

# Xsan 2

Setup Guide

 Apple Inc.

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# Setting Up a SAN

Follow the instructions in this guide to set up a volume on a storage area network (SAN) using Xsan 2.

## Is This the Right Guide for You?

To keep setup instructions simple, this guide assumes:

- You are setting up a SAN for the first time using new computers and RAID systems right out of the box
- You'll let Xsan set up a SAN directory service on your metadata controllers
- You'll use the Mac OS X Server setup assistant to create SAN user accounts
- You'll choose a standard SAN volume type and let Xsan organize your storage pools
- You'll let the Xsan setup assistant configure your private metadata network settings

If you want to reuse existing computers while following this guide, you need to perform a clean installation of Mac OS X v10.5 or Mac OS X Server v10.5 or later on each of the computers before you begin.

If you want more control over the underlying organization of your SAN volumes or directory services, you can find more general instructions in the *Xsan 2 Administrator's Guide* on the *Xsan Install Disc* and at [www.apple.com/server/documentation](http://www.apple.com/server/documentation).

If you already have a SAN that you want to upgrade to Xsan 2, you'll find instructions in the *Xsan 2 Migration Guide* at [www.apple.com/server/documentation](http://www.apple.com/server/documentation).

## Equipment You'll Need

To set up a SAN using the instructions in this guide, you need:

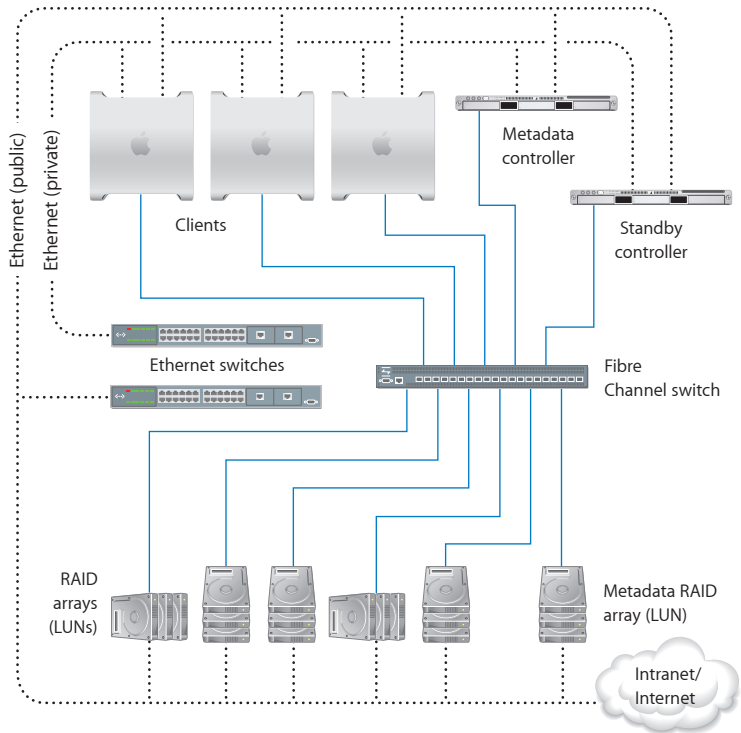
- RAID storage devices for SAN storage
- Two computers running Mac OS X Server v10.5 to act as SAN metadata controllers
- One or more SAN client computers running Mac OS X v10.5 or Mac OS X Server v10.5
- An Intel or PowerPC G5 processor and at least 2 GB of RAM in each SAN computer
- An additional 2 GB per SAN volume in each metadata controller that hosts more than one SAN volume
- An Apple Fibre Channel PCI, PCI-X, or PCI-E card installed in each SAN computer
- A Fibre Channel switch and cables for all storage devices and computers
- An Ethernet switch and cables for the private SAN metadata network
- A second Ethernet switch and cables for public intranet and Internet access
- An equipment rack for your RAID storage systems and Xserve computers

A list of qualified RAID systems and Fibre Channel switches is available on the Xsan website at [www.apple.com/xsan](http://www.apple.com/xsan)

## What You Need to Know

You'll need to provide the following information when you set up your SAN:

- A static (fixed) public IP address, subnet mask, router address, and DNS server address for each computer on the SAN. You can enter this information manually or configure a DHCP server to provide some or all of it. If you want the DHCP server to provide IP addresses, it must always assign the same IP address to each SAN computer.
- A single user name and password that will be used for the administrator account on all SAN computers.
- A unique user name and password for each user who will log in to a client computer.
- An Xsan serial number for each computer on the SAN.





