



Configuration

Related products: S2928F, S3700 Series, S5612, S5800 Series, S8500 Series, S9500 Series

Basic Configuration Commands

Table of Contents

| | |
|--|----|
| Basic Configuration Commands | i |
| Table of Contents..... | i |
| Chapter 1 System Management Commands..... | 1 |
| 1.1 Configuring File Management Commands | 1 |
| 1.1.1 copy | 1 |
| 1.1.2 delete..... | 2 |
| 1.1.3 dir | 3 |
| 1.1.4 ip address | 3 |
| 1.1.5 ip route | 4 |
| 1.1.6 show configuration | 5 |
| 1.1.7 format | 5 |
| 1.1.8 more..... | 6 |
| 1.2 Basic System Management Commands | 6 |
| 1.2.1 boot flash | 7 |
| 1.2.2 cd | 8 |
| 1.2.3 chinese | 8 |
| 1.2.4 date..... | 9 |
| 1.2.5 debug job | 10 |
| 1.2.6 english..... | 10 |

| | |
|--|----|
| 1.2.7 md | 11 |
| 1.2.8 pwd | 11 |
| 1.2.9 rd | 12 |
| 1.2.10 rename | 12 |
| 1.2.11 reboot | 13 |
| 1.2.12 alias | 14 |
| 1.2.13 boot system flash | 15 |
| 1.2.14 help | 16 |
| 1.2.15 history | 16 |
| 1.1.1 show | 18 |
| 1.2.16 show job | 19 |
| 1.2.17 show break | 21 |
| Chapter 2 Terminal Service Configuration Command | 22 |
| 2.1 Telnet Configuration Command | 22 |
| 2.1.1 telnet | 22 |
| 2.1.2 ip telnet | 24 |
| 2.1.3 ctrl-shift-6+x (the current connection is mounted) | 26 |
| 2.1.4 where | 27 |
| 2.1.5 resume | 28 |
| 2.1.6 disconnect | 30 |
| 2.1.7 clear telnet | 31 |

| | |
|---|----|
| 2.1.8 show telnet | 32 |
| 2.1.9 debug telnet..... | 32 |
| 2.2 Terminal Configuration Command..... | 33 |
| 2.2.1 attach-port..... | 34 |
| 2.2.2 autocommand | 35 |
| 2.2.3 clear line..... | 35 |
| 2.2.4 connect..... | 35 |
| 2.2.5 disconnect..... | 36 |
| 2.2.6 exec-timeout..... | 37 |
| 2.2.7 length..... | 37 |
| 2.2.8 line | 38 |
| 2.2.9 location..... | 38 |
| 2.2.10 login authentication | 39 |
| 2.2.11 monitor | 39 |
| 2.2.12 no debug all..... | 39 |
| 2.2.13 password | 40 |
| 2.2.14 resume | 41 |
| 2.2.15 show debug..... | 41 |
| 2.2.16 show line..... | 42 |
| 2.2.17 terminal length | 42 |
| 2.2.18 terminal monitor..... | 43 |

| | |
|--|----|
| 2.2.19 terminal width..... | 43 |
| 2.2.20 terminal-type | 44 |
| 2.2.21 where..... | 45 |
| 2.2.22 width | 45 |
| Chapter 3 Maintenance and Debugging Tool Commands..... | 47 |
| 3.1 Network Testing Tool Commands..... | 47 |
| 3.1.1 ping | 47 |
| 3.1.2 traceroute..... | 50 |
| 3.2 Fault Diagnosis Commands..... | 52 |
| 3.2.1 logging..... | 52 |
| 3.2.2 logging buffered | 53 |
| 3.2.3 logging console | 55 |
| 3.2.4 logging facility..... | 56 |
| 3.2.5 logging monitor | 58 |
| 3.2.6 logging on | 59 |
| 3.2.7 logging trap..... | 61 |
| 3.2.8 logging command | 62 |
| 3.2.9 logging source-interface | 63 |
| 3.2.10 logging history alerts | 63 |
| 3.2.11 logging history critical..... | 64 |
| 3.2.12 logging history debugging | 64 |

| | |
|--|----|
| 3.2.13 logging history emergencies..... | 65 |
| 3.2.14 logging history errors | 65 |
| 3.2.15 logging history informational..... | 66 |
| 3.2.16 logging history notifications..... | 66 |
| 3.2.17 logging history warnings..... | 67 |
| 3.2.18 logging history rate-limit | 67 |
| 3.2.19 logging history size..... | 68 |
| 3.2.20 service timestamps | 69 |
| 3.2.21 clear logging..... | 70 |
| 3.2.22 show break..... | 70 |
| 3.2.23 show debug..... | 72 |
| 3.2.24 show logging | 72 |
| Chapter 4 SSH Configuration Commands | 74 |
| 4.1.1 ip sshd enable..... | 74 |
| 4.1.2 ip sshd timeout..... | 74 |
| 4.1.3 ip sshd auth-method..... | 75 |
| 4.1.4 ip sshd access-class | 76 |
| 4.1.5 ip sshd auth-retries..... | 77 |
| 4.1.6 ip sshd clear | 77 |
| 4.1.7 ip sshd silence-period | 78 |
| 4.1.8 ip sshd sftp..... | 79 |

| | |
|----------------------------------|----|
| 4.1.9 ip sshd save | 79 |
| 4.1.10 ip sshd disable-aes | 80 |
| 4.1.11 ssh | 81 |
| 4.1.12 show ssh..... | 82 |
| 4.1.13 show ip sshd | 83 |

Chapter 1 System Management Commands

1.1 Configuring File Management Commands

- copy
- delete
- dir
- ip address
- ip route
- show configuration
- format
- more

1.1.1 copy

To read a file from the tftp server to a switch, use the **copy** command.

copy tftp<:filename> {flash<:filename>|rom} [ip_addr]

Parameter

| Parameter | Description |
|-------------------|--|
| tftp<:filename> | Read a file from the tftp server. Filename indicates the relevant filename. If not specified the filename, the system will prompt user to input the filename after executing the copy command. |
| flash <:filename> | Write a file to the flash memory of the switch. Filename indicates the relevant filename. If not specified the filename, the system will prompt user to input the filename after executing the copy command. |
| rom | Updates bootrom for the switch. |
| ip_addr | Specifies the IP address of tftp server. If not specified, the system will prompt user to input the IP address after executing the copy command. |

Default

None

Command mode

monitor mode

Instruction

None

Example

```
monitor#copy tftp:switch.bin flash:switch.bin 192.2.2.1
```

The example shows how to read the switch.bin from the tftp server to the flash memory of the switch:

Related commands

None

1.1.2 delete

To delete a file, use the **delete** command.

delete *file-name*

Parameter

| Parameter | Description |
|------------------|--|
| <i>file-name</i> | Specifies the filename (maximum 20 characters) |

Default

If not specified the file-name, the system will delete startup-config by default.

Command mode

monitor mode

Instruction

None

Related commands

None

1.1.3 **dir**

To display filename, use the **dir** command.

dir *file-name*

Parameter

| Parameter | Description |
|------------------|--|
| <i>file-name</i> | Specifies the filename (maximum 20 characters) |

Default

None

Command mode

monitor mode

Instruction

None

Related commands

None

1.1.4 **ip address**

To set an IP address for an Ethernet interface, use the **ip address** command.

ip address *ip-address mask*

Parameter

| Parameter | Description |
|-------------------|-----------------|
| <i>ip-address</i> | IP address |
| <i>mask</i> | IP network mask |

Default

None

Command mode

monitor mode

Instruction

None

Example

monitor#ip address 192.168.1.1 255.255.255.0

Related commands

ip route

ping

1.1.5 ip route

To specify a default gateway, use the **ip route** default command.

ip route default gw_ip_addr

Parameter

| Parameter | Description |
|-------------------|-------------------------|
| <i>gw_ip_addr</i> | Default gateway address |

Default

None

Command mode

Monitor mode

Instruction

None

Example

monitor#ip route default 192.168.1.3

Related commands

ip address

1.1.6 **show configuration**

To display the running configuration file, use the **show configuration** command.

show configuration

Parameter

None

Default

None

Command mode

monitor mode

Instrution

None

Related commands

None

1.1.7 **format**

To format file system, use the **format** command.

format

Parameter

None

Default

None

Command mode

EXEC

Instrution

All files in the file system will de deleted after executing the format command.

Related commands

None

1.1.8 more

To display the contents of a file, use the **more** command.

more *file-name*

Parameter

| Parameter | Description |
|------------------|--|
| <i>file-name</i> | Specifies the name of a file (maximum 20 characters) |

Default

None

Command mode

EXEC

Instrution

If all files are displayable characters, they will be displayed in ASCII format, or they will be displayed binary format.

