CHAPTER 1

Using the WAAS Command-Line Interface

This chapter describes how to use the WAAS CLI, including an explanation of CLI command modes, navigation and editing features, and help features.

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About the WAAS

The Cisco WAAS software command-line interface (CLI) is used in combination with the WAAS Manager GUI to configure, monitor, and maintain a WAAS device. The CLI on a WAAS device can be accessed directly through the console port of an attached PC or remotely through a Telnet session on a PC running terminal emulation software.

Note The WAAS software runs on a variety of WAE and WAVE appliances, WAE-NME and SM-SRE network modules, and as a virtual WAAS appliance (vWAAS).

Throughout this book, the term WAAS device refers collectively to a WAAS Central Manager and a WAE. The term WAE refers collectively to the supported platforms that are running the WAAS software unless otherwise noted.

Command Line Interface

The WAAS CLI allows you to configure, manage, and monitor WAAS devices on a per-device basis through a console connection or a terminal emulation program. The WAAS CLI also allows you to configure certain features that are only supported through the WAAS CLI (for example, configuring LDAP signing on a WAE).

The instructions and examples in this guide describe only those features that can be configured on an individual WAAS device using the WAAS CLI.

Graphical User Interface

In addition to the WAAS CLI, there are two WAAS graphical user interfaces (GUIs) that you access from your browser:

- The WAAS Central Manager GUI allows you to centrally configure, manage, and monitor a WAE or group of WAEs that are registered with the WAAS Central Manager. You also use this GUI to configure, manage, and monitor the WAAS Central Manager, which is the dedicated appliance on which the WAAS Central Manager GUI is running.

Note When you use the WAAS Central Manager GUI, you have the added capability of centrally configuring settings and policies for groups of WAEs (device groups). When you use the WAAS CLI, you can only configure settings and policies on a per-device basis.

- The WAE Device Manager GUI allows you to remotely configure, manage, and monitor an individual WAE through your browser. In many cases, the same device settings can be found in both the WAE Device Manager GUI and the WAAS Central Manager GUI. For this reason, we strongly recommend that you always configure a WAE from the WAAS Central Manager GUI whenever possible.

The WAAS GUIs are the primary resources for configuration and monitoring WAEs. We strongly recommend that you use the WAAS Central Manager GUI instead of the WAAS CLI, whenever possible. For more information about how to use the WAAS GUIs to configure, manage, and monitor your WAAS devices, see the *Cisco Wide Area Application Services Configuration Guide*.

We recommend that you be familiar with the basic concepts and terminology used in internetworking, in your network topology, and in the protocols that the devices in your network can use. We also recommend that you have a working knowledge of the operating systems on which you are running your WAAS network, such as Microsoft Windows, Linux, or Solaris. This guide is not a tutorial.

Using Command Modes

The CLI for WAAS software is similar to the CLI for Cisco IOS software. Like Cisco IOS software, the WAAS CLI is organized into different command and configuration modes. Each mode provides access to a specific set of commands. This section describes the command modes provided by the WAAS software CLI and includes the following topics:

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Organization of the WAAS CLI

The WAAS software CLI is organized into multiple command modes. Each command mode has its own set of commands that allow you to configure, maintain, and monitor a WAAS Wide Area Application Engine (WAE). The commands available to you at any given time depend on the mode you are in. You can enter a question mark (?) at the system prompt to obtain a list of commands available for each command mode.

The WAAS command modes include the following:

- EXEC mode—Sets, views, and tests system operations. This mode is divided into two access levels: user and privileged. To use the privileged access level, enter the **enable** command at the user access level prompt, and then enter the privileged EXEC password when you see the password prompt.
- Global configuration mode—Sets, views, and tests the configuration of WAAS software features for the entire device. To use this mode, enter the **configure** command from privileged EXEC mode.
- Interface configuration mode—Sets, views, and tests the configuration of a specific interface. To use this mode, enter the **interface** command from global configuration mode.
- Standard ACL configuration mode—Creates and modifies standard access lists on a WAAS device for controlling access to interfaces or applications. To use this mode, enter the **ip access-list standard** command from global configuration mode.
- Extended ACL configuration mode—Creates and modifies extended access lists on a WAAS device for controlling access to interfaces or applications. To use this mode, enter the **ip access-list extended** command.
- Preposition configuration mode—Creates and modifies preposition directives on a WAAS device for prepositioning files for CIFS (WAFS). To use this mode, enter the **accelerator cifs preposition** command.
- Virtual blade configuration mode—Configures virtual blades that reside in a WAE or WAVE device for additional services, including operating systems and applications, that work with the WAAS device. To use this mode, enter the **virtual-blade** command.

- PKI certificate authority configuration mode—Configures public key infrastructure (PKI) encryption certificate authorities on a WAAS device. To use this mode, enter the **crypto pki ca** command.
- PKI global settings configuration mode—Configures OCSP and revocation checking on a WAAS device. To use this mode, enter the **crypto pki global-settings** command.
- SSL accelerated service configuration mode—Enables and configures secure socket layer (SSL) acceleration on your WAAS system. To use this mode, enter the **crypto ssl service accelerated-service** command.
- SSL cipher list configuration mode—Configures SSL encryption cipher lists on a WAAS device. To use this mode, enter the **crypto ssl cipher-list** command.
- SSL global service configuration mode—Enables and configures basic SSL acceleration settings on your WAAS system. To use this mode, enter the **crypto ssl services global-settings** command.
- SSL host peering service configuration mode—Configures SSL encryption peering services on a WAAS device. To use this mode, enter the **crypto ssl services host-service peering** command.
- SSL management service configuration mode—Configures SSL encryption management service parameters on a WAAS device. To use this mode, enter the **crypto ssl management-service** command.

Modes are accessed in this order: user EXEC mode, privileged EXEC mode, then global configuration mode. From global configuration mode, you can access the configuration submodes (interface configuration mode, standard ACL configuration mode, extended ACL configuration mode, preposition configuration mode, virtual blade configuration mode, PKI certificate authority configuration mode, PKI global settings configuration mode, SSL accelerated service configuration mode, SSL cipher list configuration mode, SSL global service configuration mode, SSL host peering service configuration mode, and SSL management service configuration mode).

Using EXEC Mode

Use the EXEC mode to set, view, and test system operations. The user EXEC commands allow you to connect to remote devices, change terminal line settings on a temporary basis, perform basic tests, and list system information.

Most EXEC mode commands are one-time commands, such as **show** or **more** commands, which show the current configuration status, and **clear** commands, which clear counters or interfaces. EXEC mode commands are not saved across reboots of the WAE.

EXEC Mode Levels

The EXEC mode is divided into two access levels: user and privileged. The user EXEC mode is used by local and general system administrators, while the privileged EXEC mode is used by the root administrator. Use the **enable** and **disable** commands to switch between the two levels.

- User level—Access to the user-level EXEC command line requires a valid password. The user-level EXEC commands are a subset of the privileged-level EXEC commands. The user-level EXEC prompt is the hostname followed by a right angle bracket (>). You can change the hostname using the **hostname** global configuration command.
- Privileged level—The prompt for the privileged-level EXEC command line is the pound sign (#). To execute an EXEC command, enter the command at the EXEC system prompt and press the **Return** key. The following example shows how to access the privileged-level EXEC command line from the user level:

```
WAE> enable
WAE#
```

EXEC Mode Command-Line Processing

Common functions you can use when entering commands in EXEC mode include the following:

- Edit—To edit commands, use the **Delete** or **Backspace** keys when you enter commands at the EXEC prompt.
- Abbreviate—As a shortcut, you can abbreviate commands to the fewest letters that make them unique. For example, the letters **sho** can be entered for the **show** command.
- Display multiple pages—Certain EXEC commands display multiple screens with the following prompt at the bottom of the screen:

  ```
  --More--
  ```

  Press the **Spacebar** to continue the output, or press **Return** to display the next line. Press any other key to return to the prompt. Also, at the --More-- prompt, you can enter a **?** to display the help message.
- Exit—To leave EXEC mode, use the **exit** command at the system prompt:

  ```
  WAE# exit
  WAE>
  ```

- Comment—Any command line that begins with an exclaimation point (!) is considered a comment and is ignored.