## SAN Setup Instructions

Follow the instructions on the following pages to set up your SAN for the first time.

### Summary

- 1 Unpack and Install the SAN Hardware
- 2 Connect the SAN Networks
- 3 Set Up the Client Computers
- 4 Set Up the Standby Metadata Controller
- 5 Set Up the RAID Systems
- 6 Create a Metadata Array
- 7 Set Up the Primary Metadata Controller
- 8 Configure the SAN
- 9 Set Up a SAN Volume

### Step 1: Unpack and Install the SAN Hardware

To install the components of your SAN, follow the instructions that come with each computer, RAID storage system, and switch. Don't turn on any of the equipment until you are instructed to do so.

- 1 Unpack each computer that will be part of the SAN.
- 2 If you need to install Fibre Channel or Ethernet cards in any of the computers, follow the instructions that come with the computer to install the card.
- 3 If you are using Xserve computers, follow the instructions that come with them to install them in a rack.

- 4 Unpack the RAID systems that will provide your SAN storage and follow the instructions that come with the systems to install them in a rack.
- 5 Unpack and install the Fibre Channel switch, following the instructions that come with the switch.
- 6 Unpack and install the Ethernet switches for the SAN's private metadata network and public intranet or Internet connections.

## Step 2: Connect the SAN Networks

Use Fibre Channel and Ethernet cables to connect the SAN computers and storage devices to the Fibre Channel and Ethernet switches. Apple-qualified switches are ready to use right out of the box with no special configuration.

- 1 Turn on the Fibre Channel switch and connect each SAN computer to the switch using one or two Fibre Channel cables.
- 2 Connect the Fibre Channel ports on each RAID storage unit to the Fibre Channel switch. For details, see the instructions that come with the RAID system.
- 3 Turn on the Ethernet switches and connect the first Ethernet port on each SAN computer to the public Ethernet switch using an Ethernet cable.
- 4 Connect the second Ethernet port on each SAN computer to the private metadata Ethernet switch using a second Ethernet cable.
- 5 Connect the Ethernet ports on each RAID storage system to the public Ethernet switch. For details, see the instructions that come with the RAID storage system.

### Step 3: Set Up the Client Computers

Now you'll go to each client computer to set up an administrator account, configure network settings, and install the Xsan software. The procedure differs based on whether the client has Mac OS X or Mac OS X Server installed. Use one of the next two procedures—"If a Client Has Mac OS X Installed" or "If a Client Has Mac OS X Server Installed"—as appropriate on each client computer on the SAN. When you finish setting up the client computers, they are ready to join the SAN and will be detected automatically during SAN setup.

After you finish setting up client computers, go on to Step 4, "Set Up the Standby Controller Metadata."

#### If a Client Has Mac OS X Installed

- 1 Turn on the client computer.
- 2 Follow the Mac setup assistant's onscreen instructions to set up the computer. Pay special attention to the information in the following panes:
  - Select Your Admin Account:** If this pane appears, select "Create a local user account to administer this computer."
  - Connect to Mac OS X Server:** If this pane appears, deselect the "Use the following Mac OS X Server" option and click Continue.
  - Create Your Account:** Enter the administrator account name and password that you plan to use on all SAN computers. To simplify SAN setup, use the same administrator name and password on all computers in the SAN.
- 3 When the Mac setup assistant finishes and the Finder appears, choose System Preferences from the Apple () menu.

