Sonnet Serve 2.6 Administration Guide

March 16, 2015

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1 Introducing Sonnet Serve

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Congratulations on your purchase of Sonnet Serve, Sonnet Technologies's SAN management appliance, allowing the concurrent access to SAN volumes from multiple client computers.

This manual will guide you in the process of setting up your Sonnet Serve appliance(s), administering the access to them and accessing the SAN volume(s) from client computers. This guide is intended for any user or administrator of Sonnet Serve.

The Sonnet Serve Workflow

With the help of Sonnet Serve you can achieve a true SAN workflow, providing multiple client computers with concurrent high-speed access to NTFS shared volumes. For the purpose, both the appliance and the client computers must be connected to the shared storage using a Fibre Channel switch. To prevent data corruption when multiple computers access the same file system, Sonnet Serve also acts as a metadata controller that processes requests, coming from clients through the LAN connection. Each computer that has the Sonnet Serve Client software installed can mount the volumes the appliance has shared. If you have specified that the appliance is part of an Active Directory domain, requests for access to the shared volumes are authenticated against the domain controller. If Sonnet Serve is deployed in workgroup environment every user has full access to all data on the shared volumes.

Computers that don't have the Sonnet Serve Client driver cannot mount volumes shared to Sonnet Serve Clients although they are connected to them. These computers can only mount the volumes that Sonnet Serve has specified that it doesn't manage and protect.

Besides acting as a metadata controller on your SAN, Sonnet Serve greatly optimizes the shared storage workflow by providing you with data replication and space reclaiming services, automatic defragmentation of the shared storage volumes, storage usage and connectivity monitoring tools, etc. Using the web interface you can also reformat existing volumes, create new volumes and check and repair the file system of volumes.

Concepts Used Throughout the Guide

Storage Server — the Sonnet Serve appliance, which acts as a SAN manager and controls access to the volumes it sees and can manage.

Sonnet Serve Client — each computer running the Sonnet Serve Client software, which can mount the shared volume(s) via FC or 1/10 GbE. You can install the Sonnet Serve Client software on as many computers as you like. The storage server takes care to connect clients as long as their number doesn't exceed the number, specified in the activation key. Each Sonnet Serve Client computer can share the volumes it has mounted or folders on them to LAN clients on the network as SMB/CIFS shares.

SAN Client — a Sonnet Serve Client computer that is connected to the shared storage directly or through a switch using 8/16 Gb FC.

Fast LAN Client — a Sonnet Serve Client computer that mounts the shared volumes using 10 GbE connection to the metadata controller.

LAN client — a Sonnet Serve Client computer that mounts the shared volumes using 1 GbE connection to the metadata controller. In contrast to computers on the LAN that don't have the Sonnet Serve Client software installed and access only LAN shares of the shared storage, LAN clients mount the volumes.

Shared volume — a volume managed by Sonnet Serve, which all connected Sonnet Serve Clients can mount and work with, in contrast to computers that have access to the volume but don't have the Sonnet Serve Client software installed.

Private volume — a volume managed by Sonnet Serve, which is accessible only to the appliance, usually for performing maintenance operations. Sonnet Serve Clients and computers without the Sonnet Serve Client software installed cannot mount and work with private volumes.

Offline volume — a volume that is not managed and protected by Sonnet Serve and that can be mounted by any computer that has access to it. Sonnet Serve cannot prevent data corruption on offline volumes, when more than one computer accesses them.

SAN to LAN failover — In case there is a failure of the FC HBA or FC cable on a Sonnet Serve Client, the SAN to LAN failover mechanism lets this computer reconnect to the shared volumes over the Ethernet and thus it can continue working with the volumes although with decreased performance. For the purpose the Sonnet Serve Client computer should disconnect from the storage server and then reconnect again. Once the problem with the FC HBA or cable is fixed, the Sonnet Serve Client should again disconnect and reconnect to the Sonnet Serve in order to mount the volume(s) over the Fibre Channel.

Sonnet Serve Administrator — the user account with which any user can log on to Sonnet Serve's web interface and administer the Sonnet Serve network. The web interface of Sonnet Serve is accessible to any device with a web browser that is on the same network as the storage server.

Sonnet Serve Client System Requirements

Each system that you want to connect to Sonnet Serve as a Sonnet Serve Client must meet the following minimum system requirements:

Mac OS X:

- Intel-based Mac with 1.33-GHz CPU.
- Mac OS X Lion/Lion Server (32-bit and 64-bit), Mac OS X Mountain Lion/Mountain Lion Server (64-bit), Mac OS X Mavericks/Mavericks Server, Mac OS X Yosemite (64-bit).

Note: *No support for Mac OS X versions below 10.7.*

- 2 GB of physical RAM at least.
- 25 MB of available hard-disk space for Sonnet Serve Client software installation.
- Fibre Channel or 1/10 GbE adapter.
- The following TCP ports - 9120, 9121, 9122, 9123, 9124, 9125, 9126, 9127 - should not be blocked by a firewall if any.

Windows:

- PC with 1.33-GHz processor.
- 32-bit or 64-bit Microsoft Windows® 7/Server 2008 R2, Windows® 8/Server 2012.

Note: *No support for Microsoft Windows® 95, Windows® 98, Windows® NT, Millennium Edition, Windows® 2000, Windows® XP or Windows® Vista.*

- 2 GB of physical RAM at least.
- 25 MB of available hard-disk space for Sonnet Serve Client software installation.
- Fibre Channel or 1/10 GbE adapter.
- The following TCP ports - 9120, 9121, 9122, 9123, 9124, 9125, 9126, 9127 - should not be blocked by a firewall if any.

Linux:

- PC with 1.33-GHz Intel processor.
- Red Hat Enterprise Linux Workstation/CentOS Linux 5.x:
  - 2.6.18-128.el5 (32-bit and 64-bit)
  - 2.6.18-128.1.16.el5 (32-bit and 64-bit)
  - 2.6.18-164.2.1.el5 (32-bit and 64-bit)
  - 2.6.18-164.el5 (32-bit and 64-bit)
  - 2.6.18-164.6.1.el5 (32-bit and 64-bit)
  - 2.6.18-164.9.1.el5 (32-bit and 64-bit)

  - 2.6.18-164.10.1.el5 (32-bit and 64-bit)
  - 2.6.18-164.11.1.el5 (32-bit and 64-bit)
  - 2.6.18-164.15.1.el5 (32-bit and 64-bit)
  - 2.6.18-238.el5 (32-bit and 64-bit)
- Red Hat Enterprise Linux Workstation/CentOS Linux 6.x:
  - 2.6.32-220.el6 (64-bit)
  - 2.6.32-279.el6 (64-bit)
  - 2.6.32-358.el6 (64-bit)
  - 2.6.32-431.el6 (64-bit)
  - (CentOS Linux 6.x only) 2.6.32-431.23.3.el6.centos.plus (64-bit)
- Red Hat Enterprise Linux Workstation 5.x (Autodesk):
  - 2.6.18-128.el5.ADSK (64-bit)
- Red Hat Enterprise Linux Workstation 6.2 (Autodesk):
  - 2.6.32-220.27.1.el6.x86_64 (64-bit)
- FilmLightOS 2.x:
  - kernel 2.6.18-92.1.22.el5.centos.plus (64-bit)
  - kernel 2.6.18-194.11.4.el5.centos.plus (64-bit)
- SuSe Linux 10:
  - 2.6.16.21-0.8-default (64-bit)
  - 2.6.16.21-0.8-smp (64-bit)
  - 2.6.16.60-0.85.1-default (64-bit)
  - 2.6.16.60-0.85.1-smp (64-bit)
  - 2.6.16.60-0.103.1-default (64-bit)
  - 2.6.16.60-0.103.1-smp (64-bit)
- SuSe Linux 11:
  - 2.6.32.12-0.7-default (64-bit)
  - 3.0.80-0.7-default (64-bit)
  - 3.0.13-0.27-default (64-bit)

- DaVinci Resolve Linux:
  - 2.6.18-164.el5 (64-bit)
  - 2.6.18-238.el5 (64-bit)
  - 2.6.32-358.el6 (64-bit)
- SGO Mistika Linux:
  - 2.6.32.12-0.7-default (64-bit)
  - 3.0.13-0.27-default (64-bit)

Important: *Changing any of the default kernel setting may prevent Sonnet Serve from operating properly.*

Tip: *To check the exact version of the kernel used by your system, in command-line execute the following:* **`uname -a`**

Note: *Both uni and multiprocessor versions of the kernels are supported.*

- SELinux should be disabled prior to installing the Sonnet Serve Client software.
- 2 GB of physical RAM at least.
- 25 MB of available hard-disk space for installation.
- Fibre Channel or 1/10 GbE adapter.
- The following TCP ports - 9120, 9121, 9122, 9123, 9124, 9125, 9126, 9127- should not be blocked by a firewall if any.

Storage Requirements

Sonnet Serve supports any NTFS-formatted volume to which the appliance has Read & Write access. You can connect the appliance to the shared storage via Fibre Channel (directly or using a FC switch).

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Getting Started

After deploying Sonnet Serve within your organization following the instructions in the Sonnet Serve deployment guide, you have to go through the initial setup in order to integrate the appliance into your network. The initial setup involves only procedures that are indispensable for the proper functionality of Sonnet Serve. After you perform the initial setup procedures, your Sonnet Serve appliance will be able to operate, using the default settings. Additional administration of Sonnet Serve will allow you to optimize the accesses to the shared volumes, to perform maintenance operations and to monitor storage usage and connectivity.

For Sonnet Serve to operate normally and to share volumes to Sonnet Serve Clients, you should make sure that:

- Sonnet Serve is activated (see "Sonnet Serve Activation" on page 15).
- The normal network communication between Sonnet Serve and client computers is ensured by performing the initial setup (see "Performing Initial Setup of Sonnet Serve" on page 17).
- Some or all of the volumes seen by Sonnet Serve are shared to Sonnet Serve Clients (see "Sharing and Unsharing Volumes" on page 53).
- Client computers have the Sonnet Serve Client software installed (see "Installing and Uninstalling Sonnet Serve Client Software" on page 28) and have added and then connected to the Sonnet Serve appliance(s) (see "Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client" on page 31).

Accessing Sonnet Serve's Web Interface

Sonnet Serve can be administered through its web interface. To access it, in a web browser enter the IP address of the appliance's network port, to which your computer is connected. Your Sonnet Serve is shipped to you with preset IP address of the Public port (172.16.100.100). To access the web interface for the first time, your computer should be connected to the Public port and should use an IP address that is on the same subnet as the Public port. During the initial setup of Sonnet Serve, you can change the IP address of the Public port and of all other network ports of the appliance, letting all computers on the same network (with or without the Sonnet Serve Client software installed) access Sonnet Serve's web interface.

Note: *You can always access the web interface of Sonnet Serve through the Admin port (if Admin port is predefined by vendor), which is designed as a safety net in case you misconfigure the appliance's network identification and fail to connect to it. Once you connect a computer to the Admin port, it is automatically assigned an IP address by Sonnet Serve's DHCP server and can access the web interface using the static pre-set IP address (1.21.32.1) of the Admin port.*

Once Sonnet Serve Client computers add the appliance to their storage servers list, they can access the web interface using the tray application (Windows), the menulet (Mac OS X), command-line (Linux). For more information, refer to "Accessing the Sonnet Serve Web Interface" on page 35.

Note: *Sonnet Serve's web interface is accessible with most web browsers as long as JavaScript is enabled. If you experience any problems with Sonnet Serve's web interface, please, contact Sonnet Technologies support.*

To access the web interface for the first time:

1. Connect to the Public port directly or through an Ethernet switch.

   Important: *It is advisable to connect directly to the Public port if another computer on the network has the same IP address (172.16.100.100) as conflicts may arise.*

2. Make sure the IP address of your computer is on the same subnet as the Public port (172.16.100.101, for example).

   Note: *For more details about changing your IP address, refer to the documentation of your operating system).*

   Tip: *Once you finish the initial setup and set another IP address to the Public port, you can revert back to your old IP address.*

3. In a web browser, type the pre-defined IP address of the appliance for the Public port:
   `172.16.100.100`

4. Press Enter.

   The web interface of Sonnet Serve loads.

5. Click Manage and enter the following password:
   `admin`

Important: *It is advisable to set new password for the web interface during the initial setup of Sonnet Serve. See "Changing the Password for the Web Interface" on page 21.*

To access the web interface from a network computer:

1. In a web browser, do one of the following:

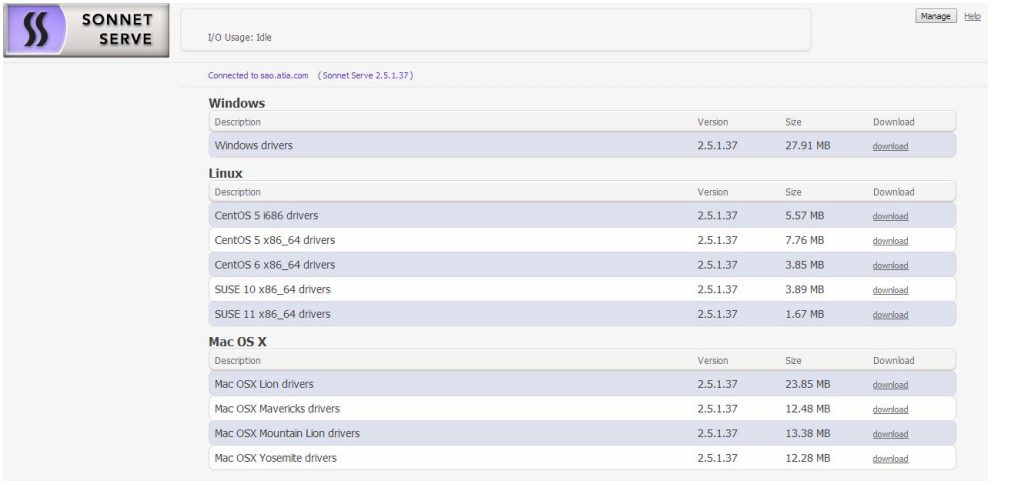
- type the IP address of the appliance for your network connection;
- type the domain name of the appliance;

Important: *A DNS server on the network must resolve the IP address of the appliance to its domain name.*

By default, the name of the appliance is its serial number. You can find it printed at the back of your appliance and in the About page of the web UI.

2. Press Enter.

The web interface of Sonnet Serve loads.



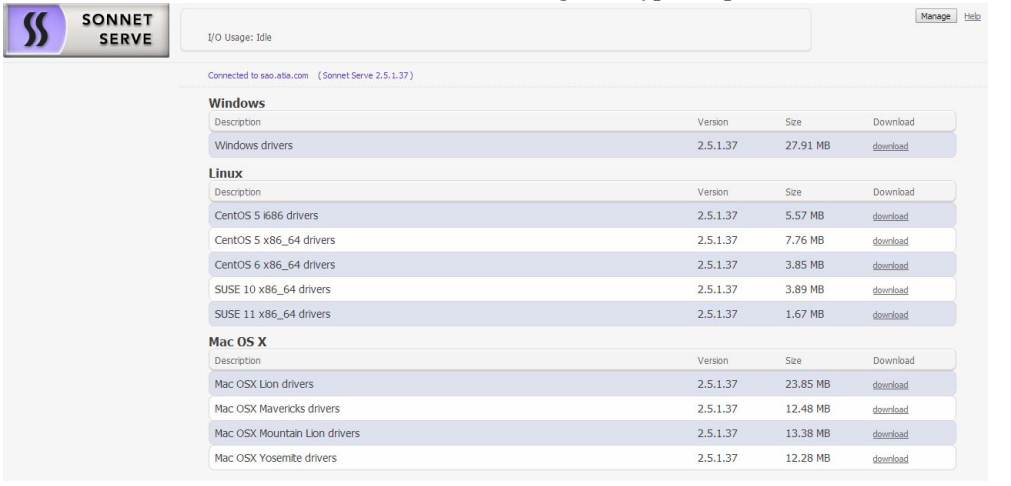
3. Click Manage and type the password for the web interface.

Important: *The pre-set password for the web interface is* **`admin`***. It is advisable to set new password for the web interface during the initial setup of Sonnet Serve. See "Changing the Password for the Web Interface" on page 21.*

To access the web interface through the Admin port:

Important: *You can access the appliance through the Admin port if such port is predefined by your vendor.*

1. In a web browser, type the pre-defined IP address of the appliance for the Admin port: `1.21.32.1`
2. Press Enter.
3. The web interface of Sonnet Serve loads.Click Manage and type the password for the web



interface.

Important: *The pre-set password for the web interface is* **`admin`**. *It is advisable to set new password for the web interface during the initial setup of Sonnet Serve. See "Changing the Password for the Web Interface" on page 21.*

Sonnet Serve Activation

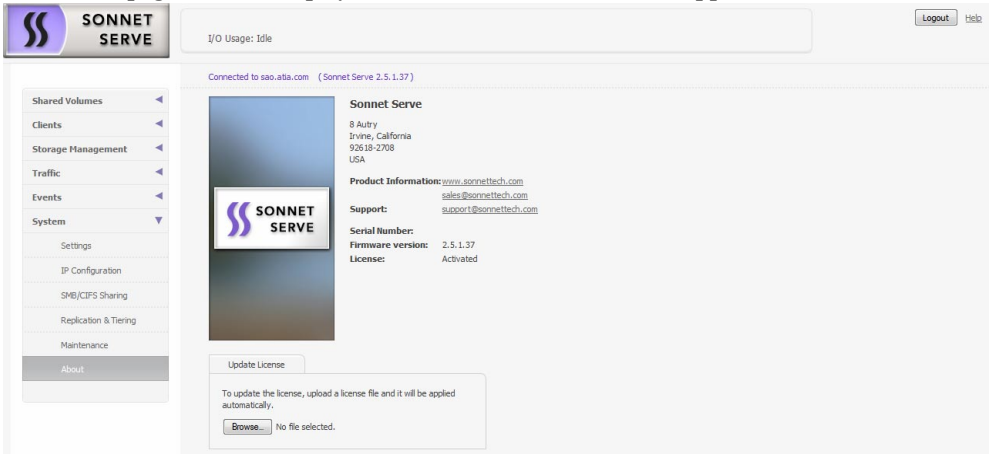
To be able to share volumes, Sonnet Serve needs to be activated. For activation Sonnet Serve makes use of a software-protection dongle, installed in your appliance. If the correct activation file is not uploaded on it, it cannot share volumes.

There's no need for activation at Sonnet Serve Clients side - all Sonnet Serve Clients can mount and work with the volumes that the appliance has shared to them. The activation file holds information about the expiration of the license. Depending on your version of Sonnet Serve, each dongle may be pre-activated or you may have to manually upload the activation file to the dongle. You can view the activation status of Sonnet Serve in the web interface.

To view the activation status of Sonnet Serve:

In the left menu, click System and then About.

The About page loads. It displays license information about the appliance:



Not present — either the dongle is not plugged, or the license file is not written on the dongle.

Valid till... — displays the date until which the license is valid.

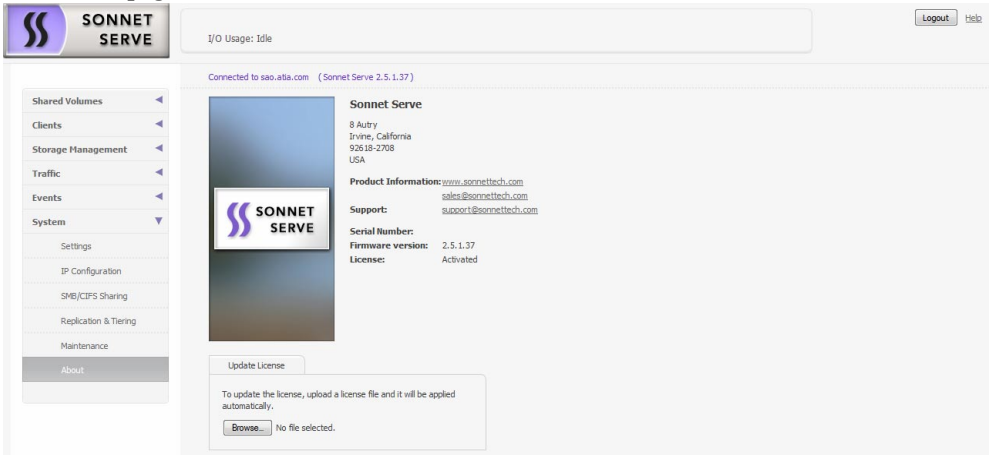
Expired — the license has expired.

Activated — a valid permanent license file is installed.

To activate Sonnet Serve:

1. In the left menu, click System and then About.

   The About page loads.



2. In the Update License field, click Browse.

   A standard dialog opens that allows you to browse for and select the license file.

3. Select the license file and then click Open.

   The license file is uploaded to Sonnet Serve and the activation tool applies it. Refresh your browser to view the activation status changes.

Performing Initial Setup of Sonnet Serve

Besides activating Sonnet Serve on the appliance, to provide for the normal work of your Sonnet Serve network, you should perform initial setup of the appliance. You can perform the first step of the initial setup - configuring the IP address of each network port of the appliance, only from the computer that is directly connected to the Public port and that uses 172.16.100.101 as IP address. Once you configure the IP addresses of the appliance, the web interface is accessible to all computers on the same network and you can proceed with the initial setup from any of them.

The initial setup includes the following procedures:

- Configure the IP address of each network port of the appliance (see “Configuring the IP Addresses of the Appliance” on page 18).
- Change the name of the appliance (see “Change the Name of The Appliance” on page 19).
- Change the password for the Sonnet Serve web interface (see “Changing the Password for the Web Interface” on page 21).

• Specify the time and date settings of the appliance (see “Specifying The Time and Date Settings of Sonnet Serve” on page 22).

• Set the environment in which Sonnet Serve operates - workgroup or Active Directory domain (see “Selecting The Network Environment of Sonnet Serve” on page 23).

Once you go through the initial setup, Sonnet Serve can operate normally without having to change any of its settings. Later on you can change any of the settings that you have specified during the initial setup from any computer that has access to Sonnet Serve’s web interface.

Configuring Sonnet Serve Identification and Connectivity Settings

Each Sonnet Serve appliance is identified in the network by IP address and name (by default, this is the serial number of the appliance).

The appliance must have an IP address for each network port through which it communicates with Sonnet Serve Clients (directly or via an Ethernet switch). The IP address of each network port must be on the same LAN as the Sonnet Serve Client that will communicate with the appliance through this port. For more information, refer to “Configuring the IP Addresses of the Appliance” on page 18.

Changing the name of the appliance can be useful to more easily identify your appliance on the network or, if you deploy more than one Sonnet Serve appliances in your organization, to facilitate you in distinguishing them. For more information, refer to “Change the Name of The Appliance” on page 19.

Configuring the IP Addresses of the Appliance

Your Sonnet Serve appliance has the following network ports:

Public port — 1GbE port designed to connect the appliance to your corporate network and provide it with access to shared resources and the Internet and also used for metadata exchange between the appliance and Fibre Channel Sonnet Serve Clients.

10GbE ports — designed to provide for both data and metadata traffic of Sonnet Serve Clients connected to the appliance via 10GbE connection.

You must set an IP address for each network port through which the appliance is connected to Sonnet Serve Clients (directly or via an Ethernet switch) - the Public port and all available 10GbE ports. The IP address you assign to each network port must be on the same subnet as the Sonnet Serve Client that will communicate with the appliance through this port. If computers in your facility are already interconnected in a LAN, you can simply assign an IP address to the Public port in the same subnet.

