

SNAZ OS - Frequently Asked Questions

This FAQ applies to all Raidtec NAS products running the Raidtec SNAZ OS NAS Operating System, version 3.1 and later. Some features may not apply to earlier versions of Raidtec NAS products. Products covered include SNAZ E0/E4/E6/S4/S8 and SNAZ R6 (Intel CPU version).

Networking and File Protocols

Q: Can I access the NAS from an Apple Macintosh client?

A: Yes. MAC OS X can access the NAS system with no difficulty.

Previous versions of MAC OS can access the NAS system using third party software, for example "DAVE" or "EtherShare". However the access speed may be slow.

Q: Can I access the NAS from an Apple Machintosh using AppleTalk?

A: No, SNAZ OS only supports NFS and CIFS/SMB file sharing protocols.

Q: How do I export shares on the NAS to Unix clients?

A: Click the "Exports" tab under "NFS" on the main WEB GUI.

Q: How can a Microsoft Windows client access the NAS if the NAS OS is SNAZ OS?

A: Microsoft Windows uses the Common Internet File System (CIFS) to access files over a network. SNAZ OS uses SAMBA to provide a CIFS File Server capability.

Q: Can I access the NAS using a Novell Netware client?

A: No, SNAZ OS only supports NFS and CIFS/SMB file sharing protocols.

Q: I do not have TCP/IP configured on my Windows client. Can I still access the NAS using NETBUI?

A: No, SNAZ OS supports Windows clients only when they are running NETBIOS over TCP/IP. TCP/IP must be configured and NETBIOS over TCP/IP must be enabled. The TCP/IP protocol is standard on WinXP, Win2000, NT, Win95 and Win98. For WFW 3.11, it is available from Microsoft.

Q: Can I access the NAS using PCNFS?

A: No, SNAZ OS does not support the PCNFS protocol. For PC/Windows clients it is suggested to use SMB (the native file sharing client for Windows).

NAS Frequently Asked Questions

Q: In domain authentication mode the NAS can not locate the PDC if the WINS is enabled. But if I do not use WINS it works fine.

A: Make sure your PDC is also configured for the same WINS server.

Q: I can not see the NAS, if I enable support for WINS on the Windows client.

A: That means your client is either not configured correctly for the WINS server or is configured for a different WINS server.

Q: Everytime I reboot through DHCP, the NAS gets a different IP address ?

A: That is because you have not reserved the IP address for the NAS in the DHCP server configuration. Please consult the NAS User Guide about DHCP server configuration of your server platform.

Q: Can I configure the secondary Ethernet port to add additional bandwidth to the primary Ethernet port?

A: No. Ethernet ports can be combined to provide redundancy with failover/failback between primary and alternate ports but only one port is active at a time. The secondary Ethernet port can also be used to isolate clients to a particular interface. Several examples are described below:

1. The primary interface and secondary interface are on different subnets. The clients are distributed across both subnets to spread the load across between the two interfaces.
2. NFS clients are put on one interface and SMB clients are put on the other interface.
3. The primary interface is only used for administration and the secondary interface is used for SMB and NFS clients.

Q: I want to have the GUI only operate on the secondary interface how is this done?

A: It isn't. The GUI is always accessible on the primary interface.

Q: If the primary Ethernet interface fails, how can the NAS be reconfigured so that the secondary Ethernet acts in place of the primary?

A: Create a Virtual Ethernet port by configuring the primary and secondary Ethernet ports in a team. This is done from the Interfaces tab on the GUI.

Q. I have a computer account for the NAS configured on an Active Directory PDC but I cannot see it on the domain. What could be wrong?

NB: The following only applies to SNAZ-OS 3.0 and FlashLinux 2.2 or earlier versions. It does not apply from SNAZ-OS 3.1 onwards.

A. Ensure the following:

NAS Frequently Asked Questions

- The hostname of the NAS is the same as in Active Directory.
- The checkbox "*Allow Pre-Windows 2000 Computers to use this Account*" was ticked when the Computer account was created in Active Directory.
- You have specified the hostname of the PDC in MS Networking Setup.
- Security Mode on the MS Networking Setup screen is set to "Domain Member".
- MS Networking is enabled on the MS Networking Setup screen.

