

HP MSR2000/3000/4000 Router Series

Fundamentals

Command Reference (V7)

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Basic CLI commands

command-alias enable

Use **command-alias enable** to enable the command keyword alias function.

Use **undo command-alias enable** to disable the command keyword alias function.

Syntax

command-alias enable

undo command-alias enable

Default

The command keyword alias function is disabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

To make configured aliases take effect, enable the command keyword alias function.

To temporarily disable the aliases, disable the command keyword alias function. Disabling the command keyword alias function does not delete the configured aliases.

Examples

```
# Enable the command keyword alias function.
```

```
<Sysname> system-view
```

```
[Sysname] command-alias enable
```

Related commands

- **command-alias mapping**
- **display command-alias**

command-alias mapping

Use **command-alias mapping** to configure a command keyword alias.

Use **undo command-alias mapping** to delete a command keyword alias.

Syntax

command-alias mapping *cmdkey alias*

undo command-alias mapping *cmdkey*

Default

A command keyword has no alias.

Views

System view

Predefined user roles

network-admin

Parameters

cmdkey: Specifies the first keyword of a non-undo command or the second keyword of an **undo** command. You must enter the keyword in its complete form.

alias: Specifies an alias for the keyword. It must be different from the first keyword of any non-undo command and the second keyword of any **undo** command.

Usage guidelines

You can configure an alias for the first keyword of a non-undo command or the second keyword of an **undo** command. Then, when you execute a command that starts with the keyword or the **undo** keyword plus the keyword, you can use the alias. For example, if you configure **show** as the alias for the **display** keyword, you can enter **show clock** to execute the **display clock** command.

To use configured command keyword aliases, make sure the **command-alias enable** command is configured.

Examples

```
# Define show as the alias of the display keyword.  
<Sysname> system-view  
[Sysname] command-alias mapping display show
```

Related commands

- **command-alias enable**
- **display command-alias**

display | { begin | exclude | include }

Use **display** | { **begin** | **exclude** | **include** } to filter the output from a **display** command with a regular expression.

Syntax

```
display command | { begin | exclude | include } regular-expression
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

command: Specifies the keywords and arguments of a **display** command. To display available keywords and arguments, enter **display ?**.

begin: Displays the first line matching the specified regular expression and all subsequent lines.

exclude: Displays all lines not matching the specified regular expression.

include: Displays all lines matching the specified regular expression.

regular-expression: Specifies a regular expression, a case-sensitive string of 1 to 256 characters.

Usage guidelines

Use the | { **begin** | **exclude** | **include** } *regular-expression* option with a **display** command to filter the command output. For more information about regular expressions, see *Fundamentals Configuration Guide*.

Examples

```
# Display the lines that contain "vlan" in the running configuration.
<Sysname> display current-configuration | include vlan
vlan 1
vlan 999
port access vlan 999
```

display | by-linum

Use **display | by-linum** to number each output line for a **display** command.

Syntax

display *command* | **by-linum**

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

command: Specifies the keywords and arguments of a **display** command. To display available keywords and arguments, enter **display ?**.

Usage guidelines

By numbering each output line from a **display** command, you can easily identify the lines of interest.

Each line number is displayed as a 5-character string and might be followed by a colon (:) or hyphen (-). If you specify the | **by-linum** option and the | **begin** *regular-expression* option for a **display** command, a hyphen is displayed for all lines that do not match the regular expression.

Examples

```
# Display VLAN 999 settings, with each output line identified by a number.
<Sysname> display vlan 999 | by-linum
1:  VLAN ID: 999
2:  VLAN type: Static
3:  Route interface: Configured
4:  IP address: 192.168.2.1
5:  Subnet mask: 255.255.255.0
6:  Description: For LAN Access
7:  Name: VLAN 0999
8:  Tagged ports:  None
```

```

    9:  Untagged ports:
    10:   Ethernet1/1

# Display the first line that begins with "user-group" in the running configuration and all of the following lines.
<Sysname> display current-configuration | by-linenum begin user-group
    114:  user-group system
    115-  #
    116-  return

```

display >

Use **display >** to save the output from a **display** command to a separate file.

Syntax

display *command* > *filename*

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

command: Specifies the keywords and arguments of a **display** command. To display available keywords and arguments, enter **display ?**.

filename: Specifies the name of the file that is used to save the output, a string of 1 to 63 characters.

Usage guidelines

The **display** commands show the configuration, statistics, and states of the device. You can use the **display >** command to save the output from a **display** command to a file for management purposes.

If the specified file does not exist, the system creates the file and then saves the output to the file. If the file already exists, the system overwrites the file.

Examples

Save VLAN 1 settings to a separate file named **vlan.txt**.

```
<Sysname> display vlan 1 > vlan.txt
```

Verify the content of the **vlan.txt** file.

```
<Sysname> more vlan.txt
```

```

VLAN ID: 1
VLAN type: Static
Route interface: Not configured
Description: VLAN 0001
Name: VLAN 0001
Tagged ports:   None
Untagged ports:
    Ethernet1/2

```

display >>

Use **display >>** to append the output from a **display** command to the end of a file.

Syntax

display *command* >> *filename*

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

command: Specifies the keywords and arguments of a **display** command. To display available keywords and arguments, enter **display ?**.

filename: Specifies the name of the file that is used to save the output, a string of 1 to 63 characters.

Usage guidelines

The **display** commands show the configuration, statistics, and states of the device. You can use **display >>** to save the output from a **display** command for management purposes.

If the specified file does not exist, the system creates the file and then saves the output to the file. If the file already exists, the system appends the output to the end of the file.

Examples

Append the VLAN 999 settings to the end of the **vlan.txt** file.

```
<Sysname> display vlan 999 >> vlan.txt
<Sysname>
```

Check the content of the **vlan.txt** file.

```
<Sysname> more vlan.txt
VLAN ID: 1
VLAN type: Static
Route interface: Not configured
Description: VLAN 0001
Name: VLAN 0001
Tagged ports:   None
Untagged ports:
    Ethernet1/2

VLAN ID: 999
VLAN type: Static
Route interface: Configured
IP address: 192.168.2.1
Subnet mask: 255.255.255.0
Description: For LAN Access
Name: VLAN 0999
Tagged ports:   None
Untagged ports:
```

display command-alias

Use **display command-alias** to display the status of the command keyword alias function and the configured command keyword alias.

Syntax

display command-alias

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display command keyword alias information.

```
<Sysname> display command-alias
```

```
Command alias is enabled
```

Index	Alias	Command key
1	ping1	ping
2	ssh1	ssh

Related commands

- **command-alias enable**
- **command-alias mapping**

display history-command

Use **display history-command** to display all commands that are saved in the command history buffer for your current CLI session.

Syntax

display history-command

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

The system automatically saves commands you have successfully executed to the command history buffer for your current CLI session. You can view them and execute them again.

By default, the system can save up to 10 commands in the buffer. You can use the **history-command max-size** command to change the buffer size.

Examples

```
# Display all commands saved in the command history buffer for your current CLI session.
<Sysname> display history-command
    system-view
    vlan 2
    quit
```

Related commands

history-command max-size

display history-command all

Use **display history-command all** to display all commands saved in the command history buffer for all CLI sessions.

Syntax

display history-command all

Views

Any view

Predefined user roles

network-admin
network-operator

Usage guidelines

The system automatically saves commands successfully executed by users to the command history buffer for all CLI sessions. Users can view them and execute them again.

The system can save up to 1024 commands in the command history buffer. When the number of commands reaches this limit, the earliest commands will be deleted to make room for the newly executed commands.

Examples

```
# Display all commands saved in the command history buffer for all CLI sessions.
<Sysname> display history-command all
    Date          Time          Terminal  Ip          User
    03/16/2012  20:03:33  vty0     192.168.1.26  **
    Cmd:dis his all

