

Data ONTAP® 7.1

Software Setup Guide

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Preface

About this guide

This guide describes how to set up and configure storage systems that run Data ONTAP® 7.1 software. It covers all supported storage system models.

Audience

This guide is for system administrators who are familiar with operating systems, such as the UNIX®, Windows NT®, Windows 2000®, Windows Server 2003 Software®, or Windows XP® 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.

Is this guide right for you?

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	This guide If you are configuring a new storage system in an FCP or iSCSI environment, see also your <i>Block Access Management Guide</i> .
Upgrading an existing storage system to the Data ONTAP 7.1 software	The <i>Upgrade Guide</i>
Converting existing storage systems to a cluster	The <i>Cluster Installation and Administration Guide</i>

For a complete listing of Data ONTAP documentation, see the Access & Order Product Documentation page on the NOW™ site at <http://now.netapp.com/>, or the *Data ONTAP 7.1 Documentation Roadmap*.

Accessing Data ONTAP man pages

Data ONTAP manual (man) 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

Man pages can be viewed in the following ways:

- ◆ At the storage system command line, by entering
`man command_or_file_name`
- ◆ From the FilerView® main navigational page
- ◆ In *Commands: Manual Page Reference*, Volumes 1 and 2

Terminology

Storage systems that run Data ONTAP are sometimes referred to as filers, storage appliances, appliances, or systems. The name of the graphical user interface for Data ONTAP, FilerView, reflects one of these common usages.

In examples that illustrate commands executed on a UNIX workstation, the command syntax and output might differ, depending on your version of UNIX.

This guide uses the term “type” to mean pressing one or more keys on the keyboard. It uses the term “enter” to mean pressing one or more keys and then pressing the Enter key, or clicking in a field in a graphical interface and typing information into it.

Where you enter commands

You can enter storage system commands either on the system console or from any client computer that can access the storage system through a Telnet session.

Keyboard conventions

When describing key combinations, this guide uses the hyphen (-) to separate individual keys. For example, *Ctrl-D* means pressing the *Control* and *D* keys simultaneously. Also, this guide uses the term *enter* to refer to the key that generates a carriage return, although the key is named “Return” on some keyboards.

Typographic conventions

The following table describes typographic conventions used in this guide.

Convention	Type of information
<i>Italic font</i>	Words or characters that require special attention. Placeholders for information 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	Command and daemon names. Information displayed on the system console or other computer monitors. The contents of files.
Bold monospaced font	Words or characters you type. What you type is always shown in lowercase letters, unless you must type it in uppercase letters.

Special messages

This guide contains two types of special messages:

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.

About this chapter This chapter provides an overview of the setup process and things to consider before you begin the process.

Topics in this chapter This chapter discusses the following topics:

- ◆ [“Before you begin”](#) on page 2
- ◆ [“The setup process”](#) on page 6

Before you begin

Product documentation

Product documentation for the storage system is available online on the NOW™ site at <http://now.netapp.com/>, and you can also order printed copies from this Web site. See the Data ONTAP *Release Notes* for information about this Data ONTAP release.

CD-ROM and diskettes

You can order a CD-ROM containing Data ONTAP software, or system boot diskettes, for storage systems that use diskettes instead of CompactFlash™ cards. Because the system software is installed at the factory, you don't need the CD-ROM or system boot diskettes to install or configure a new storage system. You should store the CD-ROM and system boot diskettes in a safe place for recovery purposes.

The following table describes the CD-ROM and system boot diskettes.

Media	Contents
Data ONTAP CD-ROM	The CD-ROM contains the system software and system boot software in two formats so that it can be read by both UNIX and Windows workstations. It also includes product documentation. If you need to reinstall the system software for any reason, you need this CD-ROM. For full information about the contents of the CD-ROM, see the file named <code>index.htm</code> on the CD-ROM. Note _____ Call technical support for instructions before reinstalling system software on the storage system.
System boot diskettes	If the storage system fails to boot from a hard disk, you must boot the storage system from the system boot diskettes, unless the storage system has a CompactFlash card. See the hardware guide for your storage system for details about how to boot from media such as diskettes.

Setting storage system domain account privileges

In order to set up and administer your storage system, you must have administrator privileges for the computer that serves as the administration host.

If...	You will need...
Your storage system has a CIFS license	Privileges to access and administer the Windows host and the storage system domain
Your storage system has an NFS license	Privileges to access and administer the UNIX host

Requirements for Windows Active Directory domains

In order to add a storage system to a Windows Active Directory domain, Organizational Unit (OU), or other Active Directory container object, the storage system administrator account must have permissions to add a Windows Active Directory server to that domain or object.

If you intend to use Windows NT4-style authentication, you need to create your storage system's Windows domain account before you run `cifs setup`. For details about this, see "[Precreating a Storage System Domain Account](#)" on page 34.

Using DHCP for remote access

When you enable Dynamic Host Configuration Protocol (DHCP) to assign a static IP address to the onboard network interface (e0) during first-time setup, you can connect to the storage system through a Telnet client and complete the first-time configuration remotely. You must attach a hard-wired serial console to the storage system to complete the configuration.

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 a Telnet client or the Setup Wizard

Attention

When you use DHCP with a storage system, you must ensure 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.

Installation of storage system hardware

For your system's configuration information, which includes such information as storage capacity, expansion slot assignments, and disk shelf, disk drive, and tape drive support, see the *System Configuration Guide* on the NetApp on the Web site at <http://now.netapp.com/>. See the hardware guide specific to your storage system for information about installing storage system hardware.

Installation of clustered storage systems

If you are installing a storage system cluster, cable the storage systems in the cluster according to the instructions in the *Cluster Guide*. Note that much of the configuration information must be complementary, and often identical, for storage systems that form a cluster. For more information, see Chapter 4, “[Verifying the configuration for clustered storage systems](#)” on page 58.

Information about SnapDrive system requirements and setup for your storage system

If you plan to use the SnapDrive™ feature on your Windows host to manage virtual disks on your storage system, see the *SnapDrive Installation and Administration Guide* for information about SnapDrive system requirements and setup for your storage system.

Information required to configure a new storage system

During the setup process, you configure your new storage system to run on the network. To configure a storage system, you need a lot of information about the storage system and your network, including such items as licensed protocols, administration host name, network interfaces, and network services such as Domain Name Service (DNS), Network Information Service (NIS), Windows Internet Naming Service (WINS), Simple Mail Transport Protocol (SMTP), and so on.

For a complete list of the required information, with spaces in which you can record configuration information to be used during storage system setup, see Appendix A, “[Configuration Worksheet](#),” on page 67.

Note

During the setup process, you will be prompted to supply the information you collected. The information prompts you see depend on your system’s hardware configuration, active licenses, and information already entered earlier in the setup process. You will not be prompted for all the information described in this guide.

**Information about
storage system
licenses**

When you receive a new storage system, it includes licenses for any protocol or service you ordered, pre-installed at the manufacturing facility. A list of pre-installed licenses is provided with new storage systems.

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

**Information about
setting up LDAP
authentication on
your storage
system**

For information about how to configure your storage system to use Lightweight Directory Access Protocol (LDAP) authentication, see the information about setting up UNIX authentication in the *File Access and Protocols Management Guide*.

**Information about
setting up Kerberos
V5 authentication
for NFS on your
storage system**

For information about how to configure your storage system to use Kerberos V5 authentication for NFS, see the *File Access and Protocols Management Guide*.

The setup process

About the setup process

Your new storage system has been installed with a complete version of Data ONTAP software, with the exception of the following files:

- ◆ /etc/rc
- ◆ /etc/exports
- ◆ /etc/hosts
- ◆ /etc/hosts.equiv
- ◆ /etc/dgateways
- ◆ /etc/nsswitch.conf
- ◆ /etc/resolv.conf

When you boot your system for the first time, the `setup` command begins to run automatically. It collects information to populate these files and to configure the installed functionality of your system, depending on your system's hardware configuration and licensed features.

