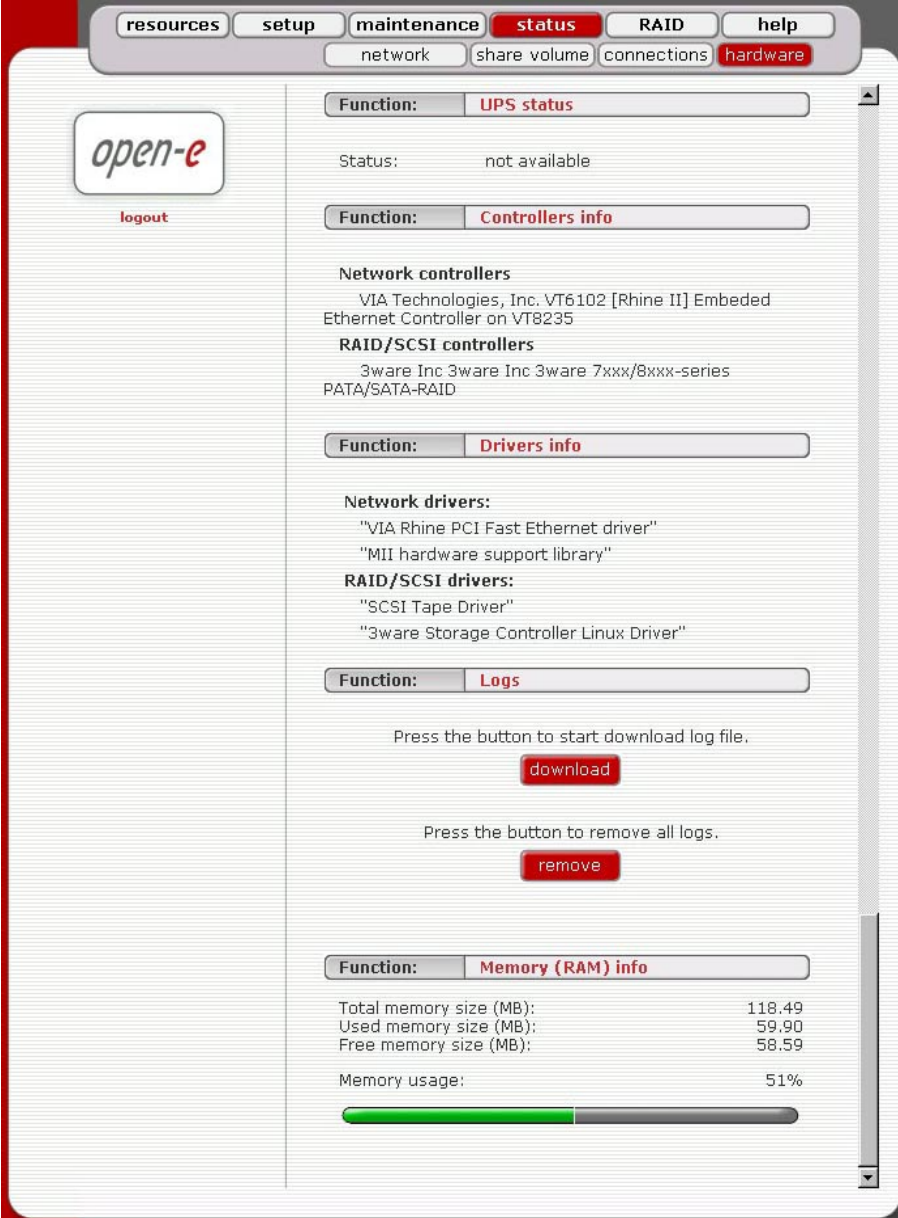
5.2.6.3 Connections

This function displays which user connections are currently active.