Related commands

None

1.2 Basic System Management Commands

- bootflash
- cd
- chinese
- english
- chram
- date
- debub job
- md
- pwd
- rd
- rename

- reboot
- show break
- show memory
- alias
- boot system flash
- help
- history
- job
- jobd
- show alias
- show job

1.2.1 boot flash

To enable the system from the specified file in monitor mode, use the **boot flash** command.

boot flash *filename*

Parameter

| Parameter | Description |
|-----------------|----------------------|
| <i>filename</i> | Specified file name. |

Default

None

Command mode

monitor mode

Command mode

Use the boot flash command to enable the device after user entering the monitor mode.

Example

```
monitor#boot flash switch.bin
```

Related commands

None

1.2.2 cd

To change the current directory, use the **cd** command.

cd *directory* | ..

Parameter:

| Parameter | Description |
|------------------|--|
| <i>directory</i> | Name of the directory. (maximum 20 characters) |
| .. | Upper directory. |

Default

None

Command mode

Monitor mode

Command mode

None

Example

```
monitor#cd my_dir
```

Related commands

pwd

1.2.3 chinese

To switch command prompt to chinese mode, use the **chinese** command.

Parameter

None

Default

None

Command mode

monitor mode

Command mode

None

Example

None

Related commands

None

1.2.4 date

To set the absolute time, use the **date** command.

Parameter

None

Default

None

Command mode

Monitor mode

Command mode

This command is used to set the absolute time for the system. For the switch with a battery-powered clock, the clock will be powered by the battery. If the clock doesn't keep good time, you need to change the battery.

For the switch without a battery-powered clock, the system date is configured to July 1st, 1970 after the reboot of the switch, and user needs to set the current time each time when starting the switch.

Example

monitor#date

The current date is 2000-7-27 21:17:24

Enter the new date(yyyy-mm-dd):2000-7-27

Enter the new time(hh:mm:ss):21:17:00

Related commands

1.2.5 debug job

To track the debug condition of the job, run **debug job**.

Parameter

None

Command mode

EXEC

Instrution

Output the debug and execution condition of the job after turn on the debug switch of the job.

Example

```
config#debug job
```

```
JOB: <showver> fired
```

```
JOB: job <showver>, cmd "show ver" is parsing
```

Related commands

job

jobd

show job

1.2.6 english

To switch the command prompt to english mode, use the **english** command.

Parameter

None

Default

None

Command mode

monitor

Instruction

None

Example

None

Related commands

None

1.2.7 md

md *directory*

Parameter

| Parameter | Description |
|------------------|---|
| <i>directory</i> | Name of directory (maximum 20 characters) |

Default

None

Command mode

monitor

Instruction

To set a directory, use the **md** command

Related commands

None

1.2.8 pwd

Parameter

None

Default

None

Command mode

monitor mode

Instruction

To display the current directory, use the **pwd** command

Related commands

None

1.2.9 rd

rd *directory*

Parameter

| Parameter | Description |
|------------------|---|
| <i>directory</i> | Name of the directory(maximum 20 characters) |

Default

None

Command mode

monitor mode

Instruction

The system prompts if the directory is not empty. The system prompts if the directory doesn't exist. To delete a command, use the **rd** command.

Related commands

None

1.2.10 rename

To rename a file in a file system, use the **rename** command.

rename *old_file_name new_file_name*

Parameter

| Parameter | Description |
|----------------------|------------------------|
| <i>old_file_name</i> | The original filename. |
| <i>new_file_name</i> | The new filename. |

Default

None

Command mode

monitor mode

Instruction

None

Related commands

None

1.2.11 **reboot**

To reboot a switch, use the **reboot** command.

Parameter

None

Default

None

Command mode

monitor mode

Instruction

None

Related commands

None

1.2.12 alias**[no] history** [+ <count> / - <count> / clear]**Parameter**

| Parameter | Description |
|-----------|--|
| + <count> | To display the count<1-20> historial command from the beginning to the end |
| - <count> | To display the count<1-20> historial command from the end to the beginning |

Default

If there are no more than 20 commands executed, all historical command lines will be displayed from the beginning to the end. If there are more than 20 commands executed, all historical command lines will be displayed from the beginning to the end.

Comand mode

Random command mode

Explanation

The modularized switch can save up to 20 historical commands. You can invoke these commands with the "up" or "down" key or directly use it after edition. The command is used to browse the **history** command. You can run the **[no] history** command to delete the **history** command.

Example

The following example shows the latest five historical commands from the end to the beginning:

```
switch#history - 5
config
int e0/1
no ip addr
```

```
ip addr 192.2.2.49 255.255.255.0
exit
```

Related command

None

1.2.13 boot system flash

Run the **boot system flash** command to specify the systematic mirroring files when the system is started up. Run the **no boot system flash** command to delete the previous configuration.

boot system flash *filename*

no boot system flash *filename*

Parameter

| Parameter | Description |
|-----------------|--|
| <i>filename</i> | It is the specified filename, which contains no more than 20 characters. |

Default

None

Command mode

Global configuration mode

Instruction

If you have not configured the command, the system will execute the first systematic mirroring file in the flash file system. If you have configured multiple commands, the system will execute the mirroring files one by one. If the file does not exist or the check sum is wrong, the system will execute the next file. If both fail, the system will run at the monitoring state.

Example

```
config#boot system flash switch.bin
```

Related command

None

1.2.14 help

help

Parameter

None

Default

None

Command mode

Management mode

Instruction

The command is used to display the help system of the switch.

Example

After you enter the command, the help system of the switch is displayed.

```
switch# help
```

Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'interface e?').

Related command

None

1.2.15 history

The command is used to check the historical commands. Run the **[no] history** command to delete the historical commands.

[no] history [+ <count> / - <count> / clear]

Parameter

| Parameter | Description |
|------------------|---|
| + <count> | Displays the count<1-20> historial command from the beginning to the end. |
| - <count> | Displays the count<1-20> historial command from the end to the beginning. |

Default

If there are no more than 20 commands executed, all historical command lines will be displayed from the beginning to the end. If there are more than 20 commands executed, all historical command lines will be displayed from the beginning to the end.

Command mode

Abandom command mode

Instruction

The modularized switch can save up to 20 historical commands. You can invoke these commands with the "up" or "down" key or directly use it after edition.

Example

The following example shows the latest five commands from the end to the beginning:

```
switch#history - 5
config
int e1/1
no ip addr
ip addr 192.2.2.49 255.255.255.0
exit
```

Related command

N/A

1.1.1 show

To display the relevant information of the system, which or specific ones of which can be filtered through the filter, run the following command:

show <sub-command> [| <begin | include | exclude | redirect> <WORD> [SEPARATOR WORD]]

Parameter

| Parameter | Description |
|-----------------------|---|
| sub-command | Stands for a child command. |
| | Uses the output filter. |
| begin | Means to show the result of the show command starting with a specific word. |
| include | Means to show the sentences of the result of the show command containing a specific word. |
| exclude | Means not to show the lines of the result of the show command containing a specific word. |
| redirect | Redirects the result of the show command to the file in the designated file system. |
| WORD | Stands for a designated word, which is the designated filename as to the redirect command. |
| SEPARATOR WORD | Stands for the designated separator, which is space by default to separate the words. |

Default value

N/A

Command mode

the EXEC mode or the configuration mode

Explanation

This command can be used to filter the useless information in the

result of the **show** command, especially when the result is too much to read. For example, if you want to browse a designated MAC address in an MAC address table, which contains a lot of MAC addresses, this command will give you convenience for you.

Example

The following example shows how to display the lines, in which the word “interface” is contained, in the result of **show running-config**.

```
Switch#show running-config | include interface
Building configuration...
```

Current configuration:

```
!
interface GigaEthernet0/1
interface GigaEthernet0/2
interface GigaEthernet0/3
interface GigaEthernet0/4
interface GigaEthernet0/5
interface GigaEthernet0/6
interface GigaEthernet0/7
interface GigaEthernet0/8
```

Related command

N/A

1.2.16 show job

It is used to display the parameters of the job and the information about job execution:

show job {*parameter* | *status*}

Parameter

| Parameter | Description |
|------------------|--|
| <i>parameter</i> | Displays the parameters of the job. |
| <i>status</i> | Displays the execution state of the job. |

Default

None

Command mode

Management mode or configuration mode

Instruction

Run the **show job** command to browse the defined parameters and the dynamic execution state of the job.

Example

The following example shows how to display the parameters of the job:

```
switch_config#show job parameter
```

```
<showver> fires interval, first at 5, re-fires per 5 secs, on error stop
```

```
will do "show ver"
```

The following example shows how to display the dynamic execution state of the job:

```
Jobd disabled at 245218 seconds
```

```
Name:   job's name
```

```
Type:   None - Not scheduled, interval - Fire interval, one-shot - Fire once
```

```
Status: null - Not scheduled, idle - To fire first
```

```
started - Fired ever, to fire again, stopped - Can't fire
```

```
First:  first time to fire
```

```
Last:   last time of firing or restarting
```

```
Next-due: next time to fire(after now)
```

```
Times:  times fired ever
```

```
Cause:  auto - Automatic, error - Error meeting, command - By command
```

```
Job's status and statistics
```

```
=====
```

| Name | Type | State | First | Last | Next-due | Times | Cause |
|---------|----------|-------|-------|------|----------|-------|-------|
| ----- | | | | | | | |
| showver | interval | idle | 5 | * | * | 2 | auto |
| ----- | | | | | | | |

```
Total 1 jobs, 0 null, 1 idle, 0 started, 0 stopped
```

Related command

debug job

job

jobd

1.2.17 **show break**

It is used to display the abnormal information of the system. The system stores all abnormal information in the latest running. The abnormal information contains the times of abnormality, the stack content and the invoked functions when abnormality occurs.