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 can also choose setup commands for other system features. For more information about setup methods, see Chapter 3, "[Setup](#)" on page 23.

Stages of the setup process

The following table describes the stages of the process for setting up and configuring a new storage system for the first time.

Stage	Process
1	Attach the new storage system to the network so that you can use one of the setup methods to set up and configure your storage system.

Stage	Process	
2	If you...	Then...
	Have a DHCP server on the same segment as your new storage system and intend to use the DHCP service to assign an IP address to the onboard interface	1. Locate the label that has the media access control (MAC) address for the onboard interface on the left side of the back of the storage system. 2. Record the MAC address in a copy of the Configuration Worksheet in Appendix A. 3. Configure the DHCP server to return a static IP address for the interface based on the MAC address for the onboard interface.
	Are not using DHCP to configure the storage system's onboard interface (e0)	Attach a serial console to the storage system.
3	Gather the information and record it.	Gather the information described in Chapter 2, " Information Gathering " on page 9 and record it on a photocopy of the Appendix A, " Configuration Worksheet ," on page 67.
4	Select the setup method to configure the storage system; follow the instructions on how to use the method.	Read Chapter 3, " Setup " on page 23 to decide which setup method to use. Note _____ The <code>setup</code> command runs automatically the first time a storage system is powered up.
5	Verify the setup.	After completing the setup process, go to Chapter 4, " After Setup Is Complete " on page 39.

Information you need to gather

You need to collect the information described in the following tables to set up and configure your storage system. You can use the Configuration Worksheet in Appendix A to record your values.

How setup methods call out information types

When you use a setup method, you are prompted to enter values for information types, depending on the setup method you've chosen. The two setup methods do not prompt you for the same information or in the same order. The `setup` command prompts you for all of the values needed to set up your storage system, based on what Data ONTAP discovers upon bootup. The Setup Wizard prompts you for the information types related to basic storage system configuration, network services, network addresses, and protocols. The differences between the setup methods are noted in the following tables.

Notation for storage system cluster configurations

If you are configuring a storage system as part of a cluster, some information types must be unique for each storage system in the cluster, and some information types must be identical on both storage systems. In the tables below, the information type description indicates whether the information type must be unique for each storage system or identical on both storage systems.

MAC address

If you intend to use the DHCP service to assign an IP address to the onboard interface, locate the media access control (MAC) address and record it.

Note

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

DHCPv6 servers are not currently supported.

Information type	Description
MAC address (or Interface MAC Address)	The unique address of the network interface built into the storage system's motherboard. You can find the address by entering <code>sysconfig -a</code> at the storage system prompt and looking for the following output: slot 0: 10/100 Ethernet Controller IV e0 MAC Address: 00:00:4c:0f:2c:ee

Required storage system information

The following information is required for all installations.

Information type	Description
Host name (Hostname or Filer Name)	The name by which the storage system is known on the network. If the storage system is licensed for the NFS protocol, the name can be no longer than 32 characters. If the storage system is licensed for the CIFS protocol, the name can be no longer than 15 characters. The host name must be unique for each storage system in a cluster.
Password (Administrative Password)	A password 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)	The time zone in which the storage system resides. See Appendix B, " Time Zones ," on page 71 for a list of valid time zones. The time zone must be identical on both storage systems in a cluster.

Information type	Description
Filer location (Location)	A description of the physical location of the storage system. The string value you enter during 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	The language used for multiprotocol storage systems if both the CIFS and NFS protocols are licensed. See Appendix C, “Supported Languages,” on page 79 for a list of supported languages and their abbreviations. The language must be identical on both storage systems in a cluster.
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 interfaces

If you want to create virtual network interfaces (vifs), you must use the `setup` command. Begin by gathering the following information.

Information type	Description
Virtual network interfaces	For each vif, record the following information: ◆ Name of each vif ◆ Number of links for each vif ◆ Link names for each link The virtual network interface information must be identical on both storage systems in a cluster.

Network information

If your network uses standard Ethernet or Gigabit Ethernet (GbE) interfaces, record the following information for each interface.

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.
IP address	A unique address for each network interface.
Subnet mask (Network Mask)	The subnet mask for the network to which each network interface is attached. Example: 255.255.255.0
Partner IP address (Interface to Take Over)	If your storage system is licensed for cluster takeover, record the interface name or IP address belonging to the takeover partner that this interface should take over during a cluster takeover. Examples: e0 or 10.10.10.2 For vifs, you must specify the interface name rather than the interface IP address.
Media type (Network Type)	The type of interface: ◆ 1000fx (Gigabit Ethernet Controller; 1000Base-SX, full-duplex, autonegotiation disabled) ◆ auto-1000fx (Gigabit Ethernet Controller; autonegotiate speed, duplex, and flow control) ◆ 100tx-fd (100Base-TX, full-duplex) ◆ tp-fd (10Base-T, full-duplex) ◆ 100tx (100Base-TX, half-duplex) ◆ tp (10Base-T, half-duplex) ◆ auto (autonegotiate speed and duplex)

Information type	Description
If the interface supports jumbo frames, Maximum Transmission Unit (MTU) size	The default frame size defined for a jumbo frame on the storage system is 9,018 bytes, and the maximum supported size is 9,210 bytes. These sizes correspond to MTU sizes of 9,000 and 9,192, respectively. Note _____ For details about MTU size, see the <i>Network Management Guide</i>.

ATM LANE

If your network supports ATM LANE, record the following information.

Information type	Description
ATM ForeIP/SPANS	If your network uses Asynchronous Transfer Mode (ATM) Simple Protocol for ATM Network Signaling (SPANS) interfaces, record the following information for each interface: ◆ Interface name ◆ Host IP address OR Partner IP address ◆ Netmask (or subnet mask) ◆ Media type The ATM ForeIP/SPANS interface information must be identical on both storage systems in a cluster.

Information type	Description
ATM LANE	If your network uses ATM LAN Emulation (LANE) interfaces, record the following information for each interface: ◆ Interface name ◆ Host IP address - OR ◆ Partner name ◆ Emulated LAN (ELAN) name ◆ LANE Configuration Server (LECS) address ◆ IP address ◆ Netmask (or subnet mask) The ATM LANE interface information must be identical on both storage systems in a cluster.

Default gateway

If your network uses routers, record the following information.

Information type	Description
Router (Routing Gateway)	Record the following information for the primary gateway to use for routing outbound network traffic: ◆ Gateway name ◆ IP address of the router

HTTP protocol

If your storage system is licensed for HTTP, record the following information.

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.

DNS services

To configure your storage system to use DNS services, you must have the following DNS information.

Information type	Description	
DNS domain	The name of your network's Domain Name Service (DNS). The DNS domain name must be identical on both storage systems in a cluster.	
DNS servers	The IP addresses of your DNS servers.	
	If...	You will need...
	Your storage system will not use Active Directory services	The IP address for one or more DNS servers that will provide host name lookup services to the storage system.
	You want to make Active Directory services available to CIFS	The IP address of DNS servers that support your Windows Active Directory domain.

NIS services

If your network uses NIS services, record the following information.

Information type	Description	
NIS domain name	The name of your NIS domain. The storage system can use an NIS domain to authenticate users and client computers. The NIS domain name must be identical on both storage systems in a cluster. Caution_____ If you use NIS for group lookup services, disabling NIS group caching can cause severe degradation in performance. Whenever you enable NIS lookups (nis.enable), it is recommended that you also enable caching (nis.group_update.enable). Failure to enable these two options together could lead to timeouts as CIFS clients attempt authentication.	
NIS servers	The host names of your preferred NIS servers.	
	If...	You will need...
	Your site uses NIS	The host names of your NIS servers.
	You want NIS to broadcast to find a server	To enter an asterisk (*) when asked for the NIS server names

CIFS protocol

If your storage system is licensed for the CIFS protocol, record the following information.