Using Global Configuration Mode

Use global configuration mode to set, view, and test the configuration of WAAS software features for the entire device. To enter this mode, enter the **configure** command from privileged EXEC mode. The prompt for global configuration mode consists of the hostname of the WAE followed by (config) and the pound sign (#). You must be in global configuration mode to enter global configuration commands.

```
WAE# configure
WAE(config)#
```

Commands entered in global configuration mode update the running configuration file as soon as they are entered. These changes are not saved into the startup configuration file until you enter the **copy running-config startup-config** EXEC mode command. See the "Saving Configuration Changes" section on page 1-15. Once the configuration is saved, it is maintained across WAE reboots.

Configuration changes that you make in global configuration mode on a WAE are propagated to the Centralized Management System (CMS) database on the WAAS Central Manager. CLI changes are sent to the Central Manager after you exit out of configuration mode, or if all configuration mode sessions have been inactive for 10 minutes.

You must be in global configuration mode to enter specific subordinate configuration modes.

Configuration Submodes

Configuration submodes are used for the configuration of specific features within the scope of a given configuration mode. From global configuration mode, you can enter the following configuration submodes:

- Interface configuration mode
- Standard ACL configuration mode
- Extended ACL configuration mode
- Preposition configuration mode
- Virtual blade configuration mode
- PKI certificate authority configuration mode
- PKI global settings configuration mode
- SSL accelerated service configuration mode
- SSL cipher list configuration mode
- SSL global service configuration mode
- SSL host peering service configuration mode
- SSL management service configuration mode

Exiting Configuration Mode

Common functions used in configuration modes include the following:

- Exit current mode—To exit global configuration mode or any subordinate configuration mode, use the **exit** command or **Ctrl-Z**.
- Exit to privileged EXEC mode—To exit to privileged EXEC mode from global configuration mode or any subordinate configuration mode, use the **end** global configuration command:

```
WAE(config)# end
WAE#
```

Using Interface Configuration Mode

Use interface configuration mode to set, view, and test the configuration of WAAS software features on a specific interface. To enter this mode, enter the **interface** command from the global configuration mode. The following example shows how to enter interface configuration mode:

```
WAE# configure
WAE(config)# interface ?
  GigabitEthernet  Select a gigabit ethernet interface to configure
  InlineGroup      Select an inline group interface to configure
  PortChannel      Ethernet Channel of interfaces
  Standby          Standby groups

WAE(config)# interface gigabitethernet ?
    <1-2>/ GigabitEthernet slot/port

WAE(config)# interface gigabitethernet 1/0
WAE(config-if)#
```

To exit interface configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-if)# exit
WAE(config)#
```

Using ACL Configuration Modes

Use the ACL configuration modes to create and modify standard and extended access list configuration on a WAAS device. From global configuration mode, you can enter the standard and extended ACL configuration modes.

- Standard—To work with a standard access list, use the **ip access-list standard** command from the global configuration mode prompt. The CLI enters a configuration mode in which all subsequent commands apply to the current access list.
- Extended—To work with an extended access list, use the **ip access-list extended** command from the global configuration mode prompt. The CLI enters a configuration mode in which all subsequent commands apply to the current access list.

To exit an ACL configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-std-nacl)# exit
WAE(config)#
```

Using Preposition Configuration Mode

Use preposition configuration mode to create and modify preposition directives on a WAAS device for prepositioning files for CIFS (WAFS). To enter this mode, use the **accelerator cifs preposition** command in the global configuration mode.