Parameter

None

Default

None

Command mode

Monitoring state

Instruction

The command is only used for debugging.

Related command

None

Chapter 2 Terminal Service Configuration Command

2.1 Telnet Configuration Command

The chapter describes telnet and related commands. The **telnet** command is used to establish a session with the remote server. The **telnet** command is always working at the UNIX operating systems. Option negotiation is required. Telnet does not provide itself the login authentication. Telnet is different from Rlogin because telnet does not provide itself password check.

The following are telnet configuration commands:

- telnet
- ip telnet
- where
- disconnect
- resume
- switchkey
- switchmsg
- sequence-char
- clear Telnet
- show Telnet
- debug Telnet

2.1.1 telnet

The following is a command sentence for establishing a telnet session:

```
telnet server-ip-addr/server-host-name [/port port][/source-interface interface]  
[/local local-ip-addr] [/debug][/echo/noecho] [/script scriptname]
```

Parameter

| Parameter | Description |
|------------------|--|
| server-ip-addr | Dotted-decimal IP address of the remote server |
| server-host-name | Name of the remote server, which is configured by the ip host command |

| | |
|----------------------|--|
| <i>port</i> | Telnet port of the remote server |
| <i>interface</i> | Local interface where the telnet connection is originated |
| <i>local-ip-addr</i> | Local IP address where the telnet connection is originated |
| <i>/debug</i> | A negotiation process for opening the debug at the client side and printing the connection |
| <i>echo/noecho</i> | Enable or disable the local echo. The default value is noecho . |
| <i>scriptname</i> | A script name used for auto login |

Default

The default port number is 23. The interface has no default number.

Command mode

Management mode

Instruction

You can use one of the following command lines to establish a remote login.

```
telnet server-ip-addr/server-host-name
```

In this case, the application program directly sends the telnet login request to port 23 of the remote server. The local IP address is the IP address which is nearest to the peer and found by the routing table.

```
telnet server-ip-addr/server-host-name /port port
```

In this case, the application program sends a telnet login request to the port of the peer.

```
telnet server-ip-addr/server-host-name /source-interface interface
```

In this case, the application program uses the IP address on the interface as the local IP address.

```
telnet server-ip-addr/server-host-name /debug
```

In this case, the application program opens the debug and exports the connection at the client side.

```
telnet server-ip-addr/server-host-name echo/noecho
```

In this case, the application program enables or disables the local echo. The local echo is disabled by default. The echo is completed at the server side. Only when the server is not in charge of echo is the local echo enabled.

```
telnet server-ip-addr/server-host-name /script scriptname
```

Before executing the automatic login command of the script, run the command **ip telnet script** to configure the script.

The previous commands can be used together.

During the session with the remote server, you can press the **Q** button to exit the session. If the session is not manually closed, the session will be complete after a 10-second timeout.

Example

Suppose you want to telnet server 192.168.20.124, the telnet port of the server is port 23 and port 2323, and the local two interfaces are e1/1(192.168.20.240) and s1/0(202.96.124.240). You can run the following operations to complete the remote login.

1. telnet 192.168.20.124 /port 2323

In this case, the telnet connection with port 2323 of the peer is to be established. The local IP address of the peer is 192.168.20.240.

2. telnet 192.168.20.124 /source-interface s1/0

In this case, the telnet connection with port 23 of the peer is to be established. The local IP address of the peer is 202.96.124.240.

3. telnet 192.168.20.124 /local 192.168.20.240

In this case, the telnet connection with port 23 of the peer is to be established. The local IP address of the peer is 192.168.20.240.

4. telnet 192.168.20.124 /debug

In this case, the telnet connection negotiation with port 23 of the peer will be printed out.

5. telnet 192.168.20.124 /echo

In this case, the local echo is enabled. If the echo is also enabled at the server side, all input will be echoed twice.

6. telnet 192.168.20.124 /script s1

Use login script S1 for automatic login.

2.1.2 ip telnet

The following are the configuration command formats of the telnet session:

```
ip telnet source-interface vlan value
```

```
ip telnet access-class accesslist
```

```
ip telnet listen-port start-port [end-port]
```

```
ip telnet script scriptname 'user_prompt' user_answer 'pwd_prompt' pwd_answer
```


Parameter

| Parameter | Description |
|--------------------|--|
| <i>value</i> | Local interface where the telnet request is originated |
| <i>accesslist</i> | Access list name to limit the source address when the local client receives the connection |
| <i>start-port</i> | Starting port number designated at the listening port area |
| <i>end-port</i> | End port number designated at the listening port area |
| <i>scriptname</i> | Name of the login script |
| <i>user_prompt</i> | Username prompt returned by the telnet server |
| <i>user_answer</i> | Username response information from the client side |
| <i>pwd_prompt</i> | Password prompt returned by the telnet server |
| <i>pwd_answer</i> | Password response information submitted by the client side |

Default

None

Command mode

Global configuration

Instruction

- Run the following command to configure the local interface for originating the telnet connection:
`ip telnet source-interface interface`
In this case, all telnet connections originated afterwards are through the interface. The configuration command is similar to the command **telnet source-interface *interface***. However, the **telnet** command has no interface parameters followed. When the interface is configured and the **telnet** command has interface parameters, the interface followed the telnet command is used.
- Run the following command to configure the name of the access list which performs limitation on local telnet connection reception.
`ip telnet access-class accesslist`

In this case, the access list will be checked when the server accepts all telnet connections.

- Run the following command to configure a port, except the default port 23, to receive the telnet service.

ip telnet listen-port *start-port* [*end-port*]

Explanation: If the end port number is not designated, the listening will be executed at a specific port. The number of the designated ports cannot be bigger than 16 and the port number ranges between 3001 and 3999.

- Run the following command to configure the telnet login script.
ip telnet script s1 'login:' switch 'Password:' test

Explanation: When the script is configured, the username prompt and password prompt and their answers must be correctly matched, especially the prompt information is capital sensitive and has inverted comma ("). If one of them is wrongly configured, the automatic login cannot be performed.

Note:

You can add the NO prefix on the above four commands and then run them to cancel previous configuration.

Example

1. **ip telnet source-interface** s1/0

In this case, the s1/0 interface will be adopted to originate all telnet connections afterwards.

2. **ip telnet access-class** abc

In this case, all the received telnet connections use access list **abc** to perform the access list check.

3. **ip telnet listen-port** 3001 3010

Except port 23, all ports from port 3001 to port 3010 can receive the telnet connection.

4. **ip telnet script** s1 'login:' switch 'Password:' test

The login script **s1** is configured. The username prompt is **login:** and the answer is **switch**. The password prompt is **Password:** and the answer is **test**.

2.1.3 ctrl-shift-6+x (the current connection is mounted)

Run the following command to mount the current telnet connection:

ctrl-shift-6+x

Parameter

None

Default

None

Command mode

Any moment in the current telnet session

Instruction

You can use the shortcut key to mount the current telnet connection at the client side.

Example

```
switchA>telnet 192.168.20.1
```

```
Welcome to Multi-Protocol 2000 Series switch
```

```
switchB>ena
```

```
switchB#(press ctrl-shift-6+x)
```

```
switchA>
```

You press **ctrl-shift-6+x** to mount the telnet connection to switch B and return to the current state of switch A.

2.1.4 where

Run the following command to check the currently mounted telnet session:

where

Parameter

None

Default

None

Command mode

Global configuration

Instruction

You can use the command to check the mounted outward telnet connection at the client side. The displayed information contains the serial number, peer address, local address and local port.

Note:

The **where** command is different from the **show telnet** command. The former is used at the client side and the displayed information is the outward telnet connection. The latter is used at the server and the displayed information is the inward telnet connection.

Example

```
switchA>telnet 192.168.20.1
Welcome to Multi-Protocol 2000 Series switch
switchB>ena
switchB#(Press ctrl-shift-6+x)
switchA> telnet 192.168.20.2
Welcome to Multi-Protocol 2000 Series switch
switchC>ena
switchC#(Press ctrl-shift-6+x)
switchA>where
```

| NO. Port | Remote Addr | Remote Port | Local Addr | Local |
|-------------|--------------|-------------|------------|----------------|
| 1 20034 | 192.168.20.1 | | 23 | 192.168.20.180 |
| 2 20035 | 192.168.20.2 | | 23 | 192.168.20.180 |

Enter where at switch A. The mounted outward connection is displayed.