Information type	Description
Windows domain	The name of your Windows domain. If your site uses Windows servers, it has one or more 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 a cluster. You can have each storage system in a cluster exist in a different domain and/or workgroup from its partner. If you have a multiprotocol environment and use UID to 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 need to record up to four WINS IP addresses. Note_____ The WINS server value does not need to be identical on both storage systems in a cluster. You can have each storage system in a cluster exist in a different domain and/or workgroup from its partner.
Windows Active Directory domain administrator user name	The user name of a Windows domain administrator with sufficient privileges to add this storage system to the Windows domain. Note_____ This is only required if you are using a Windows Active Directory domain.

Information type	Description
Windows Active Directory domain administrator password (Windows 2000 administrator password)	The password for the Active Directory domain administrator user account. If your domain is an Active Directory domain, you must use the password for a user account with sufficient permissions to add the storage system to the domain. Attention ————— Before you enter the password, be sure to create a secure connection (HTTPS); otherwise, the password is sent to the storage system unencrypted.
Active Directory	The Windows Active Directory container in which to place storage system accounts. This can be either the default of Computers or a previously created organizational unit (OU) specified by you. The path for the OU must be specified in reverse order, separated by commas. Example: If the path is eng\dev\mgmt, the active directory distinguished name is as follows: ou=mgmt, ou=dev, ou=eng Note ————— A user in the Windows Active Directory domain can precreate the account and Data ONTAP updates that account. See “Precreating a Storage System Domain Account” on page 34

**Remote
management
controller for
AutoSupport**

If your storage system has a remote management controller (RMC) for enhanced AutoSupport, record the following information.

Information type	Description
MAC address	If you are using DHCP service, record the MAC address for the RMC. Locate the MAC address by entering <code>sysconfig -v</code> at the storage system prompt and looking at the output for the RMC in slot 1. Note _____ DHCPv6 servers are not currently supported. _____
IP address	If you are not using DHCP service, record the IP address for the RMC.
Network mask	If you are not using DHCP service, record the network mask for RMC.
Gateway	If you are not using DHCP service, record the IP address for the RMC gateway.

Information type	Description
Media type	The type of interface for the RMC: ◆ 1000fx (Gigabit Ethernet Controller; 1000Base-SX, full-duplex, autonegotiation disabled) ◆ auto-1000fx (Gigabit Ethernet Controller; autonegotiate speed, duplex, and flow control) ◆ 100tx-fd (100Base-TX, full-duplex) ◆ tp-fd (10Base-T, full-duplex) ◆ 100tx (100Base-TX, half-duplex) ◆ tp (10Base-T, half-duplex) ◆ auto (autonegotiate speed, duplex, and flow control)
Mail host	The name or IP address of the preferred mail host. The mail host delivers RMC alerts and local AutoSupport e-mail.

Remote LAN module

If your storage system has a remote LAN module (RLM), record the following information.

Information type	Description
MAC address	If you are using DHCP service, record the MAC address for the RLM. Locate the MAC address by entering <code>sysconfig -v</code> at the storage system prompt and looking at the output for the RLM in slot 0. Note _____ DHCPv6 servers are not currently supported.
IP address	If you are not using DHCP service, record the IP address for the RLM.
Network mask	If you are not using DHCP service, record the network mask for the RLM.
Gateway	If you are not using DHCP service, record the IP address for the RLM gateway.
AutoSupport 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.

About this chapter

This chapter describes different methods for setting up your storage system, why you might use each method, and what to do once you have chosen a setup method.

Topics in this chapter

This chapter discusses the following topics:

- ◆ [“Choosing a setup method”](#) on page 24
- ◆ [“Using the setup command”](#) on page 27
- ◆ [“Using the Setup Wizard”](#) on page 30
- ◆ [“Configuring your storage system for CIFS”](#) on page 33
- ◆ [“Setting the system date and time”](#) on page 36

Choosing a setup method

Setup method options

When you power on a storage system for the first time, the `setup` command begins to run automatically and prompts you for configuration information. After responding to prompts to designate an administration host machine, you can continue setting up your storage system using either of the following methods:

- ◆ The `setup` command
You can continue responding to prompts from the command line interface.
- ◆ The Setup Wizard
You can choose to respond to further prompts from a Web browser.

How to decide which method to use

Use the following table to decide which setup method to use.

If...	Continue setup with...
Your network does NOT support configuration through DHCP OR Your storage system uses vifs, ATM LANE, or ATM SPANS interfaces OR You need to begin setup prior to using the wizard or running <code>cifs setup</code> OR You prefer to use the command line to set up your storage system	The <code>setup</code> command

If...	Continue setup with...
Your network supports configuration through DHCP AND your storage system does NOT use vifs, ATM LANE, or ATM SPANS interfaces AND you want to set up the storage system through a Web browser AND you use the default Active Directory container for a Windows setup	The Setup Wizard
You finished using the setup command, the Setup Wizard, or a combination of the two, to enter some basic storage system configuration information; you have an RLM installed in your storage system, and you now want to configure your RLM.	The <code>rlm setup</code> command
You finished using the setup command, the Setup Wizard, or a combination of the two to enter some basic storage system configuration information, and now want to configure your storage system for CIFS.	The <code>cifs setup</code> command

Setting up the RLM after running the setup command

Following the setup process, if a remote LAN module (RLM) is installed in your system, you may use `rlm setup` to configure RLM to monitor the storage system, diagnose error conditions, and take corrective actions.

If you have an RLM installed in your system, `rlm setup` is automatically invoked upon completion of setup operations using the `setup` command or the Setup Wizard. However, you may terminate `rlm setup` at any point and run it later by entering `rlm setup` from the command line of a Telnet client or a serial port console.

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

Setting up CIFS after running the setup command

Following the setup process, you may use `cifs setup` to configure your storage system exclusively for CIFS client access or for multiple protocols.

If you have a valid CIFS license, `cifs setup` is automatically invoked upon completion of setup operations using the `setup` command or the Setup Wizard (if `cifs setup` has not been run previously). However, you may terminate `cifs setup` at any point and run it later by entering `cifs setup` from the command line of a Telnet client or a serial port console.

If you plan to join the storage system to an Active Directory domain, you may want to consider the setup option described in “[Precreating a Storage System Domain Account](#)” on page 34.

Using the setup command

When to use the setup command

Perform the steps described in this section after you have read and considered the available setup methods described in [“Choosing a setup method”](#) on page 24.

Attention

The `setup` command can be run at any time from the storage system command line. However, it is usually run at initial system configuration when it is invoked automatically. Do not run the `setup` command unless you want to completely reconfigure your system. For more information about the `setup` command, see the `setup(1)` man page.

Designating an administration host

During the setup process, you are prompted to designate an administration host. The host you specify (if any) is the machine that you intend to use for storage system administrative tasks. Consider the following information when deciding whether you want to designate an administration host.

When you do not designate an administration host:

- ◆ The storage system’s root file systems are available to all network clients. Any users can gain access to the storage system’s root file system and change or remove storage system configuration files in the `/etc` directory.

When you designate an administration host:

- ◆ You limit storage system administration to the host you specify. You can add additional administration hosts after setup by modifying the storage system’s NFS exports and CIFS shares.
- ◆ The storage system’s root file system (`/vol/vol0` by default) is accessible to that administration host in the following ways:
 - ❖ As a share named `C$`, if the storage system is licensed for the CIFS protocol
 - ❖ By NFS mounting, if the storage system is licensed for the NFS protocol

For example, to mount `storage_sys:/vol/vol1/MyQtree` on a UNIX host, you would enter the following command:

```
mount filer:/vol/vol1/MyQtree/mnt/storage_sys
/MyQtree
```

Running the setup command

To use the `setup` command, complete the following steps.