    03/16/2012  20:03:29  vty0     192.168.1.26  **
    Cmd:sys
```

Related commands

display history-command

display hotkey

Use **display hotkey** to display hotkey information.

Syntax

display hotkey

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display hotkey information.
```

```
<Sysname> display hotkey
```

```
----- Hotkeys -----  
          -Defined command hotkeys-  
CTRL_G display current-configuration  
CTRL_L display ip routing-table  
CTRL_O undo debugging all  
  
          -Undefined command hotkeys-  
CTRL_T NULL  
CTRL_U NULL  
  
          -System-reserved hotkeys-  
CTRL_A Move the cursor to the beginning of the line.  
CTRL_B Move the cursor one character to the left.  
CTRL_C Stop the current command.  
CTRL_D Erase the character at the cursor.  
CTRL_E Move the cursor to the end of the line.  
CTRL_F Move the cursor one character to the right.  
CTRL_H Erase the character to the left of the cursor.  
CTRL_K Abort the connection request.  
CTRL_N Display the next command in the history buffer.  
CTRL_P Display the previous command in the history buffer.  
CTRL_R Redisplay the current line.  
CTRL_V Paste text from the clipboard.  
CTRL_W Delete the word to the left of the cursor.  
CTRL_X Delete all characters from the beginning of the line to the cursor.  
CTRL_Y Delete all characters from the cursor to the end of the line.  
CTRL_Z Return to the User View.  
CTRL_] Kill incoming connection or redirect connection.  
ESC_B Move the cursor back one word.  
ESC_D Delete all characters from the cursor to the end of the word.  
ESC_F Move the cursor forward one word.
```

Related commands

hotkey

hotkey

Use **hotkey** to assign a command to a configurable hotkey.

Use **undo hotkey** to restore the default.

Syntax

```
hotkey { CTRL_G | CTRL_L | CTRL_O | CTRL_T | CTRL_U } command
```

```
undo hotkey { CTRL_G | CTRL_L | CTRL_O | CTRL_T | CTRL_U }
```

Default

- **Ctrl_G**: **display current-configuration** (display the running configuration).
- **Ctrl_L**: **display ip routing-table** (display the IPv4 routing table information).
- **Ctrl_O**: **undo debugging all** (disable all debugging functions).
- **Ctrl_T**: No command is assigned to this hotkey.
- **Ctrl_U**: No command is assigned to this hotkey.

Views

System view

Predefined user roles

network-admin

Parameters

CTRL_G: Assigns a command to **Ctrl+G**.

CTRL_L: Assigns a command to **Ctrl+L**.

CTRL_O: Assigns a command to **Ctrl+O**.

CTRL_T: Assigns a command to **Ctrl+T**.

CTRL_U: Assigns a command to **Ctrl+U**.

command: Specifies the command to be assigned to the hotkey.

Usage guidelines

To facilitate CLI operation, the system defines some hotkeys and provides five configurable command hotkeys. Pressing a hotkey executes the command assigned to the hotkey.

To display system-defined and configurable hotkeys, use the **display hotkey** command.

Examples

```
# Assign the display tcp status command to the hotkey Ctrl+T.  
<Sysname> system-view  
[Sysname] hotkey ctrl_t display tcp status
```

Related commands

display hotkey

quit

Use **quit** to return to the upper-level view.

Syntax

quit

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

Executing this command in user view disconnects you from the device.

Examples

```
# Return from Ethernet 1/1 interface view to system view and then to user view.
[Sysname-Ethernet1/1] quit
[Sysname] quit
<Sysname>
```

return

Use **return** to return to user view from any other view.

Syntax

return

Views

Any view except user view

Predefined user roles

network-admin

network-operator

Usage guidelines

Pressing **Ctrl+Z** has the same effect as the **return** command.

Examples

```
# Return to user view from Ethernet 1/1 interface view.
[Sysname-Ethernet1/1] return
<Sysname>
```

screen-length disable

Use **screen-length disable** to disable pausing between screens of output for the current session.

Use **undo screen-length disable** to enable pausing between screens of output for the current session.

Syntax

screen-length disable

undo screen-length disable

Default

The default depends on the configuration of the **screen-length** command in user line view.

The following are default settings for the **screen-length** command:

- Pausing between screens of output.
- Displaying up to 24 lines on a screen.

Views

User view

Predefined user roles

network-admin

Usage guidelines

If you disable pausing between screens of output, all output is displayed and the screen is refreshed continuously until the final screen is displayed.

This command takes effect only for the current session. When you are logged out, the default is restored.

Examples

```
# Disable pausing between screens of output for the current session.
```

```
<Sysname> screen-length disable
```

Related commands

screen-length

system-view

Use **system-view** to enter system view from user view.

Syntax

system-view

Views

User view

Predefined user roles

network-admin

network-operator

Examples

```
# Enter system view from user view.
```

```
<Sysname> system-view
```

```
System View: return to User View with Ctrl+Z.
```

```
[Sysname]
```

RBAC commands

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

description

Use **description** to configure a description for a user role.

Use **undo description** to delete the description of a user role.

Syntax

description *text*

undo description

Default

A user role has no description.

Views

User role view

Predefined user roles

network-admin

Parameters

text: User role description, a case-sensitive string of 1 to 128 characters.

Examples

```
# Configure the description "labVIP" for the user role role1.
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] description labVIP
```

Related commands

- **display role**
- **role**

display role

Use **display role** to display user role information.

Syntax

display role [**name** *role-name*]

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

name *role-name*: Specifies a user role name, a case-sensitive string of 1 to 63 characters.

Usage guidelines

If no user role name is specified, the command displays information about all user roles, including the predefined user roles.

Examples

Display information about the user role **123**.

```
<Sysname> display role name 123
Role: 123
  Description: new role
  VLAN policy: deny
  Permitted VLANs: 1 to 5, 7 to 8
  Interface policy: deny
  Permitted interfaces: GigabitEthernet1/0 to GigabitEthernet1/1, Vlan-interfacel to
  Vlan-interface20
  VPN instance policy: deny
  Permitted VPN instances: vpn, vpn1, vpn2
```

```
-----
Rule   Perm  Type  Scope          Entity
-----
1      permit RWX   feature-group  abc
2      deny   -W-   feature        ldap
3      permit           command        system ; radius sc *
4      permit R--  xml-element    -
```

R:Read W:Write X:Execute

Display information about all user roles.

```
<Sysname> display role
Role: network-admin
  Description: Predefined network admin role has access to all commands on the device
  VLAN policy: permit (default)
  Interface policy: permit (default)
  VPN instance policy: permit (default)
```

```
-----
Rule   Perm  Type  Scope          Entity
-----
sys-1  permit           command        *
sys-2  permit RWX   xml-element    -
sys-3  deny           command        display security-logfile summary
sys-4  deny           command        system-view ; info-center securi
ty-logfile directory *
sys-5  deny           command        security-logfile save
```

R:Read W:Write X:Execute

Role: network-operator

Description: Predefined network operator role has access to all read commands on the device

VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

```
-----
```

Rule	Perm	Type	Scope	Entity
sys-1	permit		command	display *
sys-2	permit		command	xml
sys-3	deny		command	display history-command all
sys-4	deny		command	display exception *
sys-5	deny		command	display cpu-usage configuration *
sys-6	deny		command	display kernel exception *
sys-7	deny		command	display kernel deadlock *
sys-8	deny		command	display kernel starvation *
sys-9	deny		command	display kernel reboot *
sys-10	deny		command	display memory trace *
sys-11	deny		command	display kernel memory *
sys-12	permit		command	system-view ; local-user *
sys-13	permit		command	system-view ; local-user *
sys-14	permit	R--	web-menu	-
sys-15	permit	R--	xml-element	-
sys-16	deny		command	display security-logfile summary
sys-17	deny		command	system-view ; info-center securi ty-logfile directory *
sys-18	deny		command	security-logfile save

R:Read W:Write X:Execute

Role: level-0

Description: Predefined level-0 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

```
-----
```

Rule	Perm	Type	Scope	Entity
sys-1	permit		command	tracert *
sys-2	permit		command	telnet *
sys-3	permit		command	ping *
sys-4	permit		command	ssh2 *
sys-5	permit		command	super *

R:Read W:Write X:Execute

Role: level-1

Description: Predefined level-1 role
VLAN policy: permit (default)

Interface policy: permit (default)
VPN instance policy: permit (default)

```
-----  
Rule      Perm   Type  Scope      Entity  
-----  
sys-1    permit        command    tracert *  
sys-2    permit        command    telnet *  
sys-3    permit        command    ping *  
sys-4    permit        command    ssh2 *  
sys-5    permit        command    display *  
sys-6    permit        command    super *  
sys-7    deny          command    display history-command all
```