2.1.5 resume

It is used to resume the currently mounted outward telnet connection:

resume *no*

Parameter

| Parameter | Description |
|-----------|--|
| <i>no</i> | Number of the currently mounted telnet session that is checked |

| | |
|--|----------------------------------|
| | through the where command |
|--|----------------------------------|

Default

None

Command mode

Global configuration

Instruction

The command can be used to resume the currently mounted outward telnet connection at the client side.

Example

```
switchA>telnet 192.168.20.1
Welcome to Multi-Protocol 2000 Series switch
switchB>ena
switchB#( press ctrl-shift-6+x)
switchA> telnet 192.168.20.2
Welcome to Multi-Protocol 2000 Series switch
switchC>ena
switchC#( press ctrl-shift-6+x)
switchA>where
```

| NO. | Remote Addr | Remote Port | Local Addr | Local Port |
|-------|--------------|-------------|------------|----------------|
| 1 | 192.168.20.1 | | 23 | 192.168.20.180 |
| 20034 | | | | |
| 2 | 192.168.20.2 | | 23 | 192.168.20.180 |
| 20035 | | | | |

```
switchA>Resume 1
[Resuming connection 1 to 192.168.20.73 . . . ]
(enter)
switchB#
```

After you enter **where** at switch A and the mounted outward connection of switch A is displayed, enter **Resume1**. You will be prompted that connection 1 is resumed. The command prompts of switch B are displayed after the **Enter** key is pressed.

2.1.6 disconnect

The following command is used to clear the currently mounted outward telnet session:

disconnect *no*

Parameter

| Parameter | Description |
|-----------|---|
| <i>No</i> | Number of the currently mounted telnet session that is checked through the where command |

Default

None

Command mode

Global configuration

Instruction

The command can be used to clear the currently mounted outward telnet connection at the client side.

Note:

The **disconnect** command is different from the **clear telnet** command. The former is used at the client side and clears the outward telnet connection. The latter is used at the server and clears the inward telnet connection.

Example

```
switchA>telnet 192.168.20.1
Welcome to Multi-Protocol 2000 Series switch
switchB>ena
switchB#(press ctrl-shift-6+x)
switchA> telnet 192.168.20.2
Welcome to Multi-Protocol 2000 Series switch
switchC>ena
switchC#(press ctrl-shift-6+x)
switchA>where
```

| NO. | Remote Addr | Remote Port | Local Addr | Local Port |
|-----|-------------|-------------|------------|------------|
|-----|-------------|-------------|------------|------------|

```
1          192.168.20.1          23          192.168.20.180
20034
```

```
2          192.168.20.2          23          192.168.20.180
20035
```

```
switchA>disconnect 1
```

```
<Closing connection to 192.168.20.1> <y/n>y
```

Connection closed by remote host.

```
switchA>
```

After you enter **where** at switch A and the mounted outward connection of switch A is displayed, enter **disconnect 1**. You will be prompted whether the connection of switch B is closed. After you enter **Y**, the connection is closed.

2.1.7 clear telnet

The following is a command format to clear the telnet session at the server:

```
clear telnet no
```

Parameter

| Parameter | Description |
|-----------|--|
| <i>no</i> | Number of the telnet session that is displayed after the show telnet command is run |

Default

None

Command mode

Management mode

Instruction

The command is used to clear the telnet session at the server.

Example

```
clear telnet 1
```

The telnet session whose sequence number is 1 is cleared at the server.

2.1.8 show telnet

The following is a command format to display the telnet session at the server:

show telnet

Parameter

None

Default

None

Command mode

All command modes except the user mode

Instruction

The command is used to display the telnet session at the server. The displayed information includes the sequence number, peer address, peer port, local address and local port.

Example

Switch# show telnet

If you run the previous command, the result is shown as follows:

| NO. | Remote Addr | Remote Port | Local Addr | Local Port |
|-----|----------------|-------------|----------------|------------|
| 1 | 192.168.20.220 | 1097 | 192.168.20.240 | 23 |
| 2 | 192.168.20.180 | 14034 | 192.168.20.240 | 23 |

2.1.9 debug telnet

The following is a format of the **debug** command for the telnet session:

debug telnet

Parameter

None

Default

None

Command mode

Management mode

Instruction

The command is used to open the switch of the telnet debug.

If the switch of the telnet debug is opened, the negotiation processes of all the incoming telnet sessions are printed on the window that the debug command invokes. The **debug telnet** command is different from the **telnet debug** command. The former is to export the debug information of the telnet session connected to the server. The latter is to export the debug information of the telnet session that the client originates.

Example

```
debug telnet
```

The debug information of the telnet session that is connected to the server is displayed.

2.2 Terminal Configuration Command

The following are terminal configuration commands:

- attach-port
- autocommand
- clear line
- connect
- disconnect
- exec-timeout
- length
- line
- location
- login authentication
- monitor
- no debug all
- password
- printer enable
- printer start
- printer stop

- resume
- script activation
- script callback
- script connection
- script dialer
- script reset
- script startup
- sequence-char
- show debug
- show line
- show tty-status
- switchkey
- switchmsg
- terminal-type
- terminal monitor
- terminal width
- terminal length
- where
- width

2.2.1 attach-port

The following command is to bind the telnet listening port to the **line vty** number and enable the telnet connection at a specific port generates **vtty** according to the designated sequence number.

[no] attach-port *PORT*

Parameter

| Parameter | Description |
|-------------|---|
| <i>port</i> | Listening port of the telnet server (3001-3999) |

Default

None

Command mode

Line configuration mode

Example

Bind listening port 3001 to line vty 2 3.

```
switch_config# line vty 2 3
```

```
switch_config_line#attach-port 3001
```

2.2.2 autocommand

It is used to set the automatically-run command when user logs in to the terminal. The connection is cut off after the command is executed.

autocommand *LINE*

no autocommand

Parameter

| Parameter | Description |
|-------------|------------------------|
| <i>LINE</i> | Command to be executed |

Command mode

Line configuration mode

Example

```
switch_conf#line vty 1
```

```
switch_conf_line#autocommand pad 123456
```

After you successfully log in, the host whose X.121 address is 123456 will be automatically padded.

2.2.3 clear line

It is to clear the designated line.

clear line [*aux* | *tty* | *vty*] [*number*]

Parameter

Similar to the **line** command

Command mode

Management mode

Example

```
switch#clear line vty 0
```

2.2.4 connect

It is to connect the telnet server.

connect *server-ip-addr/server-host-name* {[/**port** *port*]/[**source-interface** *interface*]}
[/**local** *local-ip-addr*]

Parameter

| Parameter | Description |
|--|--|
| <i>server-ip-addr/server-host-name</i> | IP address of the server or the host name of the server |
| <i>port</i> | Port number |
| <i>interface</i> | Name of the interface where the connection is originated |
| <i>local-ip-addr</i> | Local IP address where the connection is originated |

Command mode

All configuration modes

Example

```
switch# connect 192.168.20.1
```

2.2.5 disconnect

It is used to delete the mounted telnet session.

disconnect *N*

Parameter

| Parameter | Description |
|-----------|--------------------------------------|
| <i>N</i> | Number of the mounted telnet session |

Command mode

All configuration modes

Example

```
switch#disconnect 1
```

2.2.6 exec-timeout

It is to set the maximum spare time for the terminal.

[no] exec-timeout [*time*]

Parameter

| Parameter | Description |
|-------------|---------------------------------|
| <i>time</i> | Spare time whose unit is second |

Default

0 (No time-out limitation)

Command mode

Line configuration mode

Example

Set the spare time of the line to one hour.

```
switch_config_line#exec-timeout 3600
```

2.2.7 length

It is used to set the line number on the screen of the terminal.

[no] length [*value*]

Parameter

| Parameter | Description |
|--------------|--|
| <i>value</i> | A value between 0 and 512 The value 0 means there is no pause. |

Default

24

Command mode

Line configuration mode

2.2.8 line

It is used to enter the line configuration mode.

line [**aux** | **console** | **tty** | **vty**] [*number*]

Parameter

| Parameter | Description |
|----------------|---|
| <i>aux</i> | Auxiliary line, which has only one number 0 |
| <i>console</i> | Monitoring line, which has only one number 0 |
| <i>tty</i> | Asynchronous line |
| <i>vty</i> | Virtual lines such as Telnet, PAD and Rlogin |
| <i>number</i> | Number in the line of the type |

Command mode

Global configuration

Example

The following example shows how to enter the line configuration mode of VTY 0 to 10.

```
switch_config#line vty 0 10
```

2.2.9 location

It is used to recoded the description of the current line.

location [*LINE*]

no location

Parameter

| Parameter | Description |
|-------------|---------------------------------|
| <i>LINE</i> | Description of the current line |

Command mode

Line configuration mode

2.2.10 login authentication

It is used to set line login authentication:

[no] line login authentication [default / WORD]

Parameter

| Parameter | Description |
|----------------|---------------------------------|
| Default | Default authentication mode |
| <i>WORD</i> | Name of the authentication list |

Command mode

Line configuration mode

Example

```
switch_conf_line#login authentication test
```

In the example, the authentication list of the line is set to **test**.