4 Click Network and select the first Ethernet port, which should be connected to your public intranet and the Internet. Choose a configuration method from the pop-up menu and then enter the appropriate settings for the client computer. See “What You Need to Know” on page 7. You can choose:

- **Manually**, and then enter the static public IP address, subnet mask, router address, and DNS server address for the client computer
- **Using DHCP with manual address**, and then enter the client computer’s IP address, if your DHCP server will provide the other TCP/IP connection settings
- **Using DHCP**, if your DHCP server will provide the client computer a static IP address and the other connection settings

Don’t configure the port connected to the private metadata network—the Xsan setup assistant will configure it for you.

5 In Date & Time preferences, configure the computer to set the date and time automatically using a time server.

6 Insert the *Xsan Install Disc*, double-click the Install Xsan.mpkg icon, and then follow the onscreen instructions to install the Xsan software on the client computer.

7 Eject the *Xsan Install Disc*.

### If a Client Has Mac OS X Server Installed

1 Turn on the client computer.

2 Follow the Mac OS X Server setup assistant’s onscreen instructions to set up the computer. Pay special attention to the information in the following panes:

**Server Configuration:** Select Advanced.

**Administrator Account:** Enter the same account name and password on all of your client computers.

**Network Address:** If this pane appears, select “No, configure network settings manually.”

**Network Interfaces:** Enable only the public Ethernet port. Disable the Ethernet port connected to the private metadata network—the Xsan setup assistant will configure it for you. If you are setting up an Intel-based Xserve, you can also enable the lights-out management port.

**TCP/IP Connection (public Ethernet port):** Choose a configuration method from the pop-up menu and then enter the appropriate settings for the client computer. See “What You Need to Know” on page 7. You can choose:

- **Manually**, and then enter the static public IP address, subnet mask, router address, and DNS server address for the client computer
- **Using DHCP with manual address**, and then enter the client computer’s IP address, if your DHCP server will provide the other TCP/IP connection settings
- **Using DHCP**, if your DHCP server will provide the client computer a static IP address and the other connection settings

**Time Zone:** To ensure consistent time metadata across all computers in the SAN, choose a network time server for your client computers.

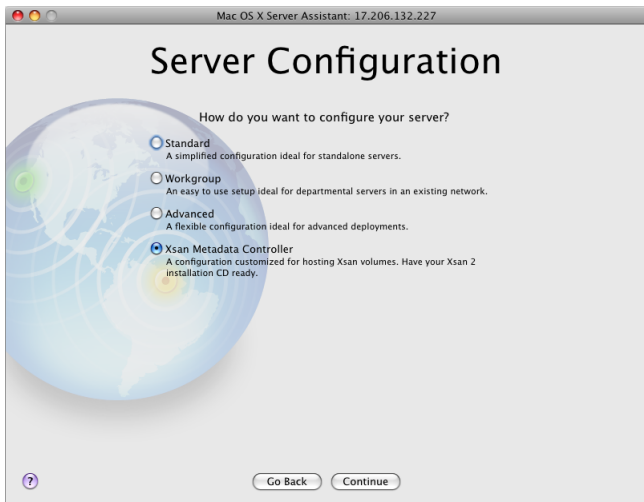
- 3 Insert the *Xsan Install Disc*, double-click the Install Xsan.mpkg icon, and then follow the onscreen instructions to install the Xsan software on the client computer.
- 4 Eject the *Xsan Install Disc*.

## Step 4: Set Up the Standby Metadata Controller

Now set up the standby metadata controller. This computer must have Mac OS X Server installed but not yet set up.

- 1 Turn on the computer you are using as the standby metadata controller.
- 2 Follow the Mac OS X Server setup assistant's onscreen instructions to configure the computer. Pay special attention to the settings in the following panes:

**Server Configuration:** Select Xsan Metadata Controller.



**Administrator Account:** Enter the same account name and password that you used on all of your client computers.

**Network Address:** If this pane appears, select “No, configure network settings manually.”

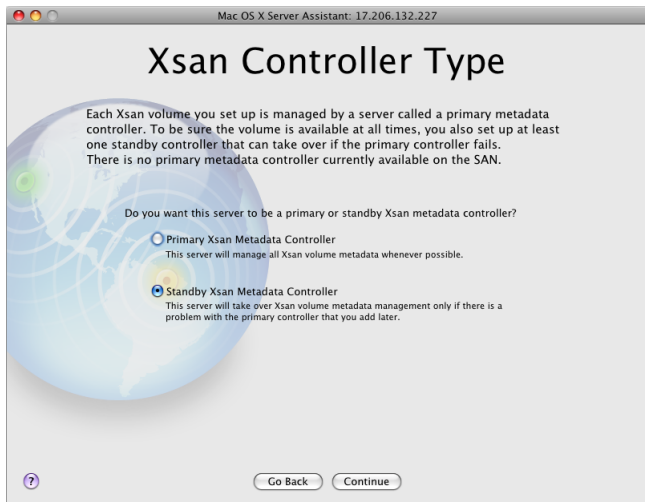
**Network Interfaces:** Enable only the public Ethernet port. Disable the Ethernet port connected to the private metadata network—it will be detected and configured by the Xsan setup assistant. If you are setting up an Intel-based Xserve, you can also enable the lights-out management port.

**TCP/IP Connection (public Ethernet port):** Choose a configuration method from the pop-up menu and then enter the appropriate settings for the standby metadata controller. See “What You Need to Know” on page 7. You can choose:

- **Manually**, and then enter the static public IP address, subnet mask, router address, and DNS server address for the computer
- **Using DHCP with manual address**, and then enter the computer’s IP address, if your DHCP server will provide the other TCP/IP connection settings

**Time Zone:** To ensure consistent time metadata across all computers in the SAN, choose the same network time server you chose for your client computers.

Xsan Controller Type: Select Standby Xsan Metadata Controller.



- 3 When prompted, insert the *Xsan Install Disc* and follow the onscreen instructions to install Xsan.

The standby metadata controller is now ready to join the SAN and will be automatically detected by the primary metadata controller during SAN setup.



## Step 5: Set Up the RAID Systems

Now configure your RAID systems. Xsan sees the RAID arrays provided by the RAID systems as Fibre Channel logical unit numbers (LUNs) that can be combined to create SAN volumes.

- 1 Follow the instructions that come with your RAID systems to turn them on and configure their network, management, and security settings.
- 2 If your RAID systems come with RAID sets already configured, they'll be automatically detected during SAN setup, and you can skip to Step 6, "Create a Metadata Array." Otherwise, use the management software that comes with the RAID system to create arrays that are the same size, leaving three drives on one system unassigned so you can create a small, separate metadata LUN as described in the next step.

## Step 6: Create a Metadata Array

Ten gigabytes (GB) of disk space is enough to store the metadata for a volume containing 10 million files, so a two-drive RAID 1 (mirrored) array is generally large enough to store the metadata for your SAN volume. If you dedicate a spare drive to this array to guarantee availability, then three drives are adequate for your SAN metadata. If all of your RAID arrays consist of four or more drives, you can follow these steps to convert one of these existing arrays into a small metadata array so you can reuse the extra drives.

- 1 If you don't have three spare drives or if all of the drives in your RAID systems already belong to RAID arrays, use the management application for your RAID system to delete an existing array. You can run the application on the standby metadata controller or on a client that you've already set up.
- 2 Use two of the drives to create a new two-drive RAID 1 (mirrored) array.

- 3 Assign a third drive as a dedicated spare for the array.
- 4 You can use any leftover drives from the original array to create a separate array, or save them for use as spares.

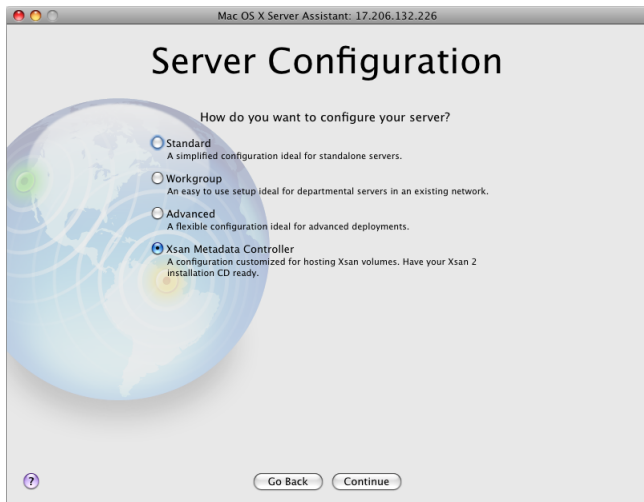
You now have a new two-drive RAID 1 array for storing SAN metadata. You'll add this LUN to your metadata storage pool when you create your SAN volume.