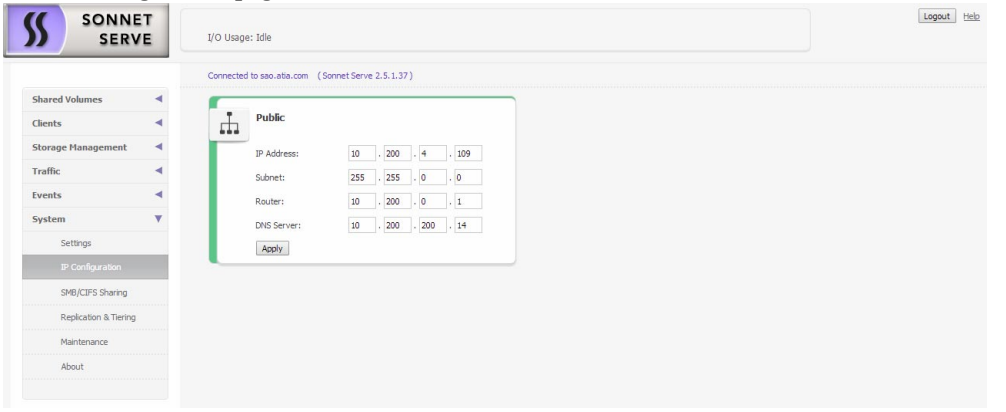
When a Fast LAN Sonnet Serve Client can reach the appliance both through the Public port and a 10GbE port, to ensure that the Sonnet Serve Client always mounts the shared volumes over the 10GbE connection, it is advisable to set the IP addresses of the 10GbE ports of both the appliance and the Sonnet Serve Client to be on a separate subnet of the LAN used by the Public port. For more information refer to the "Assigning IP Addresses to Network Ports" best practices topic in the latest version of the product release notes.

Important: *Whenever you introduce changes to the IP settings of Sonnet Serve, on all Sonnet Serve Clients you may have to re-add the appliance to the storage servers list, in order to ensure that they can connect to it.*

To assign an IP address to a network port:

1. In the left pane of Sonnet Serve's web interface, click System and then IP Configuration.

   The IP Configuration page loads.



2. In the tile of the respective port, enter the IP address and subnet mask

   Note: *As the Public port is also used for connection to the Internet, you can also specify router and DNS server details.*

3. Click Apply.

   Important: *If you change the IP address of Sonnet Serve after a Sonnet Serve Client has already added the appliance to its storage servers list using the old IP address, you may have to manually edit the IP address on that Sonnet Serve Client. (see "Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client" on page 31).*

Change the Name of The Appliance

By default, each Sonnet Serve is shipped to you with a pre-configured name - the appliance's serial number, printed at the back of the chassis and visible in the About page of the web UI.

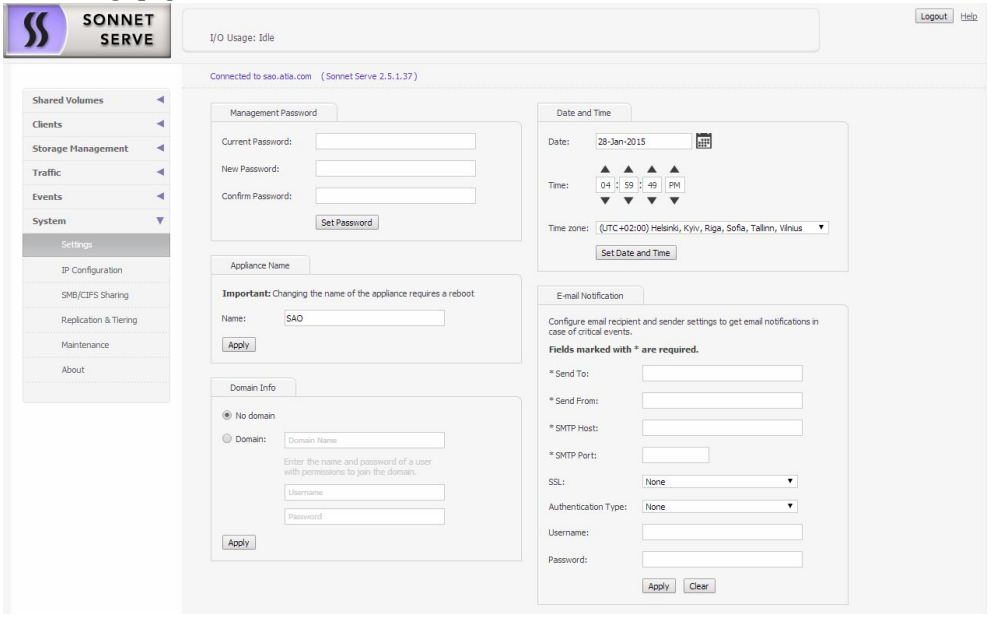
If you rename a Sonnet Serve appliance after client computers have already added it to their storage servers list, you may have to manually edit the appliance's name on client computers (see "Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client" on page 31).

To rename the appliance:

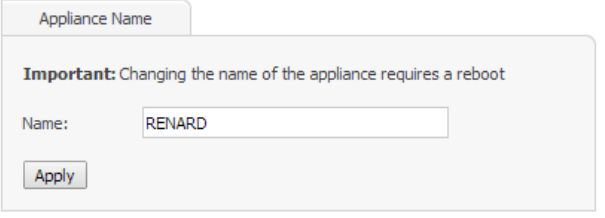
Note: *To rename the appliance you will have to reboot it.*

1. In the left pane of Sonnet Serve's web interface, click System and then Settings.

   The Settings page loads.



2. In Appliance Name, enter a new name of the appliance and click Apply.



3. Confirm that you want to change the name of the appliance when prompted.
4. In the left pane, select System and then Maintenance.
5. In System Reset drop down box, select "Full system reboot" and then click Full system reboot.

Changing the Password for the Web Interface

Sonnet Serve's web interface is accessible after supplying a password. When initially shipped to you, the web interface of the appliance uses a predefined password:

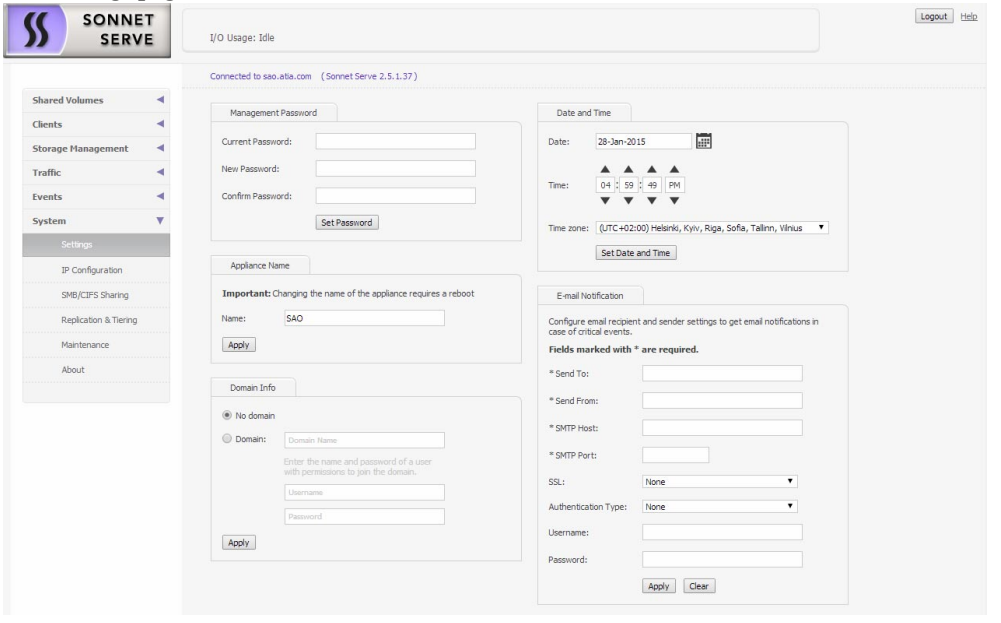
`admin`

It is advisable to change the predefined password during the initial setup as after that the web interface becomes accessible to every computer on the same network. You can change the password for the web interface at any time.

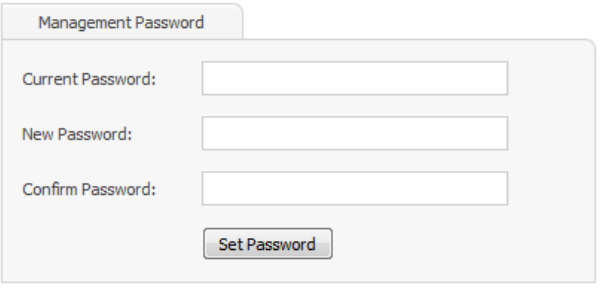
To change the web interface password:

1. In the left pane of the web interface, click System and then Settings.

The Settings page loads.



2. In the Management Password field, enter the current password and the new password in the respective fields, and then click Set Password.



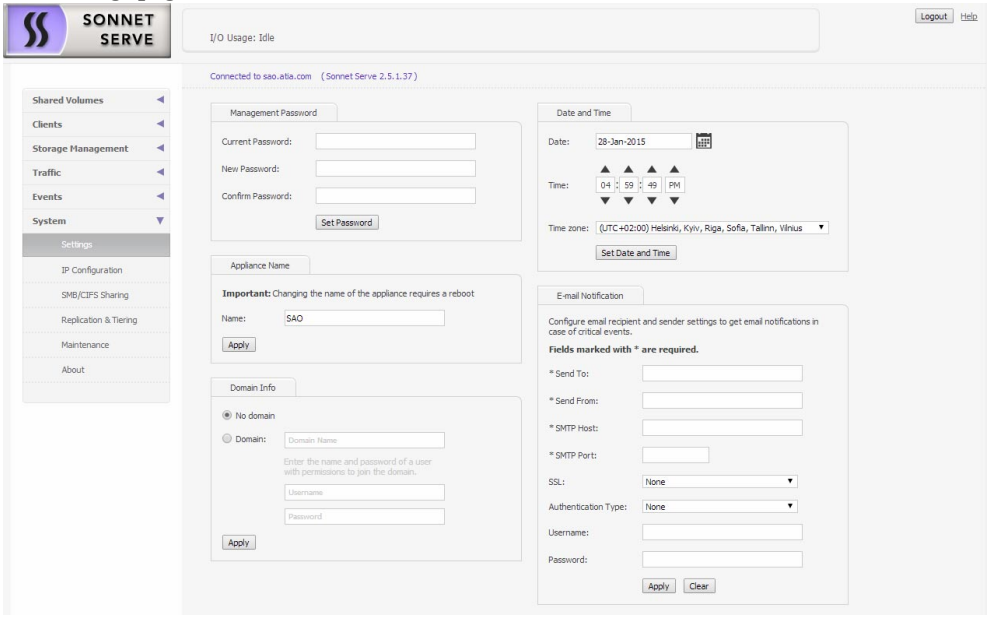
Specifying The Time and Date Settings of Sonnet Serve

To ensure the normal work of Sonnet Serve, you should set the time and date of the appliance as soon as you turn it on. It is advisable to use the same date and time settings on all computers on your Sonnet Serve network.

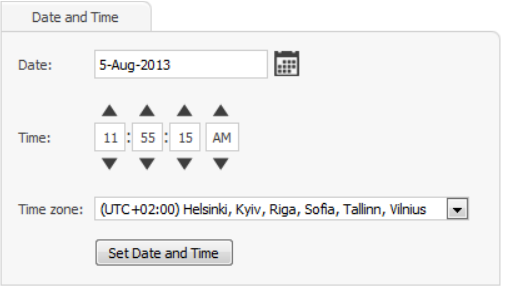
To specify the time and date settings of the appliance:

1. In the left pane of the web interface, click System and then Settings.

   The Settings page loads.



2. In Date and Time, select the desired date, time zone and specify the exact time.



3. Click Set Date and Time.

Selecting The Network Environment of Sonnet Serve

By default, Sonnet Serve is configured to operate in workgroup environment - the appliance is pre-configured as a member of the WORKGROUP workgroup and any user that can connect to it, has access to all resources on the shared volumes. If your appliance is on the same network as an Active Directory domain controller, you can add Sonnet Serve to the domain and benefit from access permissions to files and folders for domain users. For the purpose, you should simply specify the domain name and authenticate as a user that has permissions to join computers to the selected Active Directory domain.

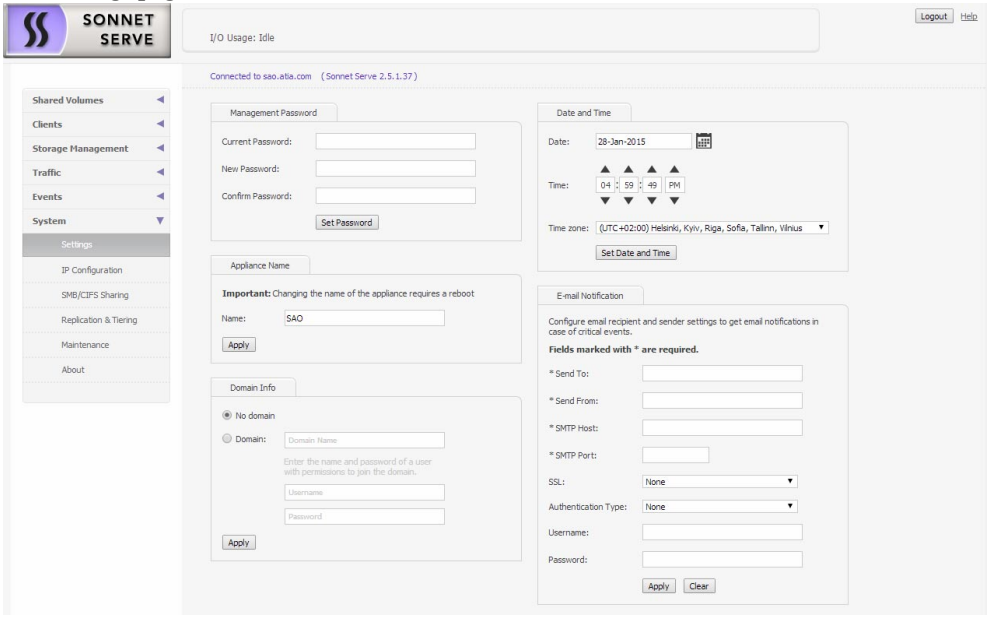
You can switch the network environment in which Sonnet Serve is deployed from workgroup to domain and vice versa at any time.

Important: *Setting the network environment of Sonnet Serve requires that you reboot the appliance.*

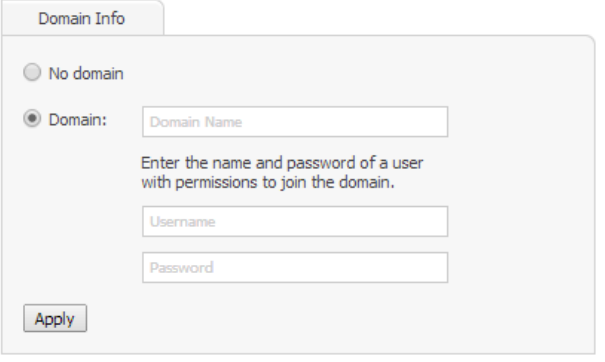
To set domain environment for Sonnet Serve:

1. In the left pane of the web interface, click System and then Settings.

   The Settings page loads.



2. In Domain Info, click Domain.



3. In the respective fields, enter the domain name and the user name and password of a user that can join computers to the specified Active Directory domain.
4. Click Apply.
5. In the left pane, select System and then Maintenance.

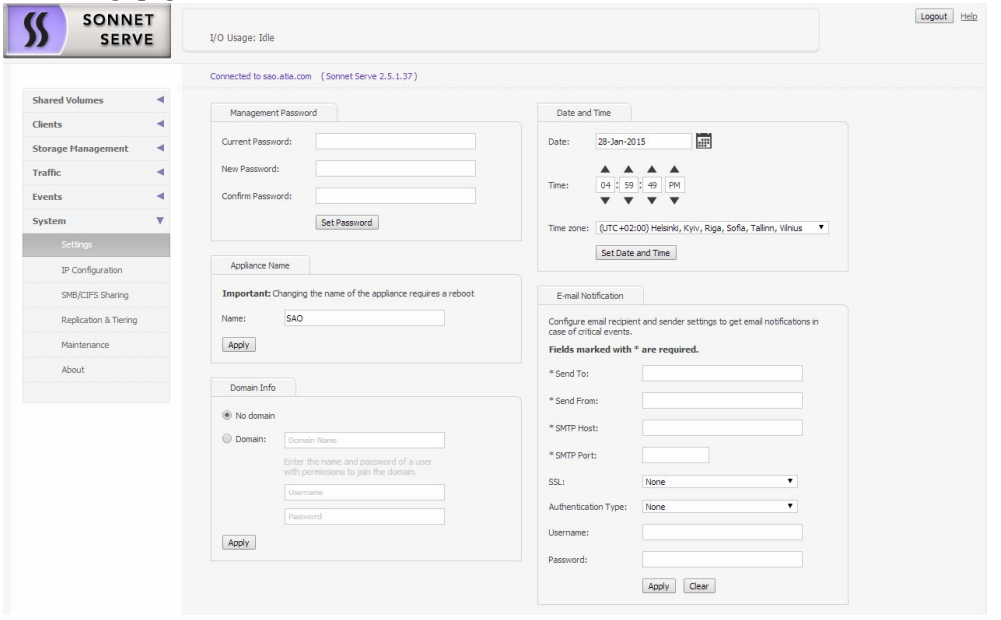
6. In System Reset drop down box, select Full System Reboot and then click Full system reboot.

   When the appliance is online again, accesses to files/folders on the shared volumes are authenticated against the specified Active Directory domain.

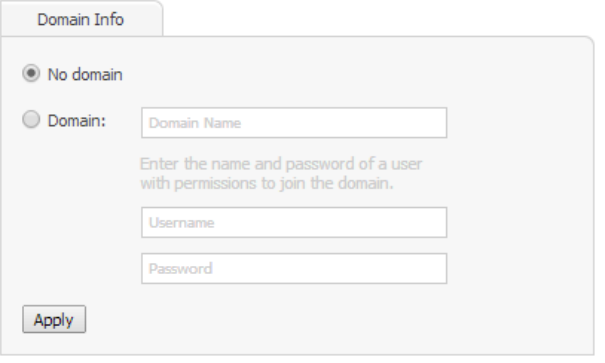
To set workgroup environment for Sonnet Serve:

1. In the left pane of the web interface, click System and then Settings.

   The Settings page loads.



2. In Domain Info, click No domain.



   The domain controller may require that you authenticate yourself as a user authorized to remove computers from the domain.

3. Click Apply.
4. In the left pane, select System and then Maintenance.
5. In System Reset drop down box, select Full System Reboot and then click Full system reboot.

   When the appliance is online again, all users that can mount the shared volumes have unrestricted access to all files/folders on it.

3 Setting Up Sonnet Serve Clients

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Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client 31

Overwriting The Volume Mount Location (Windows) . . 36

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View Traffic Information 40

Besides being connected to Sonnet Serve and the shared storage, to be able to mount and work with the shared volumes, client computers need to run the Sonnet Serve Client software. You can install the Sonnet Serve Client software on each computer that meets the minimum system requirements (see "Sonnet Serve Client System Requirements" on page 7). Once you install the Sonnet Serve Client software, you can use the Sonnet Serve Client tray application (Windows), the menulet (Mac OS X) or command-line (Linux) to:

- create a list of the Sonnet Serve appliances on your network (see "Creating a List of Sonnet Serve Appliances" on page 31).
- connect to and disconnect from appliances on your list and mount/dismount the volumes they share (see "Connecting To and Disconnecting From Sonnet Serve Appliances" on page 34).
- overwrite the volume mount location on Windows Sonnet Serve Client (see "Overwriting The Volume Mount Location (Windows)" on page 36).
- view connection status (see "View Connection Status" on page 39).
- easily access Sonnet Serve's web interface (see "Accessing Sonnet Serve's Web Interface" on page 12).

In the web interface of Sonnet Serve, you can also view traffic information for Sonnet Serve Clients (see "View Traffic Information" on page 40).

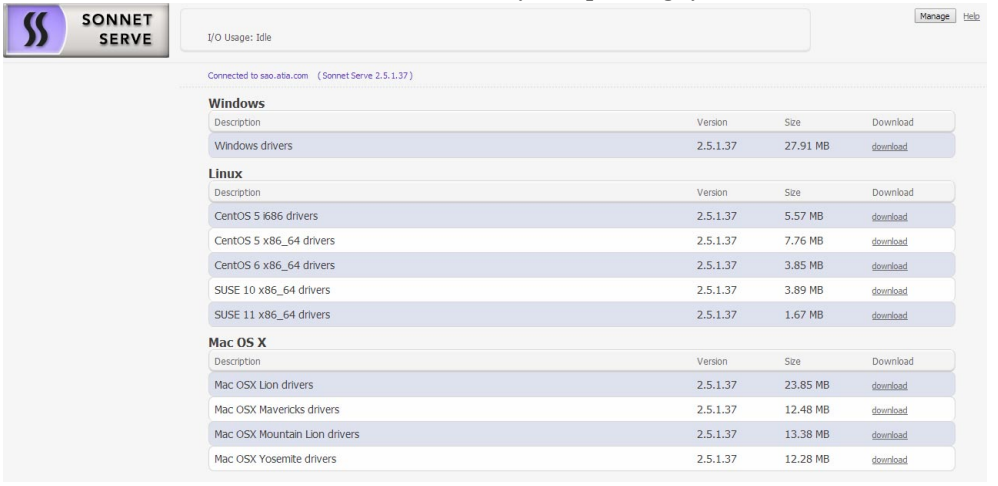
Installing and Uninstalling Sonnet Serve Client Software

Important: *All Sonnet Serve Client computers must run the same version of the software as the metadata controller computer.*

To download and install the Sonnet Serve Client software (Mac OS X and Windows):

1. Open the web interface of Sonnet Serve (see “Accessing Sonnet Serve’s Web Interface” on page 12).

2. Find the Sonnet Serve Client installation file for your operating system and click Download.



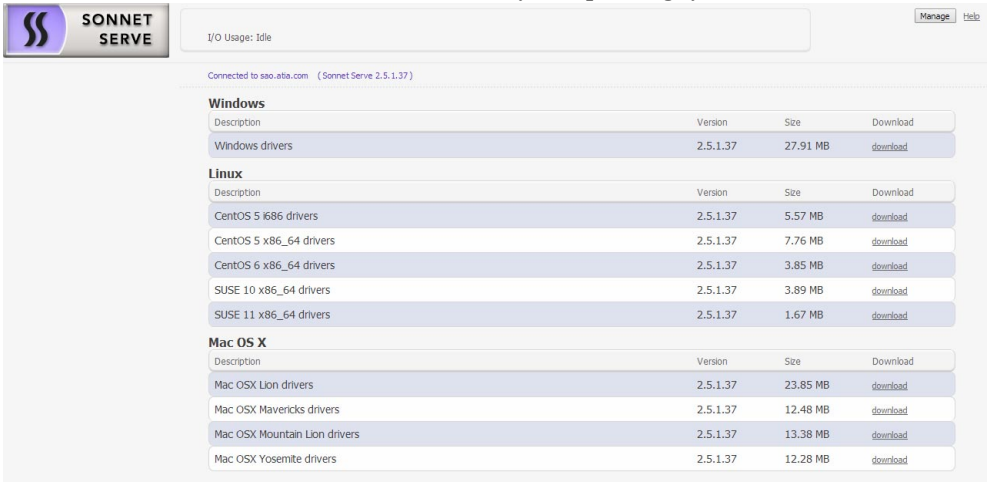
3. When the installation file downloads to your computer, double-click it to start the installation.

4. Follow the on-screen instructions and when prompted, restart your computer.

   On Mac OS X and Windows, the Sonnet Serve Client icon appears in the Menu Bar/System Tray of your computer.

To download and install the Sonnet Serve Client software (Linux):

1. Open the web interface of Sonnet Serve (see “Accessing Sonnet Serve’s Web Interface” on page 12).
2. Find the Sonnet Serve Client installation file for your operating system and click Download.