Step	Action
1	Boot the storage system following the instructions in the <i>Installation and Setup Instructions</i> for your hardware platform. Result: After the storage system boots, Data ONTAP begins discovering the devices, interfaces, and licenses installed in the system. Data ONTAP displays messages on the console and starts the <code>setup</code> command, prompting you to enter setup information. Note _____ Storage system components and external switches must be powered up in the correct order. This is especially important the first time you boot your system to ensure that initial configuration is completed correctly.
2	Answer the prompts using the information you gathered earlier. See Chapter 2, “Information Gathering” on page 9.
3	When prompted, enter a host name and IP address to designate the storage system administration host machine, or press Enter to allow storage system administration from all clients. Attention _____ If you do not designate an administration host, the storage system’s root file systems are available to all network clients. See “Designating an administration host” on page 27 for administrative host considerations. _____ To remove an administration host you’ve designated, enter the following command at the storage system prompt after setup is complete: <pre>options admin.hosts ""</pre>
4	Enter <code>n</code> to continue using the <code>setup</code> command when you receive the following prompt. <pre>Would you like to continue setup through the Web interface?</pre>

Step	Action
5	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 Note_____ If you do not enter <code>reboot</code>, the information you entered does not take effect. _____
6	If you are configuring a pair of storage systems in a cluster and have not configured the other storage system, set up the other storage system in the cluster.

Using the Setup Wizard

When to use the Setup Wizard

Perform the steps described in this section after you have read and considered the available setup methods described in “[Choosing a setup method](#)” on page 24.

Configuring and running the Setup Wizard

To configure and use the Setup Wizard, complete the following steps.

Step	Action
1	Configure the following information into your DHCP server: ◆ 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 Note 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. DHCPv6 servers are not currently supported.

Step	Action
2	Boot the storage system following the instructions in the <i>Installation and Setup Instructions</i> for your hardware platform. Result: After the storage system boots, Data ONTAP begins discovering the devices, interfaces, and licenses installed in the system. Data ONTAP displays messages on the console and starts the setup command, prompting you to enter setup information. Note Storage system components and external switches must be powered up in the correct order. This is especially important the first time you boot your system to ensure that initial configuration is completed correctly.
3	Answer the prompts using the information you gathered earlier, until you are asked to continue setup using the Web interface. See Chapter 2, “Information Gathering” on page 9.
4	Enter y when you receive the following prompt: Would you like to continue setup through the Web interface?
5	From a storage system client’s Web browser, enter the following URL: http://filer_ip_address/api <i>filer_ip_address</i> is the IP address for your storage system. Example: If the IP address of the onboard Ethernet interface (named e0) is 10.14.26.99, enter the following: http://10.14.26.99/api Result: The browser displays the Setup Wizard startup page.
6	Fill in the Setup Wizard fields using the information you gathered earlier.
7	After you verify that the configuration information is correct as shown on the last screen, click Finish.

Step	Action
8	If you are configuring a pair of storage systems in a cluster and have not configured the other storage system, set up the other storage system in the cluster now.

Configuring your storage system for CIFS

When cifs setup is run

When you have a valid CIFS license, `cifs setup` is automatically invoked upon completion of the Setup Wizard or the `setup` command (if it has not been run previously). You can also start the `cifs setup` command by entering `cifs setup` on the Data ONTAP command line.

Configuring storage systems for CIFS

To add the storage system to an Active Directory environment, the `cifs setup` command creates and joins the storage system's computer account to an Active Directory domain. This requires you to assign permissions on certain domain objects. If your security structure does not allow you to assign the permissions described in [Step 2](#) of the following procedure, see "[Precreating a Storage System Domain Account](#)" on page 34.

Complete the following steps to configure your storage system for CIFS.

Step	Action
1	Determine whether you want to precreate an Active Directory Domain account for the storage system, as described on the following page. If yes, follow that procedure. If no, go on to Step 2 .
2	For Active Directory environments only: In the Active Directory Users and Computers tree, select the Organizational Unit (OU). On the OU, assign the following permissions for the storage system administrator account: Change Password, Write Public Information, and Create Computer Objects.
3	Enter the <code>cifs setup</code> command and use the information you gathered to answer questions posed by the prompts. See Chapter 2, " Information Gathering " on page 9.

Precreating a Storage System Domain Account

Terminology

In this section, the following definitions apply:

- ◆ *storage system domain account* is the Active Directory domain account created for the storage system.
- ◆ *storage system administrator account* is the user account assigned to the storage system (the “Windows 2000 Administrator Name” you enter during `cifs setup`).
- ◆ *storage system container* is the console tree object (such as an Organizational Unit) in Windows Active Directory for your storage system domain account.

Reasons for precreating the storage system domain account

When you use `cifs setup` to create the storage system domain account, you must assign certain permissions (listed later in this section) on the storage system container.

If you create the storage system domain account before you run `cifs setup`

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

If your security structure does not allow the permissions `cifs setup` requires when it creates the storage system domain account, you can create the storage system domain account before you run `cifs setup`.

Precreating the NT4 domain account

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.

Required permissions

Permissions for adding a storage system to an Active Directory domain are the same as permissions required to add any Windows server. The storage system administrator account must have those permissions for the Active Directory container in which you are installing your storage device.

How to manually precreate and configure a storage system domain account

To precreate and configure a domain account for the storage system, perform the following steps.

Note

The following procedure describes Windows 2000 Server tasks. Details of this procedure may vary on other Windows server versions.

Step	Action
1	In the Active Directory Users and Computers View menu, ensure that the Advanced Features menu item is checked.
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. Note the storage system name to make sure you enter it precisely when you run <code>cifs setup</code> later.
4	Specify the name of the storage system administrator account to be allowed to “add this computer to the domain.”
5	Right-click on 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 enabled: "Change Password" and "Write Public Information".
9	Run <code>cifs setup</code> . At the prompt “Please enter the new hostname,” enter the storage system name you specified in Step 3 .

Setting the system date and time

About time synchronization

Keeping the system date and time correct is important to ensure that the storage system can service requests correctly. Make sure that you

- ◆ Set the system date and time when you complete the setup procedure
For more information, see “[Setting the date and time with the date command](#)” on page 36.
- ◆ Configure a network time service
You can keep your storage system time automatically synchronized with the clients it services if you have a time server on your network. For more information, see “Synchronizing system time” in the *System Administration Guide*.

If you use the SnapMirror® feature, see also “[Setting the date while running SnapMirror](#)” on page 37.

Setting the date and time with the date command

To set the date and time using the `date` command, complete the following steps.

Step	Action
1	Access the storage system command line through the console or through a Telnet session.

Step	Action
2	Enter the following command, substituting the current date and time for the number string: <pre>date [-u] [[CC]yy]mmddhhmm[.ss]</pre> -u sets the date and time to Greenwich Mean Time instead of the local time. CC is the first two digits of the current year. yy is the second two digits of the current year. mm is the current month. If omitted, the default is the current month. dd is the current day. If omitted, the default is the current day. hh is the current hour, using a 24-hour clock. mm is the current minute. ss is the current second. If omitted, the default is 0. Example: The following command sets the date and time to 22 May 2002 at 9:25 a.m. <pre>date 200205220925</pre> Note If the first two digits of the year are omitted, they default to 20; if all four digits are omitted, they default to the current year. Time changes for daylight saving and standard time, and for leap seconds and years, are handled automatically.