R:Read W:Write X:Execute

Role: level-2

Description: Predefined level-2 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

Role: level-3

Description: Predefined level-3 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

Role: level-4

Description: Predefined level-4 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

Role: level-5

Description: Predefined level-5 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

Role: level-6

Description: Predefined level-6 role
VLAN policy: permit (default)
Interface policy: permit (default)
VPN instance policy: permit (default)

Role: level-7

Description: Predefined level-7 role
VLAN policy: permit (default)
Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-8

Description: Predefined level-8 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-9

Description: Predefined leve-9 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

```
-----
```

Rule	Perm	Type	Scope	Entity
sys-1	permit	RWX	feature	-
sys-2	deny	RWX	feature	device
sys-3	deny	RWX	feature	filesystem
sys-4	permit		command	display *
sys-5	deny		command	display history-command all

```
-----
```

R:Read W:Write X:Execute

Role: level-10

Description: Predefined level-10 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-11

Description: Predefined level-11 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-12

Description: Predefined level-12 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-13

Description: Predefined level-13 role

VLAN policy: permit (default)

Interface policy: permit (default)

VPN instance policy: permit (default)

Role: level-14

Description: Predefined level-14 role
 VLAN policy: permit (default)
 Interface policy: permit (default)
 VPN instance policy: permit (default)

Role: level-15

Description: Predefined level-15 role
 VLAN policy: permit (default)
 Interface policy: permit (default)
 VPN instance policy: permit (default)

```

-----
Rule      Perm   Type  Scope      Entity
-----
sys-1    permit      command    *
sys-2    permit RWX  xml-element -
sys-3    deny        command    display security-logfile summary
sys-4    deny        command    system-view ; info-center securi
ty-logfile directory *
sys-5    deny        command    security-logfile save
R:Read W:Write X:Execute
  
```

Role: 123

Description: new role
 VLAN policy: deny
 Permitted VLANs: 1 to 5, 7 to 8
 Interface policy: deny
 Permitted interfaces: GigabitEthernet1/0 to GigabitEthernet1/1, Vlan-interfacel to Vlan-interface20
 VPN instance policy: deny
 Permitted VPN instances: vpn, vpn1, vpn2

```

-----
Rule      Perm   Type  Scope      Entity
-----
1         permit RWX  feature-group abc
2         deny  -W-   feature     ldap
3         permit      command    system ; radius sc *
4         permit R--  xml-element -
R:Read W:Write X:Execute
  
```

Role: security-audit

Description: Predefined security audit role only has access to commands for the security log administrator
 VLAN policy: permit (default)
 Interface policy: permit (default)
 VPN instance policy: permit (default)

```

-----
Rule      Perm   Type  Scope      Entity
-----
sys-1    deny        command    *
sys-2    permit      command    display security-logfile summary
  
```

sys-3	permit	command	system-view ; info-center security-logfile directory *
sys-4	permit	command	security-logfile save
sys-5	permit	command	cd *
sys-6	permit	command	copy *
sys-7	permit	command	delete *
sys-8	permit	command	dir *
sys-9	permit	command	mkdir *
sys-10	permit	command	more *
sys-11	permit	command	move *
sys-12	permit	command	rmdir *
sys-13	permit	command	pwd
sys-14	permit	command	rename *
sys-15	permit	command	undelete *
sys-16	permit	command	ftp *
sys-17	permit	command	sftp *
sys-18	permit	command	virtual-ftp-append
sys-19	permit	command	virtual-ftp-ascii
sys-20	permit	command	virtual-ftp-binary
sys-21	permit	command	virtual-ftp-bye
sys-22	permit	command	virtual-ftp-cd
sys-23	permit	command	virtual-ftp-cdup
sys-24	permit	command	virtual-ftp-close
sys-25	permit	command	virtual-ftp-delete
sys-26	permit	command	virtual-ftp-debug
sys-27	permit	command	virtual-ftp-dir
sys-28	permit	command	virtual-ftp-disconnect
sys-29	permit	command	virtual-ftp-get
sys-30	permit	command	virtual-ftp-help
sys-31	permit	command	virtual-ftp-lcd
sys-32	permit	command	virtual-ftp-ls
sys-33	permit	command	virtual-ftp-mkdir
sys-34	permit	command	virtual-ftp-newer
sys-35	permit	command	virtual-ftp-open
sys-36	permit	command	virtual-ftp-passive
sys-37	permit	command	virtual-ftp-put
sys-38	permit	command	virtual-ftp-pwd
sys-39	permit	command	virtual-ftp-quit
sys-40	permit	command	virtual-ftp-reget
sys-41	permit	command	virtual-ftp-rstatus
sys-42	permit	command	virtual-ftp-rhelp
sys-43	permit	command	virtual-ftp-rename
sys-44	permit	command	virtual-ftp-reset
sys-45	permit	command	virtual-ftp-restart
sys-46	permit	command	virtual-ftp-rmdir
sys-47	permit	command	virtual-ftp-status
sys-48	permit	command	virtual-ftp-system
sys-49	permit	command	virtual-ftp-user

```

sys-50 permit      command      virtual-ftp-verbose
sys-51 permit      command      virtual-ftp-remove
sys-52 permit      command      virtual-ftp-exit
R:Read W:Write X:Execute

```

Table 1 Command output

Field	Description
Role	User role name. Predefined user role names include network-admin, network-operator, level- <i>n</i> (where <i>n</i> represents an integer in the range of 0 to 15), and security-audit.
Description	User role description you have configured for easy identification.
VLAN policy	VLAN policy of the user role: <ul style="list-style-type: none"> • deny—Denies access to any VLAN except permitted VLANs. • permit (default)—Default VLAN policy, which enables the user role to access any VLAN.
Permitted VLANs	VLANs accessible to the user role.
Interface policy	Interface policy of the user role: <ul style="list-style-type: none"> • deny—Denies access to any interface except permitted interfaces. • permit (default)—Default interface policy, which enables the user role to access any interface.
Permitted interfaces	Interfaces accessible to the user role.
VPN instance policy	VPN instance policy of the user role: <ul style="list-style-type: none"> • deny—Denies access to any VPN except permitted VPNs. • permit (default)—Default VPN instance policy, which enables the user role to access any VPN instance.
Permitted VPN instances	VPNs accessible to the user role.
Rule	User role rule number. A user role rule specifies the permission to access a command or a set of commands. Predefined user role rules are identified by sys- <i>n</i> , where <i>n</i> represents an integer.
Perm	Access to the command: <ul style="list-style-type: none"> • permit—User role has access to the command. • deny—User role has no access to the command.
Type	Command type: <ul style="list-style-type: none"> • R—Read-only. • W—Write. • X—Execute.

Field	Description
Scope	<p>Rule control scope:</p> <ul style="list-style-type: none"> • command—Controls access to the command or commands, as specified in the Entity field. • feature—Controls access to the commands of the feature, as specified in the Entity field. • feature-group—Controls access to the commands of the features in the feature group, as specified in the Entity field. • web-menu—Controls access to Web menus. Web menus are not supported in this release. • xml-element—Controls access to XML elements.
Entity	<p>Command string, feature name, or feature group specified in the user role rule:</p> <ul style="list-style-type: none"> • An en dash (-) represents any feature. • An asterisk (*) represents zero or more characters.

Related commands

role

display role feature

Use **display role feature** to display features available in the system.

Syntax

display role feature [**name** *feature-name* | **verbose**]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

name *feature-name*: Displays the commands of a feature. The *feature-name* argument specifies the feature name, and all its letters must be lower case.

verbose: Displays the commands of each feature.

Usage guidelines

If neither **name** *feature-name* nor **verbose** is specified, the **display role feature** command displays only the list of features available in the system.

Examples

```
# Display the list of feature names.
<Sysname> display role feature
Feature: device           (Device configuration related commands)
Feature: interface       (Interface related commands)
Feature: syslog          (Syslog related commands)
Feature: process         (Process related commands)
```

...