3. When the installation file downloads to your computer, log on to the Linux system as root.
4. In command-line, type:
   `rpm –i <path to the Sonnet Serve Client software .rpm file>`
5. Press Enter.
6. In command-line, execute the following as root:
   `/etc/init.d/tboxd start`

To uninstall the Sonnet Serve Client software (Windows):

1. Display the Control Panel.
2. Double-click Programs and Features.
3. Right-click SonnetServe-Client and select Uninstall.

   You are prompted to confirm that you want to remove the Sonnet Serve Client software.
4. Click Yes, to confirm.

   Sonnet Serve Client uninstallation warns you that you will have to reboot the computer to complete the uninstallation.
5. Click OK.
6. When prompted, restart the computer.

To uninstall the Sonnet Serve Client software (Mac OS X):

1. Go to Applications | SonnetServe-Client.
2. Double-click Uninstall.
3. Provide administrator's user name and password.
4. When prompted, confirm that you want to uninstall the Sonnet Serve Client software.

To uninstall the Sonnet Serve Client software (Linux):

1. Log on to the Linux system as root.
2. In command-line, type:
   `rpm -e` SonnetServe-Client
3. Press Enter.

Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client

Managing the Sonnet Serve appliances means creating a list of all available appliances and connecting/disconnecting to any of them in order to mount and work with the volumes they are sharing.

You can manage the Sonnet Serve appliance(s) on your computer using the Sonnet Serve Client application for your operating system:

- the tray application (Windows);
- the menulet (Mac OS X);
- the command-line interface (Linux).

Creating a List of Sonnet Serve Appliances

Once you install the Sonnet Serve Client software on your computer, you can create a list of all Sonnet Serve appliances that your computer sees. Then, you can connect and disconnect to any of the appliances on your list in order to mount/dismount the volumes they have shared.

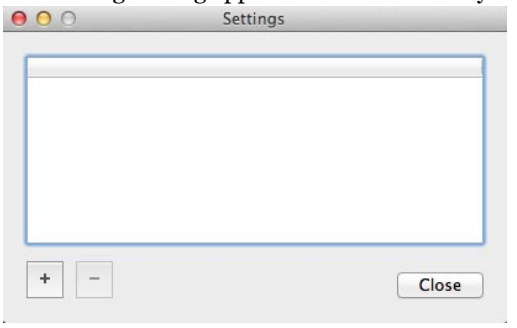
Important: *On Fast LAN clients, always add the Sonnet Serve appliance to the storage servers list with the IP address set for the 10GbE port. For more information, refer to the "Assigning IP Addresses to Network Ports" best practices topic in the latest version of the product release notes.*

Should a Sonnet Serve administrator change the name or IP address of a Sonnet Serve appliance on your list, you may have to add anew that appliances to your list, in order to connect to it and mount its volumes.

To add a Sonnet Serve appliance to the list (Mac OS X and Windows):

1. Click the Sonnet Serve Client tray/menulet icon and then click Settings.

   The Settings dialog appears. It lists all already added storage servers.



2. Do one of the following:

   • (Windows) Click Add.

   • (Mac OS X) Click the "+" button.

   The Add Storage Server dialog appears.

3. Enter the name or IP address of the Sonnet Serve appliance.

4. Click OK.

   The appliance appears in the list of storage servers in the Settings dialog. You can view its name and IP address, the preferred mount location of the volumes it shares for your computer and the appliance's status for your computer:

   • Online - the appliance is accessible and its volumes are mounted in the preferred mount location.

   • Online (mounted as...) - the appliance is accessible, but at least one of its volumes is not mounted in the preferred mount location.

   • Offline - the appliance is not accessible or the Sonnet Serve you have been connected to has failed.

To add a Sonnet Serve appliance to the list (Linux):

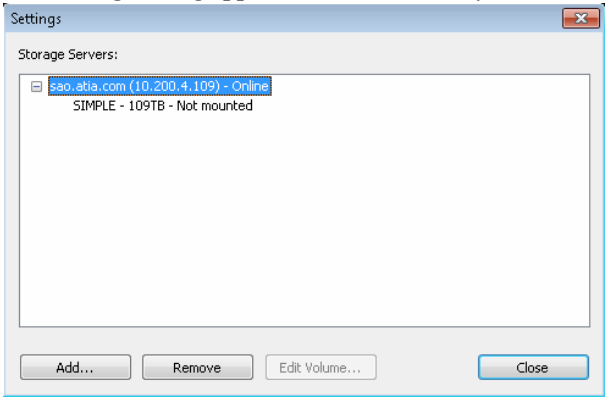
1. In command-line, type:
   `smct -a [name or IP address]`
   where **`[name or IP address]`** is the name or IP address of the Sonnet Serve appliance.
2. Press Enter.
   If you have successfully added the appliance to the list, the Sonnet Serve Client software automatically attempts to mount the volumes it shares on your computer.

Tip: *To view all appliances added to the list on your computer, type smct -l and press Enter.*

To remove a Sonnet Serve appliance from the list (Mac OS X and Windows):

Important: *After you remove a Sonnet Serve appliance from the list of storage servers on your computer, volumes shared by this storage server are automatically dismounted from your computer.*

1. Click the Sonnet Serve Client tray/menulet icon and then click Settings.
   The Settings dialog appears. It lists all already added Sonnet Serve appliances.



2. Select the appliance you want to remove from the list and do one of the following:
   - (Windows) Click Remove.
   - (Mac OS X) Click the "-" button.
3. Confirm that you want to remove the appliance from the list.
   The appliance is removed from the list and its volumes are dismounted from your computer.

To remove a Sonnet Serve appliance from the list (Linux):

1. In command-line, type:
   `smct -r [name or IP address]`
   where **`[name or IP address]`** is the name or IP address of the Sonnet Serve appliance.

Tip: *To view all appliances added to the list on your computer, type smct -l and press Enter.*

2. Press Enter.

Connecting To and Disconnecting From Sonnet Serve Appliances

To connect to a Sonnet Serve appliance (Mac OS X and Windows):

1. Click the Sonnet Serve Client tray/menulet icon and then click Connect/Disconnect.

   Your list of all storage servers is displayed.

2. Click a disconnected storage server (an appliance without a check mark in front of its name/IP address) to connect to it.

   The volumes this appliance shares are mounted on your computer.

To connect to a Sonnet Serve appliance (Linux):

1. In command-prompt, type:

   `smct -c [number/host/IP address]`

   where **`[number/host/IP address]`** is the IP address of the appliance or its number in your list of appliances.

2. Press Enter.

   Tip: *To connect to all appliances on your list, type smct -c all and press Enter.*

To disconnect from a Sonnet Serve appliance (Mac OS X and Windows):

1. Click the Sonnet Serve Client tray/menulet icon and then click Connect/Disconnect.

   Your list of all storage servers is displayed.

2. Click a connected storage server (an appliance with a check mark in front of its name/IP address) to disconnect from it and dismount the volumes it shares.

3. If prompted, confirm that you want to disconnect from the appliance.

   Note: *On Mac OS X, you are asked for confirmation only if a file operation on the shared volume is going on at the moment.*

   The volumes shared by this appliance are dismounted from your computer.

To disconnect from a Sonnet Serve appliance (Linux):

1. In command-prompt, type:

   `smct -d [number/host/IP address]`

   where **`[number/host/IP address]`** is the IP address of the appliance or its number in your list of appliances.

2. Press Enter.

Tip: *To disconnect from all appliances on your list, type* **`smct -d all`** *and press Enter.*

Accessing the Sonnet Serve Web Interface

Once Sonnet Serve Client computers add the appliance to their storage servers list, they can load the web interface directly through the tray application (Windows), the menulet (Mac OS X), command-line (Linux).

To access the web interface from a Sonnet Serve Client (Mac OS X and Windows):

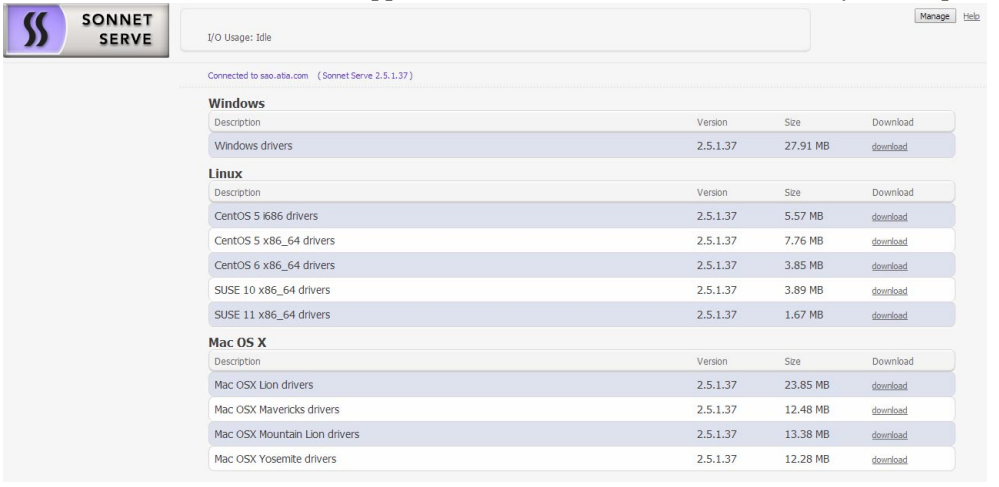
Note: *To connect to the web interface from the tray application/the menulet, you must first add the appliance to the list of accessible Sonnet Serve appliances (see "Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client" on page 31).*

1. Click the tray application/the menulet.

2. In the menu, click Open Configuration.

3. Click the appliance to whose web interface you want to connect.

The web interface of the selected appliance loads in the default web browser of your computer.



4. Click Manage and type the password for the web interface.

To access the web interface from a Sonnet Serve Client (Linux):

Note: *To connect to the web interface from a Linux Sonnet Serve Client, you must first add the appliance to the list of accessible Sonnet Serve appliances (see "Managing Sonnet Serve Appliance(s) on a Sonnet Serve Client" on page 31).*

Tip: *Instead of executing command-line commands, in a web browser you can simply type the IP address of the appliance, whose interface you want to access.*

1. In command-line, type this:
   `smct -config [number/host/IP address]`
   where **`[number/host/IP address]`** is the IP address of the appliance or its number in your list of appliances.
2. Press Enter.
   The web interface of the selected appliance loads in the default web browser of your computer.

3. Click Manage and type the password for the web interface.

Overwriting The Volume Mount Location (Windows)

By default, each Sonnet Serve volume uses Automatic mount location on all Sonnet Serve Clients:

- Windows - the first available drive letter.
- Mac OS X - **`/Volumes`**.
- Linux - **`/mnt`** directory with an automatically created symbolic link /Volumes, which points to the /mnt directory.

In the web interface of Sonnet Serve, you can specify a preferred drive letter as mount location of a Sonnet Serve volume on all Windows Sonnet Serve Clients. This way, you can make a volume to be mounted in one and the same location on all Windows Sonnet Serve Clients that see it. For more information, see “Selecting Volume Mount Location” on page 57.

Using the Sonnet Serve Client tray application, you can overwrite this setting for a particular Windows Sonnet Serve Client, by specifying different drive letter as default mount point on this computer.

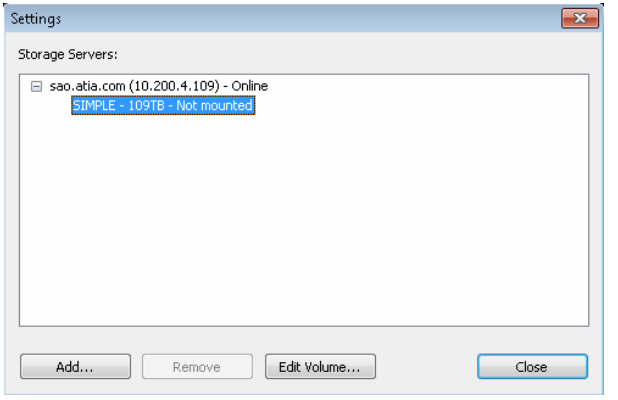
To overwrite the default mount location setting for a specific Sonnet Serve Client:

Note: *To overwrite the mount location of a volume, it must be disconnected from your computer.*

1. Click the Sonnet Serve tray application and then click Settings.

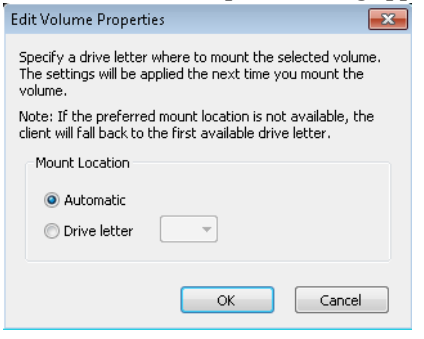
   The Settings dialog appears. It lists all already added Sonnet Serve appliances.

2. Expand a disconnected appliance and select the volume whose mount location you want to overwrite.



3. Click Edit Volume.

   The Edit Volume Properties dialog appears.



4. Do one of the following:

   • Select Automatic to let the volume mount on your computer using the first available drive letter.

- Select Drive Letter and in the drop-down box select a drive letter.

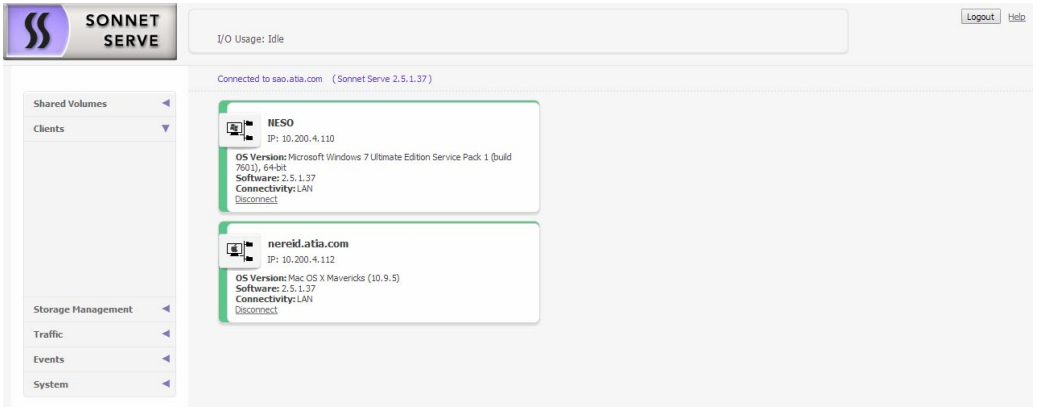
Note: *Sonnet Serve doesn't allow you to select a drive letter that is already in use on your computer.*

5. Click OK.

The volume will be mounted in the new mount location on your computer the next time you mount it.

Controlling Clients from The Web Interface

The Clients page of the web interface lists all Sonnet Serve Clients that are currently connected to the appliance. Each Sonnet Serve Client is represented by a tile that gives you the following information about the computer:



- Name;
- IP address;
- Operating system;
- Version of the Sonnet Serve Client software;
- Connectivity type - LAN or Fibre Channel;

In the tile of a Sonnet Serve Client in the Clients page, you can force disconnect just a selected Sonnet Serve Client from the shared volumes it sees.

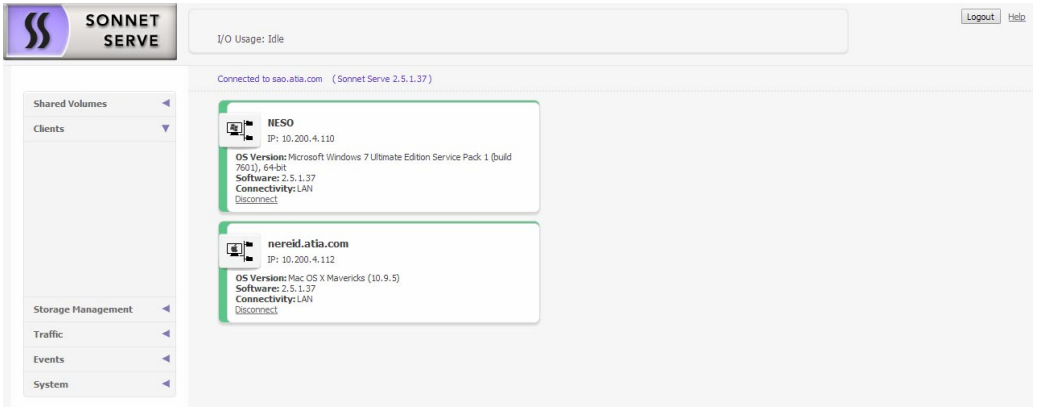
Important: *When you disconnect a Sonnet Serve Client from a shared volume, any file operation performed from that computer on the shared volume will be canceled.*

Note: *To connect again to the Sonnet Serve volume(s), each Sonnet Serve Client should manually connect to the appliance following the steps in "Connecting To and Disconnecting From Sonnet Serve Appliances" on page 34.*

To force disconnect a selected client computer:

1. In the left pane of Sonnet Serve's web interface, click Clients.

   The Client page loads. It lists all currently connected Sonnet Serve Clients.



2. Find the tile of the computer that you want to disconnect and click Disconnect.

   Note: *The Disconnect button is not present, if the Sonnet Serve Client computer has not mounted any volume.*

   Sonnet Serve disconnects the selected Sonnet Serve Client from all shared volumes.

View Connection Status

The Sonnet Serve Client tray application/menulet icon on your computer shows the connectivity status of your computer:

- Windows
  - - connected as SAN client to all appliances in the list;
  - - connected as LAN client to all appliances in the list;
  - - there's problem with the connection between your computer and one or more appliances in the storage servers list;
- Mac OS X
  - - connected to all appliances in the storage servers list;
  - - there's problem with the connection between your computer and one or more appliances in the storage servers list;

  Note: *On Mac OS X, you can check the type of connection by the icon of each Sonnet Serve volume mounted on your computer:*

- *volume is mounted over Fibre Channel;*

- *volume is mounted over the Ethernet;*

On Linux, to view the connectivity status of your computer for each appliance on the storage servers list, type this **`smct -l`** and press Enter:

- Online - the appliance is online, but you are not connected to it;
- Mounted (LAN) - your computer is connected as a LAN client to all appliances on the storage servers list;
- Mounted (Fibre) - your computer is connected as a SAN client to all appliances on the storage servers list;
- Offline - there's problem with the connection between your computer and one or more appliances in the storage servers list;

In the web interface of Sonnet Serve you can view the connection type of each client computer that is currently connected to the appliance:

	Windows	**Mac OS X**	**Linux**
SAN Member			
LAN Client			

View Traffic Information

To facilitate you in monitoring the workload of the appliance and the connectivity with currently connected Sonnet Serve Clients, Sonnet Serve's web interface offers you the Traffic monitoring tool. You can view data and metadata traffic statistics between the shared volumes and all currently connected computers for a selected period.

To view traffic information:

1. In the left pane of Sonnet Serve's web interface, click Traffic.

   The Traffic page appears.

2. In the drop-down box above the graph, select the type of metric (volume I/O in MB/s, volume I/O in requests/s, network I/O in MB/s, network packets/s, and number of open operations).

3. In the drop-down box below the graph, select the time interval for which you want statistics.

   The Traffic page displays a graph showing you the statistics for the parameters you've chosen in the respective drop-down boxes.

   Tip: *Instead of refreshing the web page to update the results displayed, select the "Update automatically" check box to allow the web interface to automatically update the information displayed.*

4 Managing the Sonnet Serve Storage

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Creating New Volumes 46
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Making a Volume Offline 55
Renaming a Sonnet Serve Volume 56
Selecting Volume Mount Location 57
Performing Maintenance Operations of The Storage 59
Sharing a Volume As a SMB/CIFS Share from Sonnet Serve 62
Smart Storage Pooling (Windows and Mac OS X only) 65

You can use Sonnet Serve with pre-formatted volumes (see “Storage Requirements” on page 10) or you can create new volumes on the disks seen by the appliance after you install Sonnet Serve.

You can manage the Sonnet Serve storage in the following ways:

- Create a new volume (see “Creating New Volumes” on page 46).
- Manage dynamic disks seen by the appliance (see “Managing Dynamic Disks Connected to the Appliance” on page 51).
- Share/unshare a volume (see “Sharing and Unsharing Volumes” on page 53).
- Make a volume offline (see “Making a Volume Offline” on page 55).
- Rename a volume (see “Renaming a Sonnet Serve Volume” on page 56).
- Set volume mount location on Windows Sonnet Serve Clients (see “Selecting Volume Mount Location” on page 57).
- Perform maintenance operations on a volume:
  - Check and repair the file system of a volume (see “Checking and Repairing The File System” on page 59).
  - Enable/disable auto-defragmentation of the shared volume(s) (see “Controlling Defragmentation” on page 60).
  - Manually defragment a shared volume, when auto-defragmentation is disabled (see “Manually Defragmenting a Sonnet Serve Volume” on page 61).
- Share a volume or a folder on it as a SMB/CIFS share to computers that don’t have the Sonnet Serve Client software installed (see “Sharing a Volume As a SMB/CIFS Share from Sonnet Serve” on page 62).
- Create a pool of two or more of the volumes and mount it as a single virtual volume on Windows and Mac OS X Sonnet Serve Clients (see “Smart Storage Pooling (Windows and Mac OS X only)” on page 65).

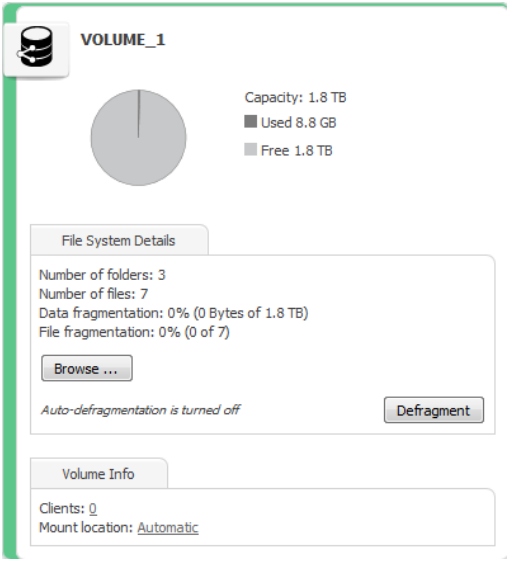
Some of the above operations on the shared storage require higher protection. That is why before you perform them, you may have to unshare the volume for Sonnet Serve Clients or enter Maintenance mode. Entering Maintenance mode automatically disconnects all client computers from the shared volumes, that is why it is advisable to make sure that no file operation is being interrupted by entering Maintenance mode. After exiting Maintenance mode client computers are not automatically reconnected to the shared volume and have to manually connect to the storage server in order to mount the volume(s).

Important: *If the appliance is rebooted while in Maintenance mode, any maintenance operation going on at the moment is canceled and clients can re-connect to Sonnet Serve.*

Viewing Storage Information

Viewing Shared Volumes Details

You can view details about volumes shared to Sonnet Serve Clients in the Shared Volumes page of the web interface. If smart storage pooling is disabled for Sonnet Serve, it displays all shared Sonnet Serve volumes as separate volume tiles. If smart storage pooling is enabled, it displays the volume tile of the virtual volume. You can view the following details:

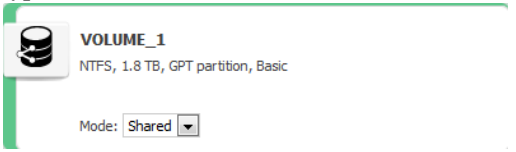


- Volume name.
- Pie chart of the volume capacity with free and used space statistics.
- File system details - number of files and folders on the volume, and fragmentation statistics.
- Number of connected clients.
- Default mount location of the volume on all Windows computers.

