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# SGI NAS

## Quick Start Guide

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# 1 Introduction

SGI NAS is a software based network attached storage (NAS) appliance that meets the current feature sets of the best of breed NAS, including unlimited snapshots, snapshot mirroring (replication), NFS v3/v4, CIFS, and easy management of extremely large storage pools. SGI NAS delivers richly featured software in the form of a software appliance that is trivial to install and easy to manage.

**SGI NAS is available as one of the following packages:**

- **SGI NAS Unified Appliance** — CD image (ISO) that can be installed on bare-metal x86/64 hardware.

The SGI NAS installer also verifies the hardware compatibility before the installation commences. Contact your SGI representative for more information on hardware compatibility.

## 1.1 Login

SGI NAS is pre-configured with administrative user accounts: **root** and **admin**. The default password for both accounts is "nasnas". Don't forget to change the default password.

To obtain your permanent software license key for each system running the SGI NAS software, open a Supportfolio™ case using the webpage <https://support.sgi.com/caseview/CreateNewCase> or by calling 1.800.800.4744. You must provide the following information:

- Sales Order Number(s)
- System Serial Number(s)
- Company Name
- End User Name
- Email Address
- Telephone

Your permanent key(s) will be emailed to you.

If your purchase was for add-on plug-ins only, open a Supportfolio case as described earlier and SGI will upload the functionality for the plug-in to your original base software key(s).

## 1.2 Document Conventions

**Command line example**

### Cross-reference



A notice, warning, conclusion, important remark.

### 1.3 Terminology

The following lists a few terms that are used in this document. For a complete list of terms, please see the SGI NAS User Guide, 007-5860-00x.

<b>Term</b>	<b>Comment</b>
SGI NAS	SGI NAS Storage Appliance.
SA-API	Storage Appliance API. NMS (next) is a sole provider of SA-API.
SGI NAS Management Server (NMS)	There is only one server instance per appliance. The server provides public and documented Storage Appliance API (SA-API) available to all appliance management and monitoring clients, remote and local, including (but not limited to) NMC.
SGI NAS Management Console (NMC)	The NMC can be used universally to view and configure every aspect of the appliance: volumes and folders, storage and network services, fault triggers and statistic collectors. NMC communicates with the local NMS (see previous) and remote management consoles and management servers to execute user requests. Multiple NMC instances can be running on a given appliance. NMC is a single-login management client with a capability to manage multiple appliances and groups of appliances.
SGI NAS Management View (NMV)	The web client uses the same SA-API (above) to communicate with the NMS. NMV shows status of all appliances on the network, displays graphical statistics collected by "statistic collectors", and more.

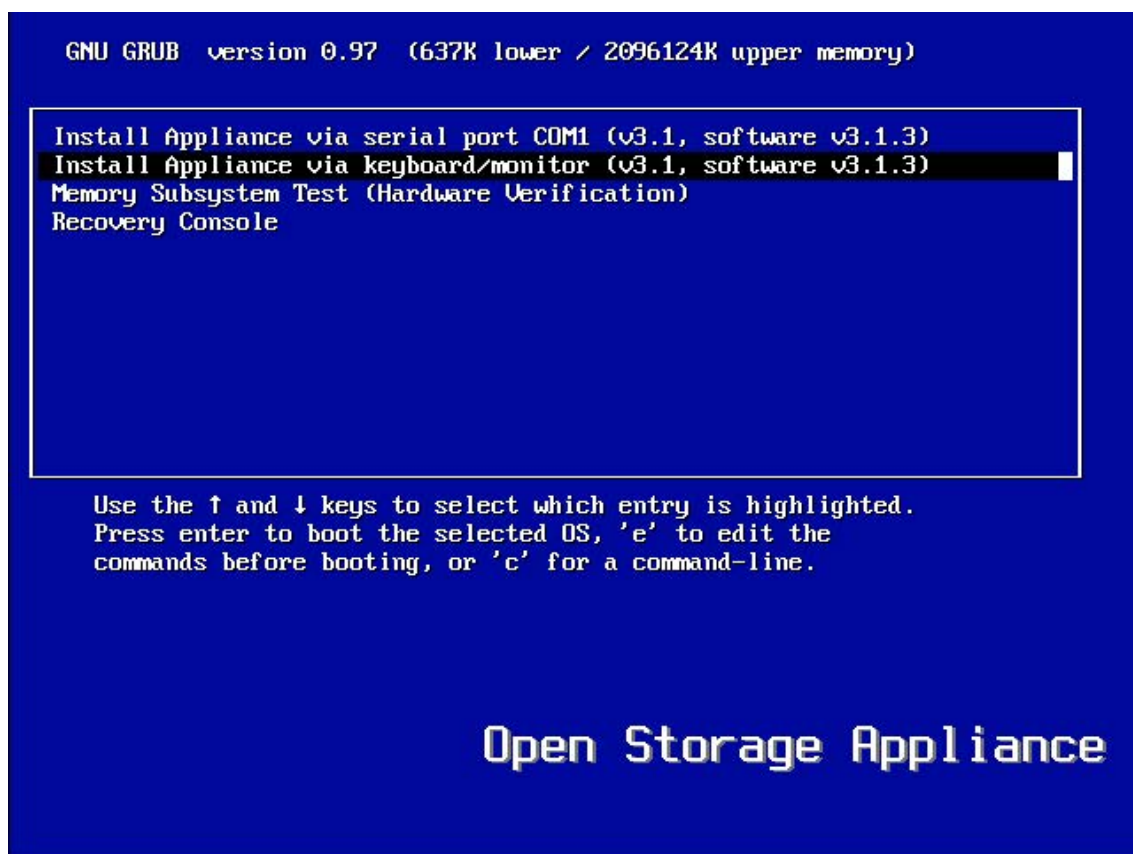




## 2 Hardware Installation

Installing SGI NAS:

1. Insert or mount the CD and boot the appliance by following the instructions that appear in the wizard.
2. Choose the type of installation:
  - via serial port COM1
  - via keyboard/monitor





### Installer's Boot Menu

The appliance can be installed via serial port COM1. The latter option is available, if your system BIOS supports keyboard/monitor to serial port redirection. Pay attention to the very first menu – the boot manager menu, an example of which is shown on the picture above. By default, the boot manager attempts to use the serial port, unless you press the Down arrow and ask it to boot using directly attached keyboard/monitor.