### **Step 7: Set Up the Primary Metadata Controller**

Now that you've prepared your SAN clients, standby metadata controller, and RAID storage systems, you're ready to set up the primary metadata controller. This computer must have Mac OS X Server installed but not yet set up.

- 1 Turn on the computer that will be the primary metadata controller.
- 2 Follow the Mac OS X Server setup assistant's onscreen instructions to configure the computer. Pay special attention to the following panes:

## Server Configuration: Select Xsan Metadata Controller.



**Administrator Account:** Enter the same administrator account name and password that you used for your SAN clients and standby metadata controller.

**Network Address:** If this pane appears, select “No, configure network settings manually.”

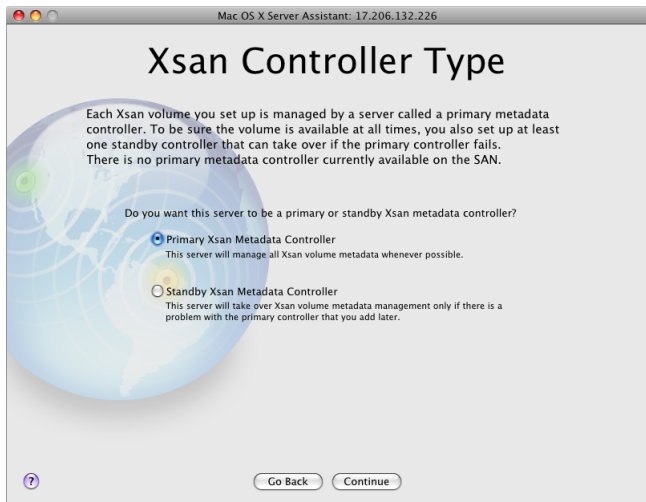
**Network Interfaces:** Enable only the public Ethernet port. Disable the Ethernet port connected to the private metadata network—the Xsan setup assistant will configure it for you. If you are setting up an Intel-based Xserve, you can also enable the lights-out management port.

**TCP/IP Connection (public Ethernet port):** Choose a configuration method from the pop-up menu and then enter the appropriate settings for the primary metadata controller. See “What You Need to Know” on page 7. You can choose:

- **Manually**, and then enter the static public IP address, subnet mask, and router address for the computer
- **Using DHCP with manual address**, and then enter the computer’s IP address, if your DHCP server will provide the other TCP/IP connection settings

**Time Zone:** To ensure consistent file metadata, choose the same network time server you chose for the other computers in the SAN.

**Xsan Controller Type:** Select Primary Xsan Metadata Controller.



**Users and Groups:** Select "Manage users and groups with Xsan Admin."

**Add User Accounts:** Select "Add new user accounts now."

**Add New User Accounts:** Enter a user name, short name, and password for each user who will log in to a client computer.

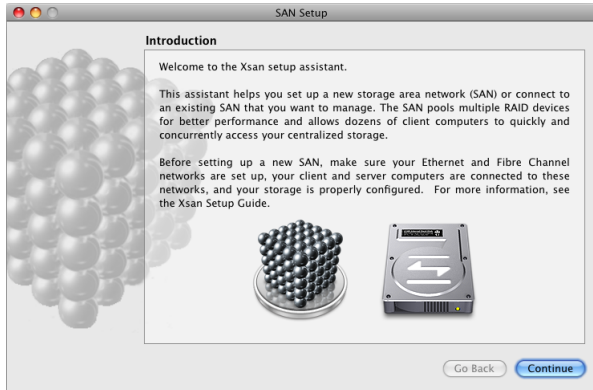
- When prompted, insert the *Xsan Install Disc* and follow the onscreen instructions to install Xsan.