Setting the date while running SnapMirror

If you use the `date` or `rdate` command to set a storage system's date earlier when the SnapMirror® software is running, Snapshot™ copies can appear out of sequence. When this occurs, SnapMirror assumes that the older snapshot was created before the newer one, and asks for a new, complete transfer before proceeding with any incremental transfers. You can avoid this problem in the following ways:

- ◆ Turn SnapMirror off until the storage system completes the changes.
- ◆ Change the date prior to the next scheduled SnapMirror transfer.

About this chapter This chapter discusses what you do after setup is complete.

Topics in this chapter

This chapter discusses the following topics:

- ◆ [“The verification process”](#) on page 40
- ◆ [“Verifying network connections”](#) on page 44
- ◆ [“Verifying host name resolution”](#) on page 47
- ◆ [“Verifying storage availability and licensing”](#) on page 49
- ◆ [“Preparing NFS clients to access the storage system”](#) on page 51
- ◆ [“Preparing CIFS clients to access the storage system”](#) on page 55
- ◆ [“Verifying the configuration for clustered storage systems”](#) on page 58
- ◆ [“Verifying the RLM connections and setup”](#) on page 62
- ◆ [“Verifying the RMC connections and setup”](#) on page 64
- ◆ [“Administering your storage system”](#) on page 65

The verification process

Complete process

The following table describes the complete process for verifying that your storage system is communicating on the network, that it is online and ready to operate. Also included are recommendations for preparing the storage system for use.

To make the storage system ready to use, complete all of the following steps that are appropriate for your storage system and the licenses you use with it.

Stage	What you do	For details
1	Verify the storage system's network connection.	See “Verifying network connections” on page 44.
2	Verify that the storage system can resolve host names.	See “Verifying host name resolution” on page 47.
3	Verify that the storage system is online and has the appropriate volumes and licenses.	See “Verifying storage availability and licensing” on page 49.
4	For NFS, configure clients to access the storage system.	See “Preparing NFS clients to access the storage system” on page 51.
5	For CIFS, configure clients to access the storage system.	See “Preparing CIFS clients to access the storage system” on page 55.
6	For HTTP, configure HTTP service.	If you purchased a license for the HTTP protocol for your storage system, turn on HTTP service using the FilerView® interface or the console commands described in the <i>File Access and Protocols Management Guide</i> .

Stage	What you do	For details
7	For CIFS, set up password and group files.	If you purchased a license for the CIFS protocol and you are not using a Windows domain controller to authenticate users, configure password and group files according to the instructions in the <i>System Administration Guide</i> .
8	Configure CIFS shares.	If you purchased a license for the CIFS protocol, configure CIFS shares so that users can access directories on the storage system according to the instructions in the <i>File Access and Protocols Management Guide</i> .
9	Assign access rights to CIFS users and groups.	If you purchased a license for the CIFS protocol, assign access rights using the instructions in the <i>File Access and Protocols Management Guide</i> .
10	Install the SecureShare® program on CIFS clients.	If your storage system is licensed for the CIFS protocol, you can install the SecureShare program on Windows client machines according to the instructions on the NetApp on the Web (NOW) site at http://now.netapp.com/ and use the feature as described in the <i>File Access and Protocols Management Guide</i> .

Stage	What you do	For details
11	Start FCP.	If your storage system is licensed for FCP, see the following documents for information about starting and managing the FCP service in a SAN: ◆ <i>Installation and Setup Guide</i> for your FCP Host Attach Kit ◆ <i>Block Access Management Guide</i> ◆ <i>The Compatibility and Configuration Guide for NetApp's FCP and iSCSI Products</i>, available online on the NOW site at http://now.netapp.com/NOW/knowledge/docs/san/fcp_iscsi_config/
12	Start iSCSI.	If your storage system is licensed for iSCSI, see the following documents for information about starting and managing the iSCSI service and iSCSI-attached hosts: ◆ <i>Installation and Setup Guide</i> for your iSCSI Host Support Kit ◆ <i>Block Access Management Guide</i> ◆ <i>The Compatibility and Configuration Guide for NetApp's FCP and iSCSI Products</i>, available online on the NOW site at http://now.netapp.com/NOW/knowledge/docs/san/fcp_iscsi_config/
13	Check the configuration of clustered storage systems.	If you configured clustered storage systems, check the cluster configuration information according to “Verifying the configuration for clustered storage systems” on page 58.
14	Check the RLM connections.	If your system has an RLM, read the information in “Verifying the RLM connections and setup” on page 62.

Stage	What you do	For details
15	Check the RMC connections.	If your system has an RMC, read the information in “ Verifying the RMC connections and setup ” on page 64.
16	Learn about the Data ONTAP software.	Read the <i>Documentation Roadmap</i> and other Data ONTAP documentation, as described in Chapter 1, “ Product documentation ” on page 2.
17	Learn about FilerView.	Read the information in “ Administering your storage system ” on page 65.
18	Install electronic documentation.	1. Obtain the documentation in zip file format from either of the following sources: • The software download page on NOW (http://now.netapp.com/) • The CD-ROM: <i>drive:\doc\docs.zip</i> 2. Use your browser to open the page at http://filer_name/na_admin 3. Select the Install Documentation link. 4. Follow the prompts to locate and install the documentation zip file.

Verifying network connections

Verifying connectivity

To verify storage system network connectivity, complete the following steps.

Step	Action	
1	If you want to verify a...	Then...
	Hostname interface	Complete Steps 2 and 3.
	IP address of an interface	Complete Steps 4 and 5.
2	At a client attached to the network, enter the following command: ping <i>hostname-interface</i> <i>hostname</i> is the host name that you assigned to the storage system when you ran <code>setup</code> . <i>interface</i> is one of the interface names that the storage system assigned when you ran <code>setup</code> . Example: This command tests the network connections for a storage system that has the host name “toaster” with an interface named <code>e0</code> installed. ping toaster-e0	
3	Repeat the test once for each interface that is installed in the storage system.	

Step	Action
4	At a client attached to the network, enter the following command: <pre>ping hostname-IP_address</pre> <i>hostname</i> is the host name that you assigned to the storage system when you ran <code>setup</code>. <i>IP_address</i> is the IP address that the storage system assigned to that interface during <code>setup</code>. Example: This command tests the network connections for a storage system that has the host name “toaster” with an interface named <code>e0</code> installed at 172.25.50.10. <pre>ping 172.25.50.10</pre>
5	Repeat the test once for each interface that is installed in the storage system.

If interfaces don't respond

To identify a problem when an interfaces does not respond to a `ping` command, take the following actions.

Step	Action
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 <code>ping</code> 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 hostname ping, there may be a problem with name resolution. See the section “ Verifying host name resolution ” on page 47.

**For more
information**

For more information about network configuration, see the *Network Management Guide*.

Verifying host name resolution

Automatically generated host names for interfaces require resolution

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 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-e0`; the second interface might be `toaster-e1`.

Host name resolution

To ensure host names are resolved into IP addresses, complete the following step.

Step	Action	
1	If you use...	Then...
	DNS or NIS for name resolution	Add an entry in your DNS or NIS databases for each of the storage system interfaces. Example: This shows how the entries might look for a storage system with four interfaces: <pre>192.16.3.145 toaster-e0 192.16.3.145 toaster-e1 192.16.3.145 toaster-f0 192.16.3.145 toaster-a5</pre> Note _____ For Active Directory domains, you must also create a host address (A) record on the DNS server for the storage system’s fully qualified domain name. _____
	/etc/hosts files for name resolution	Add an entry in each host’s /etc/hosts file for each of the storage system interfaces.

**For more
information**

For more information about host name resolution, see the *Network Management Guide*.

Verifying storage availability and licensing

Verifying that system storage is available

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)

To verify that these entities exist on your storage system, complete the following step.