5.2.6.4 Devices

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



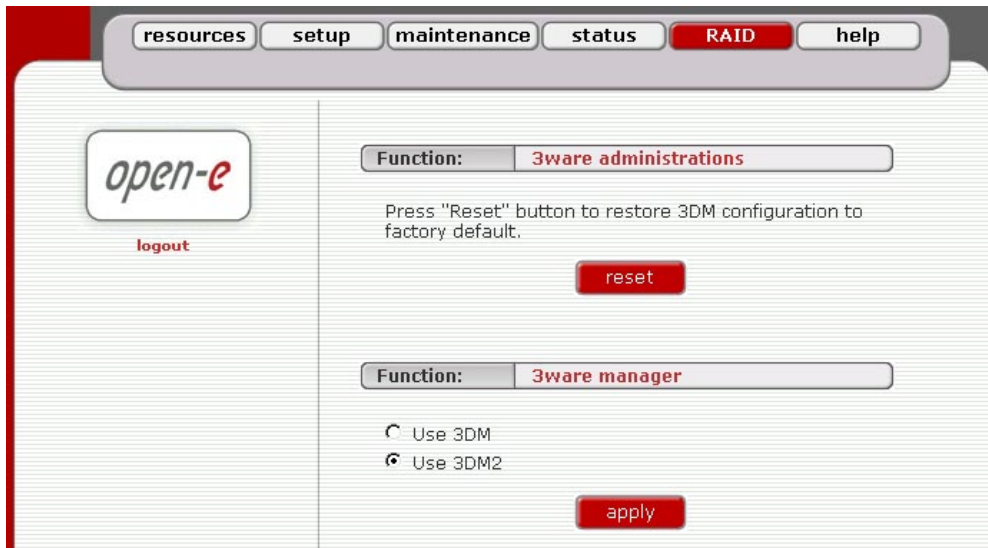
The screenshot displays the 'status' page of the Open-E NAS web interface. The page has a navigation bar at the top with tabs for 'resources', 'setup', 'maintenance', 'status' (selected), 'RAID', and 'help'. Below this, there are sub-tabs for 'network', 'share volume', 'connections', and 'hardware' (selected). The main content area is divided into several sections:

- UPS status:** Function: UPS status. Status: not available.
- Controllers info:** Function: Controllers info. This section lists:
 - Network controllers:** VIA Technologies, Inc. VT6102 [Rhine II] Embedded Ethernet Controller on VT8235
 - RAID/SCSI controllers:** 3ware Inc 3ware Inc 3ware 7xxx/8xxx-series PATA/SATA-RAID
- Drivers info:** Function: Drivers info. This section lists:
 - Network drivers:** "VIA Rhine PCI Fast Ethernet driver", "MII hardware support library"
 - RAID/SCSI drivers:** "SCSI Tape Driver", "3ware Storage Controller Linux Driver"
- Logs:** Function: Logs. This section includes a 'download' button to start downloading log files and a 'remove' button to remove all logs.
- Memory (RAM) info:** Function: Memory (RAM) info. This section displays memory usage statistics:

Total memory size (MB):	118.49
Used memory size (MB):	59.90
Free memory size (MB):	58.59
Memory usage:	51%

A progress bar below the table shows 51% of the total memory is used, represented by a green bar.

5.2.7 RAID



Please note that the RAID controller should be supported by the Open-E NAS software. In case 3ware controller installed, by clicking on RAID in the menu the 3ware web base will be started automatically.

Function: “3ware administrations”

This function will reset the 3DM password to factory default.
(Default 3DM/3DM2 password: 3ware)

Function: “3ware manager”

In case of controller 7000/8000 is installed, you can choose 3ware RAID manager 3DM or 3DM2. For 3ware 9000 series 3DM2 is used only.



Notes: *If you choose 3DM2 option for controller 7000/8000, the scheduling tasks will be not supported.*

In the host adapter of the INTEL/ ICP Vortex RAID controller you have the possibility to set which user can configure the RAID Controller. In order to configure the INTEL/ ICP vortex controller, please use the original INTEL / ICP Vortex console utility, only. Example below shows how to choose users with different authentications.

