

Data ONTAP® 7.3

Software Setup Guide

NetApp, Inc.
495 East Java Drive
Sunnyvale, CA 94089 USA
Telephone: +1 (408) 822-6000
Fax: +1 (408) 822-4501
Support telephone: +1 (888) 4-NETAPP
Documentation comments: doccomments@netapp.com
Information Web: <http://www.netapp.com>

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About this guide

You can use your product more effectively when you understand this document's intended audience and the conventions that this document uses to present information.

This document describes how to set up and configure storage systems that run Data ONTAP software. It covers all supported storage system models.

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Audience

This document is written with certain assumptions about your technical knowledge and experience.

This document is for system administrators who are familiar with operating systems that run on the storage system's clients.

It also assumes that you are familiar with how to configure the storage system and how Network File System (NFS), Common Internet File System (CIFS), and Hypertext Transport Protocol (HTTP) are used for file sharing or transfers. This guide doesn't cover basic system or network administration topics, such as IP addressing, routing, and network topology.

If you are installing new storage systems, this is the correct guide for you. If you are unsure, use the following table to decide which guide to read.

If you are ...	Read ...
Configuring a new storage system	<p>This guide</p> <p>If you are configuring a new V-Series system, see also your <i>V-Series Installation Requirements and Reference Guide</i>.</p> <p>If you are configuring a new storage system in an FC or iSCSI environment, see also your <i>Data ONTAP Block Access Management Guide for iSCSI and FC</i>.</p>

If you are ...	Read ...
Upgrading an existing storage system to this version of the Data ONTAP software	The <i>Data ONTAP Upgrade Guide</i>
Converting existing storage systems to an active/active configuration	The <i>Data ONTAP Active/Active Configuration Guide</i>

Accessing Data ONTAP man pages

You can use the Data ONTAP manual (man) pages to access technical information.

About this task

Data ONTAP manual pages are available for the following types of information. They are grouped into sections according to standard UNIX naming conventions.

Types of information	Man page section
Commands	1
Special files	4
File formats and conventions	5
System management and services	8

Step

1. View man pages in the following ways:

- Enter the following command at the storage system command line:

```
man command_or_file_name
```
- Click the manual pages button on the main Data ONTAP navigational page in the FilerView user interface.
- Use the *Commands: Manual Page Reference*, Volumes 1 and 2 (which can be downloaded or ordered through the NOW site).

Note: All Data ONTAP man pages are stored on the storage system in files whose names are prefixed with the string "na_" to distinguish them from client man pages. The prefixed names are

used to distinguish storage system man pages from other man pages and sometimes appear in the NAME field of the man page, but the prefixes are not part of the command, file, or services.

Terminology

To understand the concepts in this document, you might need to know how certain terms are used.

Storage terms

array LUN	Refers to storage that third-party storage arrays provide to storage systems running Data ONTAP software. One array LUN is the equivalent of one disk on a native disk shelf.
LUN (Logical Unit Number)	Refers to a logical unit of storage identified by a number.
native disk	Refers to a disk that is sold as local storage for storage systems that run Data ONTAP software.
native disk shelf	Refers to a disk shelf that is sold as local storage for storage systems that run Data ONTAP software.
storage controller	Refers to the component of a storage system that runs the Data ONTAP operating system and controls its disk subsystem. Storage controllers are also sometimes called <i>controllers</i> , <i>storage appliances</i> , <i>appliances</i> , <i>storage engines</i> , <i>heads</i> , <i>CPU modules</i> , or <i>controller modules</i> .
storage system	Refers to the hardware device running Data ONTAP that receives data from and sends data to native disk shelves, third-party storage, or both. Storage systems that run Data ONTAP are sometimes referred to as <i>filers</i> , <i>appliances</i> , <i>storage appliances</i> , <i>V-Series systems</i> , or <i>systems</i> .
third-party storage	Refers to back-end storage arrays, such as IBM, Hitachi Data Systems, and HP, that provide storage for storage systems running Data ONTAP.

Cluster and high-availability terms

active/active configuration	In the Data ONTAP 7.2 and 7.3 release families, refers to a pair of storage systems (sometimes called <i>nodes</i>) configured to serve data for each other if one of the two systems stops functioning. Also sometimes referred to as <i>active/active pairs</i> . In the Data ONTAP 7.1 release family and earlier releases, this functionality is referred to as a <i>cluster</i> .
cluster	In the Data ONTAP 7.1 release family and earlier releases, refers to a pair of storage systems (sometimes called <i>nodes</i>) configured to serve data for each other if one

of the two systems stops functioning. In the Data ONTAP 7.3 and 7.2 release families, this functionality is referred to as an *active/active configuration*.

Where to enter commands

You can use your product more effectively when you understand how this document uses command conventions to present information.

You can perform common administrator tasks in one or more of the following ways:

- You can enter commands either at the system console or from any client computer that can obtain access to the storage system using a Telnet or Secure Shell (SSH) session.
In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.
- You can use the FilerView graphical user interface.
- You can enter Windows, ESX, HP-UX, AIX, Linux, and Solaris commands at the applicable client console.
In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.
- You can use the client graphical user interface.
Your product documentation provides details about how to use the graphical user interface.
- You can enter commands either at the switch console or from any client that can obtain access to the switch using a Telnet session.
In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.

Keyboard and formatting conventions

You can use your product more effectively when you understand how this document uses keyboard and formatting conventions to present information.

Keyboard conventions

Convention	What it means
The NOW site	Refers to <i>NetApp On the Web</i> at http://now.netapp.com/ .

Convention	What it means
<i>Enter, enter</i>	<ul style="list-style-type: none"> Used to refer to the key that generates a carriage return; the key is named Return on some keyboards. Used to mean pressing one or more keys on the keyboard and then pressing the Enter key, or clicking in a field in a graphical interface and then typing information into the field.
hyphen (-)	Used to separate individual keys. For example, Ctrl-D means holding down the Ctrl key while pressing the D key.
type	Used to mean pressing one or more keys on the keyboard.

Formatting conventions

Convention	What it means
<i>Italic font</i>	<ul style="list-style-type: none"> Words or characters that require special attention. Placeholders for information that you must supply. For example, if the guide says to enter the <code>arp -d hostname</code> command, you enter the characters "arp -d" followed by the actual name of the host. Book titles in cross-references.
Monospaced font	<ul style="list-style-type: none"> Command names, option names, keywords, and daemon names. Information displayed on the system console or other computer monitors. Contents of files. File, path, and directory names.
Bold monospaced font	Words or characters you type. What you type is always shown in lowercase letters, unless your program is case-sensitive and uppercase letters are necessary for it to work properly.

Special messages

This document might contain the following types of messages to alert you to conditions that you need to be aware of.

Note: A note contains important information that helps you install or operate the system efficiently.

Attention: An attention notice contains instructions that you must follow to avoid a system crash, loss of data, or damage to the equipment.

How to send your comments

You can help us to improve the quality of our documentation by sending us your feedback.

Your feedback is important in helping us to provide the most accurate and high-quality information. If you have suggestions for improving this document, send us your comments by e-mail to docomments@netapp.com. To help us direct your comments to the correct division, include in the subject line the name of your product and the applicable operating system. For example, *FAS6070—Data ONTAP 7.3*, or *Host Utilities—Solaris*, or *Operations Manager 3.8—Windows*.

Overview of the software setup process

The software setup process consists of satisfying environmental prerequisites, gathering configuration information, entering configuration information at setup prompts, and verifying initial configuration parameters.

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[Default storage system configuration](#) on page 18

[About the setup process](#) on page 18

[Setup methods](#) on page 19

Software setup stages

The software setup process for your new storage system requires several steps after you have completed hardware setup.

Before you begin

This guide assumes that you have already prepared the physical site for your new storage system and that you have racked and cabled storage system hardware according to the following documents:

- *Site Requirements Guide*
- *Installation and Setup Instructions*
- *Data ONTAP Active/Active Configuration Guide*

Note: The *Data ONTAP Active/Active Configuration Guide* also includes important information about active/active configuration prerequisites and verification procedures that you will need to consult during the software setup process.

Steps

1. Ensure that your network and storage environment meets storage system requirements.
2. Gather system configuration information and record it in the worksheet provided.
3. Power on the new system.
4. Enter the information you gathered according to your preferred setup method.
5. Verify that basic system functionality has been configured correctly.
6. Configure system features and provision your features as described in relevant documents of the Data ONTAP library.

Related concepts

Prerequisites to initial configuration on page 21

Configuration information you need to gather on page 29

Related tasks

Setting up your storage system on page 47

Verifying software setup on page 57

Related information

*Data ONTAP Information Library --
now.netapp.com/NOW/knowledge/docs/ontap/ontap_index.shtml*

Default storage system configuration

Before your storage system was shipped to you, a series of tasks was performed to configure your storage system for use. These tasks simplify the setup process for you and ensure that you can run the setup script on systems.

The following tasks were performed:

- Your storage system was configured with either an aggregate and FlexVol root volume or with a traditional root volume, depending on your needs and the purchase agreement.
- Licenses for protocols and features (such as CIFS, NFS, and controller failover) you have purchased were installed on your system.
- Bootloader files and firmware updates, including primary and secondary BIOS images, were installed on the boot device that shipped with your system.

About the setup process

The software setup process collects information that enables the storage system to serve data in your environment.

When Data ONTAP software is installed on your new storage system, the following files are not populated:

- /etc/rc
- /etc/exports
- /etc/hosts
- /etc/hosts.equiv
- /etc/nsswitch.conf

- /etc/resolv.conf

When your new system is powered on for the first time, you can enter configuration values to populate these files and to configure the installed functionality of your system, depending on your system's hardware configuration and licensed features.

You have the option to enter configuration values manually in the CLI, enter configuration values manually in a graphical interface, or have configuration values populated from information in a DHCP server, depending on the setup method you select. You can also choose to enter all initial configuration values during the setup process or to enter only essential networking values and complete initial configuration at a later time.

Setup methods

You can provide initial setup configuration values through the CLI or through a graphical interface. These methods require a serial console connection, or a network connection and a DHCP server.

The most common method to set up a new system is to enter configuration values at the storage system CLI in a serial console session.

When you boot your system for the first time, a DHCP broadcast is issued from the management port (e0M, if your system has one) or from the first onboard network interface (usually e0a). If there is no response to the DHCP broadcast, the `setup` command begins to run automatically on the system console. You can also elect to disregard a DHCP server response and enter configuration values at the CLI.

The `setup` script collects information to populate configuration files and to configure the installed functionality of your system. After the `setup` command begins to run on the system console, you can choose whether to continue setup at the console or using a Web browser. You might also be prompted to respond to `setup` commands for other system features.

There are several alternatives to a serial console session for initial configuration, all requiring a network connection and correctly configured DHCP server. If you have configured a DHCP server in your environment, it will respond to the DHCP broadcast with an IP address. If you accept the assigned address, you can connect to the storage system using one of the following methods:

- **FilerView Setup Wizard**
You can connect to the storage system's built-in Web server and enter setup values in the graphical FilerView setup screens.
- **System Manager**
If you have installed System Manager software on a Windows client system, you can enter setup values at the System Manager console.

Note: System Manager provides setup and management capabilities for SAN and NAS environments from a Microsoft Windows system. You can use System Manager to quickly and efficiently set up storage systems that are single or in an active/active configuration. You can also use System Manager to configure all protocols, such as NFS, CIFS, FCP, and iSCSI, supply

provisions for file sharing and applications, and monitor and manage your storage system. For more information about System Manager, see the NOW site.