Step	Action
1	At the storage system command line, enter the following command: <pre>exportfs</pre> Result: You should see a listing that includes lines similar to the following: <pre>/vol/vol0/home -sec=sys,rw,nosuid /vol/vol0 -sec=sys,rw,anon=0,nosuid</pre>

Note /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.

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: /vol/vol0 is shared as C\$; only the system administrator with the root password has read and write access to the C\$ share. The /vol/vol0/home directory is shared as HOME without access granted to anyone.

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 configure additional licenses.

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

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

Preparing NFS clients to access the storage system

How to make storage system data available

To make storage system data available to NFS clients, you need to do the following tasks:

- ◆ Export the storage system's file system
- ◆ Mount the storage system's file system
- ◆ Create a directory on the NFS client to act as a mount point

Exporting NFS clients

You must export the storage system's file systems before NFS clients can mount them. Only UNIX and "mixed" styles of file systems are available for mounting by NFS clients. CIFS file systems (NTFS style), cannot be mounted by NFS clients.

To export the storage system's file systems, complete the following steps.

Step	Action																														
1	Determine valid path names for directories by entering the following command at the storage system prompt: qtree Sample output: <table><tr><td>Volume</td><td>Tree</td><td>Style</td><td>Oplocks</td><td>Status</td></tr><tr><td>-----</td><td>----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>vol0</td><td>home</td><td>unix</td><td>enabled</td><td>normal</td></tr><tr><td>vol1snap</td><td>qtree1</td><td>unix</td><td>enabled</td><td>normal</td></tr><tr><td>vol2eng</td><td>team1</td><td>mixed</td><td>enabled</td><td>normal</td></tr><tr><td>vol2mkt</td><td>nt</td><td>ntfs</td><td>enabled</td><td>normal</td></tr></table>	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
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 sample output, convert the first three entries into valid path names. To do this, use this format: <i>/Volume/Tree</i>. For example: /vol0/home /vol1snap/qtree1 /vol2eng/team1 Note_____ Because only “unix” and “mixed” styles can be mounted on NFS clients, /vol2mkt/nt (which has “ntfs” style) cannot be mounted. _____																														

Step	Action
3	Use a text editor from an NFS client to open the <code>/etc/exports</code> file.
4	Add the storage system directories to the <code>/etc/exports</code> file to export them. For information about specifying entries and access permissions, see the chapter about file access using NFS in the <i>File Access and Protocols Management Guide</i> to find out how <code>/etc/exports</code> works. Example: <pre>/vol/vol0/home -anon=0 /vol/vol1snap/qtreet1 /vol/vol2eng/team1</pre>
5	Save the file and exit the text editor.

Mounting NFS client file systems

You can mount the storage system's file system by using one of the following methods:

- ◆ Add entries for the directories exported from the storage system for each client in the `/etc/vfstab` file (for Solaris clients) or `/etc/fstab` file (for non-Solaris clients)
- ◆ Use the UNIX `mount` command
- ◆ Use the UNIX automounter tool

To mount the storage system's file systems by adding entries to the `/etc/vfstab` file, complete the following steps.

Step	Action
1	Use a text editor from an NFS client to open the <code>/etc/vfstab</code> (or <code>/etc/fstab</code>) file.

Step	Action
2	Add the entries for the directories exported from the storage system for each client in the <code>/etc/vfstab</code> file (or <code>/etc/fstab</code>) file. Example: <pre>toaster:/vol/vol0/home nfs - yes - rw,bg,hard toaster:/vol/vol1snap/qtrees1 -yes - rw,bg,hard toaster:/vol/vol2eng/team1 - yes - rw,bg,hard</pre> Note The <code>/vol/vol0/home</code> directory is used as a sample storage system directory in this procedure. You should use a path that exists on your storage system.
3	Save the file and exit the text editor. Result: After you edit the NFS clients' <code>/etc/vfstab</code> file (or <code>/etc/fstab</code> file), the clients mount the file systems automatically when they boot.

Creating a mount point directory on an NFS client

To create a mount point directory on the NFS client, complete the following step.

Step	Action
1	At the NFS client, create a directory to act as a mount point. Example: <code>mkdir /n/toaster/home</code>

Mounting a storage system directory on an NFS client

To mount the storage system's directory on the NFS client, complete the following steps.

Step	Action
1	To mount the storage system's /vol/vol0/home directory to /n/filer/home, add the following entry for the client in the /etc/vfstab file (or /etc/fstab) file, assuming that the client is on the same network as the storage system's e0 Ethernet interface: <pre>filer-e0:/vol/vol0/home /n/filer/home nfs rw 0 0</pre> Result: The file system is mounted when the client reboots, and remains available after subsequent rebooting.
2	To mount the /vol/vol0/home directory without a client reboot, enter the following command at the NFS client: <pre>mount filer-e1:/vol/vol0/home /n/filer/home</pre> Result: The file system is mounted immediately, but is no longer available upon reboot.

For more information

For more information about NFS configuration, see the *File Access and Protocols Management Guide*.

Preparing CIFS clients to access the storage system

How storage system data is visible to CIFS clients

Once setup is complete, the storage system establishes CIFS client connectivity by automatically registering with the master browser on its local network.

Note

Although CIFS connectivity has been established, you need to configure shares with CIFS access permissions before any storage system data becomes visible to CIFS clients. For information about how to make a test share available to CIFS clients, see the *File Access and Protocols Management Guide*.

If cross-subnet browsing is configured correctly, the storage system is now available to all CIFS clients. For more information about cross-subnet browsing, refer to Microsoft networking documentation.

CIFS client connection methods

The following table enumerates and describes the methods by which CIFS clients can connect to the storage system, depending on the client operating system.

For more information about commands and windows mentioned in the table, see the operating system manual for your computer.

Method	Client operating system	Command or window
Method 1: Clicking the storage system icon	Windows 95, Windows 98, Windows Me, Windows NT 4.0	Network Neighborhood
	Windows Me, Windows 2000, Windows XP, Windows 2003	My Network Places
Method 2: Connecting to the storage system as a network drive	Windows 95, Windows 98, Windows Me	Map Network Drive window—available according to Workgroup or domain membership
	Windows NT 4.0	Map Network Drive window (from NT Explorer)
	Windows 2000, Windows XP, Windows 2003	Map Network Drive

Method	Client operating system	Command or window
Method 3: Connecting to the storage system as a network drive	Windows NT 3.51, Windows for Workgroups	Connect Network Drive window (from the File Manager)
Method 4: Mapping a share to a drive letter on the command line	Operating systems that support the DOS command-line interface and support the <code>net use</code> command, including Windows 2000, Windows XP, and Windows Server 2003	<pre>net use drive_letter:\\path</pre> Example: <pre>net use f:\\toaster\home</pre>

Information users need for accessing the storage system

To inform users about how to access the storage system, complete the following steps.

Step	Action
1	Determine the connection methods that are correct for your CIFS clients.

Step	Action	
2	If your CIFS clients can...	Then...
	Use methods 2, 3, or 4 to connect to the storage system. See “CIFS client connection methods” on page 55.	Inform your users of the storage system’s UNC path. The UNC path consists of a computer name and a share name in the following format: <pre>\\computer_name\share_name</pre> Example: If the storage system is named toaster and the directory for users’ directories has the share name “home,” the UNC path is \\toaster\home. Result: After you provide users with information about how to access the storage system, they can connect to the storage system, view directories, and read and write files.
	Use method 1 to connect to the storage system. See “CIFS client connection methods” on page 55.	Inform your users of the storage system name so that they can locate the storage system in Network Neighborhood.

Configuring storage system storage options

Once you have verified the storage system is configured, you need to configure it for your storage needs. For information about storage configuration, see the *Storage Management Guide*.