Display the commands of each feature.

```
<Sysname> display role feature verbose
Feature: device          (Device configuration related commands)
  display clock          (R)
  debugging dev          (W)
  display debugging dev  (R)
  display device *       (R)
  display diagnostic-information (R)
  display environment *  (R)
  display fan *          (R)
  display power *        (R)
  display rps *          (R)
  display current-configuration * (R)
  display saved-configuration * (R)
  display startup        (R)
  display this *         (R)
  display version        (R)
  clock datetime *       (W)
  reboot *               (W)
  save *                 (W)
  startup saved-configuration * (W)
  system-view ; temperature-limit * (W)
  system-view ; sysname * (W)
  system-view ; clock timezone * (W)
  system-view ; configuration replace file * (W)
  system-view ; user-interface * ; idle-timeout * (W)
Feature: interface      (Interface related commands)
  reset counters interface * (W)
  debugging ifnet * (W)
  display port-group manual * (R)
  display debugging ifnet (R)
  display interface * (R)
```

...

Display the commands of the **aaa** feature.

```
<Sysname> display role feature name aaa
Feature: aaa          (AAA related commands)
  system-view ; domain * (W)
  system-view ; header * (W)
  display domain * (R)
  system-view ; user-group * (W)
  system-view ; local-user * (W)
  display local-user * (R)
  display user-group * (R)
  display debugging local-server (R)
  debugging local-server * (W)
```

Table 2 Command output (display role feature name aaa)

Field	Description
Feature	Displays the name and brief function description of the feature.
system-view ; domain *	All the commands that start with domain in system view and all the commands in ISP domain view.
system-view ; header *	All the commands that start with header in system view.
display domain *	All the commands that start with display domain in user view.
system-view ; user-group *	All the commands that start with user-group in system view, and all the commands in user group view.
system-view ; local-user *	All the commands that start with local-user in system view, and all the commands in local user view.
display user-group *	All the commands that start with display user-group in user view.
display debugging local-server	All the commands that start with display debugging local-server in user view.
debugging local-server *	All the commands that start with debugging local-server in user view.
(W)	Command type is Write. A write command configures the system.
(R)	Command type is Read. A read command displays configuration or maintenance information.
(X)	Command type is Execute. An execute command executes a specific function.

Related commands

feature

display role feature-group

Use **display role feature-group** to display feature group information.

Syntax

```
display role feature-group [ name feature-group-name ] [ verbose ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

name *feature-group-name*: Specifies a feature group. The *feature-group-name* argument represents the feature group name, a case-sensitive string of 1 to 31 characters. If no feature group is specified, the command displays information about all feature groups.

verbose: Displays the commands of each feature in the specified feature group. If no feature group is specified, this keyword enables displaying the commands of each feature in every feature group. If this keyword is not specified, the command displays only the feature lists of feature groups.

Usage guidelines

Feature groups **L2** and **L3** are predefined feature groups.

Examples

Display the feature lists of feature groups.

```
<Sysname> display role feature-group
Feature group: L2
Feature: igmp-snooping    (IGMP-Snooping related commands)
Feature: stp              (STP related commands)
Feature: lldp             (LLDP related commands)
Feature: loopbk-detect    (Loopback-detection related commands)
Feature: vlan             (Virtual LAN related commands)
Feature: port-security    (Port-security related commands)

Feature group: L3
Feature: route            (Route management related commands)
Feature: usr              (Unicast static route related commands)
Feature: ospf             (Open Shortest Path First protocol related commands)
Feature: rip              (Routing Information Protocol related commands)
Feature: isis             (ISIS protocol related commands)
Feature: bgp              (Border Gateway Protocol related commands)
Feature: l3vpn            (Layer 3 Virtual Private Network related commands)
Feature: route-policy     (Routing Policy related commands)
Feature: multicast        (Multicast related commands)
Feature: pim              (Protocol Independent Multicast related commands)
Feature: igmp             (Internet Group Management Protocol related commands)
Feature: mld              (Multicast Listener Discovery related commands)
Feature: mcast-domain     (Multicast Domain related commands)
```

Display the commands in each feature group. For more information about the wildcards and marks used in the command list, see [Table 2](#).

```
<Sysname> display role feature-group verbose
Feature group: L2
Feature: igmp-snooping    (IGMP-Snooping related commands)
    system-view ; igmp-snooping    (W)
    system-view ; vlan * ; igmp-snooping *    (W)
    system-view ; interface * ; igmp-snooping *    (W)
    display igmp-snooping *    (R)
    reset igmp-snooping *    (W)
    debugging igmp-snooping *    (W)
    display debugging igmp-snooping *    (R)
    system-view ; probe * ; debugging system internal igmp-snooping *    (W)
Feature: stp              (STP related commands)
    display stp *    (R)
    system-view ; stp *    (W)
    system-view ; interface * ; stp *    (W)
    reset stp *    (W)
    debugging stp *    (W)
    display debugging stp *    (R)
```

```

system-view ; probe ; debugging stp *      (W)
system-view ; probe ; dispaly system internal stp *      (R)
Feature: lldp      (LLDP related commands)
display lldp *      (R)
system-view ; lldp *      (W)
system-view ; interface * ; lldp *      (W)
debugging lldp *      (W)
display debugging lldp *      (R)
Feature: loopbk-detect      (Loopback-detection related commands)
display loopback-detection *      (R)
system-view ; loopback-detection *      (W)
system-view ; interface * ; loopback-detection *      (W)
debugging loopback-detection *      (W)
display debugging loopback-detection *      (R)
Feature: vlan      (Virtual LAN related commands)
display vlan *      (R)
display port trunk      (R)
display port hybrid      (R)
display debugging vlan      (R)
system-view ; probe ; debugging vlan *      (W)
system-view ; probe ; display system internal vlan *      (R)
system-view ; vlan * ;      (W)
system-view ; interface * ; port link-type *      (W)
system-view ; interface * ; port access vlan *      (W)
system-view ; interface * ; port trunk pvid vlan *      (W)
system-view ; interface * ; port trunk permit vlan *      (W)
system-view ; interface * ; port hybrid pvid vlan *      (W)
system-view ; interface * ; port hybrid vlan *      (W)
system-view ; vlan * ; name *      (W)
system-view ; vlan * ; description *      (W)
system-view ; vlan * ; port *      (W)
Feature: port-security      (Port-security related commands)
system-view ; dot1x *      (W)
system-view ; interface * ; dot1x *      (W)
display dot1x *      (R)
reset dot1x *      (W)
debugging dot1x *      (W)
display debugging dot1x *      (R)
system-view ; mac-authentication *      (W)
system-view ; interface * ; mac-authentication *      (W)
display mac-authentication *      (R)
reset mac-authentication *      (W)
debugging mac-authentication *      (W)
display debugging mac-authentication *      (R)
system-view ; port-security *      (W)
system-view ; interface * ; port-security *      (W)
display port-security *      (R)
debugging port-security *      (W)

```


display debugging port-security * (R)

Feature group: L3

Feature: route (Route management related commands)

display debugging rib * (R)
display ip routing-table * (R)
display ipv6 routing-table * (R)
display router id * (R)
display rib * (R)
display ipv6 rib * (R)
reset ip routing-table statistics * (W)
reset ipv6 routing-table statistics * (W)
debugging rib * (W)
debugging ipv6 rib * (W)
system-view ; router id * (W)
system-view ; rib * (W)
system-view ; probe * ; display system internal rib * (R)
system-view ; probe * ; display system internal ipv6 rib * (R)
system-view ; probe * ; reset rib * (W)
system-view ; probe * ; reset ipv6 rib * (W)

Feature: usr (Unicast static route related commands)

display debugging route-static * (R)
display route-static * (R)
display ipv6 route-static * (R)
debugging route-static * (W)
debugging ipv6 route-static * (W)
debugging route-direct * (W)
debugging ipv6 route-direct * (W)
system-view ; ip route-static * (W)
system-view ; ipv6 route-static * (W)
system-view ; delete static-routes * (W)
system-view ; delete ipv6 static-routes * (W)
system-view ; delete vpn-instance * (W)
system-view ; delete ipv6 vpn-instance * (W)
system-view ; probe * ; display system internal route-static * (R)
system-view ; probe * ; display system internal ipv6 route-static * (R)
system-view ; probe * ; reset route-static * (W)
system-view ; probe * ; reset ipv6 route-static * (W)
system-view ; probe * ; display system internal route-direct * (R)
system-view ; probe * ; display system internal ipv6 route-direct * (R)
system-view ; probe * ; reset route-direct * (W)
system-view ; probe * ; reset ipv6 route-direct * (W)

Feature: ospf (Open Shortest Path First protocol related commands)

display ospf * (R)
display ospfv3 * (R)
display debugging ospf * (R)
display debugging ospfv3 * (R)
reset ospf * (W)