To install via serial port, configure the BIOS to use serial port input. The serial port parameters are the most common 9600 8,N,1

After configuring the BIOS to use serial port and inserting Installation CD, you should see the SGI NAS Installer's welcome message on the remotely connected terminal window. Please make sure that the remote terminal client supports ANSI or VT100 emulation and is also configured for 9600 8,N,1.

**Optionally:** You can postpone the installation and run a thorough memory check – notice the 3rd entry in the menu above. Choosing to do so brings up the following screen, with a variety of available memory-checking options and algorithms. Use instructions at the bottom of the screen to control the execution:

```

Memtest86+ v2.11 | Pass 2%
2933 MHz | Test 17% #####
L1 Cache: 32K 97782 MB/s | Test #3 [Moving inversions, 8 bit pattern]
L2 Cache: 2048K 36215 MB/s | Testing: 132K - 2048M 2048M
L3 Cache: None | Pattern: 40404040
Memory : 2048M 8970 MB/s |-----
Chipset : Intel i440FX

WallTime  Cach Settings:  ECC Test Pass Errors ECC Errs
-----
0:00:24  204 (1) Test Selection off Std 0 0
(2) Address Range
(3) Memory Sizing
(4) Error Report Mode
(5) Show DMI Memory Info
(6) ECC Mode
(7) Restart
(8) Refresh Screen
(9) Display SPD Data
(0) Continue

(ESC)Reboot (c)configuration (SP)scroll_lock (CR)scroll_unlock

```

3. Read and accept the product license to proceed further.

```

^(-)-----Software License-----
=====
NEXENTA SYSTEMS, INC.

Nexenta Storage Appliance (NexentaStor)
Version 3.x
=====

PLEASE MAKE SURE THAT YOU HAVE A COPY(*) OF THE NEXENTASTOR LICENSE
AGREEMENT.

BY DOWNLOADING AND INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE,
YOU AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT.

IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, YOU MAY NOT
DOWNLOAD, INSTALL, COPY OR USE THE SOFTWARE.

=====

The licenses are included with the product:
v(+)-----81%-----
| <I Agree > | <Disagree> |
|-----|-----|
1* Installer 2 Shell 3 Log | Enterprise Edition v3.0, software v3.0.4

```

4. Select the disk drive(s) to be used as a system volume. The SGI NAS Operating System is installed on the system volume. All existing data on the selected disk(s) are lost during the installation process .



The corresponding drives are often referred to as root drives or boot drives. At least one drive is required to install the system. However, if you have two or three equal-sized disks with less than 100GB, it is recommended that you set up a mirror for the system volume. The N-way mirror can sustain simultaneous failure of (N-1) drives.

Use the Up and Down arrows and SPACEBAR to make the selection and confirm your choice on the next screen:

```
----- Fresh Installation -----
|
| Please select disk(s) for the NexentaStor system volume. Automatic
| partitioning will repartition the selected disk(s) using pre-configured
| layout.
| NOTE: For mirrored ZFS-boot configuration, please select two or more
| equal-size disks.
| WARNING: NexentaStor Operating System will be installed onto the system
| volume, and all existing data on the selected disk(s) will be lost during
| the installation process!
|
| Please select disk(s) (no more than 3) to be automatically partitioned:
|-----+
| | [*] c0d0 2.25 GB (Gen-ATA QEMU HARDDISK)
| | [*] c0d1 2.25 GB (Gen-ATA QEMU HARDDISK)
| |
| |
| |
| |
| |
|-----+
|
|                                     <Select>
|-----+
|
| 1* Installer  2 Shell  3 Log          Enterprise Edition v3.1, software v3.1.3
```

```
NexentaStor-Installer-FA85DFL8N
-----
|
|                                     Question
|-----+
|
| Are you absolutely sure that you want to repartition selected disk(s)
| 'c0d0 c0d1 '? This process will *DESTROY* any existing data on disk(s).
|
| Please consult platform manual for guidance on selecting boot disks.
| Continue to automatic partitioning?
|
|                                     < Yes >          < No >
|-----+
|
| 1* Installer  2 Shell  3 Log          Enterprise Edition v3.1, software v3.1.3
```

The system volume is formatted.

```
NexentaStor-Installer-EE996L7FE
-----
          Current progress
Installing the base appliance software..... Please wait.
-----
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
|          |          |          |          |          |          |          |          |          |
-----
1* Installer  2 Shell  3 Log          | Enterprise Edition v3.1, software v3.1.3
```

The footnote that appears at the bottom of the screen, as shown above, explains how to switch from the Installer to the Shell (F2), to Log (F3), and back to the main screen (F1).

During the installation, you can review the detailed progress by pressing F3:

```
* Press CTRL-C to refresh.
* Installer started at 'Wed Aug 11 23:43:16 PDT 2010'. Logging.

*** /tmp/nexenta-install.log ***
* Detected Devices:
TYPE          DRIVER          DEVICE NAME
-----
Storage       pci-ide         82371AB/EB/MB PIIX4 IDE
Video         vgatext         SUGA II Adapter
Storage       mpt             53c1030 PCI-X Fusion-MPT Dual Ultra320 SCSI
Network       e1000g         82545EM Gigabit Ethernet Controller (Copper)
* Keyboard layout is set to US-English
* Time Zone set to US/Pacific
* Selected disk(s) for auto partitioning: c0d0 c0d1
* Hot-spare disks not selected
* Selected disk(s) for hot-spare:
* Selected disk(s) for auto partitioning: c0d0
* Selected 'zfs' configuration.
* Slice0: / 4089 cylinders
* Applied selected profile: appliance
* Installing the base appliance software...
-

1 Installer  2 Shell  3* Log          | Enterprise Edition v3.0, software v3.0.4
```

To switch to the shell, press F2:

```
root@nza3-com_installed:~# _  
  
1 Installer 2* Shell 3 Log      | Enterprise Edition v3.0, software v3.0.4
```

To return to the main installation screen, press **F1**.