Verifying the configuration for clustered storage systems

How you check your cluster configuration

There are two ways you can check your cluster configuration prior to placing your cluster online:

- ◆ Running the Cluster Configuration Checker script
- ◆ Manually, through the command line

Values that need to match between clustered storage systems

When you configure your clustered storage systems, the following configuration information needs to match.

- ◆ 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 a cluster. You can have each storage system in a cluster 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.

Checking options with the Cluster Configuration Checker

The Cluster Configuration Checker is a script that runs under UNIX or as a Common Gateway Interface (CGI) script from a UNIX Web server. It detects the following configuration problems:

- ◆ Different versions of Data ONTAP on the local and partner storage systems
- ◆ Incorrectly configured network interfaces
- ◆ Mismatched licenses and option settings

Note

The Cluster Configuration Checker script does *not* verify matching configuration files. To verify matching configuration files, see “[Matching configuration files](#)” on page 61.

You can download the Cluster Configuration Checker script from the NetApp on the Web (NOW) site at <http://now.netapp.com/NOW/tools/>. Look for the Cluster Configuration Checker (cf-config-check.cgi) file.

To run this script from the command line, complete the following steps.

Step	Action
1	Collect the IP addresses and login information for the local and partner storage systems.
2	Download the Cluster Configuration Checker script ZIP archive file from the NOW site and extract the script file.
3	Run the script, as described in the online instructions on the script Web page. You can run the script either from the command line or through a Web browser that can access both storage systems.
4	Examine the script output and correct any errors or differences identified in the output.

Manually checking clustered storage system settings

The following sections provide information required to manually verify clustered storage system configurations.

Matching network interfaces

The network interfaces must have identical values on both storage systems in a cluster.

For information about how to manually check the network interfaces, see the `ifconfig(1)` man page.

Matching storage system options and licenses

To check options on the local and partner storage systems, complete the following steps.

Step	Action
1	View the options set on the local storage system by entering the following command at the storage system's console: options Result: The current option settings on the storage system are listed. You should see output similar to the following: <pre> autosupport.doit DONT autosupport.enable on . dns.domainname filer1 (might be overwritten in takeover) dns.enable off (might be overwritten in takeover) ftpd.enable off </pre>
2	Note the values of storage system options with comments. (Comments appear in parentheses.) The comments for storage system options are: ◆ (value might be overwritten in takeover) ◆ (same value required in local+partner) ◆ (Same value in local+partner recommended)
3	Verify that options with comments are set to the same value for both storage systems.
4	Correct any mismatched options using the following command: options <i>option_name</i> <i>option_value</i>
5	Check the license settings on both storage systems using the following command: license
6	Correct mismatched license settings using the following command: license <i>option=code</i>

Matching configuration files

Certain configuration files in the root volume of the storage system (not the UNIX administration host) need to be identical on clustered storage systems. Verify that the contents of the configuration files shown in the following table are identical for both storage systems in the clustered storage system, referred to as Filer 1 and Filer 2. When you have verified that the contents are identical, place a check mark in both columns for each file.

File	Filer 1	Filer 2
/etc/resolv.conf		
/etc/httpd.mimetypes		
/etc/dgateways		
/etc/nsswitch.conf		

Matching parameters

Ensure that the parameters shown in the following table have identical values on both storage systems in the clustered storage system, referred to as Filer 1 and Filer 2. When you have verified that the contents are identical, place a check mark in both columns for each parameter.

Parameter	Filer 1	Filer 2
ARP table		
date		
ndmp		
nfs		
route table		
routed		
timezone		

For more information

For more information about configuring and managing clustered storage systems, see the *Cluster Installation and Administration Guide*. If you are configuring clusters in an FCP or iSCSI environment, see also your *Block Access Management Guide*.

Verifying the RLM connections and setup

Verifying connections and setup

To verify the remote LAN module (RLM) connections and setup, complete the following steps.

Step	Action
1	To verify that AutoSupport is enabled and AutoSupport options are valid, enter the following command: options autosupport Result: The AutoSupport options should be set as follows: <pre>autosupport.enable on autosupport.support.enable on autosupport.mailhost <i>name or IP address of mailhost</i> autosupport.support.to <i>name or email address of alert recipient(s)</i> autosupport.content complete</pre>
2	Enter the following command: rlm setup Note_____ It might take a few minutes for the new network settings for the RLM to take effect. _____
3	Enter the following command to verify the configuration of the RLM interface: rlm status
4	To test RLM mail delivery, enter the following command: rlm test autosupport Result: The RLM should send e-mail within a few minutes. If the test fails, you should verify storage system connectivity, and whether the mailhost and recipients are valid.

**About the RLM
network interface**

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

**For more
information**

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

Verifying the RMC connections and setup

Verifying connections and setup

To verify the remote management controller (RMC) connections and setup, complete the following steps.

Step	Action
1	Enter the following command: <pre>rmc setup</pre> Note_____ It might take a few minutes for the new network settings for the RMC to take effect.
2	Enter the following command to verify the connection from the storage system to the RMC interface: <pre>ping rmc_interface</pre> <i>rmc_interface</i> is the IP address of the RMC.
3	To verify that AutoSupport is enabled and AutoSupport options are valid, enter the following command: <pre>options autosupport</pre> Result: The AutoSupport options should be set as follows: <pre>autosupport.enable on autosupport.support.enable on autosupport.mailhost <i>name or IP address of mailhost</i></pre>
4	To test RMC mail delivery, enter the following command: <pre>rmc test email TESTMSG</pre> Result: The RMC should send e-mail within a few minutes. If the test fails, you should verify storage system connectivity and whether the mailhost is valid.

About the RMC network interface

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

Administering your storage system

Methods of administration

This section provides a brief overview of the methods you can use to administer your storage systems. For more information about storage system access and administration, see the *System Administration Guide*.

Administration from the command line

You've already been using the command-line interface by entering commands at the storage system prompt. You can set the privilege level that determines what commands are available to you by using the `priv` command. All the commands are documented online as UNIX-style manual pages, and most commands provide online help for syntax. For more information about entering commands at the command line, see the *System Administration Guide*.

Administration from FilerView

FilerView is a Web-based administration tool for Data ONTAP that enables you to perform most administration tasks from any client on your network that has a compatible Web browser. Through FilerView, you can perform tasks that otherwise require you to enter commands at the storage system prompt or to edit configuration files. You can use FilerView even if you did not purchase a license for the HTTP. For information on how to launch FilerView and use its features, see the *System Administration Guide*.

Software updates

Software updates are regularly made available to customers who purchase software support agreements.

You can find information about the latest software updates at the NetApp on the Web (NOW) site (<http://now.netapp.com/>).

When you register with the NOW site, you can configure your account to receive e-mail regarding software updates. For more information about software updates, see the *Upgrade Guide*.

Custom Management Information Base

You may want to configure the custom Management Information Base (MIB) with SNMP, to retrieve runtime and configuration information about storage system operation such as statistics, Redundant Array of Independent Disks (RAID), file systems, and protocols. For more information about custom MIB groups, see the *Network Management Guide*.

AutoSupport feature

The AutoSupport feature is automatically enabled when you run the setup process on a storage system for the first time. AutoSupport sends event messages and weekly reports to Network Appliance technical support. This can significantly decrease the time it takes to assess and resolve problems that might occur on your system.

If you do not want any AutoSupport messages to be sent, you can disable AutoSupport by entering the command `options autosupport.support.enable off`. AutoSupport does not send any messages until at least 24 hours after you complete the setup process. For more information about AutoSupport, see the *System Administration Guide*.

For additional information

For pointers to more product information about Data ONTAP 7.1, NetApp platforms or related NetApp technology, see the Data ONTAP 7.1 *Documentation Roadmap*, available at the NetApp on the Web (NOW) site (<http://now.netapp.com/>).