```

debugging ospf *      (W)
debugging ospfv3 *   (W)
system-view ; ospf *   (W)
system-view ; snmp-agent trap enable ospf *   (W)
system-view ; interface * ; ospf *   (W)
system-view ; ospfv3 *   (W)
system-view ; interface * ; ospfv3 *   (W)
system-view ; probe * ; display system internal ospf *   (R)
system-view ; probe * ; display system internal ospfv3 *   (R)
system-view ; probe * ; reset ospf *   (W)
Feature: rip          (Routing Information Protocol related commands)
display rip *        (R)
display ripng *      (R)
reset rip *          (W)
reset ripng *        (W)
debugging rip *      (W)
display debugging rip *   (R)
debugging ripng *    (W)
display debugging ripng * (R)
system-view ; rip *   (W)
system-view ; interface * ; rip *   (W)
system-view ; ripng *   (W)
system-view ; interface * ; ripng *   (W)
system-view ; probe * ; display system internal rip *   (R)
system-view ; probe * ; display system internal ripng *   (R)
Feature: isis         (ISIS protocol related commands)
display isis *       (R)
reset isis *         (W)
debugging isis *     (W)
display debugging isis *   (R)
system-view ; isis *   (W)
system-view ; snmp-agent trap enable isis *   (W)
system-view ; interface * ; isis *   (W)
system-view ; probe * ; display system internal isis *   (R)
Feature: bgp          (Border Gateway Protocol related commands)
display debugging bgp *   (R)
display bgp *         (R)
system-view ; probe ; display system internal bgp *   (R)
reset bgp *          (W)
refresh bgp *        (W)
debugging bgp *      (W)
system-view ; snmp-agent trap enable bgp   (W)
system-view ; bgp *   (W)
Feature: l3vpn        (Layer 3 Virtual Private Network related commands)
display ip vpn-instance *   (R)
display debugging ip vpn-instance   (R)
system-view ; ip vpn-instance *   (W)
system-view ; interface * ; ip binding vpn-instance *   (W)

```

```

system-view ; snmp-agent trap enable l3vpn      (W)
system-view ; probe ; debugging system internal ip vpn-instance *    (W)
system-view ; probe ; display system internal ip vpn-instance *      (R)
system-view ; probe ; display system internal ip vpn-binding *       (R)
Feature: route-policy      (Routing Policy related commands)
display route-policy *      (R)
display ip prefix-list *    (R)
display ipv6 prefix-list *  (R)
display mac-list *          (R)
display debugging route-policy *    (R)
display ip community-list *  (R)
display ip as-path *        (R)
display ip extcommunity-list *     (R)
reset ip prefix-list *       (W)
reset ipv6 prefix-list *     (W)
reset mac-list *            (W)
debugging route-policy *     (W)
system-view ; ip prefix-list *    (W)
system-view ; ipv6 prefix-list *  (W)
system-view ; mac-list *        (W)
system-view ; route-policy *     (W)
system-view ; ip community-list * (W)
system-view ; ip as-path *      (W)
system-view ; ip extcommunity-list * (W)
Feature: multicast        (Multicast related commands)
display multicast *          (R)
display ipv6 multicast *    (R)
display l2-multicast *      (R)
display ipv6 l2-multicast * (R)
display mrib *              (R)
display ipv6 mrib *         (R)
system-view ; probe * ; display system internal mrib *      (R)
system-view ; probe * ; display system internal ipv6 mrib * (R)
system-view ; probe * ; display system internal multicast * (R)
system-view ; probe * ; display system internal ipv6 multicast * (R)
system-view ; probe * ; display system internal l2-multicast * (R)
system-view ; probe * ; display system internal ipv6 l2-multicast * (R)
reset multicast *          (W)
reset ipv6 multicast *     (W)
system-view ; probe * ; reset multicast *                   (W)
system-view ; probe * ; reset ipv6 multicast *              (W)
debugging mfib *          (W)
debugging ipv6 mfib *     (W)
display debugging mfib *  (R)
display debugging ipv6 mfib * (R)
debugging l2mf *         (W)
debugging ipv6 l2mf *    (W)
display debugging l2mf *  (R)

```

```

display debugging ipv6 l2mf *      (R)
debugging mrib *                  (W)
debugging ipv6 mrib *             (W)
display debugging mrib *          (R)
display debugging ipv6 mrib *     (R)
system-view ; multicast *         (W)
system-view ; ipv6 multicast *    (W)
system-view ; ip rpf-route-static * (W)
system-view ; delete ip rpf-route-static * (W)
system-view ; interface * ; multicast * (W)
system-view ; interface * ; ipv6 multicast * (W)
system-view ; probe * ; multicast * (W)
Feature: pim                      (Protocol Independent Multicast related commands)
display pim *                    (R)
display ipv6 pim *               (R)
system-view ; probe * ; display system internal pim * (R)
system-view ; probe * ; display system internal ipv6 pim * (R)
debugging pim *                  (W)
debugging ipv6 pim *             (W)
display debugging pim *          (R)
display debugging ipv6 pim *     (R)
system-view ; pim *              (W)
system-view ; ipv6 pim *         (W)
system-view ; interface * ; pim * (W)
system-view ; interface * ; ipv6 pim * (W)
Feature: igmp                    (Internet Group Management Protocol related commands)
display igmp *                   (R)
debugging igmp *                 (W)
display debugging igmp *         (R)
reset igmp *                     (W)
system-view ; interface * ; igmp * (W)
Feature: mld                     (Multicast Listener Discovery related commands)
display mld *                    (R)
debugging mld *                  (W)
display debugging mld *          (R)
reset mld *                      (W)
system-view ; interface * ; mld * (W)
Feature: mcast-domain            (Multicast Domain related commands)
display multicast-domain *       (R)
debugging multicast-domain *     (W)
display debugging multicast-domain * (R)
system-view ; multicast-domain * (W)
# Display the feature list of the feature group L3.
<Sysname> display role feature-group name L3
Feature group: L3
Feature: route                   (Route management related commands)
Feature: ospf                    (Open Shortest Path First protocol related commands)
Feature: rip                     (Routing Information Protocol related commands)

```

Feature: isis (ISIS protocol related commands)
Feature: bgp (Border Gateway Protocol related commands)
Feature: l3vpn (Layer 3 Virtual Private Network related commands)

Related commands

- **feature**
- **role feature-group**

feature

Use **feature** to add a feature to a feature group.

Use **undo feature** to remove a feature from a feature group.

Syntax

feature *feature-name*

undo feature *feature-name*

Default

A user-defined feature group has no features.

Views

Feature group view

Predefined user roles

network-admin

Parameters

feature-name: Specifies a feature name. You must enter the feature name exactly as it is displayed, including the case.

Usage guidelines

Repeat the **feature** command to add multiple features to a feature group.

Examples

```
# Add the security features AAA and ACL to the security group security-features.
```

```
<Sysname> system-view
```

```
[Sysname] role feature-group name security-features
```

```
[Sysname-featuregrp-security-features] feature aaa
```

```
[Sysname-featuregrp-security-features] feature acl
```

Related commands

- **display role feature**
- **display role feature-group**
- **role feature-group**

interface policy deny

Use **interface policy deny** to enter user role interface policy view.

Use **undo interface policy deny** to restore the default user role interface policy.

Syntax

```
interface policy deny
undo interface policy deny
```

Default

A user role has access to any interface.

Views

User role view

Predefined user roles

network-admin

Usage guidelines

The **interface policy deny** command denies the access of a user role to any interface.

To restrict the interface access of a user role to only a set of interfaces:

1. Use **interface policy deny** to deny access to any interface.
2. Use **permit interface** to specify accessible interfaces.

To create, remove, or configure an interface, enter its interface view, or specify the interface in a feature command, you must make sure the interface is permitted by the interface policy of any user role that you are logged in with. The create and remove operations are available only to logical interfaces.

Any change to a user role interface policy takes effect only on users that log in with the user role after the change.

Examples