- Telnet client
You can enter setup values at the CLI during a Telnet session.

Related information

[Management Software: System Manager](#)

Prerequisites to initial configuration

Before you begin the software setup process, you must ensure that you have prepared your network and storage environment for your new storage system.

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[Active/active configuration requirements](#) on page 22

[Requirements for Windows domains](#) on page 22

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[DHCP requirements for remote access](#) on page 26

Requirements for the administration host

You should designate a CIFS or NFS client workstation as an administration host to limit access to the storage system's root file system, to provide a text editor to edit configuration files, or to provide the ability to administer a storage system remotely.

During the setup process, you are prompted to designate a workstation on the network as an administration host. For more information about administration hosts, see the *Data ONTAP System Administration Guide*.

CIFS and NFS client workstations can serve as administration hosts, with these requirements and privileges:

- If you plan to use a CIFS client to manage the storage system, the CIFS client must support the `telnet` and `rsh` commands.
You can edit configuration files from any CIFS client as long as you connect to the storage system as root or Administrator.
- If you plan to use an NFS client to manage the storage system, the NFS client must meet the following requirements:
 - Support a text editor that can display and edit text files containing lines ending with the newline character
 - Support the `telnet` and `rsh` commands
 - Support the mounting of directories using the NFS protocol

When connecting from an NFS client, the administrator operates as root.

Attention: If you change the name or IP address of an administration host on a storage system that has already been set up and configured, the `/etc/exports` files will be overwritten on system reboot.

Active/active configuration requirements

For information about preparing your environment for a new active/active pair, see the *Data ONTAP Active/Active Configuration Guide*.

Requirements for Windows domains

If you are joining your system to a Windows domain, the storage system administrator account must have permissions to add the system to an Active Directory domain. It might also be necessary to precreate a domain account for your new system before initial setup.

Permissions for adding a storage system to an Active Directory domain are the same as permissions required for adding any Windows server.

Note: When you run `cifs setup`, a Windows directory account is automatically created, unless you intend to use Windows NT4-style authentication. To use Windows NT4-style authentication, you must create a domain account using Windows tools before you run `cifs setup`. If you do not do this, `cifs setup` will terminate, prompting you to create the domain account.

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Assigning domain administrator privileges

Before adding a storage system to a Windows Active Directory domain, organizational unit (OU), or other Active Directory container object, you need to make sure the storage system administrator account has sufficient privileges and permissions to add a Windows Active Directory server to that domain or object.

About this task

When the `cifs setup` program adds the storage system to an Active Directory environment, it creates an Active Directory domain and joins the storage system's computer account to that domain. Before this happens, you need to assign permissions on certain domain objects.

Note: The following steps describe the procedure on a Windows 2000 Server. Details of this procedure might vary on other Windows server versions.

Steps

1. In the Active Directory Users and Computers View menu, ensure that the Advanced Features menu item is selected.
2. In the Active Directory tree, select the OU for your storage system.
3. Select the user or group that will add the storage system to the domain.
4. In the Permissions list, ensure that the following check boxes are enabled:
 - Change Password
 - Write Public Information
 - Create Computer Objects

Precreating a storage system domain account

If your security structure does not allow you to assign the setup program the necessary permissions to create the storage system domain account, or if you intend to use Windows NT4-style authentication, you must create the storage system domain account before `cifs setup` is run.

About this task

If you create the storage system domain account before `cifs setup` is run, follow these guidelines:

- You do not need to assign the Create Computer Objects permission.
- You can assign permissions specifically on the storage system domain account, instead of assigning them on the storage system container.

Steps

1. In the Active Directory Users and Computers View menu, ensure that the Advanced Features menu item is selected.
2. In the Active Directory tree, locate the OU for your storage system, right-click, and choose New > Computer.
3. Enter the storage system (domain account) name.

Make a note of the storage system name you entered, to ensure that you enter it correctly when you run `cifs setup` later.
4. In the "add this computer to the domain" field, specify the name of the storage system administrator account.
5. Right-click the computer account you just created, and choose Properties from the pop-up menu.
6. Click the Security tab.
7. Select the user or group that will add the storage system to the domain.
8. In the Permissions list, ensure that the following check boxes are selected:

- Change Password
- Write Public Information

After you finish

When `cifs setup` is run, you will see the prompt "Please enter the new hostname." Enter the storage system name you specified in Step 3.

Requirements for Active Directory authentication

If you are deploying your new system in an Active Directory domain with Kerberos authentication, you need to ensure that DNS and network infrastructure are configured correctly before initial system setup.

Note: Kerberos 5 authentication is dependent upon the synchronization of time between the clients and the Kerberos Key Distribution Centers (KDCs).

Next topics

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[Network infrastructure requirements for Active Directory](#) on page 25

Related concepts

[Time services requirements](#) on page 25

Related tasks

[Creating a storage system DNS "A" record for CIFS client access](#) on page 63

Related information

[Unified Windows and UNIX Authentication Using Microsoft Active Directory Kerberos -- www.netapp.com/library/tr/3457.pdf](http://www.netapp.com/library/tr/3457.pdf)

DNS requirements for Active Directory

Active Directory Kerberos requires that a standards-based DNS implementation be configured. The implementation must support service locator records.

Your DNS solution must have the following capabilities:

- The DNS solution must be standards-based (RFC 1035).
- Service locator records must be supported.

Windows 2000 and Windows Server 2003/2008 Active Directory requires service locator records for finding the domain controllers, global catalog servers, Kerberos servers, LDAP servers, and the KPASSWD servers.

The following additional capabilities are recommended:

- Support for dynamic updates
- Support for incremental zone transfers

The following DNS solutions meet the requirements:

- Microsoft Server 2000/2003 DNS
This Active Directory integrated DNS provides the recommended capabilities. Service locator records are configured automatically.
- Berkeley Internet Name Domain (BIND) DNS
If you use BIND DNS, you need to manually configure the service locator records.

Network infrastructure requirements for Active Directory

You should ensure that the infrastructure supports reliable communication between clients, the storage system, DNS servers, time servers, and Active Directory domain controllers.

Verify the following network infrastructure functionality:

- To ensure that clients can find the Active Directory LDAP and Kerberos servers, there must be reliable network connectivity between the clients and DNS servers containing the LDAP and Kerberos service records. If possible, this should be a high-bandwidth connection.
- Clients must have reliable connections to domain controllers that host both the LDAP and Kerberos services. If possible, this should be a high-bandwidth connection.
- When the enterprise contains more than one domain or utilizes universal groups, there must be adequate connectivity from domain controllers to a global catalog server. If possible, this should be a high-bandwidth connection.
- If the enterprise is located in multiple locations that have low-bandwidth connectivity, you should configure Active Directory sites. These sites group resources within a local high-bandwidth zone.
- If clients from other domains access resources on the storage system, there should be reliable connectivity between the storage system and all domain controllers with users who access resources on the storage system.

Time services requirements

You should configure your storage system for time service synchronization. Many services and applications depend on accurate time synchronization.

During CIFS setup, if the storage system is to be joined to an Active Directory domain, Kerberos authentication is used. Kerberos authentication requires the storage system's time and the domain controller's time to match (within 5 minutes). If the times do not match, setup and authentication attempts fail.

By default, within Active Directory domains, all domain controllers synchronize to the domain controller that is configured as the PDC Emulator Master. Therefore, one of the following configurations is required:

- All storage systems configured to synchronize to one of the domain controllers
- Both the storage systems and the controller configured to synchronize to a central time server.

For more information about time services supported by Data ONTAP, see the *Data ONTAP System Administration Guide*.

Switch configuration requirements for vifs

If you use virtual network interfaces (vifs), you must ensure that your switches support the vif type required for your storage system before powering on for the first time.

If you plan to use this type of vif...	Your switch must support...
Dynamic multimode	Link Aggregation Control Protocol (LACP)
Static multimode	Aggregates (but must not have control packet exchange for configuring an aggregate)
Single-mode	No special switch requirements

For more information about vifs, see the *Data ONTAP Network Management Guide*.

DHCP requirements for remote access

If you want to complete the setup process from the storage system's Web browser interface (the FilerView Setup Wizard), or a Telnet client rather than the console, you must configure the Dynamic Host Configuration Protocol (DHCP).

Note: System Manager has different DHCP requirements than FilerView or Telnet. See the System Manager documentation for more information.

When you enable DHCP to assign a static IP address to an onboard network interface during first-time setup, you can connect to the storage system through a Web browser running over HTTP and complete the first-time configuration remotely using the FilerView Setup Wizard or a Telnet client.

If your system includes an e0M interface, the system broadcasts a DHCP request through it. If a DHCP server responds, it will assign an IP address to the e0M interface. If your system does not have an e0M interface, the system uses the first onboard network interface (e0a, or e0 when there is only one onboard interface) for the DHCP broadcast.

When you use DHCP to assign an IP address to the onboard interface, the storage system performs the following operations:

- Obtains the address from the DHCP server when the storage system is turned on
- Configures the onboard interface with the IP address
- Becomes accessible to the Setup Wizard or a Telnet client

You need to configure the following information into your DHCP server prior to running the Setup Wizard:

- Storage system MAC address
- Storage system fixed IP address
- Any of the following optional information:
 - Routers
 - Default route
 - DNS domain name
 - DNS servers
 - NIS domain name
 - NIS servers
 - WINS servers
 - SMTP server

Attention: When you use DHCP with a storage system, you must ensure that the DHCP server is configured to return a static IP address for the interface. If the server returns a dynamic IP address, the storage system displays an error message and continues to use the IP address permanently—which can result in an IP address conflict if the DHCP server assigns the IP address dynamically to other clients from time to time.

DHCPv6 servers are not currently supported.

Related information

Management Software: System Manager

Configuration information you need to gather

Before powering on your storage system for the first time, you should use the configuration worksheet to gather the information that the software setup process requires.

If you are configuring a storage system as part of an active/active configuration, some information types must be unique for each storage system in the configuration, and some information types must be identical on both storage systems. Some of the tables in the following sections have a description column that indicates whether the information type must be unique for each storage system or identical on both storage systems.

Next topics

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Configuration worksheet

Use the configuration worksheet to record values you will use during the setup process.

Note: The alternate names used by the Setup Wizard for the term used in the `setup` command appear in parentheses.