After you complete the installation, you are prompted to reboot the appliance.  
Reboot the appliance and proceed to [“Three Easy Operations”](#).

## 3 Three Easy Operations

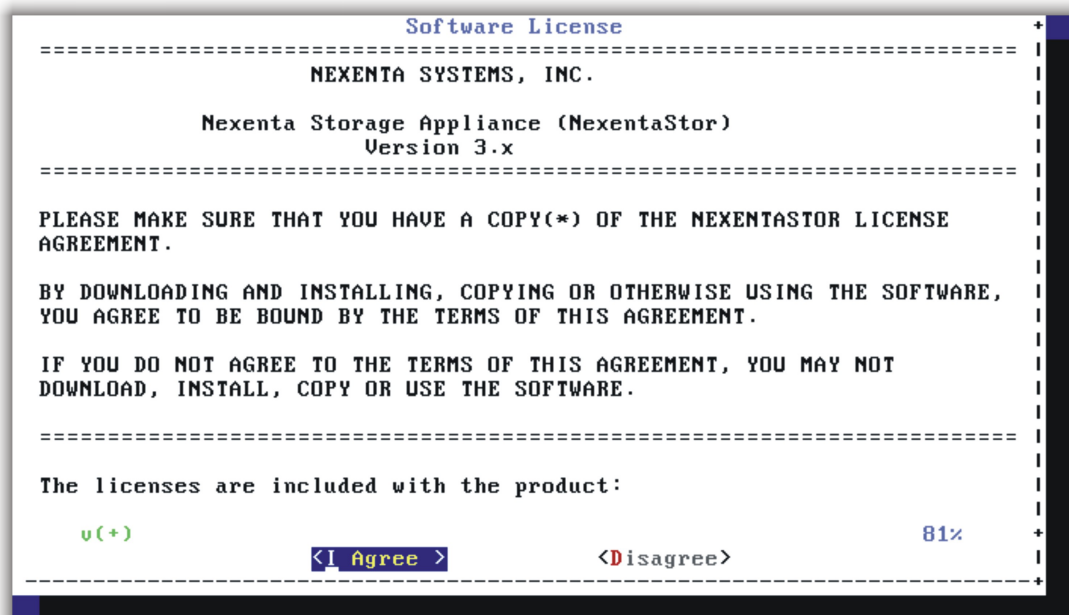
There are 3 easy operations to deploy the SGI NAS appliance:

- (A) Register the appliance
- (B) Configure primary network interface, and
- (C) Perform a few essential Wizard-guided configuration steps.

The following are step-by-step detailed instructions on how to deploy SGI NAS appliance products.

### 3.1 A: Registering SGI NAS

- Step 1. Boot the SGI NAS appliance. After the appliance boots up, review and accept the SGI NAS software license agreement<sup>A</sup>



<sup>A</sup> Some of the screenshots throughout this document may be outdated – captured from older SGI NAS versions.

Step 2. Follow the instructions on the appliance's console<sup>B</sup> to register the appliance software:

```
Welcome to ZFS Open Storage Appliance!
-----
Model          : ZFS Storage Appliance (Enterprise Edition)
Software Version : 3.0.4
Release Date   : Fri Jul 30 16:34:46 2010
UUID S/N       : 564d6e3b-069d-b861-de8e-c0504718c73f

Product registration
-----
Machine Signature : 895GKAI9N
Registration Key   : _

-----
Please enter product registration key. To obtain a key for a Free Trial
Edition, visit http://www.nexenta.com/register-trial. For commercial version
of the product, request license at http://www.nexenta.com/register-com, and
please follow the instructions emailed to you after you have purchased the
license. In all cases use the exact 'Machine Signature' (see above) to
register this copy of software.
```

For the successful appliance registration, you need to provide machine signature, a unique 9-character code that identifies your machine at the SGI license registration page. In the example above the machine signature is 895GKAI9N. Contact SGI to obtain a valid license key.

---

<sup>B</sup> SGI NAS Management Console a. k. a. NMC



## 3.2 B: Configuring primary network interface and choosing transport protocol for SGI NAS Web GUI

Step 3. Ensure you enter the product registration key **exactly** as it appears in the email sent as a result of registration (previous step).




Key is case sensitive. Make sure to enter the key **exactly** as specified in the auto-generated e-mail. The '-' separating groups of key characters need to be entered as well.

```
Welcome to ZFS Open Storage Appliance!
-----
Model           : ZFS Storage Appliance (Enterprise Edition)
Software Version : 3.0.4
Release Date    : Fri Jul 30 16:34:46 2010
UUID S/N       : 564d6e3b-069d-b861-de8e-c0504718c73f

Product registration
-----
Machine Signature : 895GKAI9N
Registration Key  : TRIA-71CC365311-895GKAI9N-GFJGKD
-----

Please enter product registration key. To obtain a key for a Free Trial
Edition, visit http://www.nexenta.com/register-trial. For commercial version
of the product, request license at http://www.nexenta.com/register-com, and
please follow the instructions emailed to you after you have purchased the
license. In all cases use the exact 'Machine Signature' (see above) to
register this copy of software.
```

Once the Registration Key is entered, (“TRIA-...” in the example above), proceed to configure **primary network interface**. You can connect to the system as is via the stated address, if you configure a client on the same network with a 192.168.1.X type address.

 To facilitate initial configuration, the appliance is pre-configured with a static IP address 192.168.1.111

When going through the very first post-installation steps, please make sure that 192.168.1.111 is NOT in use. The chance that specifically this address is already in use is pretty low; however the chance exists, and if this happens the “duplicate IP address” scenario may arise on the network to which appliance is currently connected.