```
# Deny the user role role1 to access any interface.
```

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] interface policy deny
[Sysname-role-role1-ifpolicy] quit
```

```
# Deny the user role role1 to access any interface but Ethernet 1/1 to Ethernet 1/5.
```

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] interface policy deny
[Sysname-role-role1-ifpolicy] permit interface ethernet 1/1 to ethernet 1/5
```

Related commands

- **display role**
- **permit interface**
- **role**

permit interface

Use **permit interface** to configure a list of interfaces accessible to a user role.

Use **undo permit interface** to disable the access of a user role to specific interfaces.

Syntax

```
permit interface interface-list  
undo permit interface [ interface-list ]
```

Default

No permitted interfaces are configured in user role interface policy view. A user role cannot access any interface after you configure the **interface policy deny** command.

Views

User role interface policy view

Predefined user roles

network-admin

Parameters

interface *interface-list*: Specifies a space-separated list of up to 10 interface items. Each interface item specifies one interface in the *interface-type interface-number* form or a range of interfaces in the *interface-type interface-number to interface-type interface-number* form. If an interface range is specified, the end interface must be the same type as the start interface and must have a higher interface number than the start interface.

Usage guidelines

To permit a user role to access an interface after you configure the **interface policy deny** command, you must add the interface to the permitted interface list of the policy. With the user role, you can create, remove, configure only the interfaces in the permitted interface list, enter their views, and specify them in a feature command. The create and remove operations are available only to logical interfaces.

You can repeat the **permit interface** command to add permitted interfaces to a user role interface policy.

The **undo permit interface** command removes the entire list of permitted interfaces if no interface is specified.

Any change to a user role interface policy takes effect only on users that log in with the user role after the change.

Examples

```
# Permit the user role role1 to access Ethernet 1/1 and Ethernet 1/5 to Ethernet 1/7, enter interface view and VLAN view, and execute all the commands that are available in interface view and VLAN view.
```

```
<Sysname> system-view  
[Sysname] role name role1  
[Sysname-role-role1] rule 1 permit command system-view ; interface *  
[Sysname-role-role1] rule 2 permit command system-view ; vlan *  
[Sysname-role-role1] interface policy deny  
[Sysname-role-role1-ifpolicy] permit interface ethernet 1/1 ethernet 1/5 to ethernet 1/7
```

Verify that you cannot use the user role to work on any interfaces but Ethernet 1/1 and Ethernet 1/5 to Ethernet 1/7:

```
# Verify that you can enter Ethernet 1/1 interface view.
```

```
<Sysname> system-view  
[Sysname] interface ethernet 1/1  
[Sysname-Ethernet1/1]
```

Verify that you can assign Ethernet 1/5 to VLAN 10. In this example, the user role can access any VLAN because the default VLAN policy of the user role is used.

```
<Sysname> system-view
[Sysname] vlan 10
[Sysname-vlan10] port ten-gigabitEthernet1/5
```

Verify that you cannot enter Ethernet 1/2 interface view.

```
<Sysname> system-view
[Sysname] interface ethernet 1/2
Permission denied.
```

Related commands

- **display role**
- **interface policy deny**
- **role**

permit vlan

Use **permit vlan** to configure a list of VLANs accessible to a user role.

Use **undo permit vlan** to remove the permission for a user role to access specific VLANs.

Syntax

```
permit vlan vlan-id-list
```

```
undo permit vlan [ vlan-id-list ]
```

Default

No permitted VLANs are configured in user role interface policy view.

Views

User role VLAN policy

Predefined user roles

network-admin

Parameters

vlan-id-list: Specifies a space-separated list of up to 10 VLAN items. Each VLAN item specifies a VLAN by its VLAN ID or a range of VLANs in the form of *vlan-id1 to vlan-id2*. The value range for the VLAN IDs is 1 to 4094. If a VLAN range is specified, *vlan-id2* must be greater than *vlan-id1*.

Usage guidelines

To permit a user role to access a VLAN after you configure the **vlan policy deny** command, you must add the VLAN to the permitted VLAN list of the policy. With the user role, you can create, remove, or configure only the VLANs in the permitted interface list, enter their views, and specify them in a feature command.

You can repeat the **permit vlan** command to add permitted VLANs to a user role VLAN policy.

The **undo permit vlan** command removes the entire list of permitted VLANs if no VLAN is specified.

Any change to a user role VLAN policy takes effect only on users that log in with the user role after the change.

Examples

Permit the user role **role1** to access VLANs 2, 4, and 50 to 100, enter interface view and VLAN view and execute all the commands that are available in interface view and VLAN view.

```
<Sysname> system-view
[Sysname] role name role1
Sysname-role-role1] rule 1 permit command system-view ; interface *
[Sysname-role-role1] rule 2 permit command system-view ; vlan *
[Sysname-role-role1] vlan policy deny
[Sysname-role-role1-vlanpolicy] permit vlan 2 4 50 to 100
```

Verify that you cannot use the user role to work on any VLAN but VLANs 2, 4, and 50 to 100:

Verify that you can create VLAN 100 and enter its view.

```
<Sysname> system-view
[Sysname] vlan 100
[Sysname-vlan100]
```

Verify that you can add port Ethernet 1/1 to VLAN 100 as an access port.

```
<Sysname> system-view
[Sysname] interface ethernet1/1
[Sysname-Ethernet1/1] port access vlan 100
```

Verify that you cannot create VLAN 101 or enter its view.

```
<Sysname> system-view
[Sysname] vlan 101
Permission denied.
```

Related commands

- **display role**
- **role**
- **vlan policy deny**

permit vpn-instance

Use **permit vpn-instance** to configure a list of VPNs accessible to a user role.

Use **undo permit vpn-instance** to disable the access of a user role to specific VPNs.

Syntax

```
permit vpn-instance vpn-instance-name&<1-10>
undo permit vpn-instance [ vpn-instance-name&<1-10> ]
```

Default

No permitted VPNs are configured in user role VPN instance policy.

Views

User role VPN instance policy view

Predefined user roles

network-admin

Parameters

vpn-instance-name<1-10>: Specifies a space-separated list of up to 10 MPLS L3VPN names. Each name is a case-sensitive string of 1 to 31 characters.

Usage guidelines

To permit a user role to access an MPLS L3VPN after you configure the **vpn-instance policy deny** command, you must add the VPN to the permitted VPN list of the policy. With the user role, you can create, remove, configure only the VPNs in the permitted VPN list, enter their views, and specify them in a feature command.

You can repeat the **permit vpn-instance** command to add permitted MPLS L3VPNs to a user role interface policy.

The **undo permit interface** command removes the entire list of permitted VPNs if no VPN is specified.

Any change to a user role VPN instance policy takes effect only on users that log in with the user role after the change.

Examples

Permit the user role **role1** to access VPN 1 and to execute all the commands available in system view and in the child views of system view.

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] rule 1 permit command system-view ; *
[Sysname-role-role1] vpn policy deny
[Sysname-role-role1-vpnpolicy] permit vpn-instance vpn1
```

Verify that you cannot use the user role to work on any VPN but VPN 1:

Verify that you can enter VPN1 view.

```
<Sysname> system-view
[Sysname] ip vpn-instance vpn1
[Sysname-vpn-instance-vpn1]
```

Verify that you can assign the primary accounting server at 10.110.1.2 to the VPN in the RADIUS scheme **radius1**.

```
<Sysname> system-view
[Sysname] radius scheme radius1
[Sysname-radius-radius1] primary accounting 10.110.1.2 vpn-instance vpn1
```

Verify that you cannot create the VPN **vpn2** or enter its view.

```
<Sysname> system-view
[Sysname] ip vpn-instance vpn2
Permission denied.
```

Related commands

- **display role**
- **role**
- **vpn-instance policy deny**

role

Use **role** to create a user role and enter user role view. If the user role has been created, you directly enter the user role view.

Use **undo role** to delete a user role.