Types of information		Your values
Storage system	Host name	
	Password	
	Time zone	
	Storage system location	
	Language used for multiprotocol storage systems	

Types of information		Your values
Administration host	Host name	
	IP address	
Virtual interfaces	Link names (physical interfaces names such as e0, e0a, e5a, or e9b)	
	Number of links (number of physical interfaces to include in the vif)	
	Name of virtual interface (name of vif, such as vif0)	
Ethernet interfaces	Interface name	
	IPv4 address	
	IPv4 subnet mask	
	IPv6 address	
	IPv6 subnet prefix length	
	Partner IP address or interface	
	Media type (network type)	
	Are jumbo frames supported?	
	MTU size for jumbo frames	
	Flow control	
e0M interface (if available)	IP address	
	Network mask	
	Partner IP address	
	Flow control	
Router (if used)	Gateway name	
	IPv4 address	
	IPv6 address	
HTTP	Location of HTTP directory	
DNS	Domain name	
	Server address 1	
	Server address 2	
	Server address 3	

Types of information		Your values	
NIS	Domain name		
	Server address 1		
	Server address 2		
	Server address 3		
CIFS	Windows domain		
	WINS servers	1	
		2	
		3	
	Multiprotocol or NTFS-only filer?		
	Should CIFS create default /etc/passwd and /etc/group files?		
	NIS group caching	Enable?	
		Hours to update the cache	
	CIFS server name (if different from default)		
	User authentication style: (1) Active Directory domain authentication (Active Directory domains only) (2) Windows NT 4 domain authentication (Windows NT or Active Directory domains) (3) Windows Workgroup authentication using the filer's local user accounts (4) /etc/passwd and/or NIS/LDAP authentication		
	Windows Active Directory domain	Domain name	
		Time server name(s) or IP address(es)	
		Windows user name	
		Windows user password	
Local administrator name			
Local administrator password			
CIFS administrator or group			
Active Directory container (command-line setup only)			

Types of information		Your values
RLM	MAC address	
	IP address	
	Network mask (subnet mask)	
	Gateway	
	AutoSupport mailhost	
	AutoSupport recipients	
ACP	Network interface name	
	Domain for network interface	
	Netmask (subnet mask) for network interface	

Required storage system information

You must provide basic information about the storage system during the setup process. This information is required regardless of licensed features and usage.

Information type	Description
Host name (Hostname or Storage System Name)	<p>The name by which the storage system is known on the network.</p> <p>If the storage system is licensed for the NFS protocol, the name can be no longer than 32 characters.</p> <p>If the storage system is licensed for the CIFS protocol, the name can be no longer than 15 characters.</p> <p>The host name must be unique for each storage system in an active/active configuration.</p>
Password (Administrative Password)	A password for the root account that the storage system requires before granting administrative access at the console, through a Telnet client, or through the Remote Shell protocol.
Time zone (Timezone)	<p>The time zone in which the storage system resides. See Time zones on page 71 for a list of valid time zones.</p> <p>The time zone must be identical on both storage systems in an active/active configuration.</p>

Information type	Description
Storage system location (Location)	A description of the physical location of the storage system. The text you enter during the storage system setup process is recorded in the SNMP location information. Use a description that identifies where to find your storage system (for example, "Lab 5, Row 7, Rack B").
Language	<p>The language used for multiprotocol storage systems if both the CIFS and NFS protocols are licensed. For a list of supported languages and their abbreviations, see Supported languages on page 79 .</p> <p>The language must be identical on both storage systems in an active/active configuration.</p>
Administration host (Administrative Host)	A client computer that is allowed to access the storage system through a Telnet client or through the Remote Shell protocol.

Virtual network interface information

If you want to use vifs, it is recommended that you plan for them before installation and create them during the software setup process.

Information type	Description
Virtual network interfaces	<p>You will be prompted for the number of vifs you want to create. For each vif, record the following information:</p> <ul style="list-style-type: none"> • Name of virtual interface. • Is <i>vif_name</i> a single [s], multi [m] or a lacp [l] interface group? • Is <i>vif_name</i> to use IP based [i], MAC based [m], Round-robin based [r] or Port based [p] load balancing? • Number of links for <i>vif_name</i>. • Name of link for <i>vif_name</i> (and for each additional link). • IP address for <i>vif_name</i>. • Netmask for <i>vif_name</i>. • If you are configuring IPv6 networking, also record the following information: <ul style="list-style-type: none"> • IPv6 address for <i>vif_name</i>. • Subnet prefix length for <i>vif_name</i>. • Should interface group <i>vif_name</i> take over a partner interface group during failover? • Media type for <i>vif_name</i> {100tx-fd, tp-fd, 100tx, tp, auto (10/100/1000)}. • Additional interface information for each interface in the group. <p>The virtual network interface information must be identical on both storage systems in an active/active pair.</p>

Network information

You must provide basic information about the storage system's network connections. This information is required regardless of licensed features and usage.

For more information about these parameters, see the *Data ONTAP Network Management Guide* and the `inconfig(1)` man page.

Information type	Description
Network Interface name	The name of the Ethernet (or GbE) interface, depending on what port the Ethernet card is installed in. Examples include e0 (for Ethernet single); e1 (for GbE); and e3a, e3b, e3c, e3d (for Ethernet quad-port). Network interface names are automatically assigned by Data ONTAP as it discovers them.
e0M interface (if available)	<p>The network interface of the management port (if included in your system). You can use the e0M interface to access the storage system with protocols such as <code>telnet</code>, <code>rsh</code>, and <code>snmp</code>, as well as monitoring tools such as Operations Manager. This allows you to separate management traffic from data traffic on your storage system.</p> <p>Note: The e0M interface cannot be included in vif or VLAN configurations.</p> <p>For more information about using the e0M interface to access your system, see the <i>Data ONTAP System Administration Guide</i>.</p>
Internet Protocol	<p>You are prompted to configure IPv6. If you enter n, further prompts will be for IPv4 values only.</p> <p>If you enter y to configure IPv6, you must also supply IPv4 configuration information for network interfaces in addition to IPv6 configuration information.</p> <p>Note: Enabling IPv6 during setup does not enable file access protocols (CIFS, NFS, FTP, or HTTP) over IPv6. For more information about using these protocols over IPv6, see the <i>Data ONTAP File Access and Protocols Management Guide</i>.</p> <p>Enabling IPv6 during setup also enables IPv6 router advertisement. This can be disabled separately by setting the <code>ip.v6.ra_enable</code> option to <code>off</code>.</p> <p>For more information about IPv4 and IPv6 support, see the <i>Data ONTAP Network Management Guide</i>.</p>
IP address	<p>A unique address for each network interface.</p> <p>IPv4 example: 192.0.2.66</p> <p>IPv6 example: 2001:0DB8:85A3:0:0:8A2E:0370:99</p>
Subnet mask (Network Mask, IPv4 only)	<p>The IPv4 subnet mask for the network to which each network interface is attached.</p> <p>Example: 255.255.255.0</p>

Information type	Description
Subnet prefix length	<p>The number of bits used as the subnet mask for the specified interface.</p> <p>For an IPv6 address, the prefix length must be less than or equal to 128 bits. The default value of prefix length is 64 bits.</p>
Partner IP address (Interface to Take Over)	<p>If your storage system is licensed for controller takeover, record the interface name or IP address belonging to the partner that this interface should take over during an active/active configuration takeover.</p> <p>Examples: e0 or 10.10.10.2</p> <p>When using vifs, you must specify the vif name in the ifconfig statement rather than the interface IP address.</p>
Media type (Network Type)	<p>If the network interface is Gigabit or 10 Gigabit Ethernet, you do not need to configure the media type because they support only one speed and duplex, or they can identify swappable media modules.</p> <p>If the network interface is 10/100 or 10/100/1000 Ethernet, you can select autonegotiation or you can explicitly configure the speed and duplex using these media types:</p> <ul style="list-style-type: none"> • auto (autonegotiate speed and duplex) • 100tx-fd (100Base-TX, full-duplex) • 100tx (100Base-TX, half-duplex) • tp-fd (10Base-T, full-duplex) • tp (10Base-T, half-duplex) <p>The switch must be configured to match the media type values you select.</p>
Flow control	<p>The management of the flow of frames between two directly connected link-partners. Options:</p> <ul style="list-style-type: none"> • none (No flow control) • receive (Ability to receive flow control frames) • send (Ability to send flow control frames) • full (Ability to send and receive flow control frames)

Information type	Description
Router (Routing Gateway)	Record the following information for the primary gateway to use for routing outbound network traffic: <ul style="list-style-type: none"> • Gateway name • IP address of the router for IPv4 routing • IP address of the router for IPv6 routing

HTTP protocol information

If your storage system is licensed for the HTTP protocol, you must designate a directory from which Web files and directories are served or accept the default.

If you purchased an HTTP license, Web browsers can access all of the files in the HTTP server's root directory (or other directory you designate); otherwise, Web browsers can access the man pages and FilerView only. You can also connect a third-party HTTP server to your storage system. For more information about file access using HTTP, see the *Data ONTAP File Access and Protocols Management Guide*.

Note: It is not necessary to specify the HTTP directory if you want to provide administrative access to your system using the HTTP protocol.

Information type	Description
Location of the HTTP directory	The directory where the Web files and directories are stored. The default directory is /home/http in the storage system's root volume. The /home/http path can be used by both HTTP and HTTPS protocols.

DNS services information

To configure your storage system to use the Domain Name System (DNS), you must provide DNS domain and server names.

For more information about configuring DNS, see the *Data ONTAP Network Management Guide*.

Information type	Description	
DNS domain	<p>The name of your network's DNS domain.</p> <p>The DNS domain name must be identical on both storage systems in an active/active configuration.</p> <p>Note: The domain name cannot contain an underscore (_) and must consist of alphanumeric characters. If you use an underscore, you receive a "bad domain name" message.</p>	
DNS servers	The IP addresses of your DNS servers.	
	If...	You need the IP addresses of...
	Your storage system will not use Active Directory services	<p>One or more DNS servers that provide host-name lookup services to the storage system.</p> <p>Note: If you are enabling IPv6, you can enter IPv6 DNS server addresses here.</p>
You want to make Active Directory services available to CIFS	DNS servers that support your Windows Active Directory domain.	

NIS services information

If your network uses the Network Information Service (NIS), you must provide NIS domain and server names.

For more information about configuring NIS, see the *Data ONTAP Network Management Guide*.

Information type	Description
NIS domain	<p>The name of your NIS domain. The storage system can use an NIS domain to authenticate users and client computers.</p> <p>The NIS domain name must be identical on both storage systems if your network uses NIS.</p> <p>If multiprotocol access is enabled on the storage system, group caching is beneficial for CIFS access as well as NFS access. With multiprotocol access, user mapping of CIFS users to NFS users is performed. When a Windows user requests access to data with UNIX security style, the Windows user is first mapped to the corresponding UNIX user. The UNIX users' groups must then be ascertained before the storage system can determine appropriate access. Failure to enable these two options together could lead to slow CIFS access to resources due to time spent on NIS group lookups.</p>

Information type	Description	
NIS servers	The host names of your preferred NIS servers.	
	If...	You need...
	Your site uses NIS	The host names of your NIS servers. Note: If you are enabling IPv6, you can enter IPv6 NIS server addresses here.
	You want NIS to broadcast to find a server	To enter an asterisk (*) when asked for the NIS server names.

CIFS protocol information

If your storage system is licensed for the CIFS protocol, the `cifs setup` command runs automatically when basic setup has finished. You must provide information about the Windows domain, WINS servers, the Active Directory service, and your configuration preferences.

For more information about configuring CIFS, see the *Data ONTAP File Access and Protocols Management Guide*.

Information type	Description
Windows domain	The name of your Windows domain. If your site uses Windows domains and the storage system belongs to one of these domains, record the name of the domain to which the storage system should belong. Note: The Windows domain name value does not need to be identical on both storage systems in an active/active configuration. Each storage system in an active/active configuration can exist in a different domain and/or workgroup from its partner. If you have a multiprotocol environment and use UID to Secure ID (SID) mapping, the UNIX security information must be compatible between the two domains.
WINS servers	The servers that handle Windows Internet Name Service (WINS) name registrations, queries, and releases. If you choose to make the storage system visible through WINS, you can record up to four WINS IP addresses. Note: The WINS server value does not need to be identical on both storage systems in an active/active configuration. Each storage system in an active/active configuration can exist in a different domain and/or workgroup from its partner.
Multiprotocol or NTFS-only	The setup utility determines if your system includes licenses for multiple file access protocols (to serve data to NFS, Windows, HTTP, and other clients) or for NTFS only (to serve data to Windows clients only).