If the problem is not resolved, perform the following steps:

- Disable MS Networking on the NAS GUI.
- Reset the NAS computer account on the PDC.
- Enable MS Networking again.

If this does not resolve the problem, contact Raidtec Technical Support.

Q. I can see the NAS on the domain but I cannot see domain users and groups from the NAS GUI. What could be wrong?

NB: The following only applies to SNAZ-OS 3.0 and FlashLinux 2.2 or earlier versions. It does not apply from SNAZ-OS 3.1 onwards.

A. Ensure the following:

- The hostname of the NAS is the same as in Active Directory.
- The checkbox "*Allow Pre-Windows 2000 Computers to use this Account*" was ticked when the Computer account was created in Active Directory.
- You have specified the hostname of the PDC in MS Networking Setup.
- Security Mode on the MS Networking Setup screen is set to "Domain Member".
- MS Networking is enabled on the MS Networking Setup screen.

If the problem is not resolved, perform the following steps:

- Disable MS Networking on the NAS GUI.
- Reset the NAS computer account on the PDC.
- Enable MS Networking again.

If this does not resolve the problem, contact Raidtec Technical Support.

Q. My primary Ethernet port has the correct IP address but I cannot ping the NAS. What could be wrong?

A. Ensure that the LAN cable is connected to Eth0, (the primary Ethernet port). Consult the user manual to determine the correct port.

Q. I can ping the NAS but I cannot access it via HTTP. What could be wrong?

A. Ensure the following:

- You are using IE version 4.0 or higher.
- You are accessing it via http with port number 10000. From SNAZ OS version 3.0 onwards, do not enter any port number.

Q: How can the network interfaces be forced to run at 10Mb/s?

NAS Frequently Asked Questions

A: There is no way to force the network interfaces to a particular speed. Each interface will auto-negotiate according to the 100 (or 1000)Base-T standard. This auto-negotiation will determine the speed at which the interface operates. The only way to force the interface to run at 10Mb/s is to connect it to a hub or switch that only supports 10Mb/s.

Q. How do I change the hostname of my NAS?

A. Select the "DNS" tab in "Networking" and change it there.

Q. If my LAN has a DHCP Server, will the NAS automatically get assigned the correct DNS & Gateway TCP/IP configuration?

A. Yes. This information will be read from the DHCP server and stored on the NAS Server.

Q. How do I give the NAS a static IP Address?

A. Change the IP parameters as follows:

1. From the serial console:

Use the menu to set TCP/IP parameters.

Set the *Bootproto* parameter to "none".

Reboot the system.

Note: To reach the menu from the SNAZ OS bash# prompt type "RaidtecMenu".

2. From the Web GUI:

Click on "Interfaces" under "Networking" and turn DHCP to "Off". Set the IP Address and Netmask to the desired values.

Q. How can I prevent certain clients from accessing the NAS GUI via HTTP?

A. Select the "GUI Security" tab in "Administration" and set security there.

Q. How do I join a domain in Active Directory mode?

A: Complete the following steps carefully:

- I. Make sure that the IP address of the DNS server is the same as the IP address of the Domain Controller.
- II. Make sure that the Time and Date settings on the SNAZ are the same as on the Domain Controller, (maximum difference allowed is 5 minutes). Different time zones can be used as long as both times are the same when converted to Greenwich Mean Time.
- III. Do not enable NTP if the time on the NTP server is not same as the domain controller.
- IV. Make sure that the *Domain Name* is the domain you want to join.
- V. Make sure that the Domain Controller's name is correct.
- VI. Make sure that the Realm setting is correct – it will be the same as your domain name in most cases.
- VII. Check that the password for the Domain Controller's administrator is correct.

NAS Frequently Asked Questions

- VIII. If the DHCP server is not the Domain Controller, check that DHCP is NOT enabled.
- IX. If the DHCP server is the same as the Domain Controller, check that the Domain Name is set correctly.

The above steps are all done from the SNAZ OS GUI, and they are only required for Active Directory mode, not WinNT compatible domain mode.