To exit preposition configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-preposition)# exit
WAE(config)#
```

Using Virtual Blade Configuration Mode

Use virtual blade configuration mode to configure virtual blades within your WAE or WAVE device. A WAAS virtual blade acts as a computer emulator with its own virtualized CPU, memory, firmware, disk drive, CD drive, and network interface card. It works with your WAAS system to provide additional services for the users on your network.

To enter this mode, use the **virtual blade** command from the global configuration mode.

To exit virtual blade configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-vb)# exit
WAE(config)#
```

Using PKI Certificate Authority Configuration Mode

Use PKI certificate authority configuration mode to add and configure a certificate authority.

To enter this mode, use the **crypto pki ca** command from the global configuration mode.

To exit PKI certificate authority configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-ca)# exit
WAE(config)#
```

Using PKI Global Settings Configuration Mode

Use PKI global settings configuration mode to configure OCSP and revocation checking.

To enter this mode, use the **crypto pki global-settings** command from the global configuration mode.

To exit PKI global settings configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-pki-global-settings)# exit
WAE(config)#
```

Using SSL Accelerated Service Configuration Mode

Use SSL accelerated service configuration mode to enable and configure SSL acceleration on your WAAS system, and define services to be accelerated on the SSL path.

To enter this mode, use the **crypto ssl service accelerated-service** command from the global configuration mode.

To exit SSL accelerated service configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-ssl-accelerated)# exit
WAE(config)#
```

Using SSL Cipher List Configuration Mode

Use SSL cipher list configuration mode to configure secure socket layer (SSL) encryption cipher lists on a WAAS device.

To enter this mode, use the **crypto ssl cipher-list** command from the global configuration mode.

To exit SSL cipher list configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-cipher-list)# exit
WAE(config)#
```

Using SSL Global Service Configuration Mode

Use SSL global service configuration mode to enable and configure basic SSL acceleration settings on your WAAS system.

To enter this mode, use the **crypto ssl services global-settings** command from the global configuration mode.

To exit SSL global service configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-ssl-global)# exit
WAE(config)#
```

Using SSL Host Peering Service Configuration Mode

Use SSL host peering service configuration mode to configure secure socket layer (SSL) encryption peering services on a WAAS device. SSL peering service configuration parameters control secure communications established by the SSL accelerator between WAE devices while optimizing SSL connections.

To enter this mode, use the **crypto ssl services host-service peering** command from the global configuration mode.

To exit SSL host peering service configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-ssl-peering)# exit
WAE(config)#
```

Using SSL Management Service Configuration Mode

Use SSL management service configuration mode to configure SSL parameters used for secure communications between the Central Manager and the WAE devices.

To enter this mode, use the **crypto ssl management-service** command from the global configuration mode.

To exit SSL management service configuration mode, use the **exit** command to return to global configuration mode:

```
WAE(config-ssl-mgmt)# exit
WAE(config)#
```

Command Modes Summary

Table 1-1 shows a summary of the WAAS command modes.

Table 1-1 WAAS Command Modes Summary

Command Mode	Access Method	Prompt	Exit Method
user EXEC	Log in to WAE.	`WAE>`	To exit, use the **end** command. To enter privileged EXEC mode, use the **enable** command.
privileged EXEC	From user EXEC mode, use the **enable** EXEC command.	`WAE#`	To return to user EXEC mode, use the **disable** command. To enter global configuration mode, use the **configure** command.
global configuration	From privileged EXEC mode, use the **configure** command.	`WAE(config)#`	To return to privileged EXEC mode, use the **exit** command or press **Ctrl-Z**. To enter a configuration submode, use the specific command related to the submode.

Table 1-1 WAAS Command Modes Summary (continued)