Information type	Description
Should CIFS create default /etc/passwd and /etc/group files?	<p>Enter y here if you have a multiprotocol environment. Default UNIX accounts are created which are used when performing user mapping. As an alternative to storing this information in local file, the generic user accounts can be stored in the NIS or LDAP databases; however, when generic accounts are stored in the local passwd file, mapping of a Windows user to a generic UNIX user and mapping of a generic UNIX user to a Windows user work better than when generic accounts are stored in NIS or LDAP.</p> <p>If generic accounts are configured, storage administrators should be mindful to not grant these generic accounts undue access to data. Additionally, creation of the local passwd and group file might be desirable if you select "/etc/passwd and/or NIS/LDAP authentication". If you choose this option, the storage system can use either the local files or NIS/LDAP for storing user information used for CIFS authentication. In this scenario, choosing to store the information in local files allows authentication to continue even during times where NIS and /or LDAP are configured and these services are unavailable.</p>
Would you like to enable NIS group caching?	<p>NIS group caching is used when access is requested to data with UNIX security style. UNIX file and directory style permissions of rwxrwxrwx are used to determine access for both Windows and UNIX clients. This security style uses UNIX group information.</p> <p>Note: If NIS is enabled but NIS group caching is disabled, there can be a severe impact on CIFS authentication if the NIS servers are slow to respond or unavailable. It is highly recommended that you enable NIS group caching.</p> <p>By default, the NIS group cache is updated once a day at midnight. You can update the cache more often or at different times, depending on your preferences.</p>
CIFS server name	<p>By default, the CIFS server is the same as the system host name. You can select a different name for the CIFS server, although the name can be no longer than 15 characters.</p>

Information type	Description
User authentication for CIFS services	<p>Data ONTAP CIFS services support four styles of user authentication:</p> <ol style="list-style-type: none"> 1. Active Directory domain authentication (Active Directory domains only) Users are authenticated with the domain controller in an Active Directory domain using Kerberos authentication. If you select this option, you are also prompted for other Active Directory configuration parameters. 2. Windows NT 4 domain authentication (Windows NT or Active Directory domains) Users are authenticated with the domain controller in an Active Directory or an NT domain using NT-style NTLM authentication only. 3. Windows Workgroup authentication using the filer's local user accounts Users are authenticated with the storage system's local user database using NT-style NTLM authentication. A maximum of 97 local users are supported, and local users can be members of the local groups (local user and group SIDs are used). Local users and groups are managed with the <code>useradmin</code> command. 4. <code>/etc/passwd</code> and/or NIS/LDAP authentication Users are authenticated on the basis of user names and passwords that are stored in the UNIX directory stores. Even if local Windows users are created on the storage system using the <code>useradmin</code> command, they are not used for session authentication. All authentication is done based on UNIX user information stored in the UNIX identity stores. <p>You should select an authentication style appropriate to the storage system's environment and to the clients requesting the authenticated session. For more information about CIFS authentication, see the <i>Data ONTAP File Access and Protocols Management Guide</i>.</p>
Active Directory domain name	Enter the fully qualified domain name of the domain; for example, <code>example.com</code> .
Active Directory time services	<p>In Active Directory-based domains, it is essential that the storage system's time match the domain controller's time so Kerberos-based authentication system works correctly. If the time difference between the storage system and the domain controllers is more than 5 minutes, CIFS authentication fails.</p> <p>The time services configuration should be identical on both storage systems in an active/active configuration.</p> <p>When you configure Active Directory time services, you are prompted for the host name and IP address of the time server you wish to use, as well as for additional backup servers if desired.</p>
Windows domain administrator user name (Windows user name)	<p>The user name of a Windows domain administrator with sufficient privileges to add this storage system to the Windows domain. Joining a domain requires an administrator user and password. This also applies to NT4 domains.</p> <p>Note: This is only required if you are using a Windows domain.</p>

Information type	Description
Windows domain administrator password (Windows 2000 administrator password)	The password for the domain administrator user account. Joining a domain requires an administrator user and password. This requirement also applies to NT4 domains. Attention: Before you enter the password, be sure to create a secure connection (HTTPS); otherwise, the password is sent to the storage system unencrypted.
CIFS administrator	You can specify an additional user or group to be added to the storage system's local "BUILTIN\Administrators" group, thus giving them administrative privileges as well.

Information type	Description
Active Directory container	<p>The Windows Active Directory container in which to place storage system accounts. This can be either the default Computers container or a previously created organizational unit (OU) on which you have the necessary permission to join the storage system to the domain. All OUs for which you have appropriate permissions will be displayed; the desired OU can be chosen from this list. If the person running setup does not have appropriate rights to the OU which will hold the storage system object, another user who does have the necessary permissions can be designated during the "join" step.</p> <p>Example:</p> <pre>CIFS - Logged in as administrator@EXAMPLE.COM.</pre> <p>The user that you specified has permission to create the storage system's machine account in several (7) containers. Please choose where you would like this account to be created.</p> <pre>(1) CN=computers (2) OU=java_users (3) OU=Engineer,OU=java_users (4) OU=Market,OU=java_users (5) OU=Fileers (6) OU=Domain Controllers (7) None of the above</pre> <p>Choose 7:</p> <pre>Selection (1-7)? [1]: 7 The user you specified, 'Administrator@EXAMPLE.COM', may create the filer's machine account in the container(s) listed above. To use another container, you must specify a user with the appropriate privileges. Enter the name of the Windows user []:'</pre>

Baseboard Management Controller information

If your storage system has a Baseboard Management Controller (BMC), the `bmc setup` command runs automatically when basic setup has finished. You must provide information about the BMC's network interface and network connections.

Note: You can also configure the BMC by using one of the following methods after the initial setup process:

- Running the Data ONTAP setup script
The setup script ends by initiating the `bmc setup` command.
- Running the Data ONTAP `bmc setup` command

For more information about the BMC, see the *Data ONTAP System Administration Guide*.

Information type	Description
Media Access Control (MAC) address	If you are using DHCP addressing, you need the MAC address of the BMC. You can obtain the address from the MAC address label on the BMC or by using by using the <code>bmc status</code> command (if you configure the BMC after initial system setup). Note: DHCPv6 servers are not currently supported.
IP address	If you are not using DHCP service, record an available IP address for the BMC. Note: Currently, you can use only IPv4 addresses to connect to the BMC.
Network mask	If you are not using DHCP service, record the network mask of your network.
Gateway	If you are not using DHCP service, record the IP address for the gateway of your network.
Mail host	The name or IP address of the preferred mail host. The BMC uses the same mailhost information that Data ONTAP uses for AutoSupport.

Remote LAN module information

If your storage system has a remote LAN module (RLM), you must provide information about the RLM's network interface and network connections.

For more information about configuring your RLM, see the *Data ONTAP System Administration Guide*.

Information type	Description
Media Access Control (MAC) address	If you are using DHCP addressing, you need the MAC address of the RLM. You can obtain the address from the MAC address label on the RLM or by using by using the <code>sysconfig -v</code> command (if you configure the RLM after initial system setup). Note: DHCPv6 servers are not currently supported.

Information type	Description
IP address	If you are not using DHCP service, record an available IP address for the RLM. Note: Currently, you can use only IPv4 addresses to connect to the RLM.
Network mask	If you are not using DHCP service, record the network mask of your network.
Gateway	If you are not using DHCP service, record the IP address for the gateway of your network.
Mail host	The name or IP address of the preferred mail host. The mail host delivers RLM alerts to the same destination as AutoSupport e-mail.

Shelf Alternate Control Path Management information

If you are planning to attach DS4243 disk shelves to your system, you should configure Shelf Alternate Control Path Management (ACP) during the software setup process.

Note: ACP connections must be cabled before you enter ACP configuration parameters on the storage system.

You can also configure ACP by using one of the following methods after the initial setup process:

- Running the Data ONTAP setup script
You can run the `setup` command and enter ACP configuration information.
- Setting the `acp.enabled` option to `on`
If the option has not previously been set, you will be prompted for ACP configuration values.

For more information about ACP configuration, see the *DS4243 Installation and Service Guide*.

Information type	Description
Network interface name	The name of the Ethernet (or GbE) interface that will be used exclusively for ACP traffic.
Domain for network interface	The network name (an IP address ending in 0) for the private subnet to be used exclusively by ACP. The default is 198.15.1.0.
Netmask for network interface	The subnet mask for the ACP interface.

The ACP subnet

The ACP subnet is a private Ethernet network that enables the ACP processor in the SAS module to communicate both with the storage controller and with the disk shelves. This network is separate from the I/O data path that connects the disk shelves to the HBA on the storage controller.

When you configure ACP on one of the system's network interfaces, you must supply a private domain name that conforms to RFC1918. You can use the system default domain, 198.15.1.0, or another network name (that is, an IP address ending in 0) that conforms to RFC1918.

If you are configuring ACP for disk shelves attached to an active/active configuration, you must supply the same ACP domain name and network mask for both systems.

Attention: Do not connect the ACP port to a routed network, and do not configure switches or hubs between the ACP port and the designated Ethernet port. Doing so is not supported and will cause interruptions in service.

Once you select a domain name and network mask for the interface, the ACP processor automatically assigns IP addresses for traffic in the ACP subnet. This assignment also includes the storage controller network interface that you selected for ACP traffic.

For example, if you selected e0b as the interface for ACP traffic, you will see command output similar to the following:

```
my-sys-1> storage show acp
```

```
Alternate Control Path:  enabled
Ethernet Interface:     e0b
ACP Status:            Active
ACP IP address:        198.15.1.212
ACP domain:            198.15.1.0
ACP netmask:           255.255.255.0
ACP Connectivity Status: Partial Connectivity
```

Shelf Module	Reset Cnt	IP address	FW Version	Status
7a.001.A	002	198.15.1.145	01.05	active
7a.001.B	003	198.15.1.146	01.05	active
7c.002.A	000	198.15.1.206	01.05	active
7c.002.B	001	198.15.1.204	01.05	active

Setting up your storage system

When you power on a storage system for the first time, the `setup` command begins to run automatically and prompts you for configuration information. You must enter the information you collected in the configuration worksheet by responding to prompts on the command line or from a graphical interface.

Before you begin

If your system does not boot when you power it on for the first time, you must troubleshoot your hardware configuration before proceeding to software setup.

Note: You should carefully review the setup procedures and gather configuration information *before* powering on your system for the first time. After the setup script begins to run, you do not have the option of returning to previous steps to make corrections. If you make a mistake, you must complete the setup process and reboot your system, then begin the setup process again by entering `setup` at the command line.

About this task

After responding to prompts to designate an administration host machine, you can continue setting up your storage system using either the `setup` command (responding to prompts from the command-line interface) or a graphical interface (the Setup Wizard or System Manager).

If CIFS is licensed for your storage system, you will also be prompted for CIFS configuration information.

Next topics

[Responding to setup command prompts](#) on page 47

[Responding to FilerView Setup Wizard prompts](#) on page 52

[Responding to cifs setup prompts](#) on page 53

Responding to setup command prompts

The `setup` command begins running at the storage system command prompt, where you must enter the information you gathered.

Before you begin

You must power on your storage system components and external switches following the instructions in the *Installation and Setup Instructions* for your hardware platform.