Q. Why can't I access the share when Ms-Networking is in Active Directory mode, even though it worked in NT domain mode?

A. Check all the points in the steps for joining an Active Directory above.

Q. Why can't I join a Windows NT domain in Active Directory mode?

A. Active Directory Mode is not supported by Windows NT domain.

Q. Why do I get a 'Security Key initialisation failed!' error when I try to join a domain in Active Directory mode?

A. The password of the administrator account in a NEW domain must have the password changed before a SNAZ server can join the domain in 'Active Directory' mode. This is required during the first stage of doing Kerberos authentication.

Q19. Do I need to create or reset the computer account in the domain before joining the domain?

A. No. In SNAZ OS version 3.1 onwards, the computer account is created automatically by the SNAZ server. In SNAZ-OS 3.0.x and FlashLinux 2.2 or earlier versions, it was required to create or reset the computer account.

Storage

Q: Is there any difference between the SCSI channels?

A: No. The SCSI channels are indistinguishable from each other in terms of capabilities.

Q: When I create a volume, do all of the drives have to be on the same SCSI channel?

A: No, the drives can be on either SCSI channel when creating a volume.

Q: Is it possible to attach SNAZ E0 to SCSI or FC JBODs?

A: Yes. SNAZ E0 is shipped with 1 LVD SCSI port as standard and either a 2nd SCSI port or a Fibre Channel port is available as an option.

If attaching SNAZ E0 to a SCSI or FC JBOD, the maximum number of disks supported is 15. Recommended maximum # of SCSI enclosures is 1 per SCSI Channel.

Q: Is it possible to attach SNAZ E0 to SCSI or FC RAID systems?

A: Yes. If attached to a SCSI or FC RAID system, each RAIDset created on the RAID system appears to the SNAZ E0 as an individual disk. Therefore you can have many more disks in a RAID system, with a maximum of 15 x RAIDsets.

Maximum capacity for each RAIDset is 2TB. The 2TB limit is Gross Capacity, so in a RAID 5 configuration, with 146GB disks, it would be approx. 1.7TB net usable capacity.

E.g. SNAZ E0 may be attached to a FibreArray 2102 with 3 x FibreArray 2002 and 48 x 146GB disks (7,008GB), configured with 7 RAIDsets of 1TB each - i.e. 7 x 1TB "disks".

Recommended maximum # of SCSI RAID systems is 1 per SCSI Channel. Each RAID system may have an expansion enclosure.

E.g. SNAZ E0 with 1 SCSI channel may be attached to a FlexArray HI12 with 1 x FlexArray12 and 24 x 146GB disks, configured with 3 x RAIDsets of 1TB each - i.e. 3 x 1TB "disks".

Q: Is it possible to attach SNAZ E0 to a SAN?

A: Yes. The same principles apply with SAN solutions, except that in this case SNAZ E0 is attached directly to a FC switch, which is in turn attached to either FC JBOD or FC RAID systems. In a SAN configuration, a single SNAZ E0 can see up to 15 x RAID systems (e.g. 15 x FibreArray-2102 where each 2102 has just 1 RAIDset).

Multiple SNAZ E0s may be attached to the same SAN for departmental NAS storage.

NAS Frequently Asked Questions

Q: What is the maximum number of disks that can be seen by SNAZ E0?

A: In an attached JBOD, SNAZ E0 can see a maximum of 15 disks.

If attached to a RAID system, SNAZ E0 sees each RAIDset as a "disk", so up to 15 RAIDsets may be created from many more disks in the RAID system. Alternatively in a SAN configuration SNAZ E0 can see up to 15 different RAID systems attached to the SAN.

Q: What is the maximum logical volume size in the SNAZ products?

A: 2TB.

Q: Can I buy a SNAZ E4 with 1TB ATA disks internally and then add a SCSI JBOD later and dynamically expand my volume over the new disks?

A: You can add a SCSI enclosure to the SNAZ E4, however, it does not support dynamic expansion. It would be best in this case to create a second (or multiple additional) volumes on the SCSI JBOD. Remember that the maximum capacity of a logical volume is 2TB.

Q: What's the difference between Hardware & Software RAID?

A: In fact, almost all RAID is implemented in software. However, a "Hardware" RAID controller uses a dedicated CPU to run the RAID software. The RAID software in SNAZ OS runs on a CPU that is shared with other tasks i.e. (File management and Network Management). In WIN2K and other full-blown Operating Systems, the CPU cost of Software Raid makes it impossible to run in these environments. With SNAZ OS we have stripped down the OS to the essentials and run one dedicated Function (NAS Filer System). This allows enough CPU Bandwidth to run the S/W RAID effectively.