Command Mode	Access Method	Prompt	Exit Method
interface configuration	From global configuration mode, use the **interface** command.	`WAE(config-if)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
standard ACL configuration	From global configuration mode, use the **ip access-list standard** command.	`WAE(config-std-nacl)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
extended ACL configuration	From global configuration mode, use the **ip access-list extended** command.	`WAE(config-ext-nacl)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
preposition configuration	From global configuration mode, use the **accelerator cifs preposition** command.	`WAE(config-preposition)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
virtual blade configuration	From global configuration mode, use the **virtual-blade** command.	`WAE(config-vb)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
PKI certificate authority configuration	From global configuration mode, use the **crypto pki ca** command.	`WAE(config-ca)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
PKI global settings configuration	From global configuration mode, use the **crypto pki global-settings** command.	`WAE(config-pki-global-settings)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
SSL accelerated service configuration	From global configuration mode, use the **crypto ssl service accelerated-service** command.	`WAE(config-ssl-accelerated)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
SSL cipher list configuration	From global configuration mode, use the **crypto ssl cipher-list** command.	`WAE(config-cipher-list)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
SSL global service configuration	From global configuration mode, use the **crypto ssl services global-settings** command.	`WAE(config-ssl-global)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.

Table 1-1 WAAS Command Modes Summary (continued)

Command Mode	Access Method	Prompt	Exit Method
SSL host peering service configuration	From global configuration mode, use the **crypto ssl services host-service peering** command.	`WAE(config-ssl-peering)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.
SSL management service configuration	From global configuration mode, use the **crypto ssl management-service** command.	`WAE(config-ssl-mgmt)#`	To return to global configuration mode, use the **exit** command. To return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.

Device Mode

The WAAS software allows you to specify the device mode of a WAAS device. In a WAAS network, you must deploy a WAAS device in one of the following device modes:

- Central-manager mode—Mode required by the WAAS Central Manager device.
- Application-accelerator mode—(Default) Mode for a WAAS Accelerator (a branch or data center WAE) that is running the WAAS software. WAEs are used to optimize TCP traffic over your network. When client and server applications attempt to communicate with each other, the network intercepts and redirects this traffic to the WAEs so that they can act on behalf of the client application and the destination server. The WAEs examine the traffic and use built-in application policies to determine whether to optimize the traffic or allow it to pass through your network unoptimized.

Note Because WAAS Central Manager must be deployed on a dedicated appliance, a WAAS device can operate only in one device mode: either in central-manager mode or application-accelerator mode.

The set of WAAS CLI commands that are available vary based on the device mode of the WAAS device.

Changing the Device Mode

To change the device mode of a WAAS device, use the **device mode** global configuration command as follows:

```
waas-cm(config)# device mode ?
  application-accelerator  Configure device to function as a WAAS Engine.
  central-manager          Configure device to function as a WAAS Central Manager.
```

For example, after you use the WAAS CLI to specify the basic network parameters for the designated WAAS Central Manager (the WAAS device named waas-cm) and assign it as a primary interface, you can use the **device mode** configuration command to specify its device mode as central-manager.

```
waas-cm# configure
waas-cm(config)#
waas-cm(config)# primary-interface gigabitEthernet 1/0
waas-cm(config)# device mode central-manager
waas-cm(config)# exit
waas-cm# copy run start
waas-cm# reload
Proceed with reload?[confirm] y
```

```
Shutting down all services, will Reload requested by CLI@ttyS0.
Restarting system.
```

To display the current mode that the WAAS device is operating in, enter the **show device-mode current** EXEC command:

```
WAE# show device-mode current
Current device mode: application-accelerator
```

Displaying the Configured Device Mode

You can display the configured device mode for a change that has not taken effect by using the **show device-mode configured** EXEC command.

For example, if you changed the device mode to central-manager on a WAAS device (using the **device mode central-manager** global configuration command), but did not save the running configuration (using the **copy run start** EXEC command) then, even though the new device mode has not taken effect, the output for the **show device-mode configured** command would indicate that the configured device mode is central-manager:

```
WAE# show device-mode configured
Configured device mode: central-manager
```

Using Command-Line Processing

Cisco WAAS software commands are not case sensitive. You can abbreviate commands and parameters as long as they contain enough letters to be different from any other currently available commands or parameters.

You can also scroll through the last 20 commands stored in the history buffer and enter or edit the command at the prompt. Table 1-2 lists and describes the function performed by the available WAAS command-line processing options.