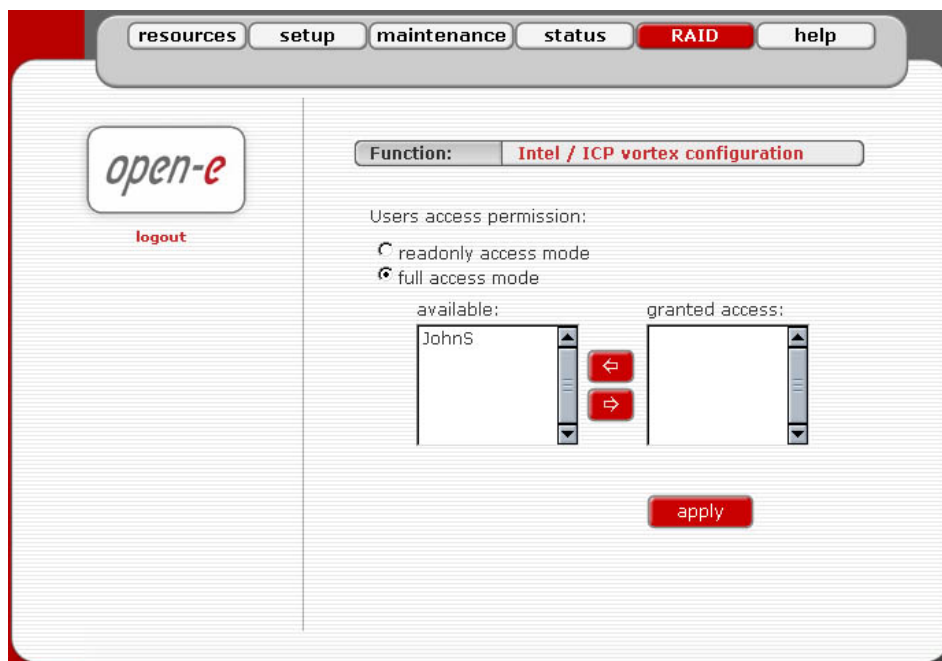
In LDAP users

- a. Create a user in the resources tab
- b. Go to the RAID tab
- c. Set the users access permission:
 - check ‘read only’ access mode or full access mode
- d. Move selected users from window 'available' to window 'granted access'
- e. Accept it by clicking the apply button

- f. On your local computer run “storcon” application. To get the ICP-VORTEX software go to http://www.icp-vortex.com/english/download/rz_neu_e.htm
- g. Select the TCP/IP Sockets interface
- h. Set the remote machine IP
- i. Type in the ID and password for each user
- j. Now you have access to the RAID controller tools

In Microsoft Primary Domain Controller (PDC, ADS) and NIS authentication

- a. Run storcon application on your local computer. To get the ICP-VORTEX software go to http://www.icp-vortex.com/english/download/rz_neu_e.htm
- b. Select the TCP/IP Sockets interface
- c. Set the remote machine IP
- d. Set the "raid-admin" and password "admin" for users with a full access or
- e. Set the "raid" and password "raid" for users with a ‘read only’ access mode
- f. Now you have access to the Intel RAID controller tools



Support remote management is used for 3ware & Intel RAID controllers only.