In H/W RAID usually (but not always) a specialised processor is used to calculate the RAID Parity Data in RAID5 volumes. In S/W RAID the main CPU calculates this Parity.

On the Raidtec SAN SSC RAID Controller, there is a dedicated H/W chip called the ROLE (Raid OffLoad Engine) which is used to calculate the Parity data.

On the SNAZ Products the CPU calculates the Parity Data.

RAID0 and RAID10 do not need Parity data to be calculated.

Q. There is an "S" symbol beside two of the volume disks in the NAS web GUI. Does this mean spare disks?

A. These are system disks. i.e. the Raid configuration is on these disks.

Q: How many disks can I put in a RAID?

A: The number of disks that can be in a RAID depends on the RAID Level. The table below indicates the maximum number of disks that can be present in a particular RAID:

RAID Level	Number of Disks	
	Minimum	Maximum
JBOD	1	1

NAS Frequently Asked Questions

RAID 0	2	11
RAID 1	2	2
RAID 5	3	11
RAID 10	2	11

Q: I have a RAID 5, RAID 10, or RAID 0 volume that is now full of data. I want to add more storage. Is there a way to add more disk(s) to this volume?

A: You cannot expand a RAID. SNAZ OS supports Logical Volumes that can be expanded. If all the current physical volumes are full, you can add new disks to the system, create another RAID and add this new capacity to the existing storage pool. FlashLinux 2.1 and earlier does not support volume expansion. The contents of the volume must be backed up, the volume deleted and then re-created with the additional disks defined and then the user data is restored from tape.

Q: I created a volume as a RAID 0 and now want it to be a RAID 5. How can I convert the volume?

A: You must back up the data on the volume, delete the RAID 0 and re-create a RAID 5. Then restore the data. Note that the net capacity on a RAID 5 will be less than on a RAID 0 using the same disks.

Q: I have a set of disks from another server that I would like to put on the NAS. Is there a way to incorporate these disks directly into the NAS (data intact)?

A: No, you will have to move the data over the network from the existing server using NFS or SMB. The NAS system uses a special disk format that allows it to uniquely identify each drive. Each disk must be "labelled" and formatted by the NAS before it can be used. This will erase any existing data on the disk.

Q: Can I move disk between NAS systems?

A: Yes. However, to be successful, you need to pay attention to the following issues:

- All disks that comprise a RAID volume must be moved from one system to the other.
- There must not be a pre-existing RAID volume on the new system with the same name.
- Ensure that both systems are running the same version of SNAZ OS before transferring the disks.

NAS Frequently Asked Questions

Q: I need to ship my server and would like to package the drives separately. Do I have to mark the locations of the drives so that they are put back in the same spot in the enclosure?

A: No. Each drive contains an identifying label that lets SNAZ R6 find the drive again, even if its location and/or ID changes.

Backup

Q: Can I put a tape drive on either SCSI channel?

A: Yes, a tape drive can be on either SCSI channel.

Q: Can I put a tape drive on the same SCSI channel as disk drives?

A: Yes, but this may not be an optimal arrangement. Many tape drives are not capable of running in Ultra160 LVD mode. When devices negotiate on the SCSI bus, the bus operates as the least capable device. So mixing a tape drive on the same SCSI channel as disks may reduce system performance.

Q: Can I mix SE and LVD mode devices on the same SCSI channel?

A: Yes, but this may not be an optimal arrangement. The SCSI bus will auto-negotiate and operate at the capabilities of the slowest device. The way that this works is that if there are any non-LVD devices on the bus, the bus will not operate in LVD mode. The same holds true for wide vs narrow.

Q: Can I put more than one tape drive on the system?

A: No. SNAZ OS supports a single tape drives or tape autoloaders. Tape libraries with multiple tape drives can also be used but only one tape drive in the library will be accessible.

Q: Can the NAS directly backup clients on the network?

A: No. The integrated backup support in SNAZ OS only allows data stored on the NAS to be backed up to a local tape device. If you want to backup data stored on clients, then you will have to copy this data to the NAS manually or use a replication application running on the client to automatically transfer data to the NAS.