Table 1-2 Command-Line Processing Keystroke Combinations

Keystroke Combinations	Function
Ctrl-A	Jumps to the first character of the command line.
Ctrl-B or the Left Arrow key	Moves the cursor back one character.
Ctrl-C	Escapes and terminates prompts and tasks.
Ctrl-D	Deletes the character at the cursor.
Ctrl-E	Jumps to the end of the current command line.
Ctrl-F or the Right Arrow key[1]	Moves the cursor forward one character.
Ctrl-K	Deletes from the cursor to the end of the command line.
Ctrl-L	Repeats the current command line on a new line.
Ctrl-N or the Down Arrow key[1]	Enters the next command line in the history buffer.
Ctrl-P or the Up Arrow key[1]	Enters the previous command line in the history buffer.
Ctrl-T	Transposes the character at the cursor with the character to the left of the cursor.

Table 1-2 Command-Line Processing Keystroke Combinations (continued)

Keystroke Combinations	Function
Ctrl-U; Ctrl-X	Deletes from the cursor to the beginning of the command line.
Ctrl-W	Deletes the last word typed.
Esc-B	Moves the cursor back one word.
Esc-D	Deletes from the cursor to the end of the word.
Esc-F	Moves the cursor forward one word.
Delete key or Backspace key	Erases a mistake when entering a command; you must re-enter the command after using this key.

1. The arrow keys function only on ANSI-compatible terminals such as VT100s.

Checking Command Syntax

The caret symbol (^) indicates that you have entered an incorrect command, keyword, or argument at a specific point in the command string.

To set the clock, for example, you can use context-sensitive help to check the syntax for setting the clock.

```
WAE# clock 1222
                ^
%Invalid input detected at '^' marker.
WAE# clock ?
    read-calendar    Read the calendar and update system clock
    set              Set the time and date
    update-calendar  Update the calendar with system clock
```

The help output shows that the **set** keyword is required. You can then check the syntax for entering the time.

```
WAE# clock set ?
    <0-23>:  Current Time (hh:mm:ss)
```

Enter the current time in 24-hour format with hours, minutes, and seconds separated by colons.

```
WAE# clock set 13:32:00
% Incomplete command.
```

The system indicates that you need to provide additional arguments to complete the command. Press the **Up Arrow** to automatically repeat the previous command entry, and then add a space and question mark (?) to display the additional arguments.

```
WAE# clock set 13:32:00 ?
    <1-31> Day of the month
    april
    august
    december
    february
    january    Month of the Year
    july
    june
    march
    may
    november
    october
    september
```

Enter the day and month as prompted, and use the question mark for additional instructions.

```
WAE# clock set 13:32:00 23 December ?
    <1993-2035>  Year
```

Now you can complete the command entry by entering the year.

```
WAE# clock set 13:32:00 23 December 05
                                    ^
%Invalid input detected at '^' marker.
WAE#
```

The caret symbol (^) and help response indicate an error with the 05 entry. To display the correct syntax, press **Ctrl-P** or the **Up Arrow**. You can also reenter the command string, and then enter a space character, a question mark, and press **Enter**.

```
WAE# clock set 13:32:00 23 December ?
<1993-2035> Year
WAE# clock set 13:32:00 23 December
```

Enter the year using the correct syntax, and press **Return** to execute the command.

```
WAE# clock set 13:32:00 23 December 2005
WARNING: Setting the clock may cause a temporary service interruption.
Do you want to proceed? [no] yes
Sat Dec 23 13:32:00 EST 2005
WAE#
```

Using the no Form of Commands

Almost every configuration command has a no form. The **no** form of a command is generally used to disable a feature or function, but it can also be used to set the feature or function to its default values. Use the command without the **no** keyword to reenable a disabled feature or to enable a feature that is disabled by default.