When Xsan finishes installing, the Xsan setup assistant opens automatically. Continue with the next step.

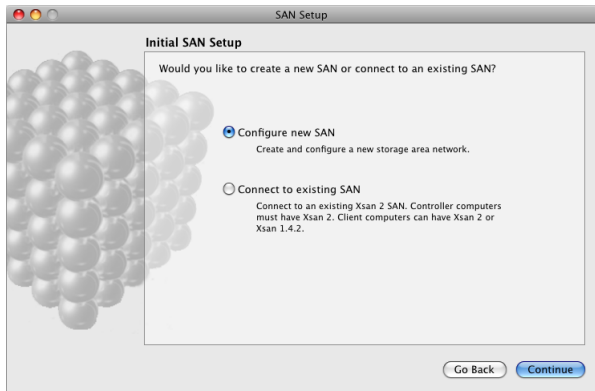
## Step 8: Configure the SAN

The Xsan setup assistant opens automatically when basic server configuration and Xsan installation are complete. Follow these steps to enter basic SAN settings.

- In the Introduction pane, click Continue.



2 In the Initial SAN Setup pane, select “Configure new SAN.”



- 3 In the SAN Settings pane, type a name for the SAN, and then enter the SAN administrator's name and email address.

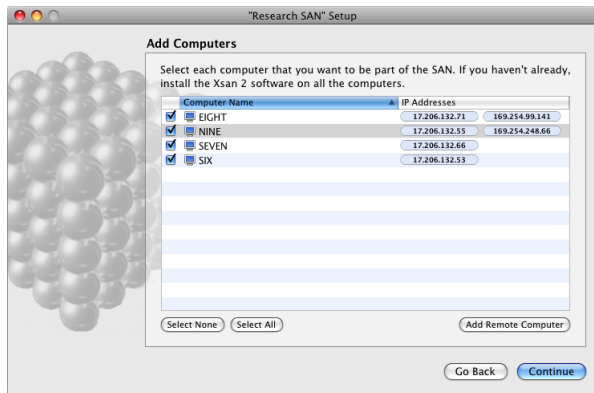




- 4 In the Add Computers pane, make sure all the computers that you want to be in the SAN are selected.

If a computer you want to include isn't listed, make sure you have installed Xsan on that computer, check that it is connected to both Ethernet networks, and check the network settings in the computer's Network preferences.

You can also click Add Remote Computer to add computers manually.

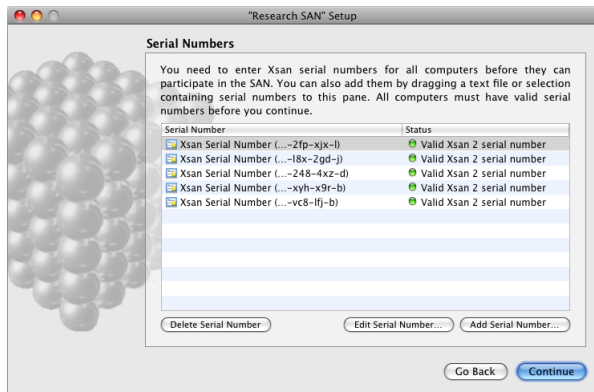


- 5 In the Authenticate SAN Computers pane, select “Use same authentication information for all SAN Computers” and enter the user account name and password you entered on the clients and the standby metadata controller.