Next, you will be prompted to reconfiguring the primary network interface. Choose DHCP, if your environment supports it, or set up the interface statically (you will need to specify the device’s IP address, subnet mask, default gateway, and DNS server addresses).

```
Machine Signature : 895GKAI9N
Registration Key  : TRIA-71CC365311-895GKAI9N-GFJGKD


Thank You!

-----
Configure primary network interface
-----
Interface ae0 (PRIMARY) : Configured as 192.168.1.111/255.255.255.0
Default Gateway         :
DNS #1                  :
DNS #2                  :
DNS #3                  :

Reconfigure? Yes
Option ? dhcp
Enabling ae0 via DHCP ... OK.

Interface ae0 (PRIMARY) : Using DHCP as 192.168.102.182/255.255.255.0
Default Gateway via DHCP :
DNS #1 via DHCP         : 192.168.102.2
DNS #2 via DHCP         :
DNS #3 via DHCP         :


Reconfigure? (y/n) _
```

 In most cases you prefer to configure appliance's primary IP interface statically. General network administration guidelines do apply.

Step 4. After choosing your primary IP settings, you need to select **not** to reconfigure. Finally, choose transport protocol for SGI NAS Web GUI

(NMV). You can select either HTTP – fast and (plain text) unsecured, or HTTPS – secured, but less responsive:

```
Configure primary network interface
-----
Interface e1000g0 (PRIMARY): Using DHCP as 192.168.102.182/255.255.255.0
Default Gateway via DHCP   :
DNS #1 via DHCP            : 192.168.102.2
DNS #2 via DHCP            :
DNS #3 via DHCP            :
Reconfigure? No
Your primary interface is   : e1000g0
Web GUI protocol           : HTTP
Web GUI port                : 2000_
-----
Choose port for the Web GUI (NMU) interface. Note that you can always re-run
NMC command 'setup appliance init' later to change the setting. Reserved
ports: 2001, 2002, 2003, 3000. Press Ctrl-C to exit.
```

 The example above shows primary networking interface and its (configured) settings. At this point you should be able to ping the appliance from an external host.

Note that during the process of network configuring you can specify Web GUI port. The default is 2000, but you can change it to whatever you like if it's not used by other services. For more info about TCP ports used by SGI NAS, see the SGI NAS User Guide.

At this point the appliance is installed and **READY TO BE INITIALLY CONFIGURED** via appliance's web GUI:

```
Configure primary network interface
-----
Interface e1000g0 (PRIMARY): Using DHCP as 192.168.102.182/255.255.255.0
Default Gateway via DHCP   :
DNS #1 via DHCP            : 192.168.102.2
DNS #2 via DHCP            :
DNS #3 via DHCP            :
Reconfigure? No

Your primary interface is  : e1000g0
Web GUI protocol          : HTTP
Web GUI port              : 2000_

Listening on http://192.168.102.182:2000

Please point your Internet browser to the URL above - NexentaStor
Initial Configuration Wizard will help you to get started.
The Quick Start Guide document is available on the website -
have it handy during initial configuration of the appliance.


ZFS OpenStorage appliance (version 3.0.4)

myhost console login: _
```

Notice a brief instruction displayed on the console above the login prompt (highlighted). It is **essential** to follow this instruction and use the internet browser to perform a few basic configuration steps.

### 3.3 C: Initial Configuration

Step 5. The appliance is now almost ready for use. As per instruction on the screen above, use the displayed URL (in this case it is `http://192.168.102.182:2000`) to connect your browser to the SGI NAS GUI-based **Initial Configuration Wizard**. The Wizard will guide you through the most essential appliance's setup – for more information refer to the SGI NAS User Guide.

 If your internet browser does not connect to the appliance, it is likely because the primary networking interface ([Steps 4 and 5](#) above) is misconfigured. You can always fix the configuration by logging to console and running:

```
nmc:/$ setup appliance init
```

#### **Advanced users only:**

Note that at this point you can log into the appliance via the SGI NAS Management Console (NMC) from either using the directly connected monitor

or by ssh-ing to the appliance's primary IP address. In both cases, login as root and use the default password "nasnas".

If you intend to do so, you will be greeted by the following SYSTEM NOTICE:

```

* * *
SYSTEM NOTICE
Appliance's initial configuration is incomplete. Please
point your Internet browser to the URL below and follow
online instructions:

```

This is a simple reminder that it is recommended to complete the appliance's configuration via **Initial Configuration Wizard**.

### 3.4 Configuration Wizard-I

Your next step is to continue appliance's configuration. The appliance has a web interface that will also initialize the system, if the network (see Step 6 above) is available. Use the URL shown above. Security certificate is displayed since you are connecting via secure connection:



Please accept it.

SGI NAS **Initial Configuration Wizard** is subdivided into two guided stages:

- Stage I - Basic Configuration (the first screenshot below)

- Stage II - Configuring Network and Storage



It is important to perform all Wizard-guided steps of the Basic Configuration.

Note in the browser's address location window there is an appliance's web GUI URL, the same one that was displayed at the end of Section 'B' Configuring primary network interface and NMV transport" (above).

For more information on the Wizard and Wizard-guided steps of configuring the appliance, see the SGI NAS User Guide section '**Initial Configuration Wizard**'.

The screenshot displays the SGI NAS Basic Configuration Wizard. The interface is divided into a sidebar and a main configuration area. The sidebar on the left contains the following menu items: 'Basic Configuration' (selected), 'Admin Passwords', 'Notification System', and 'Save Configuration?'. The main area is titled 'STEP #1: BASIC CONFIGURATION' and contains the following fields:

- Host Name:** myhost
- Domain Name:** mydomain.com
- Time Zone:** America (dropdown) / United States - US/Pacific (dropdown)
- NTP Server:** pool.ntp.org
- Keyboard Layout:** US-English (dropdown)
- Language:** English (dropdown)

A 'Next' button is located at the bottom of the configuration area.