Using System Help

You can obtain help when you enter commands by using the following methods:

- For a brief description of the context-sensitive help system, enter **help**.
- To list all commands for a command mode, enter a question mark (**?**) at the system prompt.
- To obtain a list of commands that start with a particular character set, enter an abbreviated command immediately followed by a question mark (**?**).

  ```
  WAE# cl?
      clear clock
  ```

- To list the command keywords or arguments, enter a space and a question mark (**?**) after the command.

  ```
  WAE# clock ?
      read-calendar    Read the calendar and update system clock
      set              Set the time and date
      update-calendar  Update the calendar with system clock
  ```

Saving Configuration Changes

To avoid losing new configurations, save them to NVRAM using the **copy** or **write** commands, as shown in the following example:

```
WAE# copy running-config startup-config
```

or

```
WAE# write
```

See the **copy running-config startup-config** and **write** commands for more information about running and saved configuration modes.

WAAS Directories on a WAE

This section describes how to navigate the WAAS directories on a WAE and provides directory descriptions useful for troubleshooting and monitoring the WAE.

Navigating WAAS Directories

The WAAS CLI provides several commands for navigating among directories and viewing their contents. These commands are entered from privileged EXEC mode. Table 1-3 lists and describes these commands.

Table 1-3 WAAS Navigation Commands

Command	Description
cd [*directory-name*]	Change Directory—Moves you from the current directory to the specified directory in the WAAS tree. If no directory is specified, **cd** takes you up one directory.
deltree *directory-name*	Remove Directory Tree—Deletes the specified directory and all subdirectories and files without displaying a warning message to you.
dir [*directory-name*]	Show Directory—Lists the size, date of last changes, and the name of the specified directory (or all directories if one is not specified) within the current directory path. The output from this command is the same as the **lls** command.
ls [*directory-name*]	Show Directory Names—Lists the names of directories in the current directory path.
lls [*directory-name*]	Show Directory—Lists the size, the date of the last changes, and the name of the specified directory (or all directories if one is not specified) within the current directory path. The output from this command is the same as the **dir** command.
mkdir *directory-name*	Create Directory—Creates a directory of the specified name in the current directory path.

Table 1-3 WAAS Navigation Commands (continued)

Command	Description
pwd	Present Working Directory—Lists the complete path from where this command is entered.
rmdir *directory-name*	Delete Directory—Removes the specified directory from the current directory path. All files in the directory must first be deleted before the directory can be deleted.

The following example displays a detailed list of all the files for the WAE's current directory:

```
WAE# dir
size          time of last change                name
------------  -------------------------          -----------
         4096  Fri Feb 24 14:40:00 2006  <DIR>    actona
         4096  Tue Mar 28 14:42:44 2006  <DIR>    core_dir
         4096  Wed Apr 12 20:23:10 2006  <DIR>    crash
         4506  Tue Apr 11 13:52:45 2006           dbupgrade.log
         4096  Tue Apr  4 22:50:11 2006  <DIR>    downgrade
         4096  Sun Apr 16 09:01:56 2006  <DIR>    errorlog
         4096  Wed Apr 12 20:23:41 2006  <DIR>    logs
        16384  Thu Feb 16 12:25:29 2006  <DIR>    lost+found
         4096  Wed Apr 12 03:26:02 2006  <DIR>    sa
        24576  Sun Apr 16 23:38:21 2006  <DIR>    service_logs
         4096  Thu Feb 16 12:26:09 2006  <DIR>    spool
      9945390  Sun Apr 16 23:38:20 2006           syslog.txt
     10026298  Thu Apr  6 12:25:00 2006           syslog.txt.1
     10013564  Thu Apr  6 12:25:00 2006           syslog.txt.2
     10055850  Thu Apr  6 12:25:00 2006           syslog.txt.3
     10049181  Thu Apr  6 12:25:00 2006           syslog.txt.4
         4096  Thu Feb 16 12:29:30 2006  <DIR>    var
          508  Sat Feb 25 13:18:35 2006           wdd.sh.signed
```

The following example displays only the detailed information for the logs directory:

```
WAE# dir logs
size          time of last change             name
------------  -------------------------          -----------
         4096  Thu Apr  6 12:13:50 2006  <DIR>    actona
         4096  Mon Mar  6 14:14:41 2006  <DIR>    apache
         4096  Sun Apr 16 23:36:40 2006  <DIR>    emdb
         4096  Thu Feb 16 11:51:51 2006  <DIR>    export
           92  Wed Apr 12 20:23:20 2006           ftp_export.status
         4096  Wed Apr 12 20:23:43 2006  <DIR>    rpc_httpd
            0  Wed Apr 12 20:23:41 2006           snmpd.log
         4096  Sun Mar 19 18:47:29 2006  <DIR>    tfo
```

Directory Descriptions

Several top-level directories of the WAAS software contain information used internally by the software and are not useful to you. These directories include the core_dir, crash, downgrade, errorlog, lost+found, sa, service_logs, spool, and var directories.