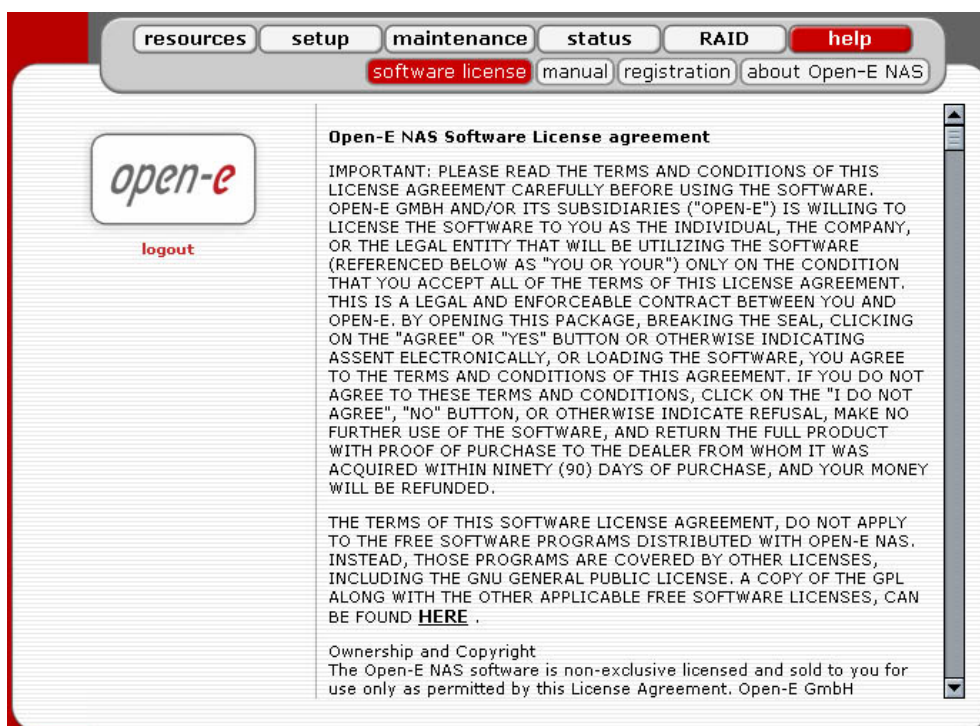
In case of Adaptec & LSI Logic, the RAID Manager is available on the NAS console only.

Once LSI RAID is installed you have access to RAID management via hot keys : CTRL+ALT+R and then ENTER.

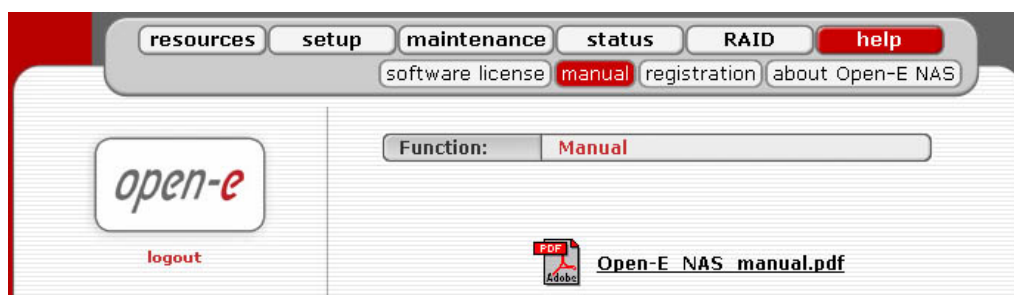
You may press F1 for help to display it on the console screen.

5.2.8 Help

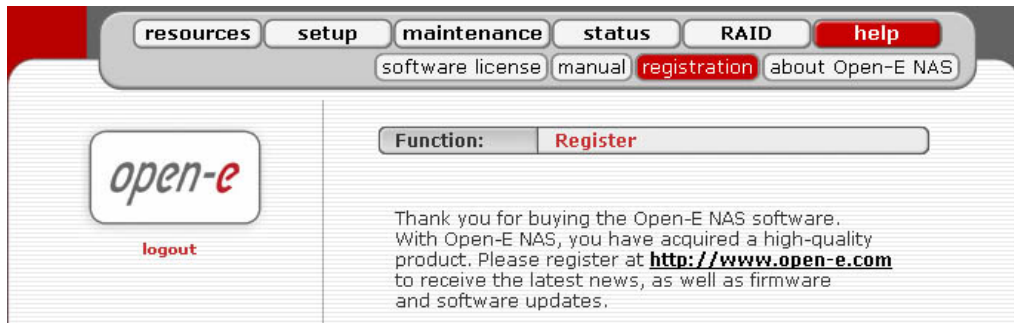
When accessing Help - “Software License” you can get acquainted with license for software included in Open-E NAS 2.0.