Q. Can I backup a NAS data with NDMP?

A. SNAZ OS version 3.1 supports NDMP. This allows NAS data to be backed up to a tape device using approved NDMP backup software. (See the SNAZ OS version release notes for currently approved NDMP backup software.) The tape device can be attached directly to the SNAZ appliance or to a backup server on the LAN.

Q: I have a large tape library that backs up clients and servers on my network. Can I use that to backup data on my NAS system?

A: Yes. There are two ways to backup NAS data to a central tape library:

NDMP

SNAZ OS version 3.1 supports NDMP. You can backup NAS data directly to the tape library using approved NDMP backup software. (See the SNAZ OS version release notes for currently approved NDMP backup software.)

Network Connection

If you map the NAS share to your backup server as a network drive (using NFS or CIFS), you can use your backup software to backup the data on the share to a central tape library. Some Backup software does not support this.

Q: What tape drives and autoloaders are supported?

A: See the list of supported tape drives and autoloaders.

Q: I've made a backup of the data on the NAS and would like to restore that data onto another non-NAS server. How can I do that?

A: This is not supported.

Miscellaneous

Q: Can I replicate data between 2 Raidtec NAS Appliances?

A: Yes. Using the optional Data Replication feature in SNAZ OS, you can replicate data between 2 NAS appliances. The Data Replication function may be used for disaster recovery or to share files between remote sites.

Q. There are 2 Pentium processors on some models of the NAS. Does this imply fault tolerance?

A. No. Using two processors improves the performance of the system by executing tasks in parallel.

Q: The NAS system is administered through a web browser. This means that it has a web server. Can I put my own web pages on it and have them viewable?

A: No, the web server incorporated into FlashLinux is specifically tailored to performing administrative tasks. There is no way to add customer web pages.

Q: The NAS system is running a form of the Linux operating system. I have a Linux application that I would like to run on it. How can I run that application on the NAS?

A: The NAS is a file server platform. It runs a NAS operating system called SNAZ OS. This is based on a Linux kernel that has been optimized for a file server application and it is not possible to run other Linux applications.

Q: I can get a login prompt when I connect to the console serial port of the NAS, but I can't connect to the NAS using telnet. Why?

A: The console serial port was provided to aid in the setup and diagnosis of the NAS. Because this requires a separate physical point-to-point connection to the NAS, it is very secure. Telnet could compromise the security of the NAS.

Q. I have a UPS connected to my NAS, but it doesn't appear to shut it down gracefully during a power-out. What could be wrong?

A. Ensure the UPS Service has been enabled in the "UPS" tab under "System".

Q. How can I tell the firmware version and build on the NAS?

A. Click the information ("i") icon on the NAS GUI homepage.

Q. How can I change the administrator password on the NAS web GUI?

A. Select the "Admins" tab under "Administration" and change it there.

Security and Access Control

Q. The "Quota" and "Access Control" screens do not display anything. What could be wrong?

A. Ensure that the recommended Java plug-in (currently JRE 1.4.1) is installed on the computer that is accessing the GUI. This can be installed from the SNAZ OS Administrator CD or downloaded from <http://java.sun.com/j2se/downloads.html>. Reboot the GUI computer after installation.

Q. My NAS "Share" is setup with read/write access but the MS clients cannot write to it. What could be wrong?

A. Ensure:

- The NAS system is running the latest released firmware from Raidtec Corporation. (The version number is given on the Information screen in the GUI).
- The ACL configurations are correct for the directory/file in question.

Q: What is the difference between Share access permissions and ACLs?

A: Share access permissions control user access to the Share including all its subdirectories. Share access permissions apply only to Windows clients. ACLs control user access to the file or directory that the ACL is set on. ACLs apply to all types of clients including Windows, Unix and Mac clients.

Q: When do I use the Share access permission and when do I set ACLs?

A: Unless you want to set DIFFERENT access permissions on any files or directories within a share, it is always recommended that you set Share access permissions and avoid setting ACLs.

Q: Can I set ACLs recursively on a directory (propagating an ACL through all files and subdirectories of the top level directory) from the ACL GUI?

A: Yes. SNAZ OS version 3.0 onwards supports setting ACL permissions recursively. You cannot set ACLs recursively on a directory from the ACL GUI in FlashLinux 2.1 and previous releases.