After the storage system boots, Data ONTAP begins discovering devices, interfaces, and licenses installed in the system. Data ONTAP displays messages on the console and starts the setup process, prompting you to enter setup information.

Note: Storage system components and external switches must be powered up in the correct order. The order is especially important the first time you boot the system to ensure that initial configuration is completed correctly.

About this task

Each step displays the `setup` command prompt. Supply an appropriate response from the configuration worksheet.

Steps

1. Choose the following option that describes your configuration.

If you are...	Then...
Using a DHCP server to assign IP addresses to your storage system	Allow the DHCP search to finish, then go to the next step.
Not using a DHCP server to assign IP addresses to your storage system	Press Ctrl-C to skip the DHCP search, then go to the next step.

2. Please enter the new hostname.

You can name this host whatever you wish (for example, `host1`).

3. Do you want to enable IPv6?

You can type either `y` or `n` at this prompt.

If you type...	Then you are prompted to enter...
<code>y</code>	IPv6 configuration information in later steps.
<code>n</code>	IPv4 configuration information in later steps.

Note: If you are configuring IPv6 for this system's network interfaces, you must also enter IPv4 configuration information when prompted. If you are only configuring IPv4 for this system's network interfaces, you do not need to enter IPv6 information.

4. Do you want to configure virtual network interfaces?

You can type either `y` or `n` at this prompt.

If you type...	Then you are...
y	<p>Prompted to enter additional configuration information for the virtual interface. These prompts are:</p> <ul style="list-style-type: none"> • Number of virtual interfaces to configure. • Name of virtual interface. • Is vif1 a single [s], multi [m] or a lacp [l] virtual interface? • Number of links for (virtual interface). • Name of link for (virtual interface).
n	Directed to the next prompt.

5. Please enter the IP address for Network Interface e0a

Enter the correct IP address for the network interface that connects the storage system to your network (for example, 192.168.1.1).

6. Please enter the netmask for Network Interface e0a.

After entering the IP address, you need to enter the netmask for your network (for example, 255.255.255.0).

If you are configuring...	Then go to...
IPv6	The next step
IPv4	Step 8

7. Please enter the IPv6 address for Network Interface e0a

Enter the correct IPv6 address for the network interface that connects the storage system to your network (for example, 2001:0DB8:85A3:0:0:8A2E:0370:99).

8. Please enter the subnet prefix length for Network Interface e0a [64]

Enter the number of bits used as the subnet mask for the specified interface; the default is 64.

9. Should interface e0a take over a partner IP address during failover ?

You can type either **y** or **n** at this prompt.

If you type...	Then you are...
y	<p>Prompted to enter the IPv4 address or interface name to be taken over by e0a.</p> <p>Note: If you type y, you must already have purchased a license for controller failover to enable this function.</p>

If you type...	Then you are...
n	Directed to the next prompt.

10. Please enter media type for e0a (100tx-fd, tp-fd, 100tx, tp, auto (10/100/1000))

Enter the media type that this interface should use.

11. Please enter flow control for e0a {none, receive, send, full} [full]

Enter the flow control option that this interface should use.

12. Do you want e0a to support jumbo frames? [n]

Specify whether you want this interface to support jumbo frames.

13. Continue to enter network parameter values for each network interface when prompted.

14. Would you like to continue setup through the Web interface?

If you want to...	Enter...
Continue setup with the Setup Wizard in a Web browser.	y Go to Responding to FilerView Setup Wizard prompts on page 52 . Note: You cannot use the Setup Wizard if you want to configure IPv6 connections.
Continue to use the command-line interface.	n Proceed to the next step.

15. Please enter the name or IP address of the IPv4 default gateway.

Enter the primary gateway that is used to route outbound network traffic.

If you are configuring...	Then go to...
IPv6	The next step
IPv4	Step 16

16. Please enter the name or IPv6 address of the IPv6 default gateway.

Enter the primary gateway that is used to route outbound IPv6 network traffic.

17. Please enter the name or IP address for administrative host.

The administration host is given root access to the storage system's /etc files for system administration.

To allow `/etc` root access to all NFS clients enter `RETURN` below.

Attention: If you change the name or IP address of an administration host on a storage system that has already been set up and configured, the `/etc/exports` files will be overwritten on system reboot.

18. Please enter the IP address for (name of admin host).

Enter the IP address of the administration host you specified earlier (for example, 192.175.4.1).

Note: The name listed here is the name of the host entered in the previous step.

19. Please enter timezone

GMT is the default setting. Select a valid value for your time zone and enter it here.

See [Time zones](#) on page 71 for a list of supported values.

20. Where is the filer located?

This is the actual physical location where the storage system resides (for example, Bldg. 4, Floor 2, Room 216).

21. What language will be used for multiprotocol files?

Enter the language.

See [Supported languages](#) on page 79 for a list of supported values.

22. Enter the root directory for HTTP files

This is the root directory for the files that the storage system will serve through HTTP or HTTPS.

23. Do you want to run DNS resolver?

If you type **y** at this prompt, you need the DNS domain name and associated IP address.

24. Do you want to run NIS client?

If you type **y** at this prompt, you will be prompted to enter the name of the NIS domain and the NIS servers.

When you have finished with the NIS prompts, you see an advisory message regarding AutoSupport and you are prompted to continue.

25. Would you like to configure the BMC LAN interface ?

If you have a BMC installed in your system and you want to use it, type **y** at the prompt and enter the BMC values you collected.

26. Would you like to configure the RLM LAN interface ?

If you have an RLM installed in your system and you want to use it, type **y** at the prompt and enter the RLM values you collected.

27. Do you want to configure the Shelf Alternate Control Path Management interface for SAS shelves ?

If you are planning to attach DS4243 disk shelves to your system, type `y` at the prompt and enter the ACP values you collected.

28. When setup is complete, to transfer the information you've entered to the storage system, enter the following command, as directed by the prompt on the screen.

`reboot`

Attention: If you do not enter `reboot`, the information you entered does not take effect and is lost.

29. If you are configuring a pair of storage systems in an active/active configuration and have not configured the other storage system, repeat these instructions to set up the other storage system in the configuration.

Responding to FilerView Setup Wizard prompts

If you have a DHCP server in your environment, you can use the FilerView Setup Wizard to complete initial configuration of your storage system.

Before you begin

You must configure a DHCP server as described in "DHCP requirements for remote access" in order to use the Setup Wizard. If you do not configure this information into your DHCP server, the corresponding fields in the Setup Wizard will be empty, and you will need to enter the information manually into the Setup Wizard fields.

About this task

You can use the FilerView Setup Wizard as an alternative to CLI setup procedures on the system console.

However, if you do not have a DHCP server, you can begin the setup process at the console and switch to the Setup Wizard. If you select `y` at the Web interface prompt (Step 14 of "Responding to setup command prompts"), a message is displayed with the name and IP address where you can use a Web browser and the FilerView application to properly configure your storage system. FilerView displays a system status screen with system information in the center frame and configuration options listed in the left frame.

Note: You cannot use the Setup Wizard if you want to configure IPv6 connections.

Steps

1. From a storage system client's Web browser, enter the following URL:

```
http://ip_address/api
```

ip_address is the IP address for your storage system.

Example

If the IP address of the onboard Ethernet interface (named e0a) is 10.14.26.99, enter the following:

```
http://10.14.26.99/api
```

The browser displays the Setup Wizard startup page.

2. Fill in the Setup Wizard fields using the information you gathered earlier.
3. After you verify that the configuration information is correct as shown on the last screen, click Finish.
4. If you are configuring a pair of storage systems in an active/active configuration and have not configured the other storage system, repeat these instructions to set up the other storage system in the configuration.

Related concepts

[DHCP requirements for remote access](#) on page 26

Related tasks

[Responding to setup command prompts](#) on page 47

Responding to cifs setup prompts

If you have a valid CIFS license, `cifs setup` starts automatically upon completion of the Setup Wizard or the `setup` command (unless `cifs setup` was run previously).

About this task

Each step displays the `cifs setup` command prompt. You should supply an appropriate response from the configuration worksheet.

Steps

1. Do you want to make the system visible via WINS?
The system first determines if WINS should be configured. If you want to configure WINS, enter `y`.
2. (1) Multiprotocol filer
(2) NTFS-only filer

You are asked if you wish to configure the storage system for multiple protocols or for NTFS only. If you have purchased multiprotocol licenses (NFS, CIFS, HTTP, and so on), enter 1.

3. Should CIFS create default `/etc/passwd` and `/etc/group` files?

Enter **y** here if you have a multiprotocol environment.

4. Would you like to enable NIS group caching?

You should enable NIS group caching.

If you enable NIS group caching, you also see the following prompts:

Enter the hour(s) when NIS should update the group cache [24].

Would you like to specify additional hours?

Enter the hours you prefer or accept the default.

5. When the default name of the CIFS server is listed, you see the following prompt:

Would you like to change this name?

If you wish to specify a different name, you can enter it here.

6. Select the style of user authentication appropriate to your environment:

(1) Active Directory domain authentication (Active Directory domains only)

(2) Windows NT 4 domain authentication (Windows NT or Active Directory domains)

(3) Windows Workgroup authentication using the filer's local user accounts

(4) `/etc/passwd` and/or NIS/LDAP authentication

If you selected ...	Then ...
1	Go to the next step.
2, 3, or 4	Go to Step 10, then see the <i>Data ONTAP File Access and Protocols Management Guide</i> for more information about CIFS setup for these authentication options.

7. What is the name of the Active Directory domain?

Enter the fully qualified domain name.

8. Would you like to configure time services?

It is recommended that time services be available to storage systems in an Active Directory domain.

If you answer **y**, respond to the following prompts:

Enter the time server host(s) and/or addresses?

Would you like to specify additional time servers?

9. Enter the name of the Windows user. Enter the password for the domain.

Enter the name and password of a Windows account with sufficient privileges to add computers to the Active Directory domain.

If you enter a Windows user name and password, you will be prompted to supply Active Directory container names in which to create machine accounts for the storage system.

- 10.** Do you want to create the (name of filer) administrator account?

It is recommended that you create a local administrator account.

If you answer **y**, respond to the following prompts:

Enter the new password for (storage system name).

Retype the password.

- 11.** Would you like to specify a user or group that can administer CIFS?

If you answer **y**, respond to the following prompt:

Enter the name of a user or group that will administer CIFS on the filer.

After you complete this step, CIFS is configured and the name registrations are complete. You see the following message:

CIFS local server is running.

Verifying software setup

As soon as hardware and software setup is complete, you should verify network connections, licensed functionality, and other relevant configurations in your environment.

Next topics

[Verifying network connectivity](#) on page 57

[Verifying host-name resolution](#) on page 58

[Verifying that the storage system is available](#) on page 59

[Verifying licensing](#) on page 60

[Preparing NFS clients to access the storage system](#) on page 61

[Preparing CIFS clients to access the storage system](#) on page 63

[Verifying the configuration for active/active storage systems](#) on page 63

[Verifying BMC connections](#) on page 64

[Verifying RLM connections](#) on page 65

[Verifying ACP connections](#) on page 66

Verifying network connectivity

You use the `ping6` or `ping` command to verify that your clients can connect to the IP addresses you configured on the storage system during setup.

About this task

You must perform these tasks from a network client system.

For more information, see the *Data ONTAP Network Management Guide*.

Steps

1. To verify network connectivity to an IP address, enter the command that corresponds to the IP protocol used for your interfaces.