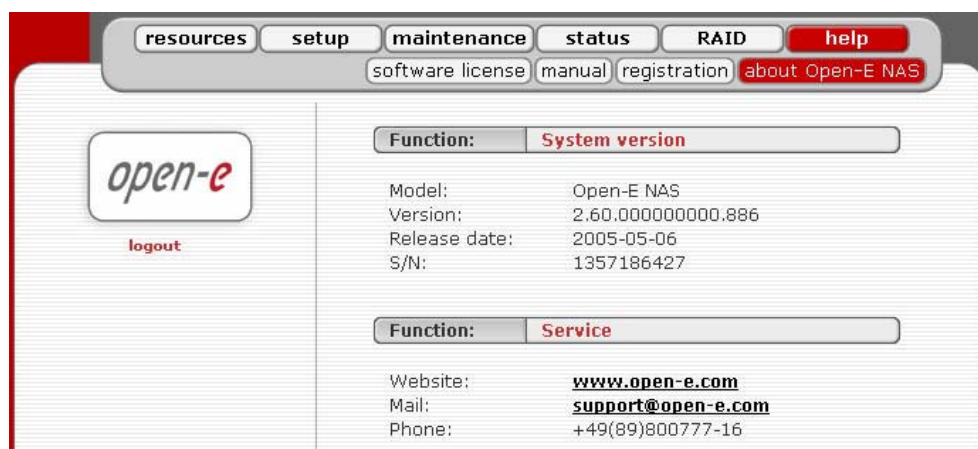
You can download a PDF version of this manual. In order to read the manual, you need a PDF viewer such as the Acrobat Reader (<http://www.adobe.com>).



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



“About Open-E NAS” indicates which system version you are currently working with. In addition, you find contact information regarding Open-E NAS; 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 does not boot, keyboard LEDs are flashing

This problem arises when you installed Open-E NAS into the secondary IDE slot by mistake. Open-E NAS is configured for and will only run in the primary IDE connector. Shut down the computer, remove Open-E NAS from secondary and place it into primary. That solves the problem. Also, it is important that you use the master plug on your power adapter.

Error: user already exists

There cannot be more than one user with the same name. You cannot create a user twice. Check your spelling. Remember, user names are not case-sensitive. You can check existing user names by expanding the tree diagram on the left.

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: resource already exists

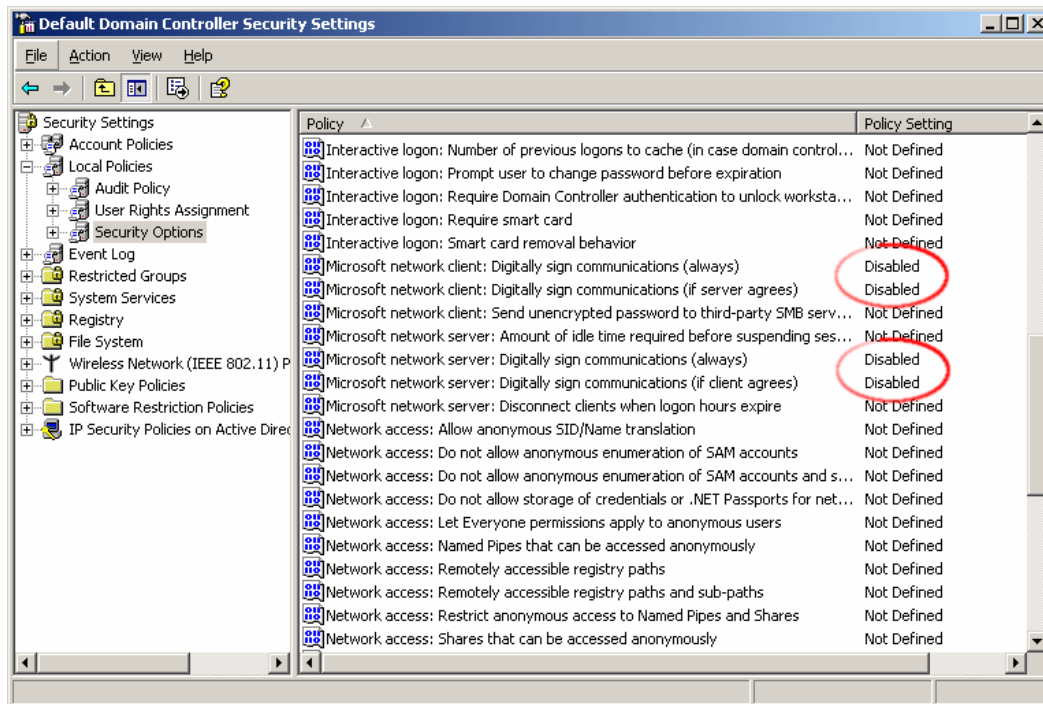
You cannot create more than one resource with the same name. You cannot create a resource twice. Check your spelling. Remember that resource names are not case-sensitive. You can check existing resource names by expanding the tree diagram to the left.