2.2.11 monitor

It is used to export the log and debugging information to the line:

[no] monitor

Parameter

None

Command mode

Line configuration mode

Example

```
switch_config_line#monitor
```

2.2.12 no debug all

It is used to shut down all debugging output of the current VTY:

no debug all

Parameter

None

Command mode

Management mode

Example

```
switch#no debug all
```

2.2.13 password

It is used to set the password for the terminal:

password {*password* | [encryption-type] *encrypted-password*}

no password

Parameter

| Parameter | Description |
|--|---|
| <i>password</i> | Password configured on the line, which is entered in the plaintext form and whose maximum length is 30 bits. |
| [encryption-type] <i>encrypted-password</i> | encryption-type means the encryption type of the password. Currently, MY COMPANY products only support two encryption modes: 0 and 7. The number 0 means the password is not encrypted and the plaintext of password is directly entered. It is the same as the way of directly entering the password. The number 7 means the password is encrypted through an algorithm defined by MY COMPANY. You need to enter the encryption text for the encrypted password. The encryption text can be copied from the configuration files of other switches. |

For password encryption, refer to the explanation of the commands **service password-encryption** and **enable password**.

Command mode

Line configuration mode

Example

```
switch_conf#line vty 1
```

```
switch_conf_line#password test
```

The previous example shows the login password of VTY1 is set to

test.

2.2.14 resume

It is used to resume the mounted telnet session:

resume *N*

Parameter

| Parameter | Description |
|-----------|--------------------------------------|
| <i>N</i> | Number of the mounted telnet session |

Command mode

All configuration modes

Example

```
switch#resume 1
```

2.2.15 show debug

It is used to display all debugging information of the current VTY:

show debug

Parameter

None

Command mode

Management mode or global configuration mode

Example

```
Switch# show debug
http authentication debug is on
http cli debug is on
http request debug is on
http response debug is on
http session debug is on
http erro debug is on
http file debug is on
```

TELNET:

Incoming Telnet debugging is on

2.2.16 **show line**

It is used to display the status of the current effective line:

show line {[**console** | **aux** / **tty** / **vty**] [*number*]}

Parameter

If there is no parameter followed, the status of all effective lines will be displayed.

The definition of other parameters is similar to that of the **line** command.

Command mode

All configuration modes except the user mode

2.2.17 **terminal length**

It is used to change the line number on the current terminal screen. The parameter can be obtained by the remote host. The rlogin protocol uses the parameter to notify the remote UNIX host. Run the **no terminal length** command to resume the default value:

terminal length *length*

no terminal length

Parameter

| Parameter | Description |
|---------------|--------------------------------------|
| <i>Length</i> | Line number displayed on each screen |

Default

Pause when 24 lines are displayed on the screen.

Command mode

Global configuration

Instruction

The command is effective only to the current terminal. When the session is complete, the terminal attribute is invalid.

Example

```
switch#terminal length 40
```

Related command

```
line
```

2.2.18 terminal monitor

It is used to display the debugging output information and system faulty information at the current terminal. The negative form of the command is used to disable the monitoring:

```
terminal monitor
```

```
no terminal monitor
```

Parameter

None

Default

The system monitoring port (console) is open by default. Other terminals are closed by default.

Command mode

Global configuration

Instruction

The command is effective only to the current terminal. When the session is complete, the terminal attribute is invalid.

Example

```
switch#terminal monitor
```

Related command

```
line
```

```
debug
```

2.2.19 terminal width

In default settings, the switch is to export 80 characters in each line. If the default settings cannot meet your requirements, you can reset it.

The parameter can be obtained by the remote host. Run the **terminal width** command to set the character number in each line. Run the **no terminal width** command to resume to the default value.

terminal width *number*

no terminal width

Parameter

| Parameter | Description |
|---------------|-------------------------------|
| <i>number</i> | Character number of each line |

Default

80 characters in each line

Command mode

Global configuration

Instruction

The command is effective only to the current terminal. When the session is complete, the terminal attribute is invalid.

Example

switch#terminal width 40

Related command

line

2.2.20 terminal-type

It is used to set the terminal type:

[no] terminal-type [*name*]

Parameter

| Parameter | Description |
|-------------|---|
| <i>Name</i> | Terminal name Terminal types currently supported are VT100, ANSI and |

| | |
|--|---------|
| | VT100J. |
|--|---------|

Default

ANSI

Command mode

Line configuration mode

2.2.21 where

It is used to check the currently mounted outward telnet session at the client side:

where

Parameter

None

Command mode

All configuration modes

Example

switch#where

2.2.22 width

It is used to set the terminal width of the line:

[no] width [*value*]

Parameter

| Parameter | Description |
|--------------|---|
| <i>Value</i> | A value between 0 and 512 The value 0 means no execution. |

Default

80

Command mode

Line configuration mode

Chapter 3 Maintenance and Debugging

Tool Commands

3.1 Network Testing Tool Commands

3.1.1 ping

It is used to test host accessibility and network connectivity. After the **ping** command is run, an ICMP request message is sent to the destination host, and then the destination host returns an ICMP response message.

ping [-f] [-i {source-ip-address | source-interface}] [-j host1 [host2 host3 ...]] [-k host1 [host2, host3 ...]] [-l length] [-n number] [-r hops] [-s tos] [-t ttl] [-v] [-w waittime] **host**

Parameter

| Parameter | Description |
|--------------------------|---|
| -f | <p>Sets the DF digit (message is not segmented).</p> <p>If the message required to be sent is larger than the MTU of the path, the message will be dropped by the routing switch on the path and the routing switch will then return an ICMP error message to the source host. If network performance has problems, one node in the network may be configured to a small MTU. You can use the -f option to decide the smallest MTU on the path.</p> <p>Default value: No resetting</p> |
| -i | <p>Sets the source IP address of the message or the IP address of an interface.</p> <p>Default value: Main IP address of the message-sending interface</p> |
| <i>source-ip-address</i> | Source IP address adopted by the message |

| | |
|--|--|
| <i>source-interface</i> | Message takes the IP address of the source-interface interface as the source address. |
| -j <i>host1</i> [<i>host2 host3...</i>] | Sets the relaxation source route. Default: Not set |
| -k <i>host1</i> [<i>host2 host3...</i>] | Sets the strict source route Default: Not set |
| -l <i>length</i> | Sets the length of ICMP data in the message. Default: 56 bytes |
| -n <i>number</i> | Sets the total number of messages. Default: 5 messages |
| -r <i>hops</i> | Records routes. Up to hops routes are recorded. Default: not record |
| -s <i>tos</i> | Sets IP TOS of the message to tos . Default: 0 |
| -t <i>ttl</i> | Sets IP TTL of the message to ttl . Default: 255 |
| -v | Detailed output Default: simple output |
| -w <i>waittime</i> | Time for each message to wait for response Default: 2 seconds |
| <i>host</i> | Destination host |

Command mode

Management mode, global configuration mode and interface configuration mode

Instruction

The command supports that the destination address is the broadcast address or the multicast address. If the destination address is the broadcast address (255.255.255.255) or the multicast address, the ICMP request message is sent on all interfaces that support broadcast or multicast. The routing switch is to export the addresses of all response hosts. By pinging multicast address 224.0.0.1, you can obtain the information about all hosts in directly-connected network segment that support multicast transmission.

Press the **Q** key to stop the **ping** command.

Simple output is adopted by default.

| Parameter | Description |
|-----------|--|
| ! | A response message is received. |
| . | Response message is not received in the timeout time. |
| U | The message that the ICMP destination cannot be reached is received. |
| Q | The ICMP source control message is received. |
| R | The ICMP redirection message is received. |
| T | The ICMP timeout message is received. |
| P | The ICMP parameter problem message is received. |

The statistics information is exported:

| Parameter | Description |
|------------------------|---|
| packets transmitted | Number of transmitted messages |
| packets received | Number of received response messages, excluding other ICMP messages |
| packet loss | Rate of messages that are not responded to |
| round-trip min/avg/max | Minimum/average/maximum time of a round trip (ms) |

Example

```
switch#ping -l 10000 -n 30 192.168.20.125
```

```
PING 192.168.20.125 (192.168.20.125): 10000 data bytes
```

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
--- 192.168.20.125 ping statistics ---
```

```
30 packets transmitted, 30 packets received, 0% packet loss
```

```
round-trip min/avg/max = 50/64/110 ms
```

3.1.2 traceroute

It is used to detect which routes have already reached the destination. You can transmit to the destination the UDP packets (or ICMP ECHO packets) of different TTLs to confirm which routes have come to the destination. Each router on this path has to deduct 1 from the TTL value before forwarding ICMP ECHO packets. Speaking from this aspect, TTL is an effective hop count. When the TTL value of a packet is deducted to zero, the router sends back to the source system the ICMP timeout message.

By checking the ICMP timeout message sent back by intermedial routers, you can confirm the routers. At the arrival of the destination, the traceroute sends a UDP packet whose port ID is larger than 30000; the destination node hence can only transmit back a Port Unreachable ICMP message. This reception of this message means the arrival of destination.