Viewing All Volumes Details

In the Volumes page (Storage Management | Volumes) each volume seen by Sonnet Serve is presented with a separate tile, even if smart storage pooling is enabled on Sonnet Serve. The

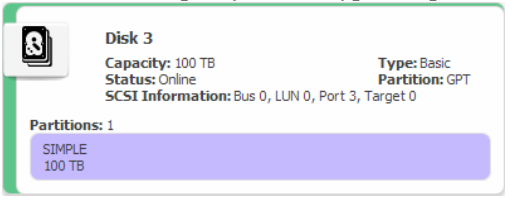
volume tile in the Volumes page gives you information about the file system, size, partition and disk type, and the mode of the volume for Sonnet Serve Clients (shared, offline or private).



Viewing Disks Details

You can view details about the disks accessible to Sonnet Serve in the Disks page.

In the Disks page each accessible disk is represented with a separate tile, that gives you information about the disk capacity, status, type and partition(s),



Creating New Volumes

You can create a new volume in the web UI of Sonnet Serve. You can create either a simple GPT volume (on a single disk) or a RAID 0 volume (on multiple disks). The new volume can be on disks that are not part of any volume or on the disks of an existing volume. When you create a new volume on the disks of an existing volume, you need to clean the disks of their storage type (basic or dynamic). For more information, refer to “Cleaning Disks” on page 46. When creating a RAID 0 volume, you can set the stripe chunk size of the new volume.

You can also create a new volume on the disks of a volume seen by Sonnet Serve from any non-Sonnet Serve Client computer that sees these disks, as long as the volume is made Offline in the Sonnet Serve interface (see “Making a Volume Offline” on page 55).

Important: *All volumes created in the Sonnet Serve UI are automatically shared to Sonnet Serve Clients.*

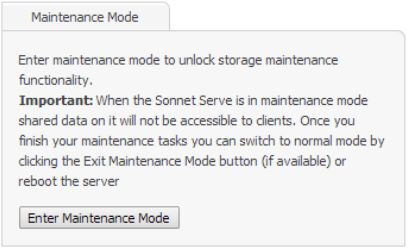
Cleaning Disks

To create a new volume on the disk(s) of an existing volume, you should first clean the disks of their storage type. By cleaning a disk from its storage type you destroy the existing volume and all data on it. When the disks, on which you want to create a new volume in Sonnet Serve’s web UI, are not part of an existing volume, there’s no need to clean them.

To clean a disk of its storage type:

Important: *Cleaning a disk is an operation that requires entering Maintenance mode. Entering Maintenance mode automatically disconnects all client computers from the shared storage and stops any file operation going on at the moment.*

1. In the left pane, click System and then Maintenance.
2. In the Maintenance page, click Enter Maintenance Mode.



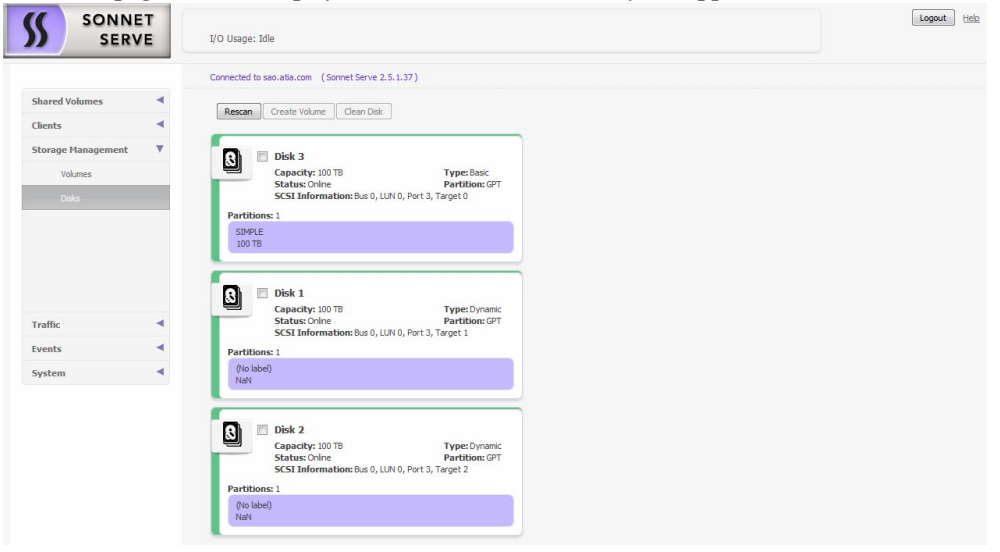
3. Confirm that you want to enter Maintenance mode, when prompted.

   The appliance automatically disconnects all Sonnet Serve Clients currently accessing the volumes and the button changes to Exit Maintenance mode.

   Important: *If you exit Maintenance mode or the appliance is rebooted while in Maintenance mode, any maintenance operation going on at the moment is canceled and clients can re-connect to Sonnet Serve.*

4. In the left pane of Sonnet Serve's web interface, click Storage Management and then Disks.

   The Disks page loads. It displays the tiles of all disks seen by the appliance.



5. Select the tile of the disk(s) that you want to clean and click Clean Disk.

   Sonnet Serve cleans the selected disks of their storage type and when the operation finishes updates their tiles with type “Unknown”.

   Tip: *You can view the operation progress in the band at the top of the page.*

6. Do one of the following:

   • Without exiting Maintenance Mode, proceed to create a new volume on the cleaned disk(s).

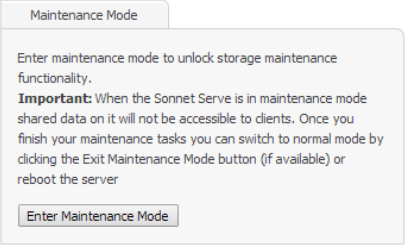
   • Exit Maintenance Mode (go to System | Maintenance, and click Exit Maintenance Mode) to let client computers connect to the shared volumes again.

To create a new basic GPT volume:

Important: *Creating a new volume is an operation that requires entering Maintenance mode. Entering Maintenance mode automatically disconnects all client computers from the shared volumes and stops any file operation going on at the moment.*

1. In the left pane of Sonnet Serve’s web interface, click System and then Maintenance.

2. In the Maintenance page, click Enter Maintenance Mode.



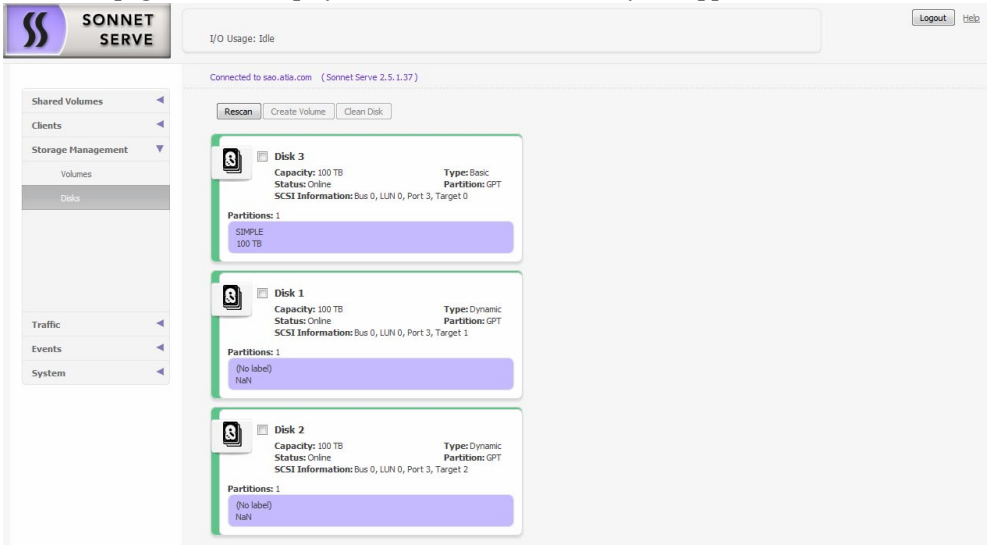
3. Confirm that you want to enter Maintenance mode, when prompted.

   The appliance automatically disconnects all Sonnet Serve Clients currently accessing the volumes and the button changes to Exit Maintenance mode.

   Important: *If you exit Maintenance mode or the appliance is rebooted while in Maintenance mode, any maintenance operation going on at the moment is canceled and clients can re-connect to Sonnet Serve.*

4. In the left pane of Sonnet Serve's web interface, click Storage Management and then Disks.

   The Disks page loads. It displays the tiles of all disks seen by the appliance.



5. Select the tile of the disk on which you want to create the new basic GPT volume and click Create Volume.

   Note: *The disk you have selected must be with "Unknown" type, designating it's cleaned of its storage type formatting.*

6. In the Volume dialog, specify the name of the new volume and click OK.

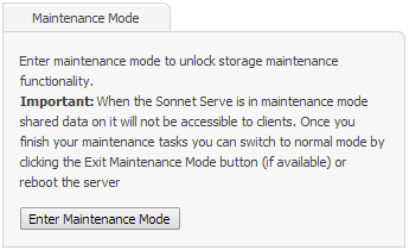
   Sonnet Serve creates a new basic GPT volume on the selected disk and automatically shares it to Sonnet Serve Clients (for steps about providing non-Sonnet Serve Client computers with access to it refer to "Making a Volume Offline" on page 55).

7. Exit Maintenance Mode (go to System and then Maintenance, and click Exit Maintenance Mode) to let Sonnet Serve Clients connect to the shared volumes again.

To create a new striped GPT volume:

Important: *Creating a new volume is an operation that requires entering Maintenance mode. Entering Maintenance mode automatically disconnects all client computers from the shared volumes and stops any file operation going on at the moment.*

1. In the left pane of Sonnet Serve's web interface, click System and then Maintenance.
2. In the Maintenance page, click Enter Maintenance Mode.



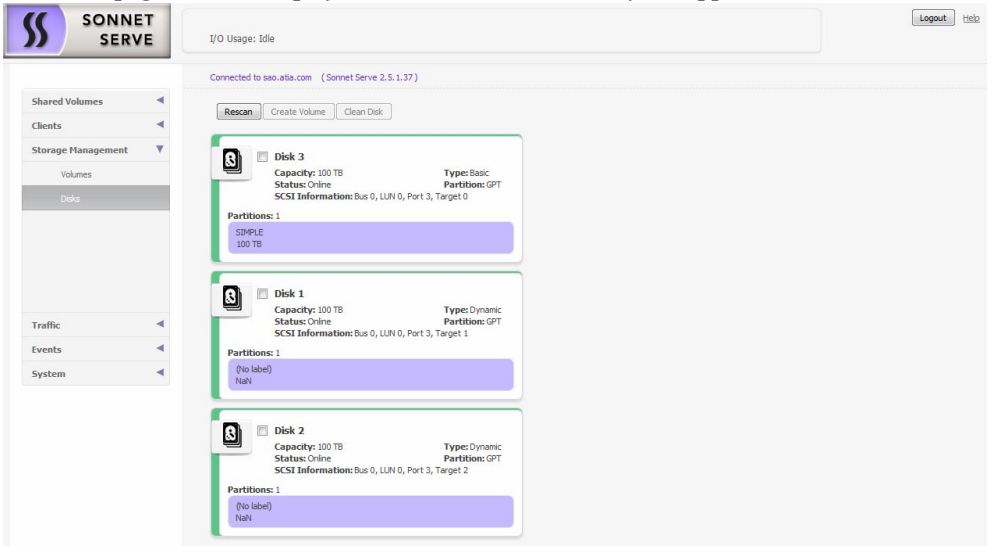
3. Confirm that you want to enter Maintenance mode, when prompted.

   The appliance automatically disconnects all Sonnet Serve Clients currently accessing the volumes and the button changes to Exit Maintenance mode.

   Important: *If you exit Maintenance mode or the appliance is rebooted while in Maintenance mode, any maintenance operation going on at the moment is canceled and clients can re-connect to Sonnet Serve.*

4. In the left pane of Sonnet Serve's web interface, click Storage Management and then Disks.

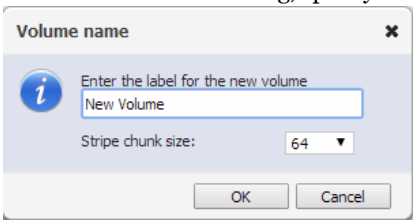
   The Disks page loads. It displays the tiles of all disks seen by the appliance.



5. Select the tiles of the disks on which you want to create the new striped volume and click Create Stripe.

   Note: *The disks you have selected must be with "Unknown" type, designating they are cleaned of their storage type formatting.*

6. In the Volume Name dialog, specify the name of the new volume.



7. (*optional*) In Stripe Chunk Size, select the desired value.

   Note: *If you don't make a selection, Sonnet Serve uses the default stripe chunk size of 64KB.*

8. Click OK.

   Sonnet Serve creates a new striped volume on the selected disks and automatically shares it to Sonnet Serve Clients (for steps about providing non-Sonnet Serve Client computers with access to it refer to "Making a Volume Offline" on page 55).

9. Exit Maintenance Mode (go to System and then Maintenance, and click Exit Maintenance Mode) to let Sonnet Serve Clients connect to the shared volumes again.

Managing Dynamic Disks Connected to the Appliance

When you connect your appliance to an already formatted striped volume, it is possible that Sonnet Serve doesn't recognize the LDM configuration of the volume's dynamic disks and they appear as Foreign. To be able to manage the striped volume, you should import its disks.

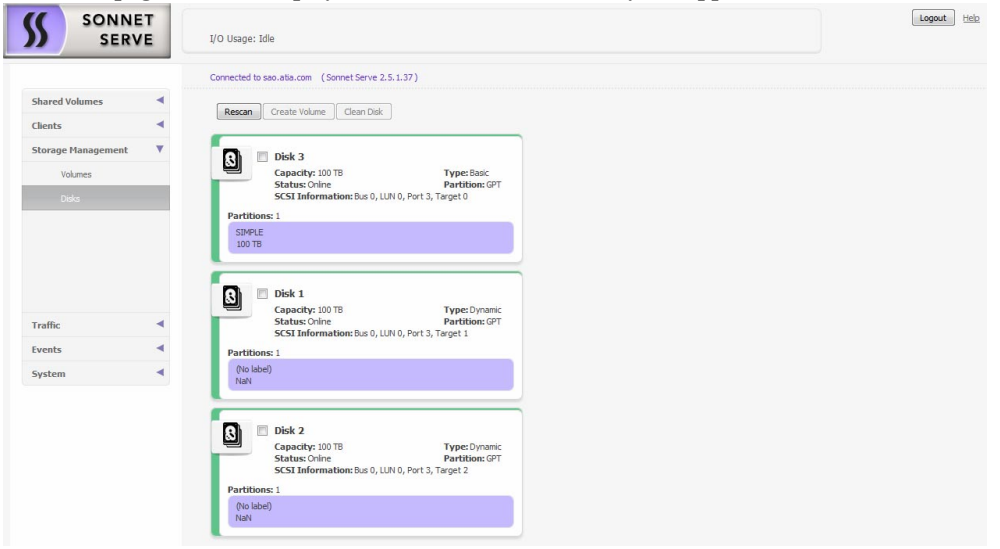
Important: *Once you import the disks on Sonnet Serve, you may have to import them on each computer that has previously seen the striped volume.*

You may also have to reactivate dynamic disks that are with Offline or Missing status on the appliance, in order to manage them.

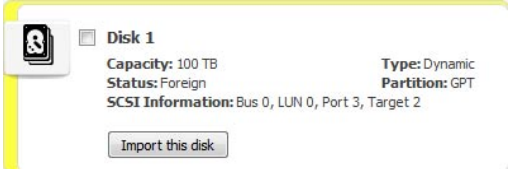
To import foreign disks:

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Disks.

   The Disks page loads. It displays the tiles of all disks seen by the appliance.



2. In the tile of a Foreign disk, click "Import this disk".



3. Confirm that you want to import the selected disk on Sonnet Serve.

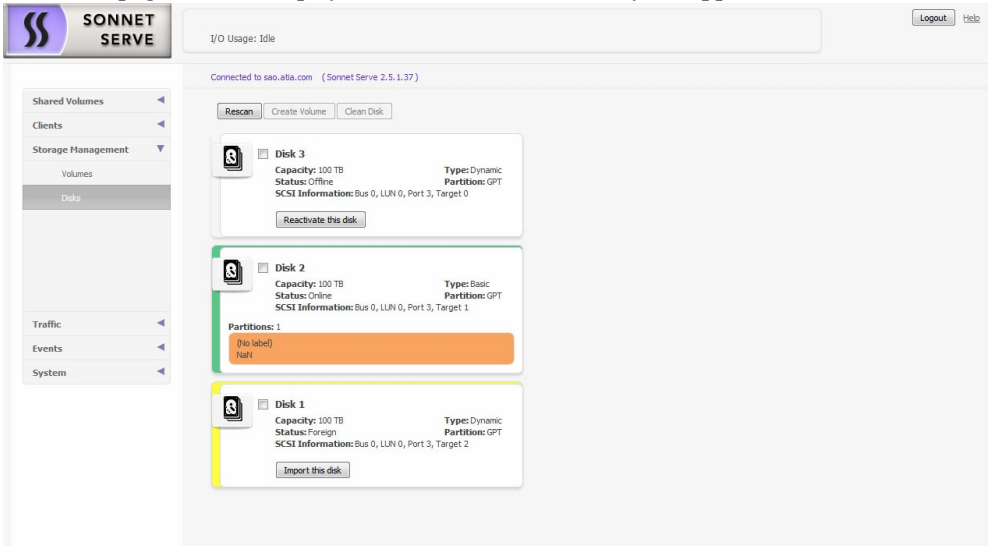
   Sonnet Serve imports all dynamic disks comprising the striped volume.

   Note: *To let SAN Sonnet Serve Clients access the striped volume, you should import its disks on each SAN Sonnet Serve Client too.*

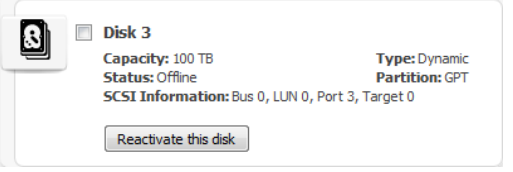
To reactivate dynamic disks:

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Disks.

   The Disks page loads. It displays the tiles of all disks seen by the appliance.



2. In the tile of a disk with Offline/Missing status, click "Reactivate this disk".



   Sonnet Serve reactivates all disks with Offline/Missing status in the same group.

Sharing and Unsharing Volumes

Volumes in the Sonnet Serve network can have one of the following states:

Shared — the volume can be mounted only on Sonnet Serve Clients;

Note: *If smart storage pooling is enabled (see "Smart Storage Pooling (Windows and Mac OS X only)" on page 65), the pool mounts on Sonnet Serve Clients only if at least one of its volumes is shared.*

Private — the volume is accessible to Sonnet Serve and neither Sonnet Serve Clients, nor computers without the Sonnet Serve Client software can mount it and work with it;

Offline — the volume is not managed by Sonnet Serve and can be mounted by any computer that sees it;

By default, when you install Sonnet Serve for the first time, all existing volumes manageable by the appliance are set to Private mode. You can choose which ones of them to share to Sonnet Serve Clients (by making them shared) and which ones to computers without the Sonnet Serve Client software installed (by making them offline).

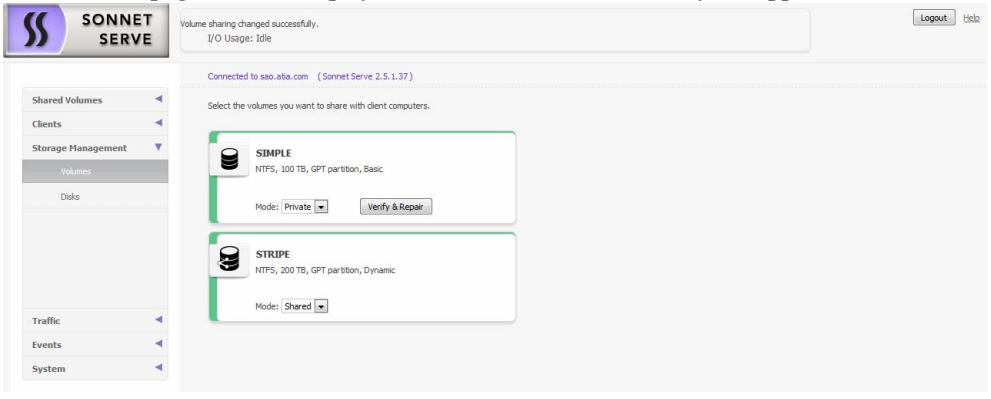
Whenever you perform a maintenance operation like checking and repairing the file system of a volume, instead of disconnecting Sonnet Serve Clients from all shared volumes by entering Maintenance mode, you can unshare the volume on which you will perform the respective maintenance operation and after that share it again.

To share a volume to Sonnet Serve Clients:

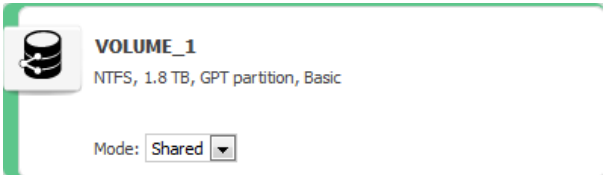
Important: *If you share an Offline volume, all non-Sonnet Serve Client computers that access it will dismount it and will lose any unsaved data on that volume.*

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Volumes.

   The Volumes page loads. It displays the tiles of all volumes seen by the appliance.



2. Find the tile of the private/offline volume, which you want to share and in the drop-down box select Shared.



3. Confirm that you want to share the volume to Sonnet Serve Clients.

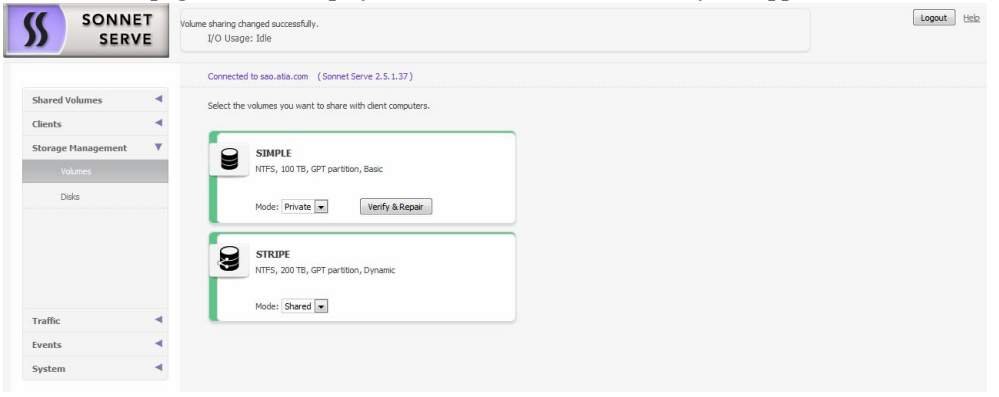
   The volume is shared to all Sonnet Serve Clients that have access to it.

To make a volume Private for the appliance:

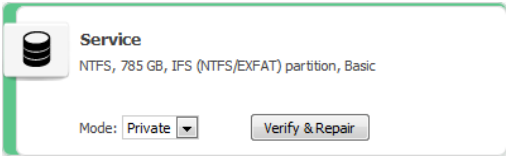
Important: *If you make Private an Offline volume, all non-Sonnet Serve Client computers that access it will dismount it and will lose any unsaved data on that volume.*

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Volumes.

   The Volumes page loads. It displays the tiles of all volumes seen by the appliance.



2. Find the tile of the volume, which you want to unshare and in the drop-down box select Private.



3. Confirm that you want to make the volume Private for the appliance.

   The volume is made Private for the appliance and all computers that had access to it (Sonnet Serve Clients or non-Sonnet Serve Clients) can no longer mount it.

Making a Volume Offline

By default, Sonnet Serve manages all volumes, meeting the storage requirements that the appliance is connected to. Whether or not the appliance shares them to Sonnet Serve Clients, these volumes are protected and cannot be mounted by computers that don't run the Sonnet Serve Client software, even though they may have access to these volumes. To let non-Sonnet Serve Client computers work and mount volumes that Sonnet Serve sees, you should remove Sonnet Serve's protection over them. You can do this by making them Offline. An Offline volume is accessible to any computer that sees that volume.