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, Shift Lock, Control, and Alt-keys.

Error: Open-E NAS cannot import the user database from a Windows Server 2003 domain.

In this case the following setting, within the local security guideline, may solve this problem:



Error: Update file not found

You instructed Open-E NAS to perform a systems update, but did not supply a valid Open-E NAS update file. Download the latest Open-E NAS update file from the www.open-e.com Web site. Next, copy the upgrade file into your "update" folder (please spell upgrade lower case). Finally, select "update" from the menu.

Error: No share volume

You must create a volume for file sharing before you can create any resource shares or search for shares. Look into the "Getting Started" section of this manual for instructions on creating a share volume.

Error: No share volume to browse

You must create a volume for file sharing before you can browse it in order to create resource shares.

Error: Invalid user name!

User name cannot:

- (1) contain characters : ~ ! @ # \$ ^ & () + [] { } * ; : ' " . , % | < > ? / \ = `
- (2) begin or end with a space

The use of the SMB (Server Message Block) protocol from Windows, also known as CIFS or Samba, places some restrictions on the use of special characters. These restrictions have historical reasons, but are still binding today. User names must not contain any of the above mentioned characters.

Error: invalid user password

A user 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. Please reenter your password.

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.

Error: invalid resource name

Resource name cannot:

- (1) contain characters : * : " | < > ? / \ ` # \$ & () + ; ' .
- (2) begin or end with a space

The use of the SMB (Server Message Block) protocol from Windows, also known as CIFS or Samba, lays some restrictions on the use of special characters. These restrictions have historical reasons, but are still binding today. Resource names cannot contain any of the above mentioned characters. Note that the list of invalid characters is slightly different than that for other name fields.

Error: invalid workgroup name

Workgroup name cannot:

- (1) contain characters : ~ ! @ # \$ ^ & () + [] { } * ; : ' " . , % | < > ? / \ = `
- (2) begin or end with a space

The use of the SMB (Server Message Block) protocol from Windows, also known as CIFS or Samba, lays some restrictions on the use of special characters. These restrictions have historical reasons, but are still binding today. Workgroup names cannot contain any of the characters listed above. Note that the list of invalid characters is slightly different than that for other name fields.



Notes: *The invalid characters for workgroup names are different than the ones for other fields.*

Error: invalid server name

Server name cannot contain:

- (1) characters : ~ ! @ # \$ ^ & () + [] { } * ; : ' " . , % | < > ? / \ = `
- (2) spaces
- (3) digits only

The use of the SMB (Server Message Block) protocol from Windows, also known as CIFS or Samba, lays some restrictions on the use of special characters. These restrictions have historical reasons, but are still binding today. Server names cannot contain any of the above mentioned characters. Note that the list of invalid characters is slightly different than that for other name fields. In addition, server names cannot be constructed from numbers only, they must contain alpha characters.

Error: invalid resource comment

Resource comment cannot be longer than 256 characters

Resource comments have a limit of 256 characters, a limit which cannot be exceeded. Use a shorter comment.

Error: invalid directory name

Directory name cannot:

- (1) contain characters: * : " | < > ? / \ ` # \$ & () + ; ' .
- (2) begin or end with a space

The internal operating system of Open-E NAS does not allow certain characters to be used for directories. The above mentioned characters are invalid, just as trailing or leading spaces. Choose a different name.

7 Appendix A

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Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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