If the protocol is ...	Then enter ...
IPv6	<code>ping6 IPv6_address</code>
IPv4	<code>ping IPv4_address</code>

Example

The following command tests the IPv6 connections for a storage system with an interface named e0a installed at 2001:0DB8:85A3:0:0:8A2E:0370:99:

```
ping6 2001:0DB8:85A3:0:0:8A2E:0370:99
```

The following command tests the IPv4 connections for a storage system with an interface named e0a installed at 192.0.2.66:

```
ping 192.0.2.66
```

2. Repeat the test once for each interface that is installed in the storage system.

You should be able to reach your new storage system from clients on your network. If you cannot, use the recommended troubleshooting procedures.

Troubleshooting connections to new network interfaces

Use this procedure to identify a problem when new network interfaces do not respond to a `ping` command.

Steps

1. Check to make sure that the interface is securely attached to the network.
2. Check to make sure that the media type is set up correctly if the interface is using a multiport Ethernet card with different port speeds.
3. Check to make sure that the routers function properly with correct routing information if the `ping` command is issued from a network not directly attached to the interface.
4. If you received a response from the IP address ping but not the host-name ping, check to see whether there is a problem with host-name resolution.

Related tasks

[Verifying host-name resolution](#) on page 58

Verifying host-name resolution

Use this procedure to ensure that host names you configured during `setup` are resolved into IP addresses.

About this task

When you ran `setup`, the storage system generated a host name for each interface by appending the number of the interface to the storage system host name. You need to make sure that these automatically generated host names are resolved into IP addresses.

For example, the interface name for the first interface on a storage system named "toaster" might be toaster-e0a; the second interface might be toaster-e0b.

For more information about host-name resolution, see your *Data ONTAP Network Management Guide*.

Steps

1. Take one of the following actions from a client system:

If you use ...	Then add an entry in ...
DNS or NIS for name resolution	<p>Your DNS or NIS databases for each of the storage system interfaces.</p> <p>The following example shows how the entries might look for a storage system with four interfaces:</p> <pre>192.16.3.145 toaster-e0a 192.16.3.146 toaster-e0b 192.16.3.147 toaster-f0 192.16.3.148 toaster-a5</pre>
/etc/hosts files for name resolution	Each host's /etc/hosts file for each of the storage system interfaces.

2. To verify host-name resolution for a network interface, enter the following command:

```
ping hostname-interface
```

hostname is the host name that you assigned to the storage system when you ran setup.

interface is one of the interface names that the storage system assigned when you ran setup.

Example

The following command tests the network connections for a storage system that has the host name "toaster" with an interface named e0a installed.

```
ping toaster-e0a
```

3. Repeat the test once for each interface that is installed in the storage system.

If you received a response from the IP-address ping but not the host-name ping, there might be a problem with name resolution.

Verifying that the storage system is available

Use the `exportfs` command to verify that the root path and root directory are available to clients.

About this task

After setup is complete, the storage system is online, and the following entities should exist on the storage system:

- /vol/vol0 (a virtual root path)
- /vol/vol0/home (a directory)

Note that /vol is not a directory—it is a special virtual root path under which the storage system mounts its volumes. You cannot mount /vol to view all the volumes on the storage system; you must mount each storage system volume separately. NFS and CIFS protocols provide the following access characteristics for the /vol virtual root path:

- For NFS
 - /vol/vol0 is exported to the administration host for root access; /vol0/home is exported to the administration host for root access and to all clients for general access.
- For CIFS
 - By default, /vol/vol0 is shared as C\$ and /vol/vol0/etc/ is shared as \$ETC. These two shares are created with "Full Control" given to the Builtin Administrators group and with no access given to any other users or groups. By default, the Builtin Administrators group members are the local administrator account, the Domain Administrator's group (if the storage system belongs to a domain), and any user or group that you configured with Administrative access during CIFS setup. The /vol/vol0/home directory is shared as HOME with "Full Control" access granted to the group Everyone.

Step

1. To verify that the /vol/vol0 path and /vol/vol0/home directory entities exist on your storage system, enter the following command at the storage system command line:

```
exportfs
```

You should see a listing that includes lines similar to the following:

```
/vol/vol0 -sec=sys,rw=admin_host,root=admin_host,nosuid
/vol/vol0/home -sec=sys,rw,root=admin_host,nosuid
```

Verifying licensing

Use the `license` command at the storage system command line to verify that the appropriate protocol and service licenses are installed on your system, or to configure additional licenses.

About this task

For more information about storage system licensing, see your *Data ONTAP System Administration Guide* and the `license(1)` man page.

Step

1. Enter the appropriate `license` command to manage your licenses.

If you want to ...	Enter this command at the storage system prompt...
View existing licenses	<code>license</code> Result: You see a list of licenses and license codes.
Add a license	<code>license add license_code</code> Result: The new protocol or service is enabled and added to the list of licenses.
Remove a license	<code>license delete service</code> Result: The protocol or service is disabled and removed from the list of licenses.

Preparing NFS clients to access the storage system

To make storage system data available to NFS clients, you need to export the storage system's file system. You must also mount the file system on your NFS clients.

For more information about NFS configuration, see your *Data ONTAP File Access and Protocols Management Guide* and your NFS client documentation.

Exporting file systems to NFS clients

Before NFS clients can mount file systems, you need to export them by adding them to the storage system's `/etc/exports` file.

About this task

All security styles of file systems—UNIX, NTFS, and Mixed—are available for exporting and can be mounted by NFS clients. However, for accessing a volume with NTFS effective security style (NTFS volume or mixed volume with NTFS effective security style), file access is granted based on NTFS permissions. To properly ascertain file permissions, UNIX user names are mapped to corresponding

Windows user names, and access is granted based on NTFS permissions granted to the mapped Windows user.

Steps

1. Determine valid path names for directories by entering the following command at the storage system prompt:

```
qtree status
```

Example

The following display shows sample output from the `qtree status` command:

Volume	Tree	Style	Oplocks	Status
-----	----	-----	-----	-----
vol0	home	unix	enabled	normal
vol1snap	qtree1	unix	enabled	normal
vol2eng	team1	mixed	enabled	normal
vol2mkt	nt	ntfs	enabled	normal

2. From the `qtree` command output, convert the first two entries into valid path names. To do so, use this format:

```
/Volume/Tree
```

Example

```
/vol0/home
/vol1snap/qtree1
/vol2eng/team1
```

3. Use a text editor from an NFS client to open the `/etc/exports` file on the storage system.
4. Add the storage system directories to the `/etc/exports` file.

Example

```
/vol/vol0/home -sec=sys, rw, root=admin_host
/vol/vol1snap/qtree1 -sec=sys, rw, root=admin_host
/vol/vol2eng/team1 -sec=sys, rw=10.0.0.0/24:172.17.0.0/16, root=admin_host
/vol/vol2mkt/nt -sec=sys, rw=netgroup1:netgroup2, root=admin_host:10.0.0.100
```

For information about specifying entries and access permissions in the `/etc/exports` file, see the chapter about file access using NFS in your *Data ONTAP File Access and Protocols Management Guide*.

5. Save the file and exit the text editor.
6. To make your changes to the `/etc/exports` file effective immediately, issue the `exportfs` command with the `reload` option:

```
exportfs -r
```

Preparing CIFS clients to access the storage system

If you are in an Active Directory domain, you must ensure that DNS is correctly configured to ensure CIFS client access.

Once setup is complete, the storage system establishes CIFS client connectivity by automatically registering with the master browser. If cross-subnet browsing is configured correctly, the storage system is now visible to all CIFS clients. For more information about cross-subnet browsing, see Microsoft networking documentation.

Note: Although CIFS visibility has been established, you need to configure shares with CIFS access permissions before any storage system data can become accessible to CIFS clients. For information about how to make a test share available to CIFS clients, see the *Data ONTAP File Access and Protocols Management Guide*.

You will also need to provide information to Windows client users about how to access data on the storage system for their particular Windows version.

Creating a storage system DNS "A" record for CIFS client access

In Active Directory domains, you must create a storage system DNS "A" record on the DNS server before providing access to CIFS clients.

About this task

The storage system's DNS "A" record can be created manually or registered dynamically.

Step

1. To enable dynamic DNS, set one of the following options:

```
dns.update.enable on
```

```
dns.update.enable secure
```

Use `secure` if your DNS supports secure updates.

To disable dynamic DNS, set the `dns.update.enable` option to `off`.

Verifying the configuration for active/active storage systems

There are two ways you can check your active/active configuration before placing the pair online: running the HA Configuration Checker (formerly the Cluster Configuration Checker) or using the command line interface.

When you configure active/active systems, the following configuration information needs to be the same on both systems:

- Parameters
- Network interfaces
- Configuration files
- Licenses and option settings

Note: The values for domain controllers and WINS servers no longer need to be identical on both storage systems in an active/active configuration. You can have each storage system exist in a different domain or a different workgroup, or both. However, if you have a multiprotocol environment and use UID-to-SID mapping, the UNIX security information must be compatible between the two domains. For example, if you have a UID of 119, it must map to the same Windows account for both storage systems.

For more information about verifying your configuration and managing storage systems in an active/active configuration, see your *Data ONTAP Active/Active Configuration Guide*.

Related information

[HA Configuration Checker -- now.netapp.com/NOW/download/tools/cf_config_check/](http://now.netapp.com/NOW/download/tools/cf_config_check/)

Verifying BMC connections

Use this procedure to verify that the Baseboard Management Controller (BMC) is set up correctly and connected to the network.

About this task

The BMC network interface is not used for serving data, so it does not show up in the output for the `ifconfig` command.

For more information about using the BMC to manage remote storage systems, see your *Data ONTAP System Administration Guide*.

Steps

1. To verify that AutoSupport is enabled and AutoSupport options are valid, enter the following command:

```
options autosupport
```

The AutoSupport options should be set as follows:

```
autosupport.enable on
autosupport.support.enable on
```



```

autosupport.mailhost name or IP address of mailhost
autosupport.content complete

```

Note: The BMC does not rely on the storage system's `autosupport.support.transport` option to send notifications. The BMC uses the Simple Mail Transport Protocol (SMTP).

2. Enter the following command to verify that the BMC's network configuration is correct or to display the MAC address of the BMC:

```
bmc status
```

Example

If you used the static IP address in Step 1, the following output is displayed:

```

Baseboard Management Controller:
Firmware Version: 1.0
IPMI version: 2.0
DHCP: off
BMC MAC address: ff:ff:ff:ff:ff:ff
IP address: 10.98.148.61
IP mask: 255.255.255.0
Gateway IP address: 10.98.148.1
BMC ARP interval: 10 seconds
BMC has (1) user: naroot
ASUP enabled: on
ASUP mailhost: mailhost@companyname.com
ASUP from: postmaster@companyname.com
ASUP recipients: recipient@companyname.com
Uptime: 0 Days, 04:47:45

```

3. Enter the following command to verify that the BMC AutoSupport function is working properly:

```
bmc test autosupport
```

Note: The BMC uses the same mail host information that Data ONTAP uses for AutoSupport. You must ensure that the `autosupport.to` option has been set properly before issuing this command.

You have successfully set up the BMC AutoSupport function when the following output is displayed: Please check ASUP message on your recipient mailbox

Verifying RLM connections

Use this procedure to verify that the remote LAN module (RLM) is set up correctly and connected to the network.

About this task

The RLM network interface is not used for serving data, so it does not show up in the output for the `ifconfig` command.