```
traceroute [-i source-ip-address ] [-m source-interface]] [-j host1 [host2 host3 ...]]
             [-k host1 [host2, host3 ...]] [-p port-number] [-q probe-count] [-r hops] [-t ttl] [-w waittime]
             [-x icmp] host
```

Parameter

| Parameter | Description |
|---|---|
| -i <i>source-ip-address</i> | Sets the source IP address of packet. |
| -m <i>source-interface</i> | Sets the packet-transmitted port. |
| -j <i>host1 [host2 host3...]</i> | Sets the loose source route.Default: Not set |
| -k <i>host1 [host2 host3...]</i> | Sets the strict source route. Default: Not set |
| -p <i>port-number</i> | Sets the ID of destination port that transmits UDP packets. Default value: 33434 |

| | |
|------------------------------|---|
| -q <i>probe-count</i> | Sets the number of packets that you detect each time. Default: 3 packets |
| -r <i>hops</i> | Records the routes (at most hops routes can be recorded). Default: The routes are not recorded. |
| -t <i>tll</i> | Sets the IP TTL of packets as TTL. Default: the minimum and maximum TTLs are 1 and 30 respectively. |
| -w <i>waittime</i> | Means the time that each packet waits for echo. Default value: 3 seconds |
| -x <i>icmp</i> | Sets the detection packet to be the ICMP ECHO packet. Default: UDP packet |
| <i>host</i> | Means the destination host. |

Command mode

EXEC or global configuration mode

Explanation

The UDP packet is used for detection by default, but you can run **-x icmp** to replace it with ICMP ECHO for detection.

If you want to stop traceroute, press **q** or **Q**.

By default, the simple output information is as follows.

| Parameter | Description |
|-----------|--|
| !N | Receives an ICMP-route unreachable packet. |
| !H | Receives an ICMP-host unreachable packet. |
| !P | Receives an ICMP-protocol unreachable packet. |
| !F | Receives an ICMP unreachable (need to be fragmented) packet. |
| !S | Receive an ICMP unreachable (failing to detect the source-station route) packet. |

The exported statistics information is as follows:

| Parameter | Description |
|-----------|-------------|
|-----------|-------------|

| | |
|--------------|---|
| hops max | Means the maximum detection hops (the threshold of ICMP). |
| byte packets | Stands for the size of each detection packet. |

Example

```
switch#traceroute 90.1.1.10
traceroute to 90.1.1.10 (90.1.1.10), 30 hops max, 36 byte packets
 1  90.2.2.1  0 ms  0 ms  0 ms
 2  90.1.1.10  0 ms  0 ms  0 ms
```

3.2 Fault Diagnosis Commands

The chapter describes the commands used for fault diagnosis. All the following commands are used to detect the reason of the fault. You can use other commands to remove the fault, such as the **debug** command.

The following are fault diagnosis commands:

- logging
- logging buffered
- logging console
- logging facility
- logging monitor
- logging on
- logging trap
- service timestamps
- clear logging
- show break
- show controller
- show debug
- show logging

3.2.1 logging

It is used to record the log information to the **syslog** server.

logging *A.B.C.D*

no logging *A.B.C.D*

Parameter

| Parameter | Description |
|----------------|--|
| <i>A.B.C.D</i> | IP address of the syslog server |

Default:

The log information is not recorded to the server.

Command mode

Global configuration

Instruction

It is used to record the log information to the designated **syslog** server.
It can be used for many times to designate multiple **syslog** servers.

Example

logging 192.168.1.1

Related command

logging trap

3.2.2 logging buffered

It is used to record the log information to the memory of the switch.

logging buffered [*size* | *level* | *dump*]

no logging buffered

Parameter

| Parameter | Description |
|--------------|--|
| <i>size</i> | Size of memory cache Value range: 4096-2147483647 Unit: byte |
| <i>level</i> | Information level of the log recorded to memory cache Refer to table 1. |

| | |
|------|---|
| dump | When the system has abnormality, the information in the current memory is currently recorded to the flash and the information is resumed after the system is restarted. |
|------|---|

Default

The information is not recorded to the memory cache.

Command mode

Global configuration

Instruction

The command records the log information to the memory cache of the switch. The memory cache is circularly used. After the memory cache is fully occupied, the latter information will cover the previous information.

You can use the **show logging** command to display the log information recorded in the memory cache of the switch.

Do not use big memory for it causes the shortage of memory.

Table 1 Level of log recording

| Prompt | Level | Description | Syslog Definition |
|----------------------|-------|----------------------------------|-------------------|
| emergencies | 0 | System unusable | LOG_EMERG |
| alerts | 1 | Immediate action needed | LOG_ALERT |
| critical | 2 | Critical conditions | LOG_CRIT |
| errors | 3 | Error conditions | LOG_ERR |
| warnings | 4 | Warning conditions | LOG_WARNING |
| notifications | 5 | Normal but significant condition | LOG_NOTICE |
| informational | 6 | Informational messages only | LOG_INFO |
| debugging | 7 | Debugging messages | LOG_DEBUG |

Related command

clear logging
show loggin

3.2.3 logging console

Run the command **logging console** to control the information volume displayed on the console.

Run the command **no logging console** to forbid the log information to be displayed on the console:

logging console *level*

no logging console

Parameter

| Parameter | Description |
|--------------|---|
| <i>level</i> | Information level of the logs displayed on the console Refer to table 2. |

Default

None

Command mode

Global configuration

Instruction

After the information level is specified, information of this level or the lower level will be displayed on the console.

Run the command **show logging** to display the currently configured level and the statistics information recorded in the log.

Table 2 Level of log recording

| Prompt | Level | Description | Syslog Definition |
|-------------|-------|-------------------------|-------------------|
| emergencies | 0 | System unusable | LOG_EMERG |
| alerts | 1 | Immediate action needed | LOG_ALERT |
| critical | 2 | Critical conditions | LOG_CRIT |

| | | | |
|---------------|---|----------------------------------|-------------|
| errors | 3 | Error conditions | LOG_ERR |
| warnings | 4 | Warning conditions | LOG_WARNING |
| notifications | 5 | Normal but significant condition | LOG_NOTICE |
| informational | 6 | Informational messages only | LOG_INFO |
| debugging | 7 | Debugging messages | LOG_DEBUG |

Example

logging console alerts

Related command

logging facility
show logging

3.2.4 logging facility

Run the command **logging facility** to configure to record specified error information. To restore to **local7**, run the command **no logging facility**.

logging facility *facility-type*
no logging facility

Parameter

| Parameter | Description |
|----------------------|------------------------------------|
| <i>facility-type</i> | Facility type Refer to table 3. |

Default

local7

Command mode

Global configuration

Instruction

Table 3 Facility type

| Type | Description |
|-----------------|---------------------------------------|
| auth | Authorization system |
| cron | Cron facility |
| daemon | System daemon |
| kern | Kernel |
| local0-7 | Reserved for locally defined messages |
| lpr | Line printer system |
| mail | Mail system |
| news | USENET news |
| sys9 | System use |
| sys10 | System use |
| sys11 | System use |
| sys12 | System use |
| sys13 | System use |
| sys14 | System use |
| syslog | System log |
| user | User process |
| uucp | UNIX-to-UNIX copy system |

Example

logging facility kern

Related command

logging console

3.2.5 logging monitor

Run the command **logging monitor** to control the information volume displayed on the terminal line.

Run the command **no logging monitor** to forbid the log information to be displayed on the terminal line.

logging monitor *level*

no logging monitor

Parameter

| Parameter | Description |
|--------------|---|
| <i>level</i> | Information level of the logs displayed on the terminal line Refer to table 4. |

Default

debugging

Command mode

Global configuration

Instruction

Table 4 Level of log recording

| Prompt | Level | Description | Syslog Definition |
|---------------|-------|----------------------------------|-------------------|
| emergencies | 0 | System is unusable | LOG_EMERG |
| alerts | 1 | Immediate action needed | LOG_ALERT |
| critical | 2 | Critical conditions | LOG_CRIT |
| errors | 3 | Error conditions | LOG_ERR |
| warnings | 4 | Warning conditions | LOG_WARNING |
| notifications | 5 | Normal but significant condition | LOG_NOTICE |

| | | | |
|---------------|---|-----------------------------|-----------|
| informational | 6 | Informational messages only | LOG_INFO |
| debugging | 7 | Debugging messages | LOG_DEBUG |

Example

logging monitor errors

Related command

terminal monitor

3.2.6 logging on

Run the command **logging on** to control the recording of error information.

Run the command **no logging on** to forbid all records.

logging on

no logging on

Parameter

None

Default

logging on

Command mode

Global configuration

Example