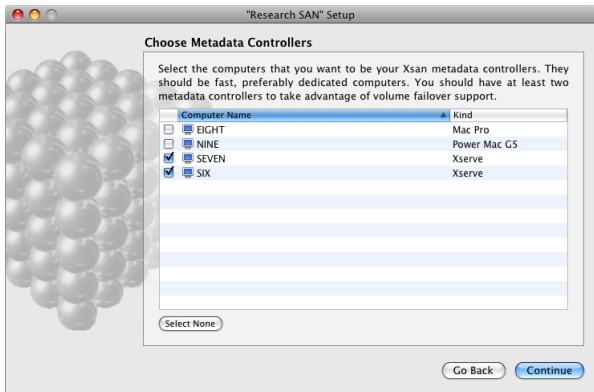


6 In the Serial Numbers pane, enter your Xsan serial numbers.

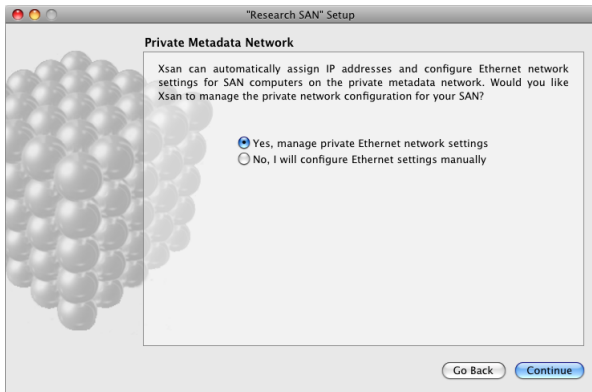
You can click Add Serial Number and type a number, or drag a text file containing serial numbers to the list.



- 7 In the Choose Metadata Controllers pane, select only your primary and standby metadata controllers. Deselect any client-only computers that appear in the list.

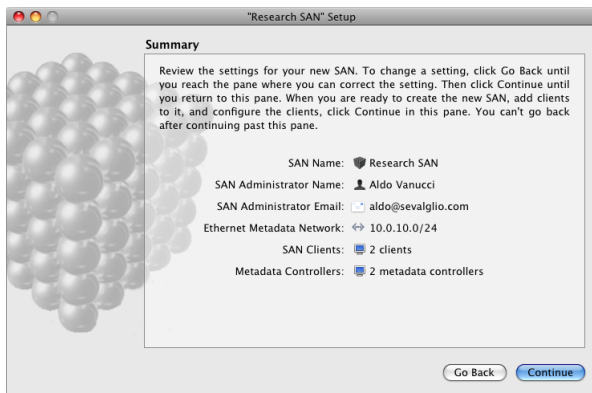


- 8 In the Private Metadata Network pane, select “Yes, manage private Ethernet network settings.”



- 9 Review the Summary pane, and if all settings are correct, click Continue.

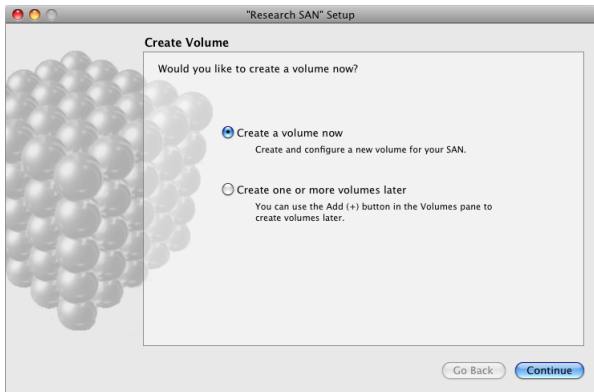
To change a setting, click Go Back until you reach the pane where you can correct the setting. Then click Continue until you return to the Summary pane.



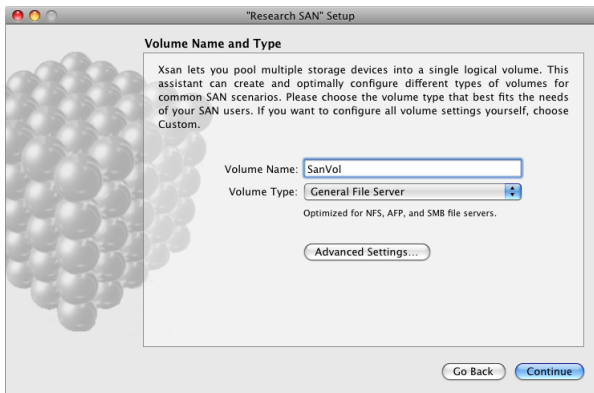
## Step 9: Set Up a SAN Volume

When the Xsan setup assistant finishes basic SAN configuration, it asks if you want to set up a volume.

- 1 In the “Create Volume” pane, select “Create a volume now” and click Continue.