Next, please assign root and admin passwords:


The screenshot shows the SGI NAS configuration wizard at Step 2: ADMIN PASSWORDS. The sidebar on the left includes 'Basic Configuration', 'Admin Passwords' (selected), 'Notification System', and 'Save Configuration?'. The main content area contains four password fields:

- Password for root**: masked with dots, label: Change root password.
- Repeat root password**: masked with dots, label: Re-enter root password.
- Password for admin**: masked with dots, label: Change admin password.
- Repeat admin password**: masked with dots, label: Re-enter admin password.

At the bottom of the main area are 'Back' and 'Next' buttons. A 'View log' link is visible in the top right corner.

SGI NAS is pre-configured with administrative user accounts: root and admin. The default password for both accounts is "nasnas". Don't forget to change the default password.

It is important to set up at least a mail server and mailing address for system notifications, reports, and faults to be reported. Configure as necessary for your site.

 Setting up e-mail notification is important, as indicated on the side panel. Part of the appliance's Fault Management and Reporting is realized via notifications. It is recommended to configure either the appliance mailer or enable the appliance inbox.

If the mailer is not configured and inbox is disabled, the appliance will fail to notify of important events, and the notifications will silently end up in the appliance log file.

Mailer settings are set up on the third wizard screen:

**sgi NAS**

View log

**Basic Configuration**

**Admin Passwords**

**Notification System**

Setup event notification and reporting mechanism. During its operation, the appliance will be sending you e-mail updates with fault management reports including detailed information on hardware and/or software failures. Appliance will also send you periodic daily/weekly status reports for variety of subsystems including detailed reports on Storage and Network utilization.

**Save Configuration?**

**STEP #3: NOTIFICATION SYSTEM**

**SMTP Server** localhost  
Mailer's hostname or IP address (may optionally contain SMTP port delimited by colon).

**SMTP User**   
SMTP user name.

**SMTP Password**   
SMTP server password.

**SMTP Send Timeout** 30  
SMTP server send timeout (in seconds).

**SMTP Authentication** Plain   
Select authentication method.

**From E-Mail Address** myhost-noreply@mydomain.com  
Will be used as the address contained in the 'From' field of the emails sent by appliance.

**E-Mail Addresses** root@localhost  
One or more comma-separated e-mail addresses to be used by the appliance for daily status reports.

**E-Mail Addresses for faults**   
OPTIONAL. One or more comma-separated e-mail addresses, to be used by the appliance for fault notifications. If this field is left empty, the above 'E-Mail Addresses' will be used for fault notification.

**E-Mail Addresses for statistics**   
OPTIONAL. One or more comma-separated destination administrative e-mail addresses to be used by the appliance for statistics. Can be left skipped. In that case, 'E-Mail addresses' will be used for statistics.

Back Test Next

Separate e-mail addresses for statistics (Volumes reports, Network Statistics, NFS Statistics), notifications (system reports with status 'NOTICE' and 'INFO') and faults (system reports with status 'WARNING' and 'CRITICAL') can be specified.

You can always review the changes, and either apply them (Save Configuration), or go back and make more changes (Previous Step):



Setting	Value
<b>Basic Configuration (6 items)</b>	
Host Name	myhost
Domain Name	mydomain.com
Time Zone	US/Pacific
NTP Server	pool.ntp.org
Keyboard Layout	US-English
Language	English
<b>Admin Passwords (2 items)</b>	
Password for root	*****
Password for admin	*****
<b>Notification System (9 items)</b>	
SMTP Server	localhost
SMTP User	
SMTP Password	*****
SMTP Send Timeout	30
SMTP Authentication	Plain
From E-Mail Address	myhost-noreply@mydomain.com
E-Mail Addresses	root@localhost
E-Mail Addresses for faults	
E-Mail Addresses for statistics	

\* Values marked in bold have been changed during Wizard 1

Back Save



Both stage I and stage II of the Wizard can be re-run any time later and configuration can be modified.

### 3.5 Configuration Wizard-II

Most likely Stage-II Wizard will be run more often. Even though SGI NAS Management View provides a superset of functionality, you may find it convenient to re-run the Wizard by pointing your internet browser to the /wizard2 URL. In the example (below) that URL is:

<http://192.168.1.108:2000/wizard2>

The following shows some of the Stage-II Wizard screens, to configure Networking and Storage. Stage-II Wizard contains a number of optional steps to setup network and storage, data volumes, folders and zvols.

At the end of this sequence you will be asked to create a system checkpoint.

For the freshly installed appliance, it is recommended to create system checkpoint upon initial configuration.

Step 1. Here you can add or delete network interfaces, setup primary interface, configure, setup default gateway and name servers.

The screenshot displays the SGI NAS configuration web interface. The top left corner features the SGI NAS logo. A navigation sidebar on the left includes links for Network, iSCSI Initiator, Disks, Volumes, Folders and Shares, and Review Changes and Exit. The main content area is titled 'STEP #1: NETWORK' and contains several sections: 'Network Interfaces' with a table showing the 'e1000g0' interface as physical and using DHCP; 'Add Interface' with a dropdown for 'Single' type and an empty device list; 'Edit Interface' with 'e1000g0' selected and 'DHCP' as the configuration method; 'Change Default Gateway' with '172.16.157.2' entered; and 'Change Name Servers' with '172.16.157.2' as the primary server. A 'Next Step >>' button is located at the bottom.

**Network**

Please verify networking configuration. Primary interface must be configured; it will be used for management access to this storage node. You may also want to create separate aggregated interface(s) for large data transfers.

**Network Interfaces:**

Interface	Type	Configuration	Primary	Actions
e1000g0	physical	Using DHCP as 172.16.157.150/255.255.255.0	<input checked="" type="radio"/>	<input type="checkbox"/> <input type="checkbox"/>

**Operations:**

**Add Interface**

Interface Type:  (Type of new interface: single or aggregated.)

All Available Devices:

**Edit Interface**

Configured Interfaces:  (All available configured interfaces. For aggregation select two or more interfaces.)

Configuration Method:  (Network Interface configuration method: static or dynamic (via DHCP).)

**Change Default Gateway**

Default Gateway:  (Default networking gateway IPv4 address in a dot-decimal notation (.#.#.#).)