Table 1-4 describes the directories that contain information that is useful for troubleshooting or monitoring.

Table 1-4 WAAS Directory Descriptions

Directory/File Name	Contents
actona	This directory contains the current software image installed on the WAAS device and any previous images that were installed.
logs	This directory contains application-specific logs used in troubleshooting. The *actona* subdirectory contains the commonly used Manager.log, Utilities.log, and Watchdog.log log files. See the *Cisco Wide Area Application Services Configuration Guide* for more details about how these log files are used.
syslog.txt	This file is the central repository for log messages. Important messages about the operation of WAAS or its components are sometimes logged in this file. They are often intermingled with routine messages that require no action. You may be requested to provide this file, the output of the **show tech-support** EXEC command, and perhaps other output to Cisco TAC personnel if a problem arises.

Note The WAAS software uses the CONTENT file system for both the CIFS file system and the data redundancy elimination (DRE) cache.

Managing WAAS Files Per Device

The WAAS CLI provides several commands for managing files and viewing their contents per device. These commands are entered from privileged EXEC mode. Table 1-5 describes the WAAS file management commands.

Table 1-5 WAAS File Management Commands

Command	Description
copy {*source* | *image*}	Copy—Copies the selected source file, image, or configuration information: • cdrom—Copies the file from the CDROM. • compactflash—Copies the file from the CompactFlash card. • disk—Copies the configuration or file from the disk. • ftp—Copies the file from the FTP server. • http—Copies the file from the HTTP server. • running-config—Copies information from the current system configuration. • startup-config—Copies information from the startup configuration. • sysreport—Copies system information. • system-status—Copies the system status for debugging reference. • tech-support—Copies system information for technical support. • tftp—Copies the software image from the TFTP server.
cpfile *source-filename destination-filename*	Copy File—Makes a copy of a source file, and puts it in the current directory.
delfile *filename*	Remove File—Deletes the specified file from the current directory path.
less *filename*	Display File Using LESS—Displays the specified file on the screen using the LESS program. The filename is case sensitive. Enter **q** to stop viewing the file and return to the directory.
mkfile *filename*	Create File—Creates a file of the specified name in the current directory path.
rename *old-filename new-filename*	Rename File—Renames the specified file with a new filename.
type *filename*	Display File—Displays the content of the specified file on the screen.
type-tail *filename* [*line* | follow | | {begin *LINE* | exclude *LINE* | include *LINE*}]	Display End of File—Displays the last few lines of the specified file. Can also be used to view the last lines of a file continuously as new lines are added to the file, to start at a particular line in the file, or to include or exclude specific lines in the file.
find-pattern *pattern*	Find in a File—Searches a file for the specified pattern.

The following example shows how to save the currently running configuration to the startup configuration using the **copy** EXEC command:

```
WAE# copy running-config startup-config
```

The following example shows how to remove a file named sample from the directory named *test* using the **delfile** command:

```
WAE# cd test
WAE# ls
sample
sample2
WAE# delfile sample
WAE# ls
sample2
```

The following example shows how to view the last lines of the Watchdog.log file:

```
WAE# cd logs
WAE# cd actona
WAE# ls
Watchdog.log
WAE# type-tail Watchdog.log
[2006-01-30 15:13:44,769][FATAL] - System got fatal error going to restart.
[2006-03-19 18:43:08,611][FATAL] - System got fatal error going to restart.
[2006-03-19 19:05:11,216][FATAL] - System got fatal error going to restart.
WAE#
```