Syntax

role name *role-name*

undo role name *role-name*

Default

The system has 19 predefined user roles: network-admin, network-operator, level-*n* (where *n* represents an integer in the range of 0 to 15), and security-audit.

Views

System view

Predefined user roles

network-admin

Parameters

name *role-name*: Specifies a username. The *role-name* argument is a case-sensitive string of 1 to 63 characters.

Usage guidelines

You can create up to 64 user roles in addition to the predefined user roles.

To change the permissions assigned to a user role, you must first enter its view.

You cannot delete the predefined user roles or change the permissions assigned to network-admin, network-operator, level-15, or security-audit.

Level-0 to level-14 users can modify their own permissions for any commands except for the **display history-command all** command.

Examples

Create the user role **role1** and enter its view.

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1]
```

Related commands

- **display role**
- **interface policy deny**
- **rule**
- **vlan policy deny**
- **vpn-instance policy deny**

role default-role enable

Use **role default-role enable** to enable the default user role feature for remote AAA users.

Use **undo role default-role enable** to restore the default.

Syntax

role default-role enable

undo role default-role enable

Default

The default user role function is disabled. AAA users that do not have a user role cannot log in to the device.

Views

System view

Predefined user roles

network-admin

Usage guidelines

An AAA authentication user must have at least one user role to log in to the device. The default user role function assigns the network-operator user role to a local or remote AAA authenticated user if the AAA server has not authorized the user to use any user roles. Without the function, AAA authenticated users cannot access the system if they have no user role authorization.

You can configure the default user role function to enable an AAA authenticated user that has not been assigned any user role to log in with the default user role network-operator.

If AAA users have been assigned user roles, they log in with the user roles.

Examples

```
# Enable the default user role feature.  
<Sysname> system-view  
[Sysname] role default-role enable
```

Related commands

role

role feature-group

Use **role feature-group** to create a user role feature group and enter user role feature group view.

Use **undo role feature-group** to delete a user role feature group.

Syntax

role feature-group name *feature-group-name*

undo role feature-group name *feature-group-name*

Default

Two user role feature groups, **L2** and **L3**, are created.

Views

System view

Predefined user roles

network-admin

Parameters

name *feature-group-name*: Specifies a feature group name. The *feature-group-name* argument is a case-sensitive string of 1 to 31 characters.

Usage guidelines

Assign a set of features to a user role feature group for easy permission assignment management.

In addition to the predefined feature groups **L2** and **L3**, you can create up to 64 user role feature groups. The **L2** feature group includes all Layer 2 feature commands, and the **L3** feature group includes all Layer 3 feature commands. These predefined feature groups cannot be deleted.

After you create a user role feature group, you can use the **display role feature** command to display the features available in the system and use the **feature** command to add features to the feature group.

Examples

```
# Create the feature group security-features.
<Sysname> system-view
[Sysname] role feature-group name security-features
[Sysname-featuregrp-security-features]
```

Related commands

- **display role feature-group**
- **display role feature**
- **feature**

rule

Use **rule** to create or change a user role rule for controlling command access.

Use **undo rule** to delete a user role rule.

Syntax

```
rule number { deny | permit } { command command-string | { execute | read | write } * { feature
[ feature-name ] | feature-group feature-group-name | web-menu [ web-string ] | xml-element
[ xml-string ] }
```

```
undo rule { number | all }
```

Default

A user-defined user role has no rules and cannot use any command.

Views

User role view

Predefined user roles

network-admin

Parameters

number: Specifies a rule number in the range of 1 to 256.

deny: Denies access to any specified command.

permit: Permits access to any specified command.

command *command-string*: Specifies a command string. The *command-string* argument is a case-sensitive string of 1 to 128 characters, including the wildcard asterisk (*), the delimiters space and tab, and all printable characters.

execute: Specifies the execute commands of a feature or feature group. An execute command (for example, **ping**) executes a specific function or program.

read: Specifies the read commands of a feature or feature group. A read command (for example, **display**, **dir**, **more**, or **pwd**) displays configuration or maintenance information.

write: Specifies the write commands of a feature or feature group. A write command (for example, **ssh server enable**) configures the system.

feature [*feature-name*]: Specifies one or all features. The *feature-name* argument specifies a feature name. If no feature name is specified, you specify all the features in the system. When you specify a feature, you must enter its name exactly as displayed by **display role feature**, including the case.

feature-group *feature-group-name*: Specifies a user-defined or pre-defined feature group. The *feature-group-name* argument represents the feature group name, a case-sensitive string of 1 to 31 characters. If the feature group has not been created, the rule takes effect after the group is created. To display the feature groups that have been created, use the **display role feature-group** command.

web-menu [*web-string*]: Specifies a Web menu item. The *web-string* argument represents the path of the Web menu item, a case-insensitive string of 1 to 512 characters. Use the slash (/) to separate menu folder and file names, for example, M_DEVICE/I_BASIC_INFO/I_reboot. If you do not specify any Web menu item, the rule applies to all Web items. Web menu items are not supported in this release.

xml-element [*xml-string*]: Specifies an XML element. The *xml-string* argument represents the path of the XML element, a case-insensitive string of 1 to 512 characters. Use the slash (/) to separate element folder and file names, for example, Interfaces/Index/Name. If you do not specify any XML element, the rule applies to all XML elements.

all: Deletes all the user role rules.

Usage guidelines

You can define the following types of rules for different access control granularities:

- **Command rule**—Controls access to a command or a set of commands that match a regular expression.
- **Feature rule**—Controls access to the commands of a feature by command type.
- **Feature group rule**—Controls access to the commands of a group of features by command type.
- **Web menu rule**—Controls access to Web menus. Web menus are not supported in this release.
- **XML element rule**—Controls access to XML elements.

You can configure up to 256 rules for a user role, but the total number of user role rules in the system cannot exceed 1024.

A user role can access the set of permitted commands specified in its rules. User role rules include predefined (identified by *sys-n*) and user-defined user role rules.

- If two user-defined rules of the same type conflict, the one with the higher ID takes effect. For example, if rule 1 permits the **ping** command, rule 2 permits the **tracert** command, and rule 3 denies the **ping** command, the user role can use the **tracert** command but not the **ping** command.
- If a predefined user role rule and a user-defined user role rule conflict, the user-defined user role rule takes effect.

Any rule modification, addition, or removal for a user role takes effect only on the users that log in with the user role after the change.

When you specify a command string, follow the guidelines in [Table 3](#).

Table 3 Command string configuration rules

Rule	Guidelines
Semicolon (;) is the delimiter.	<p>Use a semicolon to separate the command of each view that you must enter before you access a command or a set of commands, except for the commands (for example, display and dir) available in user view or any view.</p> <p>Each semicolon-separated segment must have at least one printable character.</p> <p>To specify the commands in a view but not the commands in its subviews, use a semicolon as the last printable character in the last segment. To specify the commands in a view and its subviews, the last printable character in the last segment must not be a semicolon.</p> <p>For example, you must enter system view before you enter interface view. To specify all the commands that start with ip in any interface view, you must use the "system ; interface * ; ip * ;" command string.</p> <p>For another example, the "system ; radius scheme * ;" command string represents all the commands that start with radius scheme in system view. The "system ; radius scheme *" command string represents all the commands that start with radius scheme in system view and all the commands in RADIUS scheme view.</p>
Asterisk (*) is the wildcard.	<p>An asterisk represents zero or multiple characters.</p> <p>In a non-last segment, you can use an asterisk only at the end of the segment.</p> <p>In the last segment, you can use an asterisk in any position of the segment. If the asterisk appears at the beginning, you cannot specify any printable characters behind it.</p> <p>For example, the "system ; *" command string represents all the commands available in system view and all its subviews, and the "debugging * event" command string represents all event debugging commands available in user view.</p>
Keyword abbreviation is allowed.	<p>You can specify a keyword by entering its first few characters. Any command that starts with this character string matches the rule.</p> <p>For example, "rule 1 deny command dis mpls lsp protocol static asbr" denies access to the commands display mpls lsp protocol static asbr and display mpls lsp protocol static-cr asbr.</p>
To control the access to a command, you must specify the command immediately after the view that has the command.	<p>To control access to a command, you must specify the command immediately behind the view to which the command is assigned. The rules that control command access for any subview do not apply to the command.</p> <p>For example, the "rule 1 deny command system ; interface * ; *" command string disables access to any command that is assigned to interface view, but you can still execute the acl number command in interface view, because this command is assigned to system view rather than interface view. To disable access to this command, use "rule 1 deny command system ; acl * ;".</p>

Rule	Guidelines
Do not include the vertical bar (), greater-than sign (>), or double greater-than sign (>>) when you specify display commands in a user role command rule.	<p>The system does not treat these redirect signs and the parameters that follow them as part of command lines, but in user role command rules, they are handled as part of command lines. As a result, no rule that includes any of these signs can find a match.</p> <p>For example, "rule 1 permit command display debugging > log" can never find a match, because the system has a display debugging command but not a display debugging > log command.</p>

Examples