**Change Name Servers**

Name Server 1:  (Primary naming server IPv4 address in a dot-decimal notation (.#.#.#).)

Name Server 2:  (Secondary naming server IPv4 address in a dot-decimal notation (.#.#.#).)

Name Server 3:  (Additional naming server IPv4 address in a dot-decimal notation (.#.#.#).)

Step 2. Configure iSCSI Initiator to use virtual disks exported via VMware or another iSCSI target. The appliance supports all 3 types of iSCSI discovery.

**sg NAS**

View log

**Network**

**ISCSI Initiator**

Setup iSCSI Initiator to utilize virtual disks exported via VMWare or another iSCSI target.

**Disks**

**Volumes**

**Folders and Shares**

**Review Changes and Exit**

**STEP #2: ISCSI INITIATOR**

**ISCSI Initiator parameters:**

**Initiator Name**   
iSCSI initiator node name. Maximum of 223 characters.

**Initiator Alias**   
iSCSI initiator node alias. Maximum length of 223 characters.

**Authentication Method**   
Authentication mode: none or CHAP.

**Number of Sessions**   
The number of configured iSCSI sessions that will be created for each iSCSI target to utilize I/O multipathing feature.

**Header Digest Method**   
Enable or disable CRC32 check for SCSI packet headers (may affect performance).

**Data Digest Method**   
Enable or disable CRC32 check for SCSI data transfers (may affect performance).

**RADIUS Server Access**   
Enable or disable RADIUS server to access and verify authorization.

**Configured iSCSI discovery methods:**

Parameter	Type	Enabled	Delete

**Additional iSCSI discovery method:**

**ISCSI Discovery Method**   
Method to discover new iSCSI targets: SendTargets, static address or iSNS server.

**ISCSI Target IP Address**   
iSCSI Target IPv4 address, and optional port number in form #.#.#.#[port].

Step 3. Allows you to review the available disks. If any new disks were added, click on refresh and they will appear in the list:

**sg NAS**

View log

**Network**

**ISCSI Initiator**

**Disks**

Volumes utilize physical and/or virtual disks. In VMWare environment, you can use virtual disks or physically connected devices exported via VMWare wizard. Alternatively, you can utilize directly attached disks or use iSCSI to access pools of disks remotely.

**Volumes**

**Folders and Shares**

**Review Changes and Exit**

**STEP #3: DISKS**

**Disks:**

Disk	Device	Type	Size	Volume	Attach	Model
c0t1d0	sd2	disk	68.49 GB		mpt	FUJITSU, Rev. 0104
c0t2d0	sd1	disk	232.89 GB	syspool	mpt	Hitachi, Rev. V5DOA73A
c0t3d0	sd3	disk	68.49 GB		mpt	FUJITSU, Rev. 0104
c0t4d0	sd4	disk	68.49 GB		mpt	FUJITSU, Rev. 0104
c0t5d0	sd5	disk	68.49 GB		mpt	FUJITSU, Rev. 0104

Step 4. Next, the Wizard will help you to create or import data volumes:

**sg** NAS

View log

Network

STEP #4: VOLUMES

iSCSI Initiator

Volumes:

No available volumes.

Disks

Operations:

**Add New Volume**

**Performance considerations**

For mirrored configurations:  
Random read and write performance scales linearly with the number of disks; write performance scales linearly with the number of mirror sets.  
Sequential read throughput scales linearly with the number of disks; write throughput scales linearly with the number of mirror sets.

For parity (RAID-Z, RAID-Z2) configurations:  
Random read and write performance scales linearly with the number of RAID sets.  
Sequential read and write throughput scales linearly with the number of data (non-parity) disks.  
**Caution!** It is NOT recommended to use non-redundant device configuration within a ZFS volume.

**Volume Configuration:**

**Available Disks**

- c0t1d0 : mpt(disk) : 68.49 GB
- c0t3d0 : mpt(disk) : 68.49 GB
- c0t4d0 : mpt(disk) : 68.49 GB
- c0t5d0 : mpt(disk) : 68.49 GB

**Redundancy Type**

Add to pool >>  
Add to spare >>  
Add to log >>  
Add to cache >>  
Add to selected >>  
<< Remove selected  
<< Remove all

**Final Volume Configuration**

Available physical and logical (virtual) disks. Mounted/Slices/Partitions are not allowed.

Add or Remove disks and groups

This configuration will be used to create volume.

**Volume Properties:**

**Name**

Volume name must begin with a letter and can only contain alphanumeric characters (a-z, A-Z, 0-9) in addition to the following three special characters: underscore (\_), hyphen (-) and period (.)  
Volume name has the following restrictions: the beginning sequence c(0-9) is not allowed; the name log is reserved; a name that begins with mirror, raidz, or spare is not allowed because these name are reserved.  
In addition, volume name must not contain a percent sign (%).

**Description**

Optional volume description. Maximum length is 255 characters.

**Deduplication** off

Controls the deduplication option for the volume. If enabled, it will optimize use of duplicate copies of data. Default is off.

**Compression** on

Controls the compression algorithm used for this dataset. Default is "on". Setting compression to "on" uses the lzjb compression algorithm. The lzjb compression algorithm is optimized for performance while providing decent data compression. Currently, "gzip" is equivalent to "gzip-6".

**Autoexpand** off

Controls automatic pool expansion when the underlying LUN is grown.

**Sync** standard

Controls synchronous requests (standard - ensure all synchronous requests are written to stable storage; always - every file system transaction will be written and flushed to stable storage by system call return; disabled - synchronous requests are disabled). Default is standard.

**Force creation**

Forces use of (virtual or physical) disks (LUNs) even if they appear to be in use.

Create Volume

**Import Volume**

No exported or destroyed volumes found.