Configuration Worksheet

A

How to use this worksheet

Use this worksheet with Chapter 2, “[Information Gathering](#),” on page 9, to record the information you need to set up and configure your storage system or NearStore® system. Gather the information before you begin setting up and configuring your system.

Types of information		Your values
Filer	MAC address for the storage system's built-in Ethernet interface	
	Host name	
	Password	
	Time zone	
	Filer location	
	Language used for multiprotocol storage systems	
Administration host	Host name	
	IP address	
Virtual interfaces	Interface name	
	Number of links	
	Link names	
Ethernet interfaces	Interface name	
	IP address	
	Subnet mask	
	Partner IP address	
	Media type (network type)	
	Are jumbo frames supported?	
	MTU size for jumbo frames	

Types of information		Your values
ATM ForeIP/SPANS	Interface name	
	Host IP address or Partner IP address	
	Netmask (or subnet mask)	
	Media type	
ATM LANE	Interface name	
	Host IP address or partner name	
	Emulated LAN (ELAN) name	
	LANE Configuration Server (LECS) address	
	IP address	
	Netmask (or subnet mask)	
Router (if used)	Gateway name	
	IP address	
Location of HTTP directory		
DNS	Domain name	
	Server address 1	
	Server address 2	
	Server address 3	
NIS	Domain name	
	Server name 1	
	Server name 2	
	Server name 3	
Windows domain		

Types of information		Your values
WINS servers	1	
	2	
	3	
Windows Active Directory domain administrator user name		
Windows Active Directory domain administrator password		
Active Directory (command-line setup only)		
RMC	MAC address	
	IP address	
	Network mask (subnet mask)	
	Gateway	
	Media type	
	Mailhost	
RLM	MAC address	
	IP address	
	Network mask (subnet mask)	
	Gateway	
	AutoSupport mailhost	
	AutoSupport recipient(s)	

About this section

This appendix provides valid times zones you can enter when the `setup` command prompts you to enter a time zone. Time zones are divided into two sections:

- ◆ “[GMT offset and miscellaneous time zones](#)” on page 72
Time zones by offset from Greenwich Mean Time (GMT), and miscellaneous time zones that are not grouped by region.
- ◆ “[Time zones by geographical region](#)” on page 74
Time zones grouped by geographical region, in alphabetical order.

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

Time zone aliases

Use the following aliases to represent their corresponding time zone descriptions.

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

GMT offset and miscellaneous time zones

About time zones listed in this section

This section contains the following valid Data ONTAP time zones:

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

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	

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	

Miscellaneous

Arctic/Longyearbyen	HST	Portugal
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	

Time zones by geographical region

About time zones listed in this section

This section contains valid Data ONTAP time zones, grouped alphabetically by geographical region.

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/Calcutta Asia/Chungking Asia/Colombo Asia/Dacca Asia/Damascus Asia/Dubai Asia/Dushanbe Asia/Gaza Asia/Harbin Asia/Hong_Kong	Asia/Kuching Asia/Kuwait Asia/Macao Asia/Magadan Asia/Manila Asia/Muscat Asia/Nicosia Asia/Novosibirsk Asia/Omsk Asia/Phnom_Penh Asia/Pyongyang	Asia/Tokyo Asia/Ujung_Pandang Asia/Ulan_Bator Asia/Urumqi Asia/Vientiane Asia/Vladivostok Asia/Yakutsk Asia/Yekaterinburg Asia/Yerevan
Atlantic	Atlantic/Azores Atlantic/Bermuda Atlantic/Canary Atlantic/Cape_Verde	Atlantic/Faeroe Atlantic/Jan_Mayen Atlantic/Madeira Atlantic/Reykjavik	Atlantic/South_Georgia Atlantic/St_Helena Atlantic/Stanley
Australia	Australia/ACT Australia/Adelaide Australia/Brisbane Australia/Broken_Hill Australia/Canberra Australia/Darwin Australia/Hobart	Australia/LHI Australia/Lindeman Australia/Lord_Howe Australia/Melbourne Australia/NSW Australia/North Australia/Perth	Australia/Queensland Australia/South Australia/Sydney Australia/Tasmania Australia/Victoria Australia/West Australia/Yancowinna
Brazil	Brazil/Acre Brazil/DeNoronha	Brazil/East	Brazil/West
Canada	Canada/Atlantic Canada/Central Canada/East-Saskatchewan	Canada/Eastern Canada/Mountain Canada/Newfoundland	Canada/Pacific Canada/Saskatchewan Canada/Yukon

Chile	Chile/Continental	Chile/EasterIsland	
Europe	Europe/Amsterdam Europe/Andorra Europe/Athens Europe/Belfast Europe/Belgrade Europe/Berlin Europe/Bratislava Europe/Brussels Europe/Bucharest Europe/Budapest Europe/Chisinau Europe/Copenhagen Europe/Dublin Europe/Gibraltar Europe/Helsinki Europe/Istanbul	Europe/Kiev Europe/Kuybyshev Europe/Lisbon Europe/Ljubljana Europe/London (BST) Europe/Luxembourg Europe/Madrid Europe/Malta Europe/Minsk Europe/Monaco Europe/Moscow Europe/Oslo Europe/Paris Europe/Prague Europe/Riga Europe/Rome	Europe/San_Marino Europe/Sarajevo Europe/Simferopol Europe/Skopje Europe/Sofia Europe/Stockholm Europe/Tallinn Europe/Tirane Europe/Vaduz Europe/Vatican Europe/Vienna Europe/Vilnius Europe/Warsaw Europe/Zagreb Europe/Zurich
Indian (Indian Ocean)	Indian/Antananarivo Indian/Chagos Indian/Christmas Indian/Cocos	Indian/Comoro Indian/Kerguelen Indian/Mahe Indian/Maldives	Indian/Mauritius Indian/Mayotte Indian/Reunion
Mexico	Mexico/BajaNorte	Mexico/BajaSur	Mexico/General
Pacific	Pacific/Apia Pacific/Auckland Pacific/Chatham Pacific/Easter Pacific/Efate Pacific/Enderbury Pacific/Fakaofu Pacific/Fiji Pacific/Funafuti	Pacific/Johnston Pacific/Kiritimati Pacific/Kosrae Pacific/Kwajalein Pacific/Majuro Pacific/Marquesas Pacific/Midway Pacific/Nauru Pacific/Niue	Pacific/Ponape Pacific/Port_Moresby Pacific/Rarotonga Pacific/Saipan Pacific/Samoa Pacific/Tahiti Pacific/Tarawa Pacific/Tongatapu Pacific/Truk

Pacific/Galapagos
Pacific/Gambier
Pacific/Guadacanal
Pacific/Guam
Pacific/Honolulu

Pacific/Norfolk
Pacific/Noumea
Pacific/Pago_Pago
Pacific/Palau
Pacific/Pitcairn

Pacific/Wake
Pacific/Wallis
Pacific/Yap

Supported Languages

C

Language choices

The following table lists the languages supported by Data ONTAP on multiprotocol storage systems, and the corresponding language code abbreviations you enter during setup.

You can also view this list by entering `vol lang` at the storage system prompt.

Language	Abbreviation	Language	Abbreviation
Danish	da	Korean	ko
Dutch	nl	Norwegian	no
English	en	Portugese	pt
English (U.S.)	en_US	POSIX	C
Finnish	fi	Simplified Chinese	zh
French	fr	Simplified Chinese (GBK)	zh.GBK
German	de	Spanish	es
Hebrew	he	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		

Specifying the language code

To specify the language appropriate to your organization, complete the following step.

Step	Action
1	When prompted during setup, enter the code that corresponds to the appropriate language. Note_____ To use UTF-8 as the NFS character set, append .UTF-8 to the abbreviation. _____ Example: ko.UTF8

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