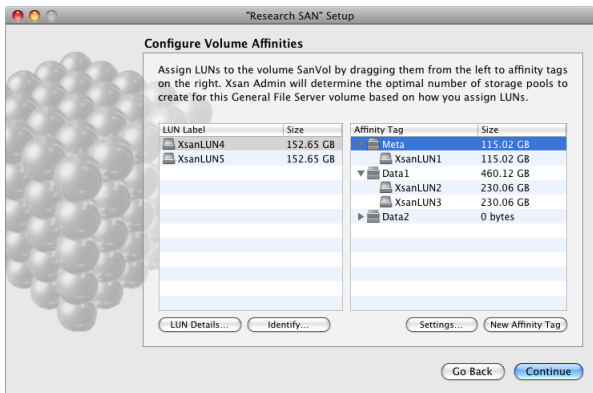
- In the “Volume Name and Type” pane, type a name for the volume and choose a volume type that matches the type of work the volume will support.



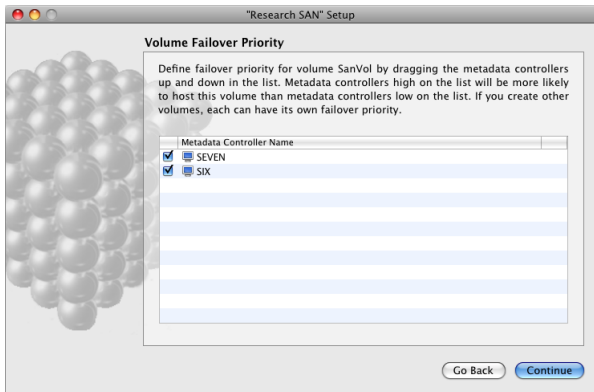
- If the Label LUNs pane appears, select “Automatically label all unlabeled LUNs with prefix” and click Continue. When the list of labeled LUNs appears, verify the LUN labels and click Continue.



- 4 In the Configure Volume Affinities pane, drag LUNs from the left column to the corresponding affinity tag in the right column.
- a Drag the special metadata LUN you created (in Step 6, “Create a Metadata Array”) to the MetadataAndJournal affinity tag.
  - b Drag your other LUNs to the other affinity tags. To avoid wasting storage, all LUNs assigned to an affinity tag should be the same size.
  - c When you finish, click Continue.

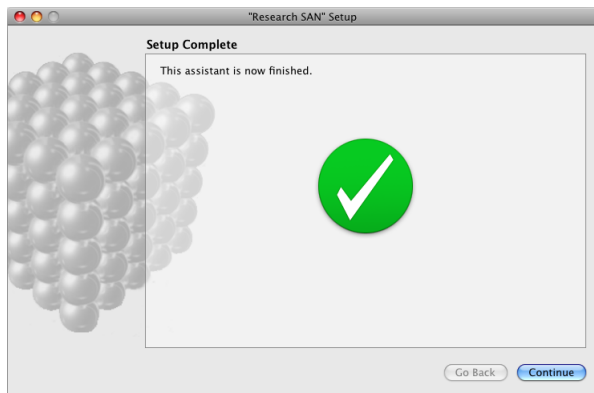


- 5 In the Volume Failover Priority pane, ensure that the primary metadata controller is at the top of the list, and then click Continue.



- 6 In the Setup Complete pane, click Continue.

Xsan Admin displays a summary of your SAN configuration and the new volume is mounted and ready to use in the Finder on all clients and metadata controllers.



## What's Next?

Your SAN volume is now ready to use. When any SAN user logs in to a client computer, they'll see the volume in the Finder. For information about using and managing the SAN, see the *Xsan 2 Administrator's Guide* on the *Xsan Install Disc* and at [www.apple.com/server/documentation](http://www.apple.com/server/documentation). This guide includes topics such as:

- Controlling access to files and folders on SAN volumes
- Setting folder affinities
- Managing available space with user quotas
- Monitoring the status of the SAN and its volumes

You can also find information about these and other tasks in the onscreen help. Open Xsan Admin and choose Help > Xsan Admin Help.