```
switch_config# logging on
switch_config# ^Z
switch#
Configured from console 0 by DEFAULT
switch# ping 192.167.1.1

switch#ping 192.167.1.1
PING 192.167.1.1 (192.167.1.1): 56 data bytes
!!!!
```

--- 192.167.1.1 ping statistics ---

5 packets transmitted, 5 packets received, 0% packet loss

round-trip min/avg/max = 0/4/10 ms

switch#IP: s=192.167.1.111 (local), d=192.167.1.1 (FastEthernet0/0),
g=192.167.1.1, len=84, sending

IP: s=192.167.1.1 (FastEthernet0/0), d=192.167.1.111 (FastEthernet0/0),
len=84,rcvd

IP: s=192.167.1.111 (local), d=192.167.1.1 (FastEthernet0/0), g=192.167.1.1,
len=84, sending

IP: s=192.167.1.1 (FastEthernet0/0), d=192.167.1.111 (FastEthernet0/0),
len=84,rcvd

IP: s=192.167.1.111 (local), d=192.167.1.1 (FastEthernet0/0), g=192.167.1.1,
len=84, sending

IP: s=192.167.1.1 (FastEthernet0/0), d=192.167.1.111 (FastEthernet0/0),
len=84,rcvd

IP: s=192.167.1.111 (local), d=192.167.1.1 (FastEthernet0/0), g=192.167.1.1,
len=84, sending

IP: s=192.167.1.1 (FastEthernet0/0), d=192.167.1.111 (FastEthernet0/0),
len=84,rcvd

IP: s=192.167.1.111 (local), d=192.167.1.1 (FastEthernet0/0), g=192.167.1.1,
len=84, sending

IP: s=192.167.1.1 (FastEthernet0/0), d=192.167.1.111 (FastEthernet0/0),
len=84,rcvd

switch_config# **no logging on**

switch_config# ^Z

switch#

switch# **ping** 192.167.1.1

PING 192.167.1.1 (192.167.1.1): 56 data bytes

!!!!

--- 192.167.1.1 ping statistics ---

5 packets transmitted, 5 packets received, 0% packet loss

round-trip min/avg/max = 0/4/10 ms

Related command

logging

logging buffered

logging monitor

logging console**3.2.7 logging trap**

Run the command **logging trap** to control the information volume recorded to the syslog server.

Run the command **no logging trap** to forbid the information to be recorded to the syslog server.

logging trap *level*

no logging trap

Parameter

| Parameter | Description |
|--------------|---|
| <i>level</i> | Information level of the logs displayed on the syslog server Refer to table 5. |

Default

Informational

Command mode

Global configuration

Instruction

Table 5 Level of log recording

| Prompt | Level | Description | Syslog Definition |
|-------------|-------|-------------------------|-------------------|
| emergencies | 0 | System is unusable | LOG_EMERG |
| alerts | 1 | Immediate action needed | LOG_ALERT |
| critical | 2 | Critical conditions | LOG_CRIT |
| errors | 3 | Error conditions | LOG_ERR |
| warnings | 4 | Warning conditions | LOG_WARNING |

| | | | |
|---------------|---|----------------------------------|------------|
| notifications | 5 | Normal but significant condition | LOG_NOTICE |
| informational | 6 | Informational messages only | LOG_INFO |
| debugging | 7 | Debugging messages | LOG_DEBUG |

Example

```
logging 192.168.1.1
logging trap notifications
```

Related command**logging****3.2.8 logging command**

To enable the command execution recording, run **logging command**. After this function is opened, a log will be generated for each of all entered commands, in which the line to execute this command, the command line, the execution result, the login line and the login address will be recorded.

You can use **no logging command** to disable this function.

Parameter

N/A

Default value

no logging command

Command mode

Global configuration mode

Example

```
Switch_config#logging command
Switch_config#Jul 11 15:26:56 %CMD-6-EXECUTE: `logging command` return 0, switch(vty
0, 192.168.25.42).
```

Related command

logging

3.2.9 logging source-interface

This command is used to set the source port of log exchange.
You can use **no logging source-interface** to disable this function.

Parameter

N/A

Default value

no logging source-interface

Command mode

Global configuration mode

Example

Switch_config# logging source-interface vlan 1

Related command

logging

3.2.10 logging history alerts

This command is used to set the level of the historical log table to **alerts** (need to act immediately).

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history alerts

Related command

logging

3.2.11 logging history critical

This command is used to set the level of the historical log table to **critical**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history critical

Related command

logging

3.2.12 logging history debugging

This command is used to set the level of the historical log table to **debugging**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history debugging

Related command

logging

3.2.13 logging history emergencies

This command is used to set the level of the historical log table to **emergencies**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history emergencies

Related command

logging

3.2.14 logging history errors

This command is used to set the level of the historical log table to **errors**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history errors

Related command

logging

3.2.15 logging history informational

This command is used to set the level of the historical log table to **informational**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history informational

Related command

logging

3.2.16 logging history notifications

This command is used to set the level of the historical log table to **notifications**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history notifications

Related command

logging

3.2.17 logging history warnings

This command is used to set the level of the historical log table to **warnings**.

Parameter

N/A

Default value

logging history warnings

Command mode

Global configuration mode

Example

Switch_config#logging history warnings

Related command

logging

3.2.18 logging history rate-limit

This command is used to set the log output rate.

Parameter

| Parameter | Description |
|-----------|---|
| <1-512> | Stands for the number of logs which are exported each second. |

Default value

logging history rate-limit 0

Command mode

Global configuration mode

Example

Switch_config#logging history rate-limit 256

Related command

logging

3.2.19 logging history size

This command is used to set the number of entries in the historical log table.

Parameter

| Parameter | Description |
|-----------|--|
| <0-500> | Stands for the number of historical log entries. |

Default value

logging history size 0

Command mode

Global configuration mode

Example

Switch_config#logging history size 256

Related command**logging****3.2.20 service timestamps**

Run the command **service timestamps** to configure the time stamp that is added when the system is debugged or records the log information.

Run the command **no service timestamps** to cancel the time stamp that is added when the system is debugged or records the log information.

service timestamps [log|debug] [*uptime*| *datetime*]

no service timestamps [log|debug]

Parameter

| Parameter | Description |
|-----------------|---|
| log | Adds the time stamp before the log information. |
| debug | Adds the time stamp before the debug information. |
| <i>uptime</i> | Duration between the startup of the switch and the current time |
| <i>datetime</i> | Real-time clock time |

Default

Service timestamps log date

Service timestamps debug date

Command mode

Global configuration

Instruction

The time stamp in the **uptime** form is displayed like HHHH:MM:SS, meaning the duration from the start-up of the switch to the current time. The time stamp in the **date** form is displayed like YEAR-MON-DAY HH:MM:SS, meaning the real-time clock time.

Example

Service timestamps debug uptime

3.2.21 clear logging

It is used to clear the log information recorded in the memory cache.

clear logging

Parameter

None

Command mode

Management mode

Related command

logging buffered

show logging

3.2.22 show break

It is used to display the information about abnormal breakdown of the switch.

show break [*map-filename*]

Parameter

| Parameter | Description |
|---------------------|---|
| <i>map-filename</i> | Specifies the filename of the function mapping table. |

Default

None

Command mode

Management mode

Instruction

It is used to display the information about abnormal breakdown of the switch, helping to find the cause of the abnormality.

Example

```
switch#sh break
Exception Type:1400-Data TLB error
BreakNum: 1 s date: 2000-1-1 time: 0:34:6
r0      r1      r2      r3      r4      r5      r6
00008538-01dbc970-0054ca18-00000003-80808080-fefefeff-01dbcca1-
r7      r8      r9      r10     r11     r12     r13
00000000-00009032-00000000-7fffff0-00008588-44444444-0054c190-
r14     r15     r16     r17     r18     r19     r20
000083f4-000083f4-00000000-00000000-00000000-00000000-00000000-
r21     r22     r23     r24     r25     r26     r27
00000000-0000000a-00000001-00000000-00000000-004d6ce8-01dbd15c-
r28     r29     r30     r31     spr8     spr9     ip
00000002-00467078-00010300-00000300-00000310-00008588-00000370-
Variables :
00008538-44444444-01dbd15c-01dbcaac-00000002-00000000-004d6ce8-
01dbca18-
00008538 --- do_chram_mem_sys_addr---bspcfg.o
0001060c --- subcmd---cmdparse.o---libcmd.a
000083e4 --- do_chram_mem_sys---bspcfg.o
0000fb24 --- lookupcmd---cmdparse.o---libcmd.a
0000f05c --- cmdparse---cmdparse.o---libcmd.a
003e220c --- vty---vty.o---libvty.a
00499820 --- pSOS_qcv_broadcast---ksppc.o---os\libsos.a
```

The whole displayed content can be divided into six parts:

1 RROR:file function.map not found

The prompt information means that the system has not been installed the software **function.map**, which does not affect the system running. If the version of the software **function.map** is not consistent with that of the switch, the system prompts that the version is not consistent.

2 Exception Type—Abnormal hex code plus abnormal name

3 BreakNum

It is the current abnormal number. It means the number of abnormalities that the system has since it is powered on in the latest time. It is followed by the time when the abnormality occurs.

4 Content of the register

The common content of the register is listed out.

5 Variable area

The content in the stack is listed out.

6 Calling relationship of the number

If the **map** file is not installed on the system, only the function's address is displayed. If the **map** file is installed on the system, the corresponding function name, **.o** file name and **.a** file name are displayed.

The calling relationship is from bottom to top.

3.2.23 **show debug**

It is used to display all the enabled debugging options of the switch.

show debug

Parameter

None

Command mode

Management mode

Example