Q: Can I change owner or group name of a file or directory from the ACL GUI?

A: SNAZ OS 3.0 onwards supports changing the owner and group of a file or directory. You cannot change owner or group name of a file or directory from the ACL GUI in FlashLinux 2.1 and previous releases.

Q: What if I set both Share access permissions and ACLs on a shared directory? How do they work?

A: If you set both, they work in an "AND" logic.

Q: What is the effect of adding users and groups to the "Valid Users" and "Valid Groups" fields on the Share screen?

A: If you enter user names in the Valid Users field, only these users will have access to the share. The level of access is defined by the radio buttons "Read Only" or "Read/Write normal user rights". If you do not enter any names in the Valid Users field, the share is accessible to all users. (Either all users in the local user database or all domain users depending on the Security Mode setting on the MS Networking Setup screen). The same applies to groups.

Q: Why can I not add users or groups into "Read/Write users" and "Read/Write groups" on a share?

A: If a share is exported as "Read/Write", you cannot add users or groups into "Read/Write users" and "Read/Write groups" on this share. This is because when a share is set as "Read/Write", all users and groups have read/write access to the share by default and you don't have to specify which users or groups are "Read/Write". You may add users or groups into "Read only users" and "Read only groups".

Q: Why can I not add users or groups into "Read only users" and "Read only groups" on a share?

A: If a share is exported as "Read Only", you cannot add users or groups into "Read only users" and "Read only groups" on this share. This is because when a share is set as "Read only", all users and groups have the read only access to the share by default and you don't have to specify which users or groups are "Read only". You may add users or groups into "Read/Write users" and "Read/Write groups" to give them read/write access.

Q: I cannot delete a file created by someone else even though I am the system administrator.

A: Add your user name to the "Administrators" field on the Share screen. This will give you full access to all files and directories on the share.

Q: What access permission do users have if I export a share as "Read/Write Unlimited Rights"?

A: All users have administrator privilege on that share if you export the share as "Read/Write Unlimited Rights". Please note the owner and group of files created by all users will all be "root". In this mode, ACLs will not work.

Q: What access permission do users have if I export a share as "Guest access" and I don't set any ACLs?

NAS Frequently Asked Questions

A: All users logged in are automatically named as "guest" and have full access to files/directories created by other guest users.

SNAZ OS System Limits

Version: SNAZ OS3.1 and later.

Most of the limits given below are based on theoretical maximum values. Where possible, limits have been verified. The limits achieved in a particular system will depend on the installed memory, number of CPU's and the disk storage capacity available.

NFS

Maximum number of NFS exports: >1000 (Depends on the system volume size available.)

Maximum number of NFS clients: >200

MS Networking

Maximum number of MS Networking shares: >1000 (Depends on the system volume size available.)

Maximum number of Users: 10000 (Depends on the system volume size available.)

Maximum number of Groups: 1000 (Depends on the system volume size available.)

Maximum simultaneous Samba connections with 512MB memory: 300

(This is not a hard limit but is recommended for maintaining acceptable performance).

File System

Max number of RAID Volumes on the system: Depends on the number of disks in the system. Each volume requires at least one disk. RAID 1 volumes require at least 2 disks. RAID 5 volumes require at least 3 disks.

Max number of disks in a RAID Volume: 12

Max size of a RAID Volume: 2TB

Max number of Volume Groups: 99

Max size of a Volume Group: Theoretically $2^{64} - 1$ bytes

Max number of Logical Volumes: 256 (including Snapshots)

Max size of a Logical Volume: 2TB

Max path length: 4095 characters

Max number of files in a directory: > 200 million

Max number of subdirectories in a directory: > 200 million

Max file size: 2TB.

Max ACL entries for a file or Directory: 25 including base and mask entries.

Storage

Maximum number of volumes on the system: Depends on the number of disks in a system. Each volume requires at least one disk. RAID 1 volumes require at least 2 disks. RAID 5 volumes require at least 3 disks.

Backup & Restore

Local backup: Can only backup files that are less than 2GB. Total backup size is limited by the tape capacity.

NDMP: Can backup files up to 2TB in size. Total backup size is limited by the control agent and/or the tape capacity.