<< Previous Step   Next Step >>

## Step 5. Create folders.

The screenshot displays the SGI NAS management interface. The top navigation bar includes the SGI logo and 'NAS'. A 'View log' link is visible in the top right. The main content area is titled 'STEP #5: FOLDERS AND SHARES'. On the left, a sidebar contains navigation links for Network, iSCSI Initiator, Disks, Volumes, and Folders and Shares. The 'Folders and Shares' section is active, showing a help text box with instructions on creating folders and a 'Review Changes and Exit' button. The main area shows a 'Folders:' section with a message 'No available folders.' and an 'Operations:' section with a 'Create New Folder' button. The 'Create New Folder' wizard is open, showing various configuration options:

- Volume:** vol1 (Folder's volume)
- Folder Name:** fo1 (Each folder pathname's component delimited by backslash (\) can only contain alphanumeric characters (a-z, A-Z, 0-9) in addition to the following three special characters: underscore (\_), hyphen (-) and period (.). Folder pathname must begin with an alphanumeric character and not contain a percent sign (%).)
- Description:** (Human-readable description for this folder.)
- Record Size:** 128K (Specifies a suggested block size for files in the folder. Default is 128K.)
- Log Bias:** latency (Provide a hint to ZFS about handling of synchronous requests in this dataset. If logbias is set to latency (the default), ZFS will use pool log devices (if configured) to handle the requests at low latency. If logbias is set to throughput, ZFS will not use configured pool log devices. ZFS will instead optimize synchronous operations for global pool throughput and efficient use of resources.)
- Deduplication:** off (Controls the deduplication option for this dataset. If enabled, it will optimize use of duplicate copies of data. Default is "off".)
- Compression:** on (Controls the compression algorithm used for this dataset. Default is "on". Setting compression to "on" uses the lzjb compression algorithm. The lzjb compression algorithm is optimized for performance while providing decent data compression. Currently, "gzip" is equivalent to "gzip-6".)
- Number of Copies:** 1 (Controls the number of copies of data stored for this dataset. Default is "1".)
- Case Sensitivity:** mixed (Indicates whether the file name matching algorithm used by the file system should be case-sensitive, case-insensitive, or allow a combination of both styles of matching. Use "mixed" if the folder is planned to be shared via CIFS and NFS at the same time. Default is "mixed".)
- Unicode Only:** off (Enable it if you want to exclude non-Unicode file names creation for this folder. If set, this option will ensure better inter-client operability. Make sure this option is enabled if you are planning to use this folder as a share for MacOS X, Windows and Linux clients. Default is "off".)
- Sync:** standard (Controls synchronous requests (standard - ensure all synchronous requests are written to stable storage; always - every file system transaction will be written and flushed to stable storage by system call return; disabled - synchronous requests are disabled). Default is standard.)

At the bottom of the wizard is a 'Create' button. Below the wizard are navigation buttons: '<< Previous Step' and 'Next Step >>'.

While walking through Wizard-guided steps, pay attention to system notices. When creating a volume, please keep in mind that redundant configurations typically improve performance and reliability but reduce effective storage capacity.

Step 6. Finally, with its last screen the Wizard invites to review and save all changes:

**STEP #6: REVIEW CHANGES AND EXIT**

**Network**

Interface	Type	Configuration
e1000g0	physical	Configured as 150.166.43.141/255.255.255.0 with mtu 1500
e1000g1	physical	Unconfigured

**Disks**

Disk	Device	Type	Size	Volume	Attach	Model
c0t1d0	sd2	disk	68.49 GB	vol1	mpt	FUJITSU, Rev. 0104
c0t2d0	sd1	disk	232.89 GB	syspool	mpt	Hitachi, Rev. V5DOA73A
c0t3d0	sd3	disk	68.49 GB	vol1	mpt	FUJITSU, Rev. 0104
c0t4d0	sd4	disk	68.49 GB		mpt	FUJITSU, Rev. 0104
c0t5d0	sd5	disk	68.49 GB		mpt	FUJITSU, Rev. 0104

**Volumes**

Volume	Configuration	Size	Allocated	Free	Capacity	Dedup Ratio	State
vol1	raidz1 group: 1, devices: 2	136.00 GB	356.00 KB	136.00 GB	0%	1.00x	ONLINE

**Folders and Shares**

Folder	Refer	Used	Avail	CIFS	NFS	FTP	RSYNC	WebDAV	Index
vol1:fol1	31.00 KB	31.00 KB	66.90 GB	-	-	-	-	-	-

Results 1 - 1 (all)

**Warning:** Optimize appliance's I/O performance by disabling ZFS cache flushing. While providing a considerable performance improvement in certain scenarios (in particular those involving CIFS, NFS or iSCSI) - this settings may be unsafe, in terms of application-level data integrity. It is strongly recommended to use this feature if and only if your storage is NVRAM protected, and the hardware platform is connected to Uninterrupted Power Supply (UPS). Default setting: unchecked (disabled).

Optimize I/O performance for CIFS/NFS/iSCSI UPS-backed deployments?

Create periodic scrubbing service (auto-scrub) for system volume weekly, every Sunday at 3am ?

<< Previous Step    Start NMV

The Wizard will also recommend to create system checkpoint (see above) – “a snapshot of the freshly installed and initially configured appliance”. Please see the SGI NAS User Guide for introduction and for detailed information on appliance's upgrade/checkpoint functionality.



To re-run any stage of the Wizard, go to Settings → Appliance → Wizard1/Wizard2. Or you can simply type in a browser:

**http://ip\_adress:2000/wizard1**

**http://ip\_adress:2000/wizard2**

## 4 Upgrading the license – Re-registering

To display appliance's license information, simply click on the **About** menu of the SGI NAS Management View top level toolbar - for example:



The screenshot shows the SGI NAS Management View interface. The top navigation bar includes 'About', 'Support', 'Add Capacity', 'Register', and 'Help'. The main content area is titled 'ABOUT INFORMATION' and displays a table of system properties and their values.