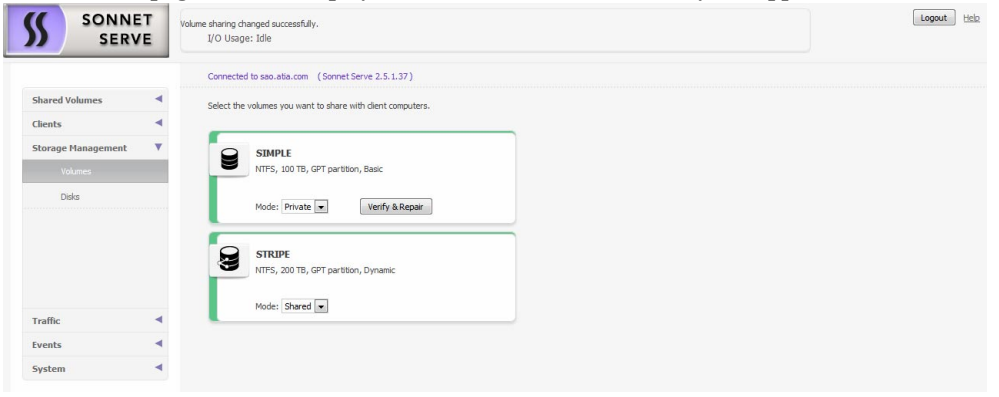
Important: *As offline volumes are not protected by Sonnet Serve, you should take care not to let more than one computer to mount them at a time in order to prevent data corruption on them.*

To make a volume offline (remove Sonnet Serve protection):

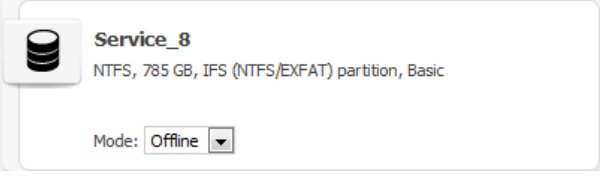
Important: *If you make a shared volume Offline, all Sonnet Serve Clients that access it will dismount it and will lose any unsaved data on that volume.*

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Volumes.

   The Volumes page loads. It displays the tiles of all volumes seen by the appliance.



2. Find the tile of the volume, which you want to share and in the drop-down box select Offline.



3. Confirm that you want to make the volume Offline.

   The volume is made Offline and all non-Sonnet Serve Client computers that see it can mount it.

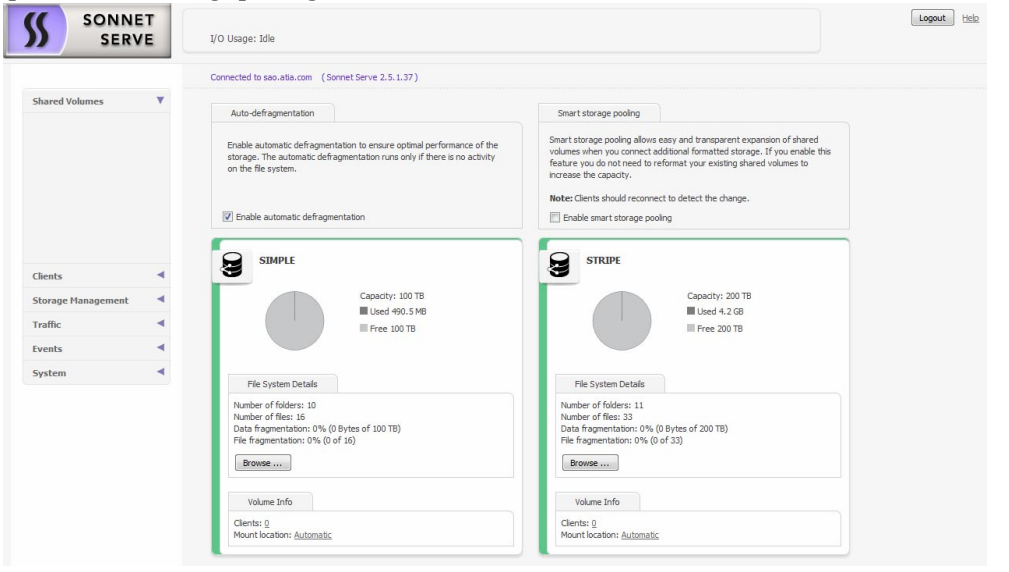
Renaming a Sonnet Serve Volume

The name of each Sonnet Serve volume is used as its label on client computers. When smart storage pooling is enabled on the appliance, the name of the pool is used as a label of the virtual volume. You can change the name of a shared volume/pool at any time. Computers that have mounted a shared volume with its old name can see it with its new name only after reconnecting to the appliance.

To rename a Sonnet Serve volume:

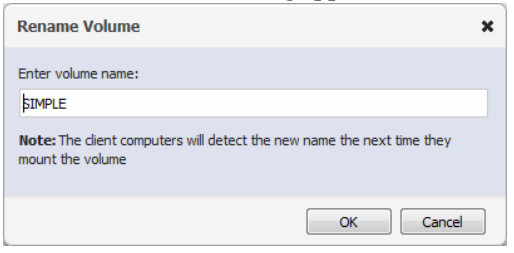
1. In the left pane of Sonnet Serve's web interface, click Shared Volumes.

   The Shared Volumes page loads. It displays the tiles of all Sonnet Serve volumes or the tile of the pool, if smart storage pooling is enabled.



2. Click the name of the volume/pool in the tile.

   The Rename Volume dialog appears.



3. Enter a new name of the volume/pool and click OK.

   The new volume name is displayed on client computers only after they remount the volume.

Selecting Volume Mount Location

By default, each Sonnet Serve volume uses Automatic mount location on all client computers:

- Windows - the first available drive letter.

- Mac OS X - **`/Volumes`**.
- Linux - **`/mnt`** directory with an automatically created symbolic link /Volumes, which points to the /mnt directory.

In the web interface of Sonnet Serve, you can specify a preferred drive letter as mount location of a Sonnet Serve volume on all Windows machines. This way, you can make a volume to be mounted in one and the same location on all Windows machines that see it.

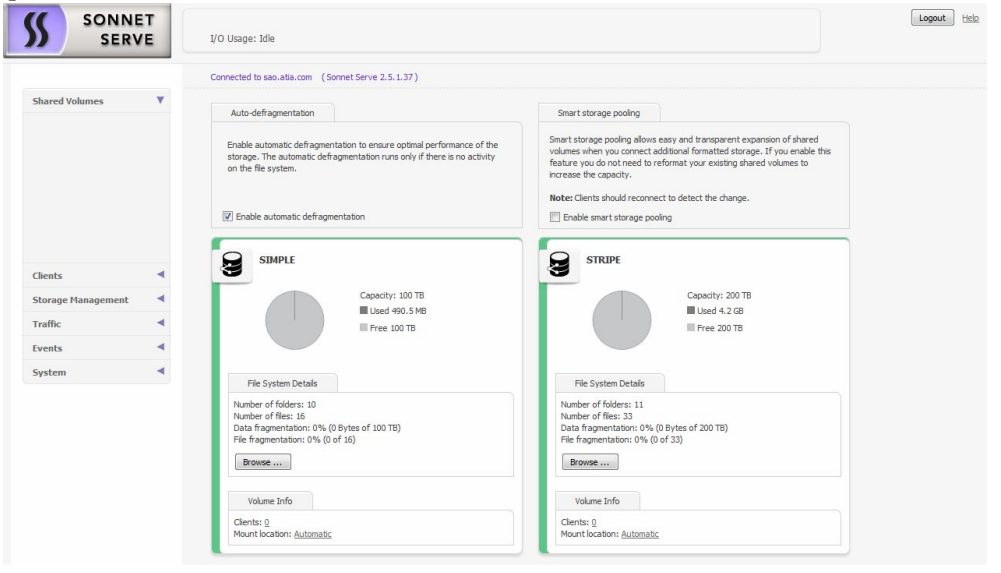
Note: *If you specify a drive letter as default mount location, but this drive letter is already in use on a Windows Sonnet Serve Client computer, it uses Automatic as mount location setting.*

You can also overwrite this setting for a particular Windows Sonnet Serve Client, by specifying different drive letter as default mount point on this computer. For more information, see “Overwriting The Volume Mount Location (Windows)” on page 36.

To set default mount location on Windows Sonnet Serve Clients:

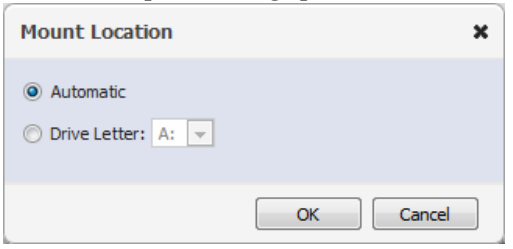
1. In the left pane of Sonnet Serve’s web interface, click Shared Volumes.

   The page that loads displays the volume tiles of all Sonnet Serve volumes or the tile of the volume pool.



2. In the tile of the selected volume, click Mount Options.

   The Mount Options dialog opens.



3. Do one of the following:

- Select Automatic to let the volume mount on Sonnet Serve Clients using the first available drive letter.
- Select Drive Letter and in the drop-down box select a drive letter.

4. Click OK.

   The volume is mounted in the new mount location on Sonnet Serve Clients only after they remount it.

Performing Maintenance Operations of The Storage

Checking and Repairing The File System

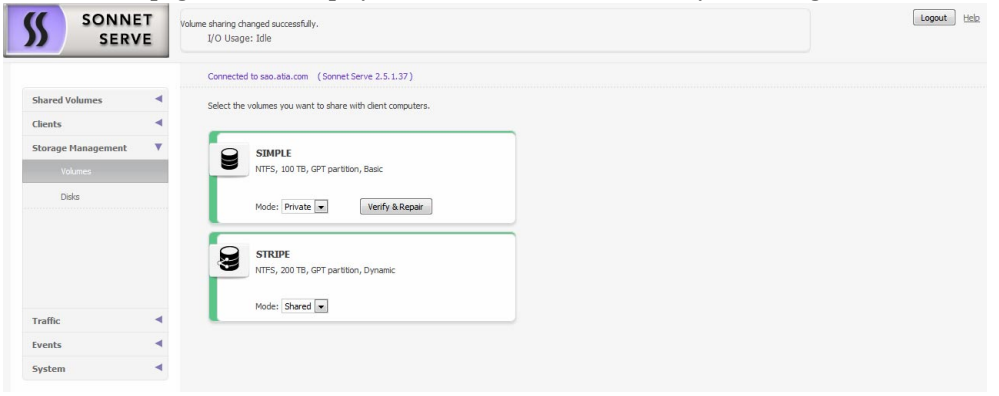
You can check and repair the file system on each volume managed by Sonnet Serve from the web interface. The operation goes through two stages - file system check and file system repair. While you perform the operation, Sonnet Serve Clients must not have access to the volume, that is why you should first make it private for the storage server and only after the operation finishes, share it to Sonnet Serve Clients again.

Requests for data on the volume whose file system you are checking and repairing will not be processed until the volume is again shared to Sonnet Serve Clients.

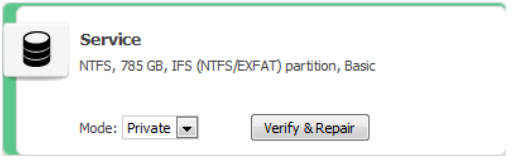
To check and repair the file system of a shared volume:

1. In the left pane of Sonnet Serve's web interface, click Storage Management and then Volumes.

   The Volumes page loads. It displays the tiles of all volumes seen by the storage server.



2. Find the tile of the volume, which you want to unshare and in the drop-down box select Private.



3. Confirm that you want to make the volume Private for the storage server.
4. Click Verify & Repair in the volume tile.

   Note: *This button is hidden, if the volume is not Private for the appliance.*

5. Click Continue to confirm that you want to check and repair the file system.

When the file system check finishes, Sonnet Serve automatically attempts to repair the file system. While the operation is in progress, the volume disappears from the web UI. Once the operation finishes, the volume again appears in the web UI and you can share it to Sonnet Serve Clients (see "Sharing and Unsharing Volumes" on page 53).

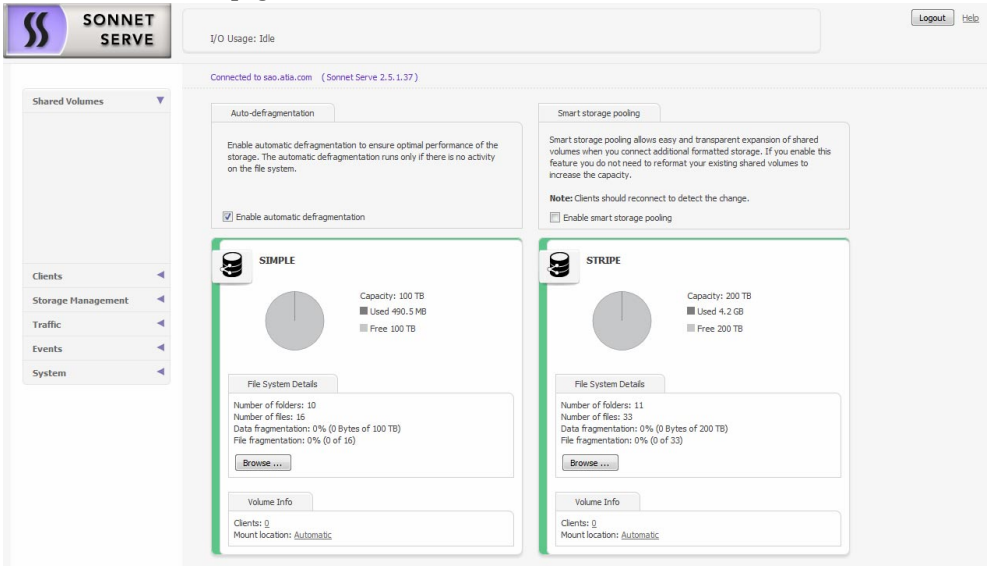
Controlling Defragmentation

Sonnet Serve's defragmentation engine is designed not only to reduce the fragmentation of the file system, but also to optimize the processing of file sequences on the shared volumes. By default, Sonnet Serve's auto-defragmentation is automatically enabled. It defragments both data and free space on the shared volume(s) only when the system is in idle state (overall traffic to the shared storage doesn't exceed 10MB/s for at least 30 minutes) and automatically pauses, when traffic above this threshold is detected. You can disable auto-defragmentation and run defragmentation manually from the web interface instead.

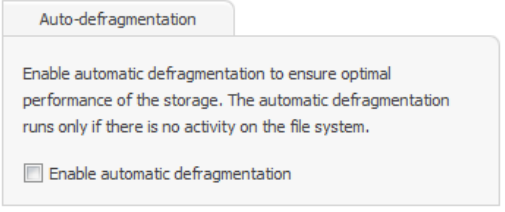
To enable/disable auto-defragmentation:

1. In the left pane of Sonnet Serve's web interface, click Shared Volumes.

   The Shared Volumes page loads.



2. In the Auto-defragmentation field, do one of the following:



   • Select the "Enable automatic defragmentation" check box, to enable auto-defragmentation of the volume.

   • Clear the "Enable automatic defragmentation" check box, to disable auto-defragmentation of the volume.

3. Click Continue to Confirm the selected option.

Manually Defragmenting a Sonnet Serve Volume

If you have disabled auto-defragmentation on Sonnet Serve (see "Controlling Defragmentation" on page 60), it is advisable that you perform manual defragmentation of the volume(s) when needed. You can keep track of the fragmentation of each Sonnet Serve volume in the Volume tile - it displays

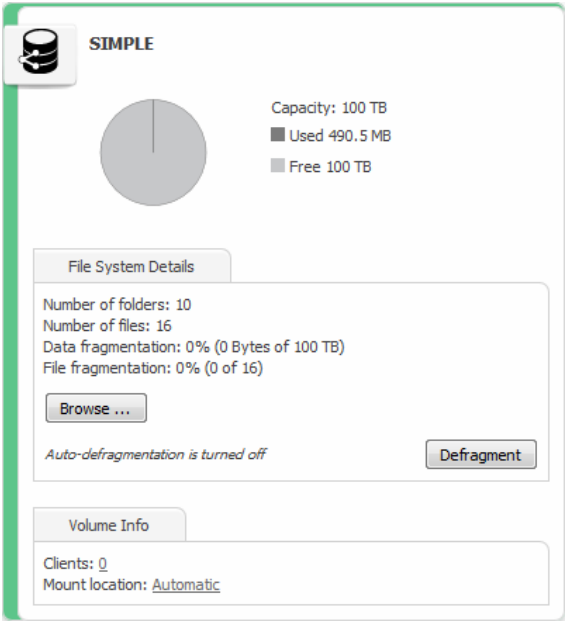
information about both data fragmentation and file fragmentation. Manual defragmentation can be stopped at any time.

To manually defragment a Sonnet Serve volume:

1. In the left pane of Sonnet Serve's web interface, click Shared Volumes.

   The page that loads displays the tiles of all available volumes.

2. In the tile of a selected volume, click Defragment.



Important: *When smart storage pooling is enabled, to manually defragment the volumes comprising the pool, you must first disable smart storage pooling (see "Smart Storage Pooling (Windows and Mac OS X only)" on page 65).*

While the process is running, the Volume tile displays the defragmentation progress percentage and allows you to stop the defragmentation by clicking Stop Defrag.

Sharing a Volume As a SMB/CIFS Share from Sonnet Serve

As each Sonnet Serve client computer can export a shared volume (or a folder on it) as a LAN share to computers on the network that don't have the Sonnet Serve Client software installed, the appliance itself can export a volume it shares or a folder on it as a SMB/CIFS share too. You can export as many shares as you like or remove any one of them at any time. The exported shares are

accessible to all computers on the same LAN segment, by typing the name/IP address of the appliance in the file explorer of the operating system.

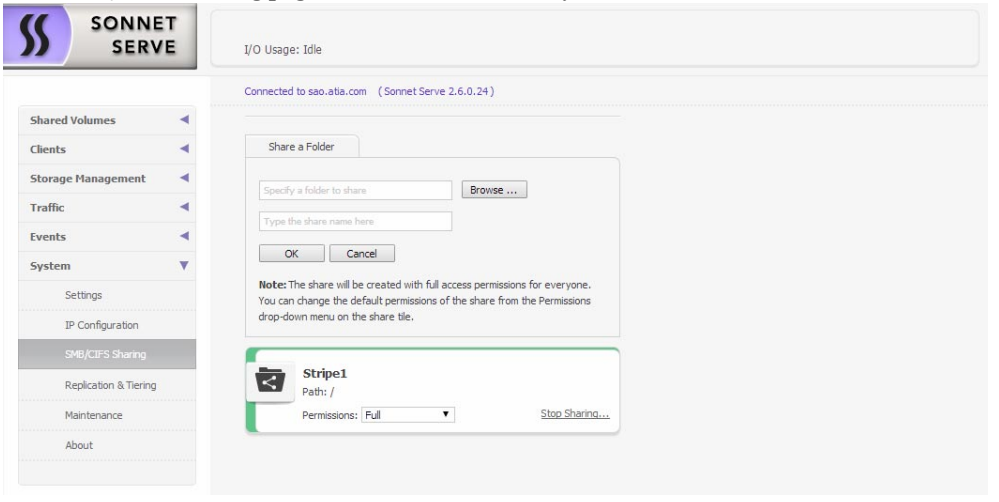
By default, the newly created SMB/CIFS share is accessible with "Full access" permissions to everyone. You can change the access permissions to the share for Everyone (domain or workgroup users) in the web interface of Sonnet Serve.

Note: *To change the name of a share, you should first remove it then re-create it with its new name.*

To create a SMB/CIFS share on a Sonnet Serve volume:

1. In the left pane of Sonnet Serve's web interface, click System and then SMB/CIFS Sharing.

   The SMB/CIFS Sharing page loads. It lists all already created shares.



2. In Share a Folder, click Browse and browse to the desired volume and select the folder on it.

   Tip: *To share a whole volume, select the root of the volume.*

3. Enter a name of the share and click OK.

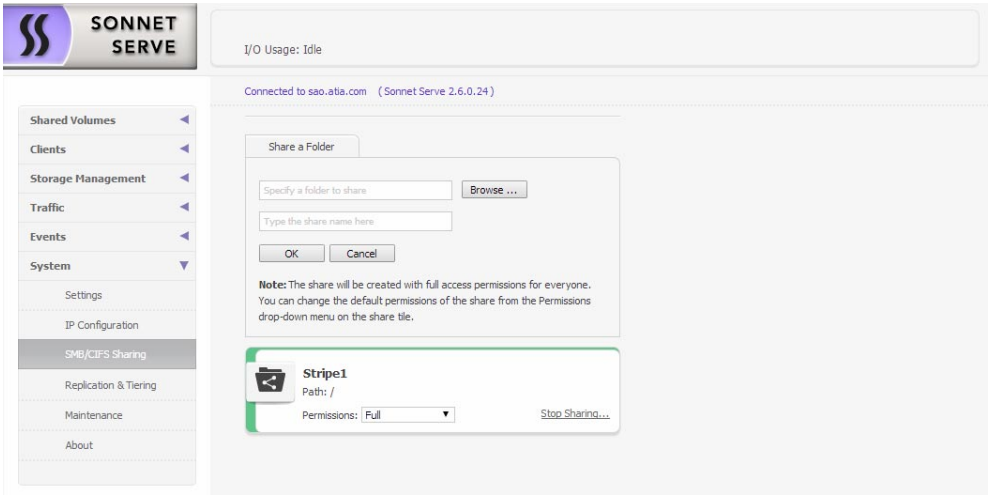
   Note: *If you do not specify a name of the share, it automatically takes the name of the folder.*

   The share appears in the list of shares. By default, it is accessible to everyone with Read Only permissions. To change the share permissions, refer to page 65.

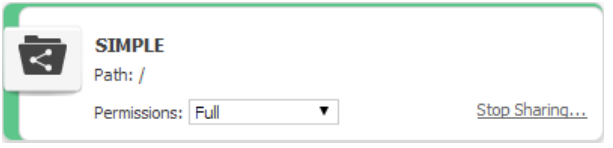
To remove a SMB/CIFS share of a Sonnet Serve volume:

1. In the left pane of Sonnet Serve's web interface, click System and then SMB/CIFS Sharing.

   The SMB/CIFS Sharing page loads. It lists all already created shares in descending order by share name.



2. Find the tile of the share that you want to remove and click Stop Sharing.



   Important: *All LAN clients that are currently accessing the SMB/CIFS share through Sonnet Serve lose connection to it and any file operation going on at the moment may fail.*

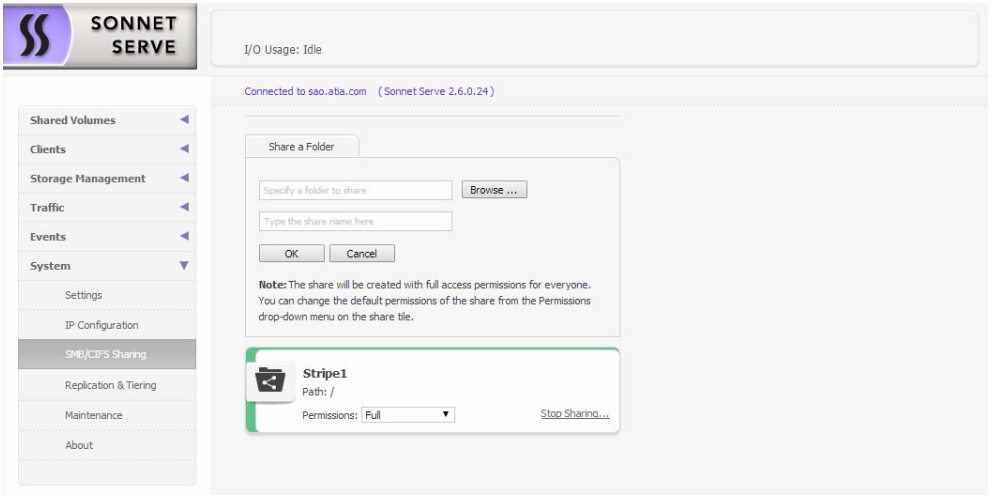
3. Confirm that you want to remove the share.