For more information about using the RLM to manage remote storage systems, see your *Data ONTAP System Administration Guide*.

Steps

1. To verify that AutoSupport is enabled and AutoSupport options are valid, enter the following command:

```
options autosupport
```

The AutoSupport options should be set as follows:

```
autosupport.enable on
autosupport.support.enable on
autosupport.mailhost name or IP address of mailhost
autosupport.support.to name or email address of alert recipients
autosupport.content complete
```

2. Enter the following command to verify the configuration of the RLM interface:

```
rlm status
```

Note: It might take a few minutes for the new network settings for the RLM to take effect.

3. To test RLM mail delivery, enter the following command:

```
rlm test autosupport
```

The RLM should send e-mail within a few minutes. If the test fails, you should verify storage system connectivity, and check whether the mail host and recipients are valid.

Verifying ACP connections

If DS4243 disk shelves are connected to your system, use this procedure to verify that Shelf Alternate Control Path Management (ACP) is set up correctly and connected to a local LAN.

About this task

For more information about using ACP to increase storage availability, see your *Data ONTAP Storage Management Guide*.

Step

1. To verify that ACP is enabled, enter the following command:

```
storage show acp
```

You should see command output similar to the following:

```

Alternate Control Path:  enabled
Ethernet Interface:     e0b
ACP Status:             Active
ACP IP address:         198.15.1.212
ACP domain:             198.15.1.0
ACP netmask:           255.255.255.0
ACP Connectivity Status: Full Connectivity

```

Shelf Module	Reset Cnt	IP address	FW Version	Status
7a.001.A	002	198.15.1.145	01.05	active
7a.001.B	003	198.15.1.146	01.05	active
7c.002.A	000	198.15.1.206	01.05	active
7c.002.B	001	198.15.1.204	01.05	active

Where to go from here

Product documentation for the storage system is available online and in printed format.

Documentation is available on the NOW site. You can also order printed copies from this Web site. See the *Release Notes* for information about this Data ONTAP release.

For information about...	Go to the NOW site for the...
New features, enhancements, known issues, and late-breaking news for your version of Data ONTAP software	<i>Data ONTAP Release Notes</i> for your version of Data ONTAP
Setting up and verifying software configuration	<i>Data ONTAP Software Setup Guide</i>
Managing all aspects of your system	Documentation for your version of Data ONTAP. See the <i>Data ONTAP Documentation Roadmap</i> for an overview.
Cabling, configuring, and disk ownership	<i>Data ONTAP Active/Active Configuration Guide</i> <i>Data ONTAP System Administration Guide</i> <i>Data ONTAP Data Protection Online Backup and Recovery Guide</i> <i>Data ONTAP Storage Management Guide</i>
Setting up and managing network configurations of storage systems	<i>Data ONTAP Network Management Guide</i>
Configuring and managing the FC protocol, and creating and managing LUNs and initiator groups with the FC service	<i>Data ONTAP Block Access Management Guide for iSCSI and FC</i>
The most current information about your system hardware	<i>Hardware Information Library</i> page
Hardware configuration options available for your system	<i>System Configuration Guide</i>
Troubleshooting your system	<i>Platform Monitoring Guide</i>
Testing field-replaceable units and diagnosing and correcting system hardware problems	<i>Diagnostics Guide</i>
Configuring Remote Management after initial setup	<i>Data ONTAP System Administration Guide</i>
Managing your disk shelves	<i>DiskShelf14mk2 AT Hardware Guide</i> <i>DiskShelf14mk2 and DS14mk4 FC Hardware Guide</i> DS4243

Related information

Data ONTAP Information Library --

now.netapp.com/NOW/knowledge/docs/ontap/ontap_index.shtml

Hardware Information Library --

now.netapp.com/NOW/knowledge/docs/hardware/hardware_index.shtml

Time zones

You must select a valid time zone or alias from the lists provided, record it in the configuration worksheet, and enter the value at the `setup` prompt.

If you need to change your selected time zone after setup is complete, see the `timezone(1)` man page.

You can enter a geographic region, or you can use one of the following aliases to represent its corresponding time zone descriptions:

- GMT — Greenwich Mean Time, UCT, UTC, Universal, Zulu
- CET — MET (Middle European Time)
- US/Eastern — Jamaica
- US/Mountain — Navajo

Next topics

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Time zones by geographical region

Tables in these sections list valid time zones grouped by geographical region, in alphabetical order.

Africa

Africa/Abidjan	Africa/Djibouti	Africa/Maputo
Africa/Accra	Africa/Douala	Africa/Maseru
Africa/Addis_Ababa	Africa/Freetown	Africa/Mbabane
Africa/Algiers	Africa/Gaborone	Africa/Mogadishu
Africa/Asmera	Africa/Harare	Africa/Monrovia
Africa/Bamako	Africa/Johannesburg	Africa/Nairobi
Africa/Bangui	Africa/Kampala	Africa/Ndjamena
Africa/Banjul	Africa/Khartoum	Africa/Niamey
Africa/Bissau	Africa/Kigali	Africa/Nouakchott
Africa/Blantyre	Africa/Kinshasa	Africa/Ouagadougou

Africa/Brazzaville	Africa/Lagos	Africa/Porto-Novo
Africa/Bujumbura	Africa/Libreville	Africa/Sao_Tome
Africa/Cairo	Africa/Lome	Africa/Timbuktu
Africa/Casablanca	Africa/Luanda	Africa/Tripoli
Africa/Conakry	Africa/Lumumbashi	Africa/Tunis
Africa/Dakar	Africa/Lusaka	Africa/Windhoek
Africa/Dar_es_Salaam	Africa/Malabo	

America

America/Adak	America/Grenada	America/Noronha
America/Anchorage	America/Guadeloupe	America/Panama
America/Anguilla	America/Guatemala	America/Pangnirtung
America/Antigua	America/Guayaquil	America/Paramaribo
America/Aruba	America/Guyana	America/Phoenix
America/Asuncion	America/Halifax	America/Port_of_Spain
America/Atka	America/Havana	America/Port-au-Prince
America/Barbados	America/Indiana	America/Porto_Acre
America/Belize	America/Indianapolis	America/Puerto_Rico
America/Bogota	America/Inuvik	America/Rainy_River
America/Boise	America/Iqaluit	America/Rankin_Inlet
America/Buenos_Aires	America/Jamaica	America/Regina
America/Caracas	America/Jujuy	America/Rosario
America/Catamarca	America/Juneau	America/Santiago
America/Cayenne	America/Knox_IN	America/Santo_Domingo
America/Cayman	America/La_Paz	America/Sao_Paulo
America/Chicago	America/Lima	America/Scoresbysund
America/Cordoba	America/Los_Angeles	America/Shiprock
America/Costa_Rica	America/Louisville	America/St_Johns
America/Cuiaba	America/Maceio	America/St_Kitts

America/Curacao	America/Managua	America/St_Lucia
America/Dawson	America/Manaus	America/St_Thomas
America/Dawson_Creek	America/Martinique	America/St_Vincent
America/Denver	America/Mazatlan	America/Swift_Current
America/Detroit	America/Mendoza	America/Tegucigalpa
America/Dominica	America/Menominee	America/Thule
America/Edmonton	America/Mexico_City	America/Thunder_Bay
America/El_Salvador	America/Miquelon	America/Tijuana
America/Ensenada	America/Montevideo	America/Tortola
America/Fort_Wayne	America/Montreal	America/Vancouver
America/Fortaleza	America/Montserrat	America/Virgin
America/Glace_Bay	America/Nassau	America/Whitehorse
America/Godthab	America/New_York	America/Winnipeg
America/Goose_Bay	America/Nipigon	America/Yakutat
America/Grand_Turk	America/Nome	America/Yellowknife

Antarctica

Antarctica/Casey	Antarctica/Mawson	Antarctica/Palmer
Antarctica/DumontDURville	Antarctica/McMurdo	Antarctica/South_Pole

Asia

Asia/Aden	Asia/Irkutsk	Asia/Qatar
Asia/Alma-Ata	Asia/Ishigaki	Asia/Rangoon
Asia/Amman	Asia/Istanbul	Asia/Riyadh
Asia/Anadyr	Asia/Jakarta	Asia/Saigon
Asia/Aqtau	Asia/Jayapura	Asia/Seoul
Asia/Aqtobe	Asia/Jerusalem	Asia/Shanghai
Asia/Ashkhabad	Asia/Kabul	Asia/Singapore
Asia/Baghdad	Asia/Kamchatka	Asia/Taipei
Asia/Bahrain	Asia/Karachi	Asia/Tashkent

Asia/Baku	Asia/Kashgar	Asia/Tbilisi
Asia/Bangkok	Asia/Katmandu	Asia/Tehran
Asia/Beirut	Asia/Krasnoyarsk	Asia/Tel_Aviv
Asia/Bishkek	Asia/Kuala_Lumpur	Asia/Thimbu
Asia/Brunei	Asia/Kuching	Asia/Tokyo
Asia/Calcutta	Asia/Kuwait	Asia/Ujung_Pandang
Asia/Chungking	Asia/Macao	Asia/Ulan_Bator
Asia/Colombo	Asia/Magadan	Asia/Urumqi
Asia/Dacca	Asia/Manila	Asia/Vientiane
Asia/Damascus	Asia/Muscat	Asia/Vladivostok
Asia/Dubai	Asia/Nicosia	Asia/Yakutsk
Asia/Dushanbe	Asia/Novosibirsk	Asia/Yekaterinburg
Asia/Gaza	Asia/Omsk	Asia/Yerevan
Asia/Harbin	Asia/Phnom_Penh	
Asia/Hong_Kong	Asia/Pyongyang	

Atlantic

Atlantic/Azores	Atlantic/Faeroe	Atlantic/South_Georgia
Atlantic/Bermuda	Atlantic/Jan_Mayen	Atlantic/St_Helena
Atlantic/Canary	Atlantic/Madeira	Atlantic/Stanley
Atlantic/Cape_Verde	Atlantic/Reykjavik	

Australia

Australia/ACT	Australia/LHI	Australia/Queensland
Australia/Adelaide	Australia/Lindeman	Australia/South
Australia/Brisbane	Australia/Lord Howe	Australia/Sydney
Australia/Broken_Hill	Australia/Melbourne	Australia/Tasmania
Australia/Canberra	Australia/NSW	Australia/Victoria
Australia/Darwin	Australia/North	Australia/West
Australia/Hobart	Australia/Perth	Australia/Yancowinna

Brazil

Brazil/Acre	Brazil/East
Brazil/DeNoronha	Brazil/West

Canada

Canada/Atlantic	Canada/Eastern	Canada/Pacific
Canada/Central	Canada/Mountain	Canada/Saskatchewan
Canada/East- Saskatchewan	Canada/Newfoundland	Canada/Yukon

Chile

Chile/Continental	Chile/EasterIsland
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Europe

Europe/Amsterdam	Europe/Kiev	Europe/San_Marino
Europe/Andorra	Europe/Kuybyshev	Europe/Sarajevo
Europe/Athens	Europe/Lisbon	Europe/Simferopol
Europe/Belfast	Europe/Ljubljana	Europe/Skopje
Europe/Belgrade	Europe/London (BST)	Europe/Sofia
Europe/Berlin	Europe/Luxembourg	Europe/Stockholm
Europe/Bratislava	Europe/Madrid	Europe/Tallinn
Europe/Brussels	Europe/Malta	Europe/Tirane
Europe/Bucharest	Europe/Minsk	Europe/Vaduz
Europe/Budapest	Europe/Monaco	Europe/Vatican
Europe/Chisinau	Europe/Moscow	Europe/Vienna
Europe/Copenhagen	Europe/Oslo	Europe/Vilnius
Europe/Dublin	Europe/Paris	Europe/Warsaw
Europe/Gibraltar	Europe/Prague	Europe/Zagreb
Europe/Helsinki	Europe/Riga	Europe/Zurich
Europe/Istanbul	Europe/Rome	