Property	Value
Model	Open Storage Appliance (Enterprise Edition)
UUID	00000000-0000-0000-0000-000000000000
Machine Signature	5847CLL8K
Host Name	myhost
Domain Name	mydomain.com
Primary Interface	rtso
Primary MAC	b6:33:b1:86:db:d2
Last System Boot	Sat Dec 27 16:00:00 1986
Load Average	0.95, 0.68, 0.35
Server Time	Thu Jun 7 13:33:04 2012
Time Zone	US/Pacific
NMS Version	3.1.3 (r9837)
NMC Version	3.1.3 (r9812)
NMV Version	3.1.3 (r9840)
OS Version	3.1.3
Total Memory	2047MB
Free Memory	1124MB
Registration Key	TRIA-F5C4A03318-5847CLL8K-EGFQLJ
License Type	TRIA
License Verification	Software license verified OK
License Days Left	112 (for online upgrades)

Alternatively, use NMC command:

```
nmc:/$ show appliance license
```

If you changed your licensing terms (e. g., added more capacity) and received a new license key for the appliance that is already in use, re-register the appliance using the following NMC command:

```
nmc:/$ setup appliance register
```

For information on registering (and re-registering) appliance, see the corresponding manual page:

```
nmc:/$ setup appliance register -h
```

Or, you can re-register using the appliance web GUI interface:



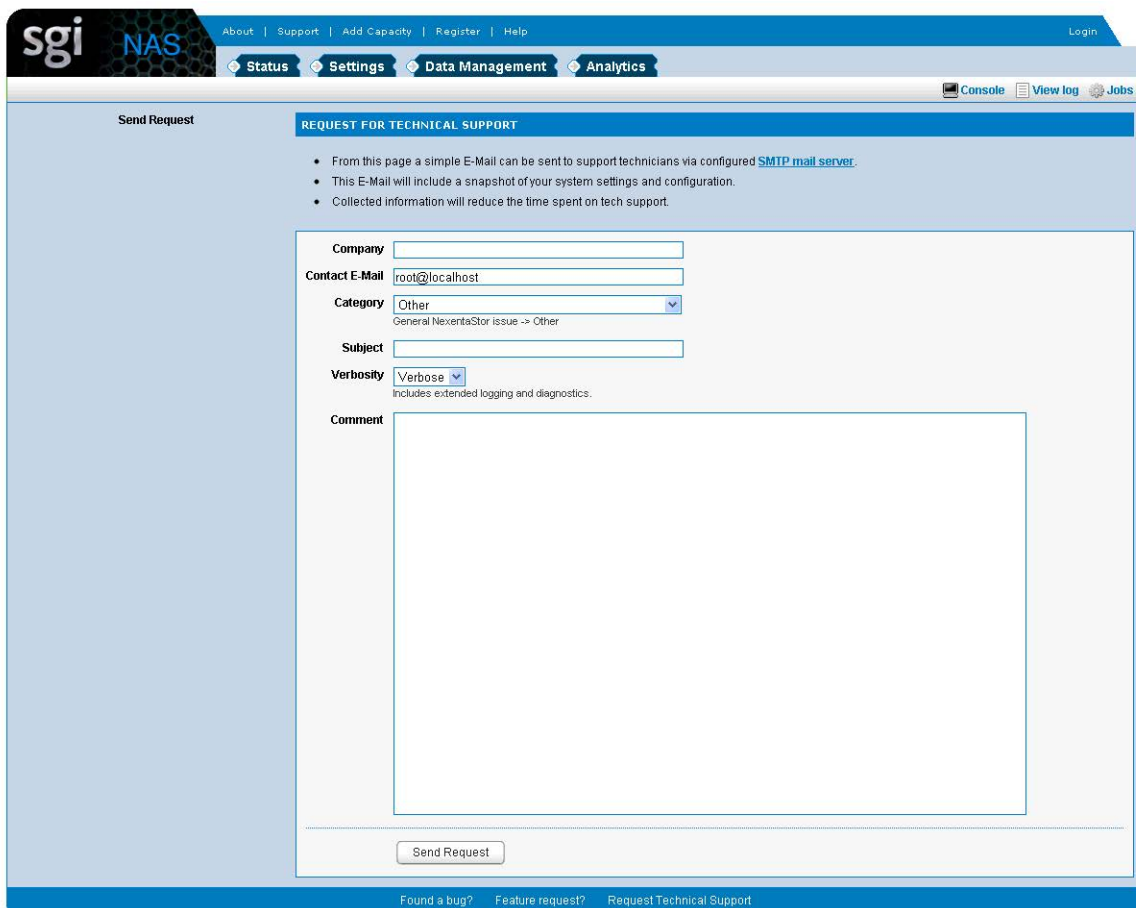
The screenshot shows a web form titled "Software Registration". It contains two input fields: "Machine ID" with the value "5847CLL8K" and "License Key" with the value "TRIA-F5C4A03318-5847CLL8K-EGFQLJ". Below the fields are two buttons: "Register" and "Back to GUI".



## 5 Contact information

### 5.1 Support request

To contact support at SGI, click on 'Support' in NMV as shown in the screen below.



The screenshot shows the SGI NAS web interface. The top navigation bar includes 'About', 'Support', 'Add Capacity', 'Register', and 'Help'. Below this is a secondary navigation bar with 'Status', 'Settings', 'Data Management', and 'Analytics'. The main content area is titled 'Send Request' and 'REQUEST FOR TECHNICAL SUPPORT'. It contains a list of bullet points explaining the request process, followed by a form with fields for 'Company', 'Contact E-Mail' (pre-filled with 'root@localhost'), 'Category' (set to 'Other'), 'Subject', 'Verbosity' (set to 'Verbose'), and a 'Comment' text area. A 'Send Request' button is at the bottom of the form. The footer of the page has links for 'Found a bug?', 'Feature request?', and 'Request Technical Support'.

or type the following NMC command:

```
nmc:/$ support
```

which will then prompt for a subject and message.

### 5.2 Other resources

For licensing questions, please contact your SGI sales or support representative.

## **Product Support**

SGI provides a comprehensive product support and maintenance program for its products. For a full description of this program, do one of the following:

- See <http://www.sgi.com/support/>.
- If you are in North America, contact the Technical Assistance Center at 1 (800) 800 4SGI or contact your authorized service provider.
- If you are outside North America, see the following website for the appropriate Customer Service phone number: <http://www.sgi.com/support/supportcenters.html>.