   The share is removed from the list of shares.

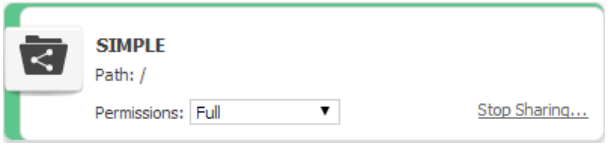
To set permissions of a SMB/CIFS share on a Sonnet Serve volume:

1. In the left pane of Sonnet Serve's web interface, click System and then SMB/CIFS Sharing.

   The SMB/CIFS Sharing page loads. It lists all already created shares in descending order by share name.



2. Find the tile of the share whose permissions you want to set.



3. In the drop-down box, select the respective permissions for Everyone.

   The permissions are applied on the next re-mount of the share on non-Sonnet Serve Client computers.

Smart Storage Pooling (Windows and Mac OS X only)

The smart storage pooling feature of Sonnet Serve allows you to unite the volumes shared by the appliance into a single virtual volume - the storage pool - that Sonnet Serve Clients can access through a universal mount point. The pool size equals the sizes of all volumes that comprise it and presents their existing folder structures as one merged folder structure. Volumes can contain data prior to uniting them in a storage pool and it will remain visible in the pool. Similarly, when the pool is disbanded (by disabling smart storage pooling), all data remain on the respective Sonnet Serve volume and is accessible through the volume itself.

When enabling smart storage pooling on volumes that already contain data, it is possible ambiguity of file objects to occur i.e. files/folders with one and the same name to exist in exactly the same location on two or more volumes in the pool. For more details, refer to “Dealing with Files and Folders Ambiguity” on page 69.

By default, when writing new data on the pool, Sonnet Serve tries to store it on the same file system on which the containing folder is stored. In case you write new data on the root of the storage pool, Sonnet Serve creates it in the root of the shared volume that has more free space. You can change this default behaviour, by applying a data distribution policy. For more details, see “Data Distribution within the Storage Pool” on page 67.

To enable smart storage pooling, there must be at least two shared volumes available. While smart storage pooling is enabled, you can set any volume in the pool to Private or Offline and clients will continue to mount the pool as long as at least of the volumes in it is shared, but cannot access data stored on volumes that are not shared.

You can enable and disable smart storage pooling at any time as long as data replication is not currently enabled. Windows and Mac OS X Sonnet Serve Clients will detect that they should mount either the individual volumes or the pool, only on the next attempt to mount the Sonnet Serve storage.

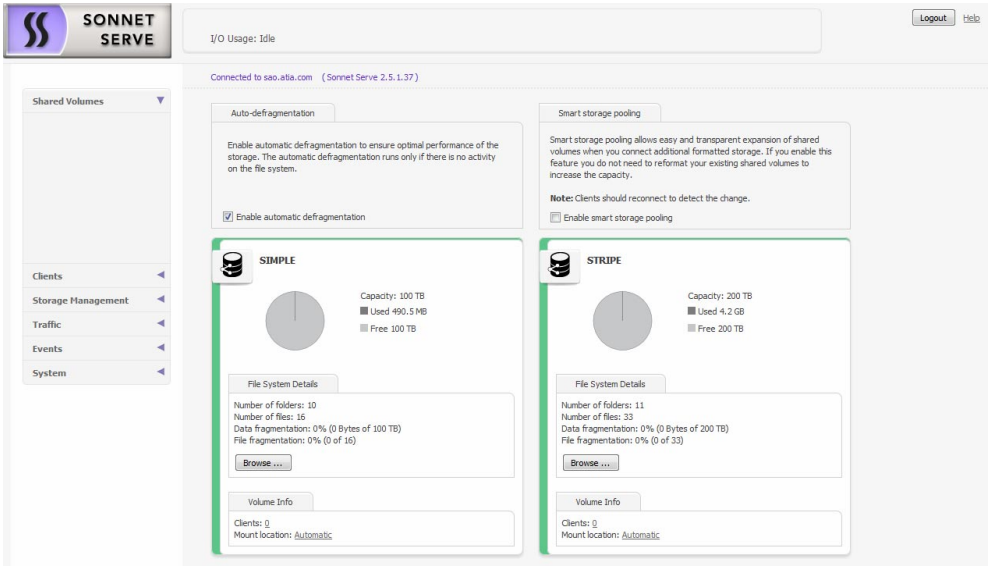
Note: *Smart storage pooling is not supported on Linux Sonnet Serve Clients and they always mount the individual volumes only.*

Options you might want to configure after enabling/disabling smart storage pooling include volume mount location for the pool, data replication and storage reclaiming settings.

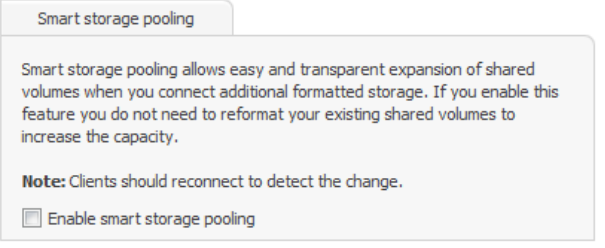
To enable/disable smart storage pooling:

1. In the left pane of Sonnet Serve's web interface, click Shared Volumes.

The Shared Volumes page loads. It displays the tiles of all volumes shared to Sonnet Serve Clients.



2. In Smart Storage Pooling, do one of the following:



- Select the "Enable smart storage pooling" check box, to unite all shared volumes in a pool.
- Clear the "Enable smart storage pooling" check box, to disband the volume pool and let Sonnet Serve Clients access the individual volumes instead.

Note: *You cannot change smart storage pooling settings, if data replication is enabled.*

Data Distribution within the Storage Pool

By default, when writing new data on the pool, Sonnet Serve tries to store it on the same file system on which the containing folder is stored. In case you write new data in the root of the storage pool, Sonnet Serve creates it in the root of the volume that has more free space.

You can change this default behaviour for newly created folders, by applying a data distribution policy to a folder (the root of the volume pool or any folder in the pool):

Balance by size — creates the folder on the volume in the storage pool, which has more free space.

Balance by count — creates the folder on the volume in the storage pool, which has the minimal number of folder entries.

Note: *Files are always stored on the volume of their parent folder regardless of the policy you apply.*

To apply one or the other of the above policies, you should create a file with the name of the policy in the root of the storage pool or in any of its subfolders, thus instructing Sonnet Serve to calculate either the free space or the number of folders on each volume in the pool and only after that to create the new folder on the volume that matches the policy. Should the policy instruct Sonnet Serve to create the new folder not on the volume containing the parent folder, but on another volume, Sonnet Serve replicates the entire folder structure from the root of the volume pool to the newly created folder so that the path used to access it would be the same as if accessing it from the parent folder. For example, if on one shared volume you have a folder “Projects” that contains three subfolders - “May”, “June” and “July”, and you set the creation behaviour of folder “June” to use the Balance by count policy, when you create a new folder “Drafts” in the “June” folder, and it needs to be stored on another volume, because there are less file objects on it, Sonnet Serve will create in the root of the other volume, a folder “Projects” containing just the folder “June” with a subfolder “Drafts”. The policy is valid just for the folder containing the respective policy file and is not applied recursively to its sub-folders i.e. if you create new folders in the folder “Drafts”, which doesn’t contain a policy file, the new folders will be stored on the second volume.

If the policy file is missing or both files are stored in the root of the volume pool, Sonnet Serve assumes that the default behaviour should be used i.e. the folder should be created on the same file system on which the containing folder is stored or, in case this is the root of the volume pool - on the volume that has more free space.

Note: *You can create the policy file from any connected Sonnet Serve Client that can mount the pool or the volumes in it.*

To set policy for newly created folders from Windows:

1. In command prompt, navigate to the folder where you want to create the policy file (the root of the volume pool or a subfolder in the pool).
2. Do one of the following:
   - To set balance by size policy, execute the following command:

```
type NUL > .pool_balance_size
```

- To set balance by count policy, execute the following command:

```
type NUL > .pool_balance_count
```

The file is created in the specified location and Sonnet Serve is instructed to create new folders in this location based on the rules of the selected policy.

To set policy for newly created folders from Mac OS X and Linux:

1. In Terminal/command-line, navigate to the folder where you want to create the policy file (the root of the volume pool or a subfolder in the pool).

   Note: *As smart storage pooling is not supported on Linux, to create the policy file in the root of the volume pool, simply create it in the root of one of the volumes in it, making sure that another policy file doesn't exist in the root of the other volumes in the pool.*

2. Do one of the following:

   - To set balance by size policy, execute the following command:

```
touch .pool_balance_size
```

   - To set balance by count policy, execute the following command:

```
touch .pool_balance_count
```

   The file is created in the specified location and Sonnet Serve is instructed to create new folders in this location based on the rules of the selected policy.

Dealing with Files and Folders Ambiguity

As Sonnet Serve lets you unite in a virtual volume pool volumes that already contain data, it is possible ambiguity of file objects to occur i.e. files/folders with one and the same name to exist in exactly the same location on two or more member volumes. Additionally, Linux Sonnet Serve Clients can also contribute to file/folder ambiguity as they always mount the individual volumes and there's no way to prevent them from creating a folder/file with one and the same name in exactly location on more than one of the volumes.

Sonnet Serve discerns three types of ambiguity:

folder ambiguity — folders with one and the same name existing in exactly the same location on two or more volumes in the pool - for example, a folder "Work" in the root of two shared volumes.

file ambiguity — files with one and the same name existing in exactly the same location on two or more volumes in the pool - for example, a file "Work" in the root of two shared volumes in the pool.

combined ambiguity — a file and a folder with identical names existing in exactly the same location on two or more member volumes in the pool - for example, a folder "Work" and a file

"Work" in the root of two volumes in the pool.

Although no data is lost after enabling smart storage pooling, the operating system does not allow two or more files/folders with exactly the same name to coexist in the same location.

When ambiguity occurs with folders, Sonnet Serve simply displays only one folder in the storage pool and it contains the merged contents of all ambiguous folders with the same name. Still, the displayed folder has the attributes of the ambiguous folder that has been most recently modified. For example, if a folder "Work" with Hidden attributes is stored in the root of volume A and has been most recently modified, and a folder "Work" with Read-only attributes is stored in the root of volume B, the folder "Work" in the root of the storage pool has Hidden attributes. Additionally, if you attempt to delete an ambiguous folder, all folders with the same name are deleted from their volumes.

When ambiguity occurs at file level, Sonnet Serve displays the ambiguous file with latest modification time stamp and hides the other instances. When performing a file operation on an ambiguous file in the file browser of your operating system, you can expect the following:

- deleting the ambiguous file that is shown in the storage pool deletes all other ambiguous files as well;
- renaming the ambiguous file that is shown in the pool renames all other ambiguous files as well;
- moving an ambiguous file, moves only the file displayed in the pool and deletes the other ambiguous files with the same name;

In the case of combined ambiguity, Sonnet Serve always displays the folder and hides the file with the same name. When performing a file operation, Sonnet Serve performs it only on the folder and ignores the files with the same name in the same location.

Resolving Ambiguities

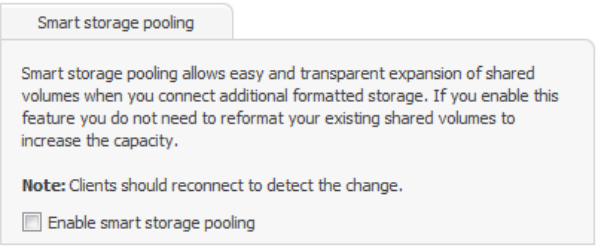
It is highly advisable to resolve all ambiguities in your pool. You can resolve ambiguities in the file browser of any Sonnet Serve Client that has mounted the pool. On Windows and Mac OS X Sonnet Serve Clients, you should first disable smart storage pooling and mount the individual volumes. To resolve ambiguities from Linux Sonnet Serve Clients, there's no need to disable smart storage pooling. You can resolve ambiguities in the following ways:

- by deleting, renaming or moving the ambiguous file/folder (file ambiguity, folder ambiguity and combined ambiguity);
- by unifying the attributes of the ambiguous folders (folder ambiguity);

Important: *When renaming or moving an ambiguous file, you should take care not to create a new ambiguity.*

To resolve ambiguity in a Sonnet Serve Client's file browser:

1. *(if you resolve ambiguities from Mac OS X or Windows)* In the Shared Volumes page, clear the "Enable smart storage pooling" check box, to disband the volume pool and let Sonnet Serve Clients access the individual Sonnet Serve volumes.



   Note: *You cannot change smart storage pooling settings, if data replication is enabled.*

2. In the file browser of your operating system, open one of the member volumes to the ambiguous file/folder and do one of the following:

   • delete, rename or move to another location the ambiguous file/folder;

   • change the ambiguous folder's attributes to match the attributes of the other ambiguous folders with the same name;

3. Repeat the above step until all ambiguities in the pool are resolved.

4. *(optional, if you have disabled smart storage pooling)* In the Shared Volumes page, select the "Enable smart storage pooling" check box, to unite the available Sonnet Serve volumes in a pool.

5 Data Management

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Data on the Shared Volumes

By default, data on the shared storage is accessible to anyone seeing the shared volumes. By adding Sonnet Serve in an Active Directory domain, you can utilize access permissions for data on the shared volumes. When Sonnet Serve is set up to operate in domain environment, the permissions that are already set on the file system are respected. You can manage the permissions from any Windows Sonnet Serve Client computer, which can mount the shared volume(s). For more details, refer to the documentation of the Windows Domain Server that controls permissions on your network.

Important: *Whether or not the volumes are accessed in domain environment, the SYSTEM account must always have full control.*

By default, any file you delete from the Sonnet Serve volume(s) is permanently deleted.

Another aspect in which you can manage data on the Sonnet Serve volume(s) is by replicating it and reclaiming storage space by removing replicated data. For more information, refer to “Data Replication” on page 74 and “Managing Replicated Data” on page 81.

Note: *The Replication & Tiering feature is available only after activating it on Sonnet Serve.*

Data Replication

Data replication as implemented in Sonnet Serve is very easy to setup and perform. You should first enable data replication, by setting a replication volume (a network share or a WOS appliance) on which data to be copied. Then you must specify the parameters for data replication i.e. what data should be replicated. Data replication is then performed automatically in the background. In order not to obstruct file operations going on in the same time, the replication mechanism starts processing the queue with files scheduled for replication only after it detects that overall traffic to the shared storage has remained low (below 100MB/s) for at least 10 minutes. Should the traffic from client computers exceed this threshold, replication is automatically paused until traffic remains low for at least 10 minutes.

You can also manually replicate data in the Volume Browser. In contrast to automatic data replication, the manual method allows you to select any file or folder on the shared storage and copy it immediately to the replication volume. For more information refer to “Managing Data in The Volume Browser” on page 86.

Enabling and Disabling Data Replication

By default, Sonnet Serve operates with disabled data replication. You can enable and disable data replication at any time.

To enable data replication, you should simply set a replication volume (volume on which data to be copied). This can be a network share or a Data Direct Network (DDN) Web Object Scaler appliance. The replication volume must be accessible with Read & Write permissions from Sonnet Serve.

Important: *You can change the replication volume at any time, keeping in mind that all already replicated data will be inaccessible from the new replication volume. For a workaround about migrating replicated data from one replication volume to another, refer to the release notes of your version of Sonnet Serve.*

When you disable data replication, you lose all replication target settings and if you decide to enable it again, you will have to configure them anew. Besides, while replication is disabled, files existing solely on the replication volume can no longer be recovered run-time.

Enabling Data Replication on a Network Share

To set a network share as a replication target of your shared storage, you should:

• provide the user name and password of an account that has Read & Write permissions to the network share;

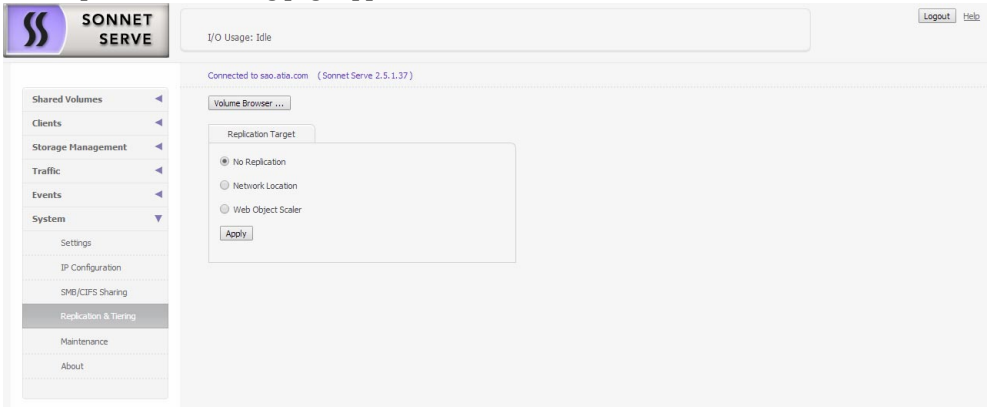
• create a separate folder on the network share for each volume of your shared storage, on which replication will be enabled;

> **Important:** *Although you can use one and the same folder for storing replicated data from two or more shared volumes, conflicts may arise if Sonnet Serve replicates files with identical name from two or more volumes.*
>
> **Warning:** *Do not change the name of a folder on the network share as this may prevent Sonnet Serve replication from operating.*

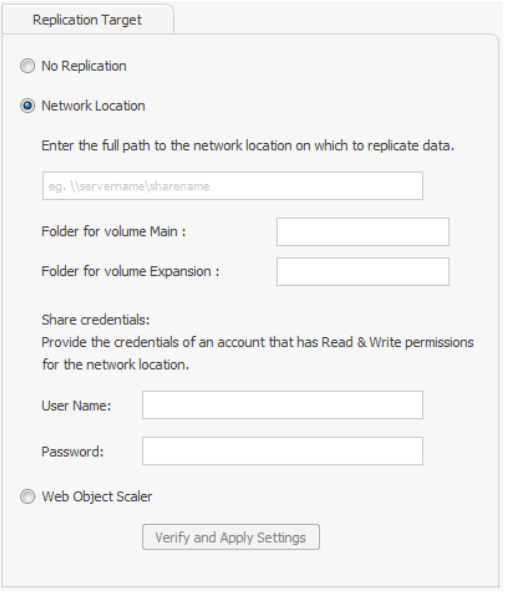
To enable data replication on a network share:

1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.

The Replication & Tiering page appears.



2. Select “Network Location”.



3. In the Replication Target dialog, enter the following:

- the full path to the network share.

Note: *You can enter the path to the network shares using backslashes.*

- the name of each folder on the network share to be used for each of the shared storage volumes.

- the user name and password of a user that has Read & Write permissions on the network share.

4. Click Verify and Apply Settings.

In case Sonnet Serve cannot verify the path to the share, the credentials for access to it and the folder names, it displays an error message and prompts you to re-configure any of these settings that might not have been configured correctly.

Important: *Until you specify criteria for the replication policy, Sonnet Serve uses the default settings - no data is replicated. For more information about specifying the replication settings, refer to “Data Replication Policy” on page 78.*

Enabling Data Replication on a Web Object Scaler Requirements

To set a WOS appliance as a replication target of your shared storage, you should:

- you should provide the user name and password of an account that has Read & Write permissions to the WOS appliance;

• before enabling data replication, on the WOS appliance, you should create a separate policy for each shared volume, on which replication will be enabled. Each policy should meet the following requirements:

- the policy is not used for another volume;
- each policy is searchable;
- the “Search field” of each policy must contain the following values:

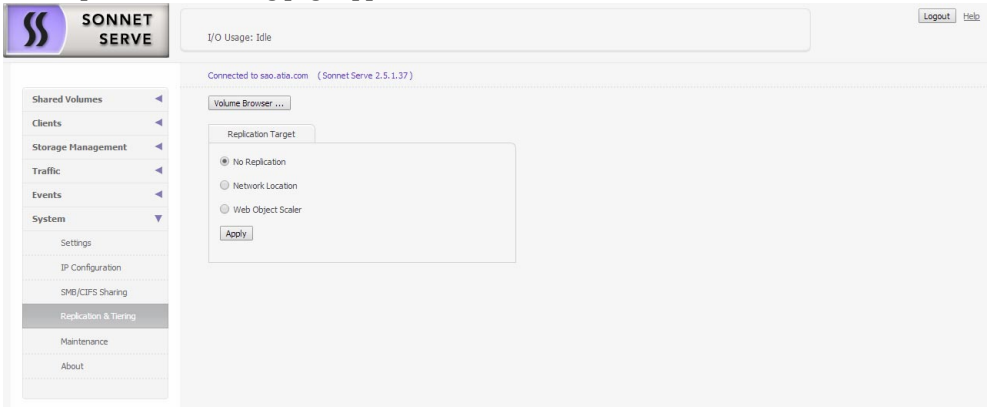
```
TT_ID
TT_PARENT_ID
```

Warning: *Do not change the name of the policy on the WOS appliance as this may prevent Sonnet Serve replication from operating.*

To enable data replication on a WOS appliance:

1. In the left pane of Sonnet Serve’s web interface, click System and then Replication & Tiering.

   The Replication & Tiering page appears.



2. Select “Web Object Scaler”.
3. In the field below, enter the following:
   - address (URL) of the WOS appliance.
   - a name of the WOS policy to be used for each shared volume.
   - the user name and password of a user that has permissions to upload/download files to the specified WOS.
4. Click Verify and Apply Settings.

   In case Sonnet Serve cannot verify the URL of the WOS appliance, the credentials for access to it and that either any one of the specified policies does not exist on the WOS appliance, or it

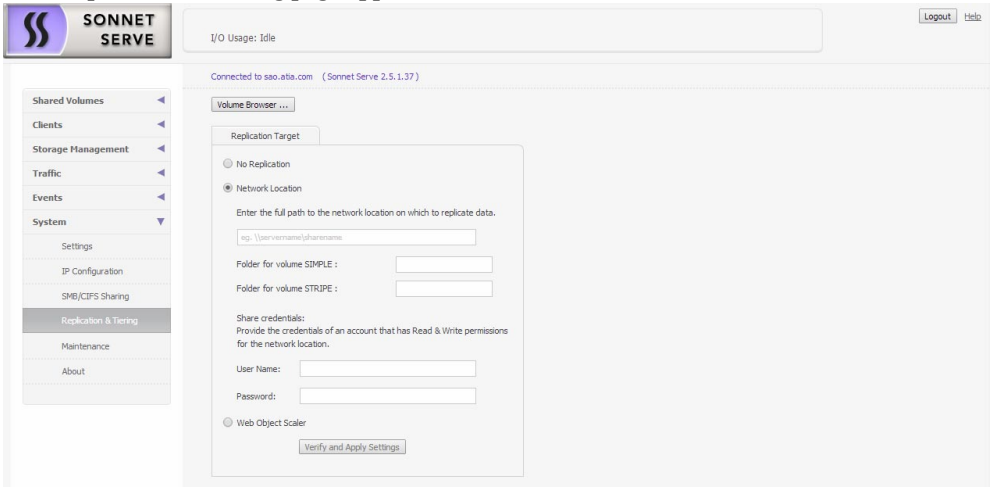
doesn't meet the criteria for replication volume, it displays an error message and prompts you to re-configure any of these settings that might not have been configured correctly.