Indian (Indian Ocean)

Indian/Antananarivo	Indian/Comoro	Indian/Mauritius
Indian/Chagos	Indian/Kerguelen	Indian/Mayotte
Indian/Christmas	Indian/Mahe	Indian/Reunion
Indian/Cocos	Indian/Maldives	

Mexico

Mexico/BajaNorte	Mexico/BajaSur	Mexico/General
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Pacific

Pacific/Apia	Pacific/Johnston	Pacific/Ponape
Pacific/Auckland	Pacific/Kiritimati	Pacific/Port_Moresby
Pacific/Chatham	Pacific/Kosrae	Pacific/Rarotonga
Pacific/Easter	Pacific/Kwajalein	Pacific/Saipan
Pacific/Efate	Pacific/Majuro	Pacific/Samoa
Pacific/Enderbury	Pacific/Marquesas	Pacific/Tahiti
Pacific/Fakaofu	Pacific/Midway	Pacific/Tarawa
Pacific/Fiji	Pacific/Nauru	Pacific/Tongatapu
Pacific/Funafuti	Pacific/Niue	Pacific/Truk
Pacific/Galapagos	Pacific/Norfolk	Pacific/Wake
Pacific/Gambier	Pacific/Noumea	Pacific/Wallis
Pacific/Guadalcanal	Pacific/Pago_Pago	Pacific/Yap
Pacific/Guam	Pacific/Palau	
Pacific/Honolulu	Pacific/Pitcairn	

GMT offset and miscellaneous time zones

Tables in this section contain the following valid Data ONTAP time zones:

- Time zones defined by offset from Greenwich Mean Time (GMT)

- Time zones that are not associated with a geographical region
- Regional time zones that are not grouped by major land mass

GMT

GMT	GMT+9	GMT-5
GMT+1	GMT+10	GMT-6
GMT+2	GMT+11	GMT-7
GMT+3	GMT+12	GMT-8
GMT+4	GMT+13	GMT-9
GMT+5	GMT-1	GMT-10
GMT+6	GMT-2	GMT-11
GMT+7	GMT-3	GMT-12
GMT+8	GMT-4	

Etc

Etc/GMT	Etc/GMT+11	Etc/GMT-9
Etc/GMT+0	Etc/GMT+12	Etc/GMT-10
Etc/GMT+1	Etc/GMT0	Etc/GMT-11
Etc/GMT+2	Etc/GMT-0	Etc/GMT-12
Etc/GMT+3	Etc/GMT-1	Etc/GMT-13
Etc/GMT+4	Etc/GMT-2	Etc/GMT-14
Etc/GMT+5	Etc/GMT-3	Etc/Greenwich
Etc/GMT+6	Etc/GMT-4	Etc/UCT
Etc/GMT+7	Etc/GMT-5	Etc/Universal
Etc/GMT+8	Etc/GMT-6	Etc/UTC
Etc/GMT+9	Etc/GMT-7	Etc/Zulu
Etc/GMT+10	Etc/GMT-8	

Miscellaneous

Arctic/Longyearbyen	HST	Portugal
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CET	Iceland	PRC
CST6CDT	Iran	PST8PDT
Cuba	Israel	ROC
EET	Japan	ROK
Egypt	Kwajalein	Singapore
Eire	Libya	Turkey
EST	MET	UCT
EST5EDT	MST	Universal
Factory	MST7MDT	UTC
GB	Navajo	WET
GB-Eire	NZ	W-SU
Greenwich	NZ-CHAT	Zulu
Hongkong	Poland	

System V

SystemV/AST4	SystemV/EST5EDT	SystemV/PST8PDT
SystemV/AST4ADT	SystemV/HST10	SystemV/YST9
SystemV/CST6	SystemV/MST7	SystemV/YST9YDT
SystemV/CST6CDT	SystemV/MST7MDT	
SystemV/EST5	SystemV/PST8	

Supported languages

You must select a supported language from the list provided and record its abbreviation in the configuration worksheet.

Next topics

[Specifying the language code](#) on page 79

[Language choices](#) on page 79

Specifying the language code

When you enter language codes during setup, you might need to specify a suffix, such as UTF-8.

Step

1. When prompted during setup, enter the code that corresponds to the appropriate language. To use UTF-8 as the NFS character set, append UTF-8 to the abbreviation.

Example

`ko.UTF-8`

Language choices

When you respond to the setup prompt for language, you need to enter the language code (abbreviation).

Note: You can also view supported languages and their abbreviations by entering `vol lang` at the storage system prompt.

Language	Abbreviation	Language	Abbreviation
Arabic	ar	Norwegian	no
Croatian	hr	Polish	pl
Czech	cs	Portugese	pt
Danish	da	POSIX	C
Dutch	nl	Romanian	ro
English	en	Russian	ru

Language	Abbreviation	Language	Abbreviation
English (U.S.)	en_US	Simplified Chinese	zh
Finnish	fi	Simplified Chinese (GBK)	zh.GBK
French	fr	Slovak	sk
German	de	Slovenian	sl
Hebrew	he	Spanish	es
Hungarian	hu	Swedish	sv
Italian	it	Traditional Chinese euc-tw	zh_TW
Japanese euc-j	ja	Traditional Chinese Big 5	zh_TW.BIG5
Japanese PCK (sjis)	ja_JP.PCK	Turkish	tr
Korean	ko		

What to do if the system does not boot when powered on

If your system does not boot when you power it on for the first time, you can troubleshoot the problem by following a series of steps appropriate to your system.

For FAS20xx and FAS31xx series systems, use the procedure provided in this guide.

For the following systems, use the procedure provided with the *Installation and Setup Instructions* that shipped with your system hardware.

- FAS60xx
- FAS30xx
- FAS200 series
- SA600 and SA300
- FAS900 series
- NearStore R200

Next topics

[Troubleshooting if the FAS20xx or SA200 system does not boot](#) on page 81

[Troubleshooting if the FAS31xx system does not boot](#) on page 83

Troubleshooting if the FAS20xx or SA200 system does not boot

If your FAS20xx or SA200 system does not boot when you power it on, you can troubleshoot the problem by following a series of steps.

Steps

1. Look for a description of the problem on the console.

Follow the instructions, if provided, on the console.

2. Check all cables and connections, making sure that they are secure.
3. Ensure that power is supplied and is reaching your system from the power source.
4. Make sure that the power supplies on your controller and disk shelves are working.

If the LEDs on a power supply are...	Then...
Illuminated	Proceed to the next step.

If the LEDs on a power supply are...	Then...
Not illuminated	Remove the power supply and reinstall it, making sure that it connects with the backplane.

5. Verify disk shelf compatibility and check the disk shelf IDs.
6. Ensure that the Fibre Channel disk shelf speed is correct.
If you have DS14mk2 FC and DS14mk4 FC shelves mixed in the same loop, set the shelf speed to 2 Gb, regardless of module type.
7. Check disk ownership to ensure that the disks are assigned to the system:
 - a. Verify that disks are assigned to the system by entering **disk show**.
 - b. Validate that storage is attached to the system, and verify any changes you made, by entering **disk show -v**.
8. Turn off your controller and disk shelves, and then turn on the disk shelves.
Check the quick reference card that came with the disk shelf for information about LED responses.
9. Use the onboard diagnostics to check that Fibre Channel disks in the storage system are operating properly.
 - a. Turn on your system and press Ctrl-C. Enter **boot_diags** at the boot loader prompt.
 - b. Enter **fc1** in the Diagnostic Monitor program that starts at boot.
 - c. Enter **73** at the prompt to show all disk drives.
10. Use the onboard diagnostics to check that SAS disks in the storage system are operating properly.
 - a. Enter **mb** in the Diagnostic Monitor program.
 - b. Enter **6** to select the SAS test menu.
 - c. Enter **42** to scan and show disks on the selected SAS.
This displays the number of SAS disks.
 - d. Enter **72** to show the attached SAS devices.
 - e. Exit the Diagnostic Monitor by entering **99** at the prompt, as needed.
 - f. Enter the **exit** command to return to LOADER.
 - g. Start Data ONTAP by entering **autoboot** at the prompt.
11. Try booting your system again.

If your system...	Then...
Boots successfully	Proceed to set up the software.
Does not boot successfully	Call NetApp technical support at +1 (888) 4-NETAPP. The system might not have the boot image downloaded on the boot device.

Troubleshooting if the FAS31xx system does not boot

If your FAS31xx system does not boot when you power it on, you can troubleshoot the problem by following a series of steps.

Steps

1. Look for a description of the problem on the console.

Follow the instructions, if provided, on the console.

2. Check all cables and connections, making sure that they are secure.
3. Ensure that power is supplied and is reaching your system from the power source.
4. Make sure that the power supplies on your controller and disk shelves are working.

If the LEDs on a power supply are...	Then...
Illuminated	Proceed to the next step.
Not illuminated	Remove the power supply and reinstall it, making sure that it connects with the backplane.

5. Verify disk shelf compatibility and check the disk shelf IDs.
6. Ensure that the Fibre Channel disk shelf speed is correct.

If you have DS14mk2 FC and DS14mk4 FC shelves mixed in the same loop, set the shelf speed to 2 Gb, regardless of module type.

7. Check disk ownership to ensure that the disks are assigned to the system:
 - a. Verify that disks are assigned to the system by entering **disk show**.
 - b. Validate that storage is attached to the system, and verify any changes you made, by entering **disk show -v**.
8. Turn off your controller and disk shelves, and then turn on the disk shelves.

For information about LED responses, check the quick reference card that came with the disk shelf or the hardware guide for your disk shelf.

9. Use the onboard diagnostics to check that Fibre Channel disks in the storage system are operating properly.
 - a. Turn on your system and press Ctrl-C. Enter **boot_diags** at the LOADER> prompt.
 - b. Enter **fcsl** in the Diagnostic Monitor program that starts at boot.
 - c. Enter **73** at the prompt to show all disk drives.
 - d. Exit the Diagnostic Monitor by entering **99** at the prompt, as needed.
 - e. Enter the **exit** command to return to LOADER.
 - f. Start Data ONTAP by entering **autoboot** at the prompt.

10. Use the onboard diagnostics to check that SAS disks in the storage system are operating properly.
 - a. Enter **mb** in the Diagnostic Monitor program.
 - b. Enter **6** to select the SAS test menu.
 - c. Enter **42** to scan and show disks on the selected SAS.

This displays the number of SAS disks.

- d. Enter **72** to show the attached SAS devices.
 - e. Exit the Diagnostic Monitor by entering **99** at the prompt, as needed.
 - f. Enter the **exit** command to return to LOADER.
 - g. Start Data ONTAP by entering **autoboot** at the prompt.
11. Try booting your system again.

If your system...	Then...
Boots successfully	Proceed to set up the software.
Does not boot successfully	Call NetApp technical support at +1 (888) 4-NETAPP. The system might not have the boot image downloaded on the boot device.

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