```
switch# show debug
```

Crypto Subsystem:

Crypto Ipsec debugging is on

Crypto Isakmp debugging is on

Crypto Packet debugging is on

Related command

debug

3.2.24 **show logging**

It is used to display the state of logging (syslog).

show logging

Parameter

None

Command mode

Management mode

Instruction

It is used to display the state of logging (syslog), including the login information about the console, monitor and syslog.

Example

```
switch# show logging
```

```
Syslog logging: enabled (0 messages dropped, 0 flushes, 0 overruns)
```

```
  Console logging: level debugging, 12 messages logged
```

```
  Monitor logging: level debugging, 0 messages logged
```

```
  Buffer logging: level debugging, 4 messages logged
```

```
  Trap logging: level informations, 0 message lines logged
```

```
Log Buffer (4096 bytes):
```

```
2000-1-4 00:30:11 Configured from console 0 by DEFAULT
```

```
2000-1-4 00:30:28 User DEFAULT enter privilege mode from console 0, level = 15
```

Related command

clear logging

Chapter 4 SSH Configuration Commands

4.1.1 ip sshd enable

Command description

`ip sshd enable`
`no ip sshd enable`

Parameter

None

Default

1024 bits

Instruction

It is used to generate the rsa encryption key and then monitor the connection to the ssh server. The process of generating encryption key is a process of consuming the calculation time. It takes one or two minutes.

Command mode

Global configuration mode

Example

In the following example, the SSH service is generated.
device_config#ip sshd enable

4.1.2 ip sshd timeout

Command description

`ip sshd timeout time-length`
`no ip timeout`

Parameter

| Parameter | Description |
|-----------|-------------|
|-----------|-------------|

| | |
|-------------|---|
| time-length | Maximum time from the establishment of connection to the authentication approval Value range: 60-65535 |
|-------------|---|

Default

180 seconds

Instruction

To prevent the illegal user from occupying the connection resources, the connections that are not approved will be shut down after the set duration is exceeded.

Command mode

Global configuration mode

Example

In the following example, the timeout time is set to 360 seconds:

```
device_config#ip sshd timeout 360
```

4.1.3 ip sshd auth-method

Command description

ip sshd auth-method *method*

no sshd auth-method

Parameter

| Parameter | Description |
|-----------|----------------------------------|
| method | Sets authentication method list. |

Default

The **default** authentication method list is used.

Instruction

The ssh server uses the authentication method list of the login type.

Command mode

Global configuration mode

Example

In the following example, an **auth-ssh** authentication method list is configured and it is applied to the ssh server:

```
device_config#aaa authentication login auth-ssh local
```

```
device_config#ip sshd auth-method auth-ssh
```

4.1.4 ip sshd access-class

Command description

ip sshd access-class *access-list*

no ip sshd access-class

Parameter

| Parameter | Description |
|--------------------|-------------------------|
| <i>access-list</i> | Standard IP access list |

Default

No access control list

Instruction

It is used to configure the access control list for the ssh server. Only the connections complying with the regulations in the access control list can be approved.

Command mode

Global configuration mode

Example

In the following example, an **ssh-accesslist** access control list is configured and applied in the ssh server:

```
device_config# ip access-list standard ssh-accesslist
```

```
device_config_std_nacl#deny 192.168.20.40
```

```
device_config#ip sshd access-class ssh-accesslist
```

4.1.5 ip sshd auth-retries

Command description

ip sshd auth-retries *times*

no ip sshd auth-retries

Parameter

| Parameter | Description |
|--------------|---|
| <i>times</i> | Maximum re-authentication times Value range: 0-65535 |

Default

3 times

Instruction

The connection will be shut down when the re-authentication times exceeds the set times.

Command mode

Global configuration mode

Example

In the following example, the maximum re-authentication times is set to five times:

```
device_config#ip sshd auth-retries 5
```

4.1.6 ip sshd clear

Command description

ip sshd clear *ID*

Parameter

| Parameter | Description |
|-----------|--|
| ID | Number of the SSH connection to the local device Value range: 0-65535 |

Default

N/A

Instruction

It is used to mandatorily close the incoming ssh connection with the specified number. You can run the command **show ip sshd line** to check the current incoming connection's number.

Command mode

Global configuration mode

Example

In the following example, the No.0 incoming connection is mandatorily closed:

```
device_config#ip sshd clear 0
```

4.1.7 ip sshd silence-period**Syntax**

ip sshd silence-period *time-length*
no ip sshd silence-period

Parameter

| Parameter | Description |
|-------------|---|
| time-length | Means the time of the silence, which ranges from 0 to 3600. |

Default value

60s

Remarks

This command is used to set the login silence period. After the accumulated login failures exceed a certain threshold, the system regards that there exist attacks and disables the SSH service in a period of time, that is, the system enters the login silence period.

The silence period is set by the **ip sshd silence-period** command. The default silence period is 60 seconds. The allowable login failures are set by the **ip sshd auth-retries** command, whose default value is 6.

Command mode

Global configuration mode

Example

The following example shows how to set the silence period to 200 seconds.

```
switch_config#ip sshd silence-period 200
```

4.1.8 ip sshd sftp**Syntax**

```
ip sshd sftp  
no ip sshd sftp
```

Parameter

N/A

Default value

N/A

Remarks

This command is used to enable the SFTP function. The SFTP function refers to the secure file transmission system based on SSH, of which the authentication procedure and data transmission are encrypted. Though it has low transmission efficiency, network security is highly improved.

Command mode

Global configuration mode

Example

The following example shows how to enable the SFTP function.

```
switch_config#ip sshd sftp
```

4.1.9 ip sshd save**Syntax**

```
ip sshd save
```

no ip sshd save

Parameter

N/A

Default value

N/A

Remarks

This command is used to save the initial key. When the SSH server is restarted, the key will be first read from the flash; if the key reading is successful, the recalculation of key will be avoided and the startup time will be shortened.

Command mode

Global configuration mode

Example

The following example shows how to enable the key protection function.

```
switch_config#ip sshd save
```

4.1.10 ip sshd disable-aes**Syntax**

```
ip sshd disable-aes  
no ip sshd disable-aes
```

Parameter

N/A

Default value

The AES encryption algorithm is forbidden.

Remarks

This command is used to decide whether to use the AES algorithm during the encryption algorithm negotiation. The AES algorithms such as aes128-cbc and aes256-cbc are not used by default.

Command mode

Global configuration mode

Example

The following example shows how to disable the AES encryption algorithm.

```
switch_config#ip sshd disable-aes
```

4.1.11 ssh

Command description

```
ssh -l userid -d destIP [-c {des|3des|blowfish}] [-o  
numberofpasswdprompts] [-p port]
```

Parameter

| Parameter | Description |
|------------------------------------|--|
| -l <i>userid</i> | User account on the server |
| -d <i>destl</i> | Destination IP address in the dotted decimal system |
| -o numberofpasswdprompts | Re-authentication times after the first authentication fails Actual re-authentication times is the set value plus the smallest value set on the server. Its default value is three times. Value range: 0-65535 |
| -p <i>port</i> | Port number that the server monitors Its default value is 22. Value range: 0-65535 |
| -c {des 3des blowfish} | Encryption algorithm used during communication The encryption algorithm is 3des by default. |

Default

N/A

Instruction

The command is used to create a connection with the remote ssh server.

Command mode

Privileged mode

Example

In the following example, a connection with the ssh server whose IP address is 192.168.20.41 is created. The account is **zmz** and the encryption algorithm is **blowfish**:

```
device#ip ssh -l zmz -d 192.168.20.41 -c blowfish
```

4.1.12 show ssh**Command description**

show ssh

Parameter

None

Default value

N/A

Instruction

It is used to display the sessions on the ssh server.

Command mode

Privileged mode

Example

In the following example, the sessions on the ssh server are displayed:

```
device#show ssh
```

4.1.13 show ip sshd

Command description

show ip sshd

Parameter

None

Default value

N/A

Instrunction

It is used to display the current state of the ssh server.

Command mode

Privileged mode

Example

In the following example, the current state of the ssh server is displayed:

```
device#show ip sshd
```