Important: *Until you specify criteria for the replication policy, Sonnet Serve uses the default settings - no data is replicated. For more information about specifying the replication settings, refer to "Data Replication Policy" on page 78.*

To disable data replication:

1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.

   The Replication & Tiering page appears.



2. In Replication Target, select "No replication" and then click Apply.

   Data replication on Sonnet Serve is disabled.

Data Replication Policy

The replication policy governs what data on the shared storage should be copied to the replication volume. Sonnet Serve chooses what data to replicate based on two parameters - where this data is stored (all data on the Sonnet Serve volume, all data except data in specific folders or just data in specific folders) and for how long it has not been modified (by default, data not modified within the last 12 hours). Any file that matches the criteria is queued by Sonnet Serve for replication. Sonnet Serve processes the replication queue (i.e. copies files from the queue to the replication volume) only when the traffic to the storage remains low (below 100 MB/s) for at least 10 minutes. Should Sonnet Serve detect I/O activity above this threshold, the replication is paused until traffic remains low again.

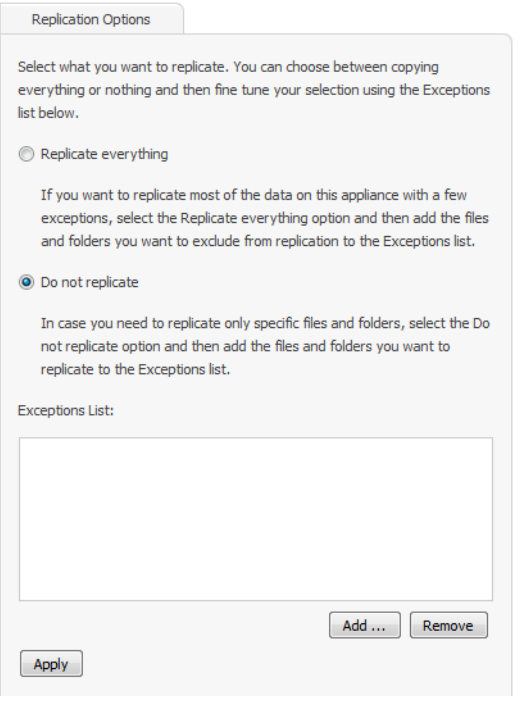
Note: *System files and hidden files are not replicated automatically even if they meet the policy criteria.*

Any file that has been modified after it has been replicated is again subject to replication once it matches the replication policy criteria.

You can change the replication policy settings at any time. The new settings will be valid for the next time Sonnet Serve scans the shared volumes for data to replicate.

Setting replication policy parameters:

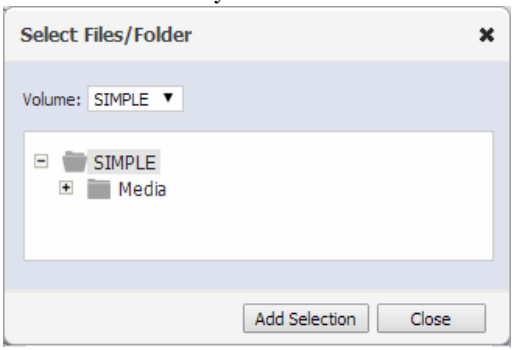
1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.
2. In Replication Options, do one of the following:



- Select "Replicate everything" to let Sonnet Serve replicate all matching files, except the ones you specify as exceptions (see next step).
- Select "Do not replicate" to tell Sonnet Serve that it needs to replicate only files that you have added to the exceptions list (see next step).

3. In Exceptions List, click Add.

4. In the dialog, browse to and select a file or a folder and click Add Selection to add them to list of exceptions for the replication option you have selected above. You can add as many files and folders to the list as you like.



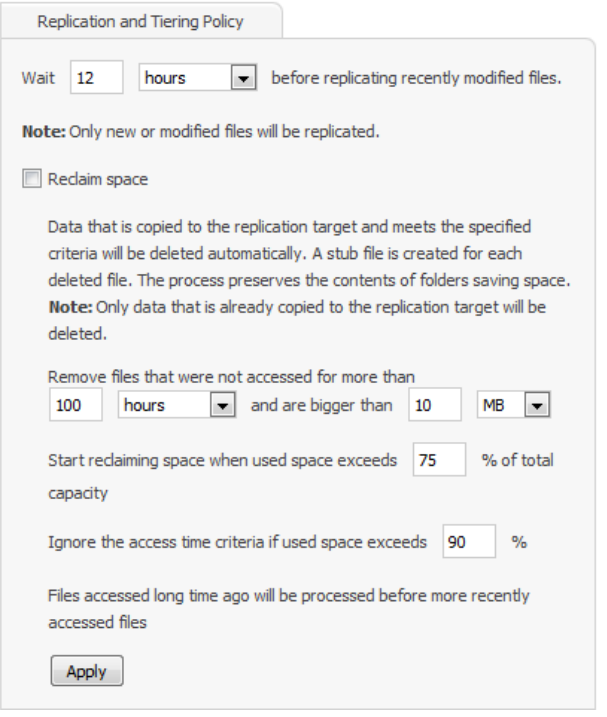
For example, if you have selected “Replicate everything” and add a folder Drafts to the list of exceptions, Sonnet Serve will omit all files located in the folder Drafts. Or, if you have selected “Do not replicate” and add to the exceptions list a folder “Final”, containing just the final versions of the files you’ve been working on, Sonnet Serve will replicate only files in this folder and none of the files in the other folders on the shared volumes.

Note: *To remove a file/folder from the exceptions list, select it in the list and click Remove.*

5. When finished with the exceptions list, click Close.

6. In Replication Options, click Apply.

7. In Replication and Tiering Policy/“Wait [specified time], before replicating modified files”, specify for how long a file should not have been modified for Sonnet Serve to replicate it, by entering the desired number and selecting the unit of measure in the drop-down box beside it.



   For example, to set Sonnet Serve to replicate files that have not been modified in the last 2 weeks, enter the number “2” and then select “weeks” in the drop-down box.

8. In Replication and Tiering Policy, click Apply.

Managing Replicated Data

By default, replicated data is available on both the Sonnet Serve volumes and the replication volume. Even if a Sonnet Serve Client deletes a replicated file from the shared storage, its copy on the replication volumes is not deleted. You can permanently delete it in the Volume Browser (see “Managing Data in The Volume Browser” on page 86) or restore it on the shared storage by re-scanning the storage for files that are replicated but don’t have offline counterparts (see “Re-scanning Replicated Data” on page 88).

To minimize used storage and duplicated data, Sonnet Serve offers you a mechanism for reclaiming space on its volume(s) by automatically deleting files that already exist on the replication volume, but keeping the path to them on the replication volume. Similar to the replication policy, this mechanism operates using simple criteria that tell Sonnet Serve what already replicated data

should be removed from the shared volume, leaving just its copy on the replication volume. Deleted data is still accessible to users and applications by using the same paths, as if it has not moved. This is achieved by creating a stub file in the place of each replicated file that is deleted from the shared volumes. Should a user or application attempt to access a deleted replicated file, Sonnet Serve automatically replaces the stub file with its original counterpart from the replication volume.

While the replication and reclaiming space operations are performed automatically in the background, Sonnet Serve provides you with user friendly interface (the Volume Browser) to manually copy data on the replication volume or manually restore a file from the replication volume to the shared volumes. For more information refer to “Managing Data in The Volume Browser” on page 86.

Specifying Reclaiming Space Criteria

Basically, you can specify two parameters based on which Sonnet Serve to reclaim space by deleting replicated files from the shared volume - minimal file size and time interval for which the file has not been accessed. For example, if you set the file size threshold to 1GB and the time interval to 2 weeks, Sonnet Serve will delete replicated files with size 1GB or above that have not been accessed for at least 2 weeks, leaving on the Sonnet Serve volume replicated files whose size is smaller than 1GB and replicated files with bigger size that have been accessed by a client computer in less than 2 weeks.

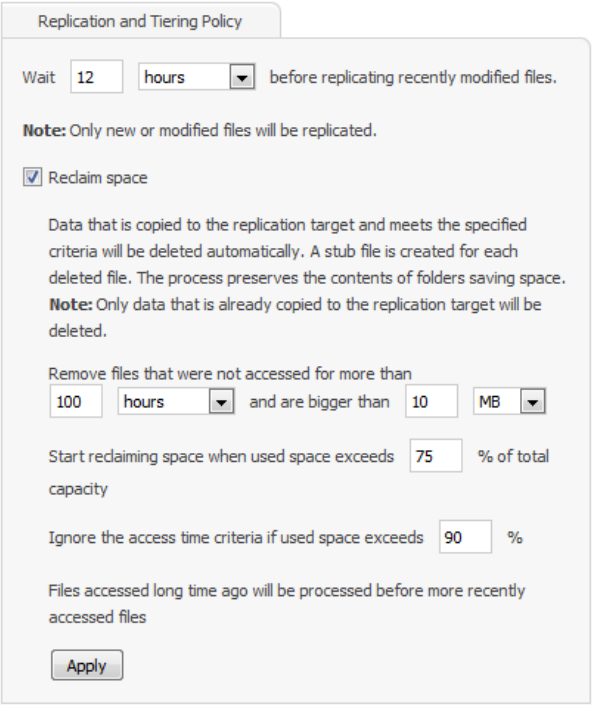
Note: *Sonnet Serve doesn’t create stub files for files whose size is equal or less than the size of the file system cluster (64Kb) as they take the same or less space as the stub files themselves.*

Additionally, you can instruct Sonnet Serve to enforce the reclaim space policy only if used space on the Sonnet Serve storage exceeds a specified threshold. You can also instruct Sonnet Serve to queue for deletion all replicated files (regardless of their last access time, starting with the ones that have been least recently accessed), if the used space reaches a specified limit.

You can enable and disable space reclaiming at any time. Even after you disable space reclaiming, attempting to access a stub file will restore the original file from the replication volume as long as that volume is still accessible to Sonnet Serve.

To enable space reclaiming:

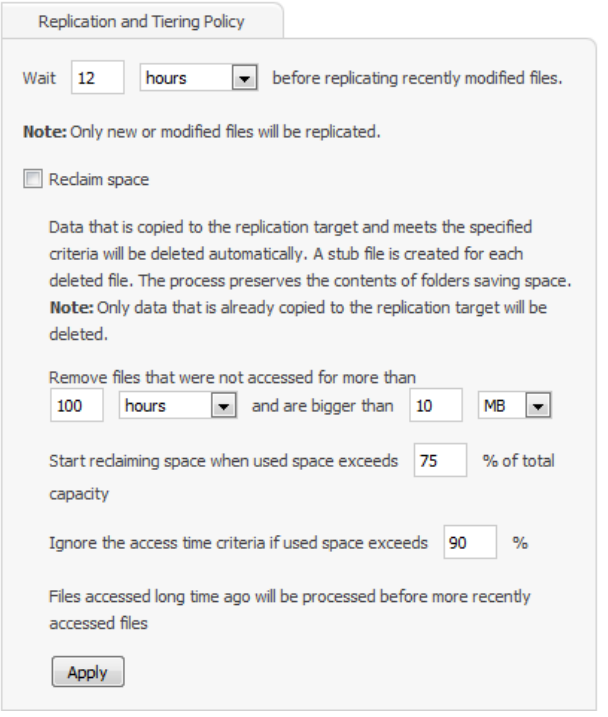
1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.
2. In Replication and Tiering Policy, select the "Reclaim space" check box and click Apply.



Until you change the criteria for space reclaiming, Sonnet Serve uses the default settings.

To disable space reclaiming:

1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.
2. In Replication and Tiering Policy, clear the "Reclaim space" check box and click Apply.

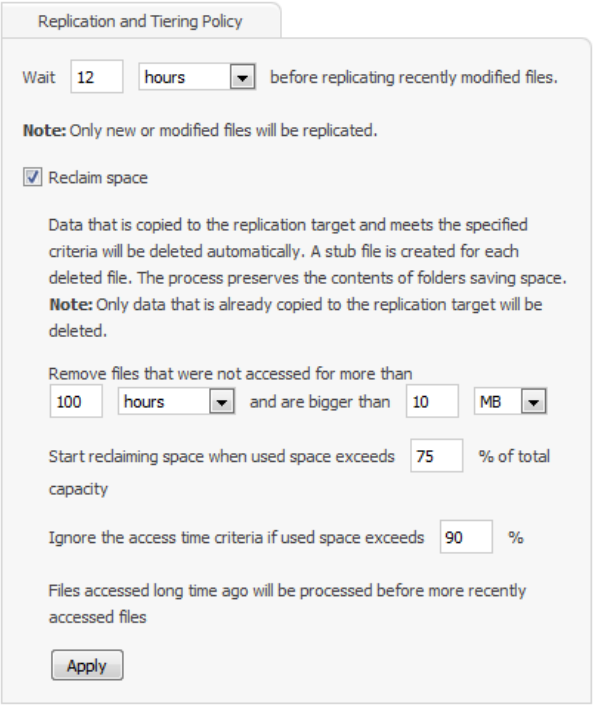


Space reclaiming is disabled for the Sonnet Serve volume and unless you manually delete a replicated file from the shared storage, it exists on both the Sonnet Serve volume(s) and the replication volume.

Note: *Even after you disable space reclaiming, attempting to access a stub file will restore the original file from the replication volume as long as that volume is still accessible to Sonnet Serve.*

To set the criteria for space reclaiming:

1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.
2. In Replication and Tiering Policy, do the following:



- In "Remove files that were not accessed for more than", specify the minimum time before a replicated file has been accessed for it to be replaced by a stub file and specify the minimum size of the files that should be replaced by stub files as long as they are already copied to the replication volume.

  Tip: *Use the drop-down box on the side, to change the unit of measure.*

- In "Start reclaiming space when used space exceeds", enter the percent of used space on the Sonnet Serve volume, which, when exceeded, should trigger space reclaiming.

  Tip: *Enter 0% to start space reclaiming regardless of the used space on the Sonnet Serve volume(s).*

- In "Ignore the access time criteria, if used space exceeds", enter the percent of used space on the Sonnet Serve volume, which, when exceeded, should trigger deletion of all already replicated files regardless of their size.

3. Click Apply.

Managing Data in The Volume Browser

The Volume Browser is the place where you can explore data on the shared Sonnet Serve volumes and manually replicate files (or whole folders), create stub files, restore files from the replication volume or delete files.

Important: *When you delete a replicated or offline file in your file browser, you only delete it from the shared volume, but its replicated counterpart remains on the replication target. To permanently delete a file from both the shared volume and the replication volume, you should perform the operation in the Volume Browser.*

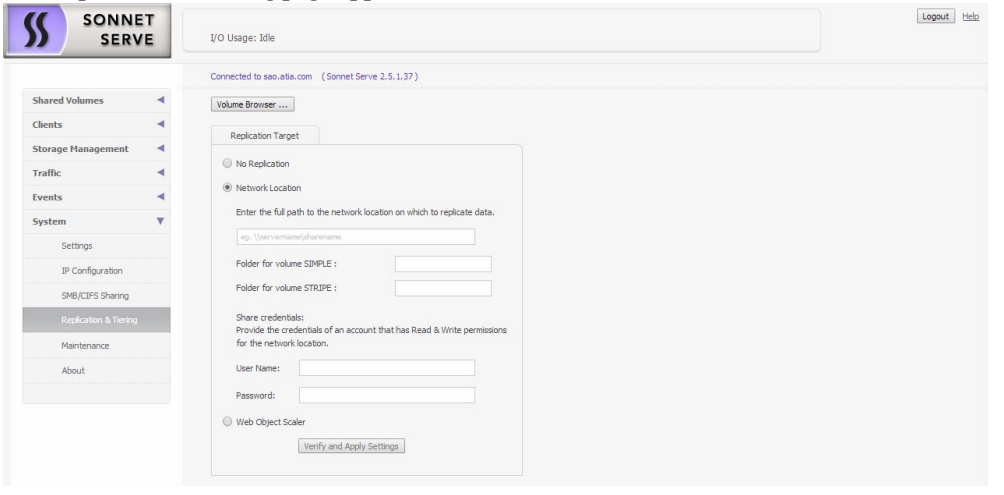
Initiating a task in the Volume Browser always takes precedence over the automatically scheduled tasks. That means that if you choose to manually replicate files through the Volume Browser, the execution of the operation will begin immediately (in contrast to automatic replication, which waits for low traffic to the storage to begin processing the replication queue) and will probably pause the automatic replication queue that is being processed at the moment.

Note: *The Volume Browser hides system files such as files associated with the Recycle bin, volume icons, etc.*

To open the Volume Browser:

1. In the left pane of Sonnet Serve's web interface, click System and then Replication & Tiering.

   The Replication & Tiering page appears.

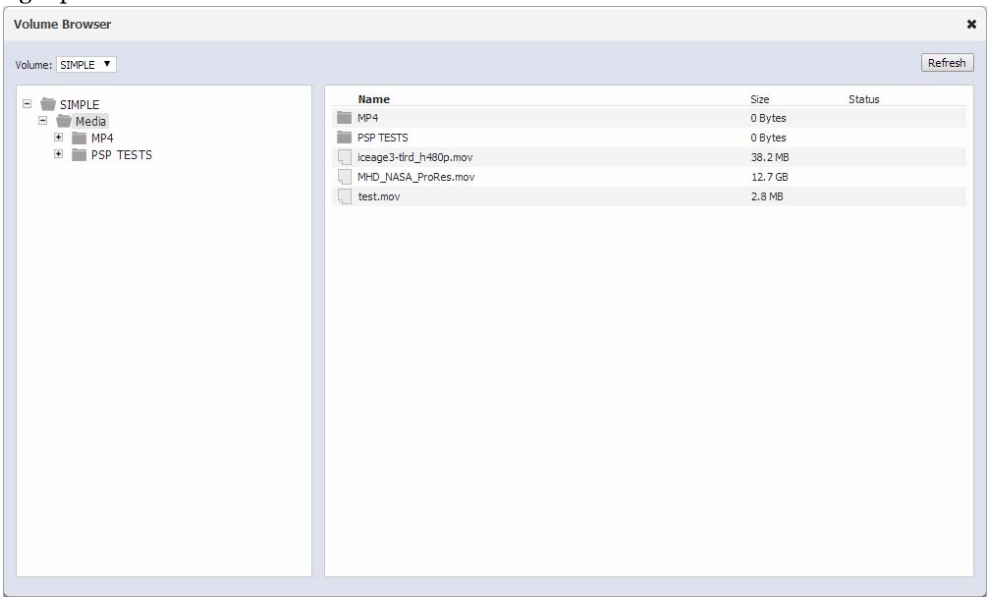


2. In the Replication& Tiering page, click VolumeBrowser.

   Tip: *You can also open the Volume Browser, by clicking Browse in the tile of a volume.*

   The Volume Browser opens. The left pane allows you to navigate the tree structure of the contents of the volume selected in the drop-down box. By expanding the node of a folder, you

can view its hierarchical structure. Clicking an item in the tree view, displays its contents in the right panel.



The file operations you can perform in the Volume Browser depend on the status of the selected file:

normal — a file that doesn't have a copy on the replication volume or a file that has been modified after its last replication (i.e. is subject to replication again);

replicated — a file that is replicated and exists on both the Sonnet Serve volume and the replication volume;

offline — a stub file i.e. a file that has been replicated and then has been deleted from the Sonnet Serve volume in order to reclaim space;

Depending on the status of a selected file, you can perform the following operations:

File status	Replicate	Restore	Make offline	Delete
replicated	YES	-	YES	YES*
normal	YES	-	-	YES
offline	-	YES	-	YES*

* if you delete a replicated or offline file, you are also permanently deleting its copy on the replication volume.

You can perform any of the above operations on multiple files simultaneously (by Ctrl-selecting them) as long as all selected files have the same status. You can also select a folder to perform the desired operation on all matching files in that folder i.e. for example, clicking Restore for a selected folder will restore all offline files in that folder.

Important: *Attempting to start manual replication before the previous manual replication task has been completed will fail. It is advisable to run manual replication only after making sure that previous manual replication tasks are fully completed (the files are with "replicated" status in the Volume Browser).*

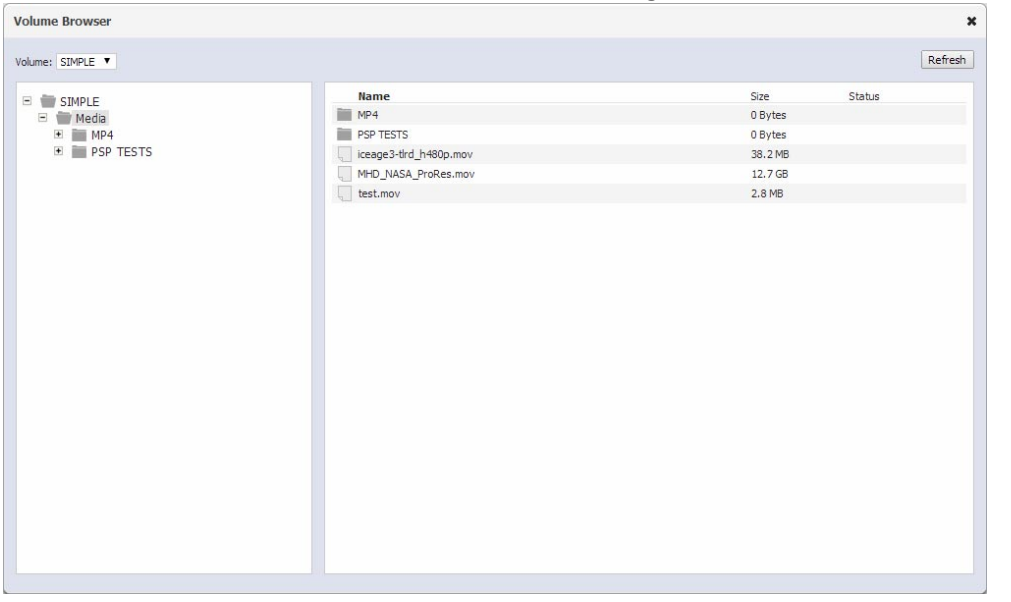
Re-scanning Replicated Data

There are some situations in which a replicated file can have no offline counterpart on the Sonnet Serve volume. To allow you to create a stub file for each file existing on the replication volume, Sonnet Serve provides you with a mechanism for re-scanning the replicated data. When a replicated file doesn't have a stub file on the Sonnet Serve volume is detected, Sonnet Serve automatically creates the stub file in the source folder.

You can re-scan the whole volume, on which Data Replication is enabled or just a folder on it.

To re-scan replicated data:

1. Open the Volume Browser (see page 86).
2. In the taskbar of the Volume Browser, do one of the following:



- Click Rescan Volume, to re-scan the whole volume that is selected in the drop-down box of the Volume Browser.
- Browse to and select the folder, whose contents you want to re-scan and then click Rescan Replicas.

3. Sonnet Serve scans the selected location and if it finds a file that doesn't have a stub counterpart on the Sonnet Serve volume, creates a stub file in the source folder.

6 System Maintenance

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System maintenance operations include Sonnet Serve reboot options and advanced operations like upgrading the appliance firmware and restoring the system settings to its factory defaults.

Sonnet Serve Reboot Options

To facilitate you in performing certain tasks and in order not to obstruct users work with the appliance, Sonnet Serve offers you several reboot options. You can issue the following commands:

- Restart add-on services - restarts all add-on services, installed on the appliance (like auto defragmentaion, replication & tiering, etc.).
- Restart all services - restarts all Sonnet Serve services and starts them in the correct order, clients are disconnected from the appliance.
- Full System reboot - the appliance automatically disconnects any connected client computer and shuts down, then starts again. Once the system is up again, the web interface is automatically refreshed.
- Shutdown - the appliance automatically disconnects any connected client computer and shuts down.

Whenever you need to restart or shut down the appliance, it is advisable to do it from the web interface, instead of pressing the Power or Reset buttons. In both cases, when the respective command is issued from the web interface, Sonnet Serve takes care to disconnect any connected Sonnet Serve Client and to shut down any processes before turning off the appliance.

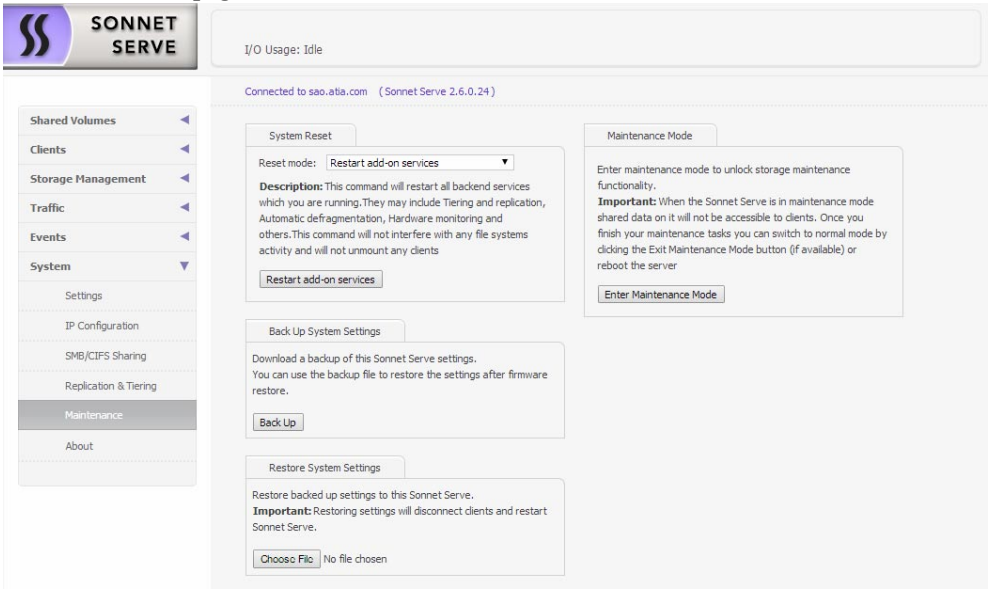
Note: *After restarting the appliance, client computers are not automatically reconnected to it.*

Important: *Some of the Shut down and Reboot commands are not available when maintenance operations such as Firmware Update are going on at the moment.*

To issue a reboot option command:

1. In the left pane of Sonnet Serve's web interface, click System and then Maintenance.

   The Maintenance page loads.



2. Select the desired reboot option in the drop down box.

   The button below the drop down box changes according to the selected command.

3. Click the button below the drop down box to issue the selected command.

Backing Up and Restoring the Sonnet Serve Configuration

To facilitate you when upgrading your Sonnet Serve appliance, Sonnet Serve allows you to back up and then restore all settings configured in the web interface, thus sparing you the effort to configure them again. When you restore a previously backed up configuration, you restore all settings for appliance name, shared, offline and private volumes (identified by volume GUID), default volume mount point on Windows Sonnet Serve Clients, auto-defragmentation, smart storage pooling, domain settings, replication and tiering settings, IP configuration, except the names of the volumes seen by the storage server. If your Sonnet Serve appliance features two server nodes, the feature backs up and restores the settings on both nodes.

Note: *Sonnet Serve doesn't back up and restore the password for the web interface, but keeps the last used password.*

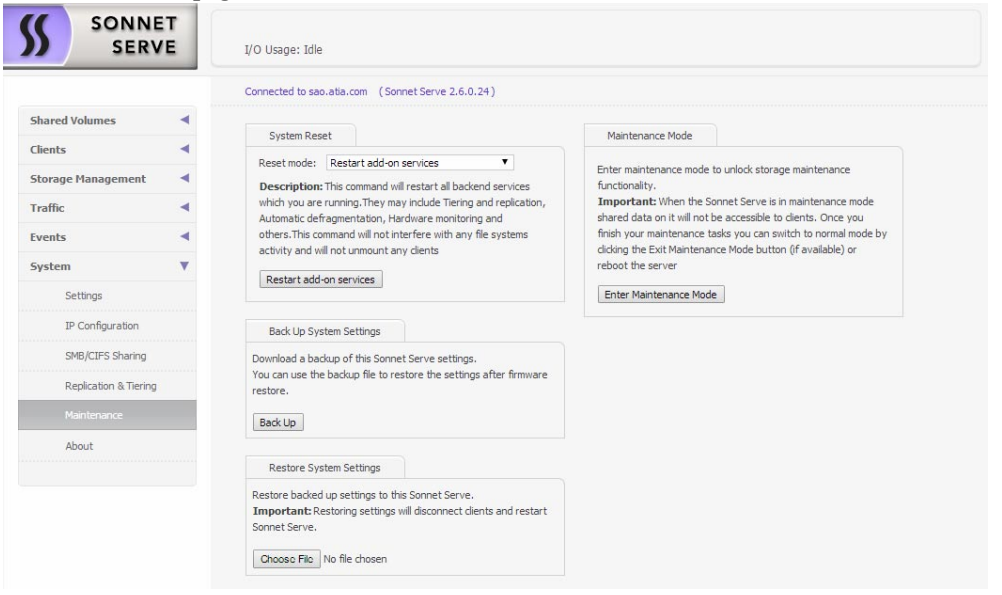
By default, the file with the backed up configuration is saved with the following name: [storage server name]_[time]_[date]_backup.json. You can create as many backups as you want and change their name to make it easier for you to discern between one another as long as you keep their extension (`.json`).

Important: *Restoring a backed up settings configuration automatically disconnects all Sonnet Serve Clients and restarts the storage server computer.*

To back up the Sonnet Serve settings configuration:

1. In the left pane of Sonnet Serve's web interface, click System and then Maintenance.

   The Maintenance page loads.



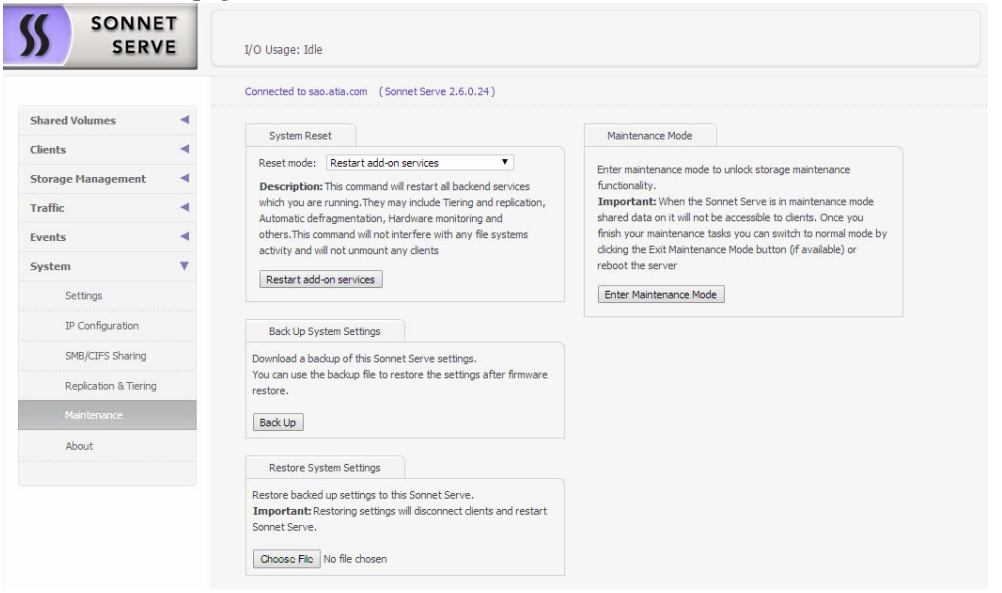
2. In Back Up System Settings, click Back Up.
3. Provide the password for the web interface and click Continue.

   A standard dialog opens that allows you to browse for a location where to save the settings backup file.
4. Select the location where to save the file and click Save.

To restore a Sonnet Serve settings configuration:

1. In the left pane of Sonnet Serve's web interface, click System and then Maintenance.

   The Maintenance page loads.



2. In Restore System Settings, click Restore.
3. Provide the password for the web interface and click Continue.

   A standard dialog opens that allows you to browse for a location, from which to import the selected settings backup file.
4. Select the file and click Open.
5. Sonnet Serve automatically disconnects all Sonnet Serve Clients and after importing the selected backup file restarts.

Uploading Firmware Updates

You can use the web interface of Sonnet Serve to update the appliance firmware. You can check the current firmware version in the About page of the web interface. Once you receive a firmware update, it is advisable to upload it on your appliance to guarantee its good functionality.

Some firmware updates require that the Sonnet Serve Client software also be updated on client computers.

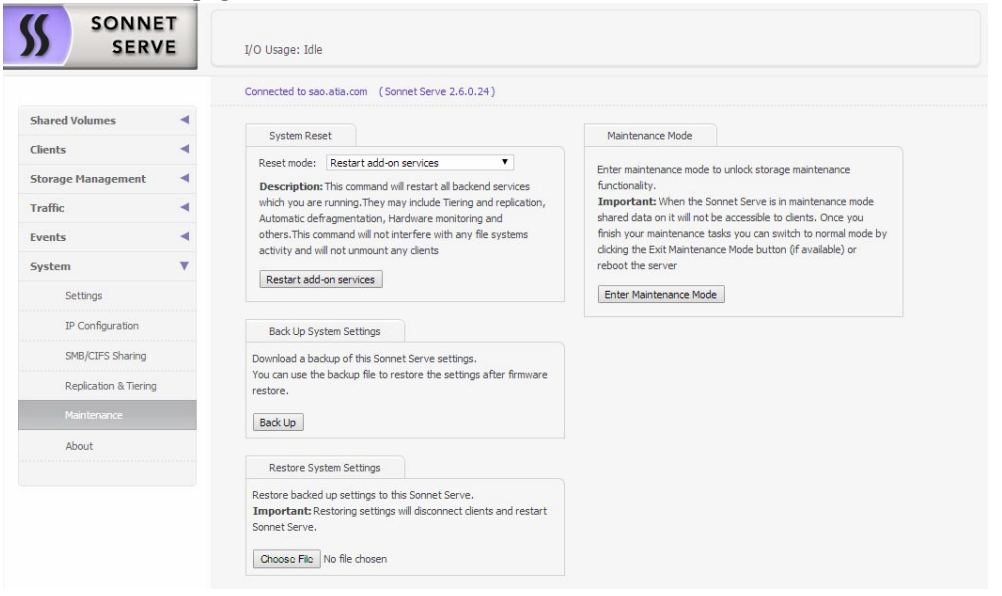
You can update the firmware, when no client computer is connected to the appliance and no other maintenance operation is going on at the moment. That is why before updating the firmware you should enter Maintenance mode, which disconnects all client computers.

Important: *The process of firmware update cannot be interrupted or paused. Do not shut down or restart the appliance after a firmware update has begun.*

To upload a firmware update:

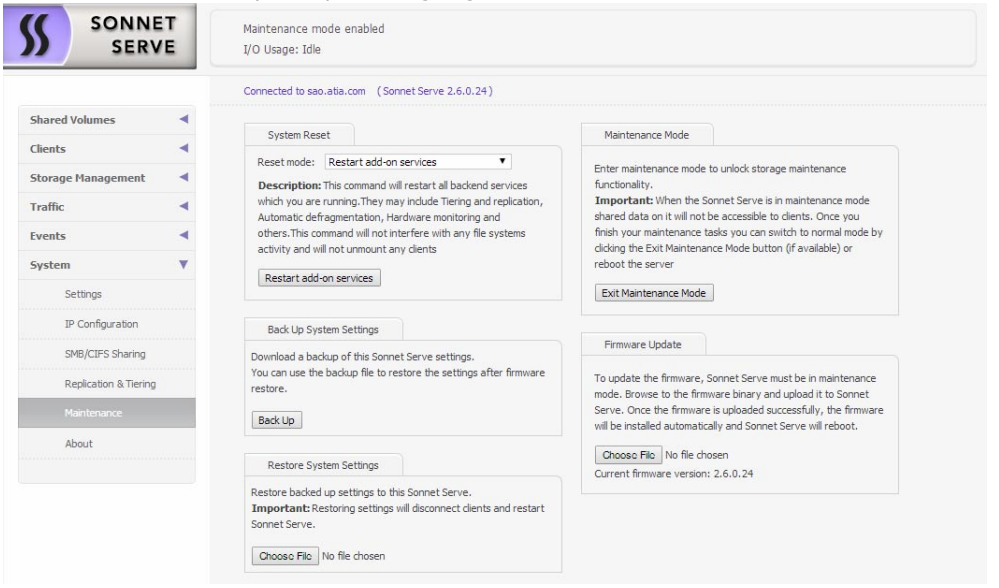
1. In the left pane of Sonnet Serve's web interface, click System and then Maintenance.

The Maintenance page loads.



2. Click Enter Maintenance mode and then confirm that you want to enter Maintenance mode.

Important: *All connected Sonnet Serve Clients will be automatically disconnected from the shared volumes and any file operation going on at the moment will be canceled.*



3. In Firmware Update, click Browse/Choose file and then browse for and select the file containing the firmware update to upload.
4. Click Continue to confirm that you want to perform firmware update.

   Sonnet Serve uploads the firmware on the system hard drive, unpacks it and applies the firmware update. When the firmware update finishes, the system automatically restarts and all clients can connect to it.

Performing System Restore

Use the USB flash drive included in your Sonnet Serve shipment to restore your appliance to the factory default settings in case of system malfunction or failure.

Important: *All your settings (IP addresses, defragmentation preferences, password for the web interface, etc.) will be lost after restoring the system to the default factory settings.*

Follow the instructions below or contact Sonnet Technologies support for assistance at: support@sonnettech.com

To perform system restore:

1. Shut down the appliance (see “Sonnet Serve Reboot Options” on page 92).

   Note: *In case it is impossible to shut down the appliance through the web interface, press the power button continuously.*

2. Plug the USB flash drive in the USB port on the front panel and press the power button to start the appliance.

   When the system restore finishes, Sonnet Serve automatically shuts down.

3. Unplug the USB flash drive and press the power button to start the appliance.

Viewing Event Reports

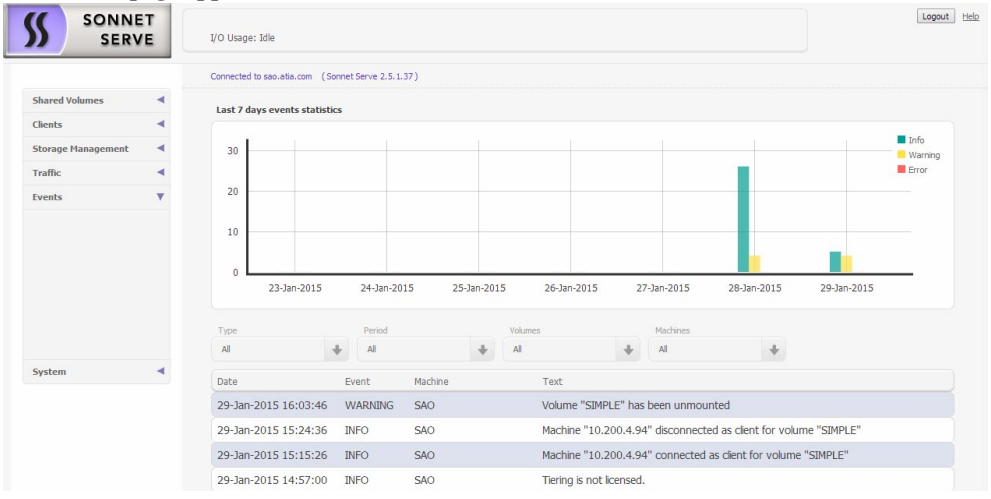
In the web interface allows you to view detailed reports about events regarding the shared volumes, a Sonnet Serve Client or all Sonnet Serve Clients within a selected time period. You can filter the events by three categories - informations, warning and errors.

Note: *You can generate Event reports if you are currently connected to the Sonnet Serve appliance for which you generate the report.*

To generate an event report:

1. In the left pane of Sonnet Serve’s web interface, click Events.

   The Events page appears.



2. In the Type drop-down box, select whether to generate a report about all events or filter it to specific type only.

3. In the Period drop-down box, select the time period for which to generate the report.

4. In the Machines drop-down box, select whether to generate a report about all machines or filter it to a specific computer only.

   The Events page displays graphs with the event types by date and below lists all events in descending order.

Getting E-mail Notifications

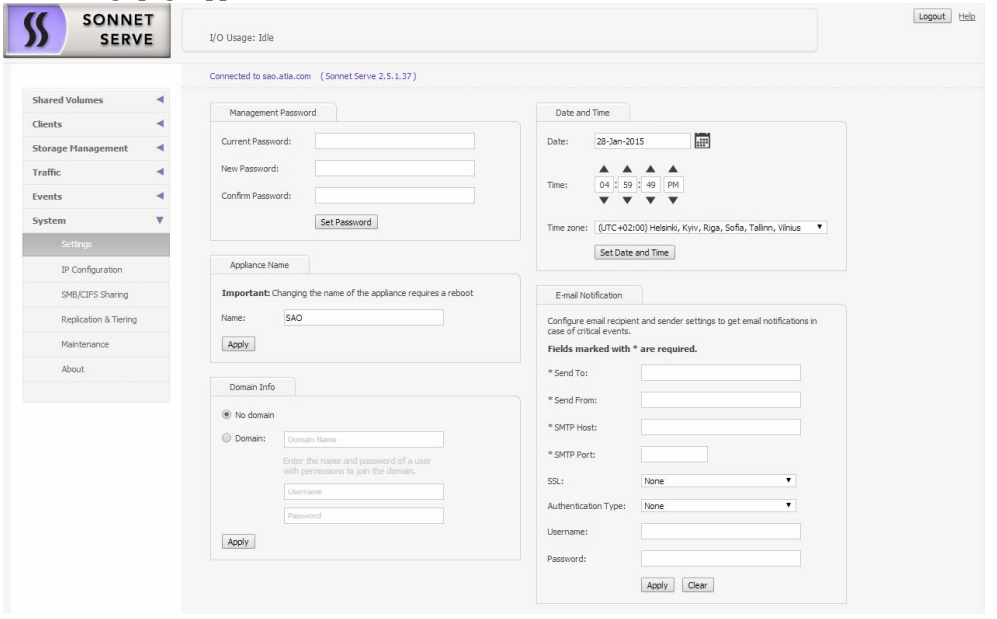
Sonnet Serve offers you the opportunity to receive mail notifications each time there's a problem with the shared volumes. The notifications give you detailed information about the storage status and the exact disk that has failed. To benefit from the mail notifications, besides specifying the mail account(s) to which the notifications to be sent, you must also specify an e-mail account from which these notifications to be sent. This account must be managed by a mail server to which Sonnet Serve is connected via the Public port or another Ethernet port. It is advisable to let the system administrator set the notification settings as you will also need the password, SMTP host, SMTP port, SSL and authentication type details of the account from which the notifications will be send. Your system administrator can create a new e-mail account specifically for the purposes of sending e-mail notifications from Sonnet Serve.

You can enable/disable e-mail notifications at any time, keeping in mind that each time you disable them, you lose all e-mail notification settings you have specified.

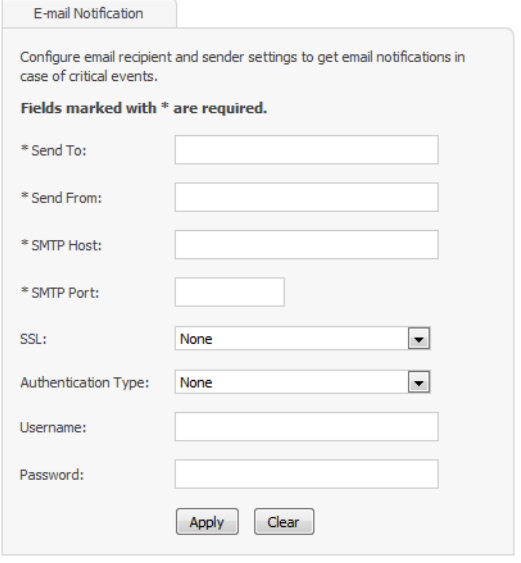
To enable e-mail notifications:

1. In the left pane of Sonnet Serve's web interface, click Settings.

The Settings page appears.



2. In E-mail Notification, enter the needed information in the respective fields and click Apply.



Note: *In case you want to set more than one e-mail account to receive notifications, in the Send To field enter the respective e-mail accounts separated by commas.*

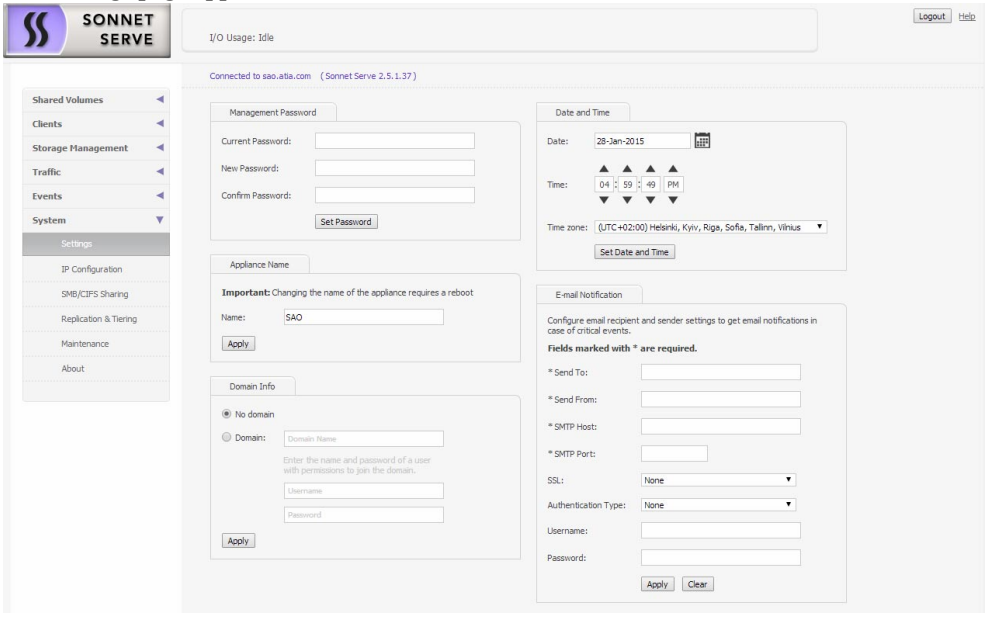
In case you need to edit any settings, introduce the respective change in the dialog and then click Apply.

Tip: *To verify that you have correctly specified the e-mail notification settings, click Send Test Message and check the Inbox of the mail account for the test message.*

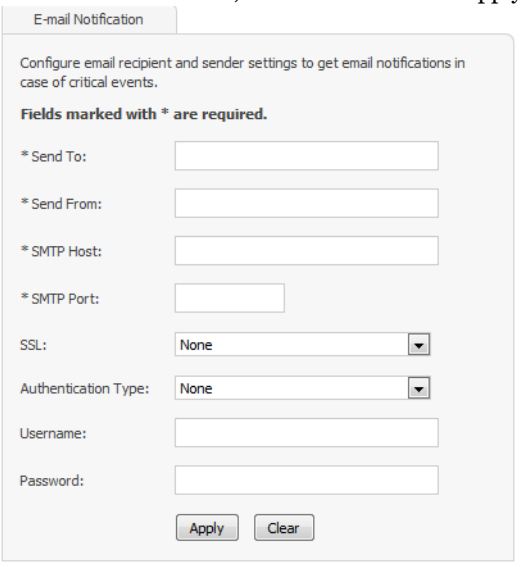
To disable e-mail notifications:

1. In the left pane of Sonnet Serve's web interface, click Settings.

   The Settings page appears.



2. In E-mail Notification, click Clear and then Apply.



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