```
# Permit the user role role1 to execute the display acl command.
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] rule 1 permit command display acl

# Permit the user role role1 to execute all commands that start with display.
[Sysname-role-role1] rule 2 permit command display *

# Permit the user role role1 to execute the radius scheme aaa command in system view and use all
commands assigned to RADIUS scheme view.
[Sysname-role-role1] rule 3 permit command system ; radius scheme aaa

# Deny the access of role1 to any read or write command of any feature.
[Sysname-role-role1] rule 4 deny read write feature

# Deny the access of role1 to any read command of the feature aaa.
[Sysname-role-role1] rule 5 deny read feature aaa

# Permit role1 to access all read, write, and execute commands of the feature group security-features.
[Sysname-role-role1] rule 6 permit read write execute feature-group security-features
```

Related commands

- **display role**
- **display role feature**
- **display role feature-group**
- **role**

super

Use **super** to obtain a user role that you are not logged in with.

Syntax

```
super [ rolename ]
```

Views

User view

Predefined user roles

network-admin

Parameters

rolename: Specifies a user role, a case-sensitive string of 1 to 63 characters. The user role must exist in the system. If no user role is specified, you obtain the user role network-admin.

Usage guidelines

To enable a user to obtain a temporary user role that is not specified in the user account, you must configure user role authentication. If no password is configured in the local password authentication, a console or AUX user can obtain the user role by either entering a string or not entering anything.

Examples

```
# Obtain the user role network-operator.
<Sysname> super network-operator
Password:
User privilege role is network-operator, and only those commands can be used that authorized
to the role.
```

Related commands

- **authentication super** (Security Command Reference)
- **super authentication-mode**
- **super password**

super authentication-mode

Use **super authentication-mode** to set an authentication mode when you obtain the user role that you are not logged in with.

Use **undo super authentication-mode** to restore the default.

Syntax

```
super authentication-mode { local | scheme } *
undo super authentication-mode
```

Default

Local password authentication applies.

Views

System view

Predefined user roles

network-admin

Parameters

local: Enables local password authentication.

scheme: Enables remote AAA authentication.

Usage guidelines

The authentication setting applies only to AUX, VTY, and TTY users. A console user can obtain the user role without authentication.

For local password authentication, use the **super password** command to set a password.

For remote AAA authentication, set the username and password on the RADIUS or HWTACACS server.

If you specify both **local** and **scheme** keywords, the keyword first entered in the command takes precedence, as follows:

- **scheme local**—Enables remote-then-local authentication mode. The device first performs AAA authentication for temporary user role authorization. If the remote HWTACACS or RADIUS server does not respond or the AAA configuration on the device is invalid, local password authentication is performed.
- **local scheme**—Enables local-then-remote authentication mode. The device first performs local password authentication. If no password is configured for the user role, the device performs remote authentication.

For more information about AAA, see *Security Configuration Guide*.

Examples

```
# Enable local-only authentication for the temporary user role authorization.
```

```
<Sysname> system-view  
[Sysname] super authentication-mode local
```

```
# Enable remote-then-local authentication for the temporary user role authorization.
```

```
<Sysname> system-view  
[Sysname] super authentication-mode scheme local
```

Related commands

- **authentication super** (Security Command Reference)
- **super password**

super password

Use **super password** to set a password for a user role.

Use **undo super password** to restore the default.

Syntax

In non-FIPS mode:

```
super password [ role rolename ] [ { hash | simple } password ]  
undo super password [ role rolename ]
```

In FIPS mode:

```
super password [ role rolename ]  
undo super password [ role rolename ]
```

Default

No password is set for a user role.

Views

System view

Predefined user roles

network-admin

Parameters

role rolename: Specifies a user role, a case-sensitive string of 1 to 63 characters. The user role must exist in the system. If no user role is specified, this command sets a password for user role network-admin.

hash: Sets a hashed password.

simple: Sets a plaintext password. This password will be saved in hashed text for security purposes.

password: Specifies the password string. This argument is case sensitive.

- In non-FIPS mode, if **simple** is specified, it must be a string of 1 to 63 characters. If **hash** is specified, it must be a string of 1 to 110 characters.
- In FIPS mode, the password must be a string of 15 to 63 characters, and must contain 4 character types including digits, uppercase letters, lowercase letters, and special characters.

Usage guidelines

If you do not specify any parameters, you specify a plaintext password in the interactive mode.

The FIPS mode supports only the interactive mode for setting a password.

Set a password if you configure local password authentication for temporary user role authorization.

It is a good practice to specify different passwords for different user roles.

Examples

```
# Set the password to 123456TESTplat&! for the user role network-operator.
```

```
<Sysname> system-view
```

```
[Sysname] super password role network-operator simple 123456TESTplat&!
```

```
# Set the password to 123456TESTplat&! in the interactive mode for the user role network-operator.
```

```
<Sysname> system-view
```

```
[Sysname] super password role network-operator
```

```
Password:
```

```
Confirm :
```

```
Updating user information. Please wait... ..
```

Related commands

super authentication-mode

vlan policy deny

Use **vlan policy deny** to enter the user role VLAN policy view.

Use **undo vlan policy deny** to restore the default user role VLAN policy.

Syntax

vlan policy deny

undo vlan policy deny

Default

A user role has no access to any VLAN.

Views

User role view

Predefined user roles

network-admin

Usage guidelines

The **vlan policy deny** command denies the access of a user role to any VLAN.

To restrict the VLAN access of a user role to only a set of VLANs:

1. Use **vlan policy deny** to deny access to any VLAN.
2. Use **permit vlan** to specify accessible VLANs.

To create, remove, or configure a VLAN, enter its view, or specify the VLAN in a feature command, you must make sure the VLAN is permitted by the VLAN policy of any user role that you are logged in with.

Any change to a user role VLAN policy takes effect only on users that log in with the user role after the change.

Examples

```
# Deny the access of role1 to any VLAN.
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] vlan policy deny
[Sysname-role-role1-vlanpolicy] quit

# Deny the access of role1 to any VLAN but VLANs 50 to 100.
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] vlan policy deny
[Sysname-role-role1-vlanpolicy] permit vlan 50 to 100
```

Related commands

- **display role**
- **permit vlan**
- **role**

vpn-instance policy deny

Use **vpn-instance policy deny** to enter user role VPN instance policy view.

Use **undo vpn-instance policy deny** to restore the default user role VPN instance policy.

Syntax

```
vpn-instance policy deny
undo vpn-instance policy deny
```

Default

A user role has access to any VPN.

Views

User role view

Predefined user roles

network-admin

Usage guidelines

The **vpn-instance policy deny** command denies the access of a user role to any VPN.

To restrict the VPN access of a user role to only a set of VPNs:

1. Use **vpn-instance policy deny** to deny access to any VPN.
2. Use **permit vpn-instance** to specify accessible VPNs.

To create, remove, or configure an MPLS L3VPN, enter its view, or specify it in a feature command, you must make sure the VPN is permitted by the VPN instance policy of any user role that you are logged in with.

Any change to a user role VPN instance policy takes effect only on users that log in with the user role after the change.

Examples

Deny the access of user role **role1** to any VPN.

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] vpn-instance policy deny
[Sysname-role-role1-vpnpolicy] quit
```

Deny the access of user role **role1** to any VPN but **vpn2**.

```
<Sysname> system-view
[Sysname] role name role1
[Sysname-role-role1] vpn-instance policy deny
[Sysname-role-role1-vpnpolicy] permit vpn-instance vpn2
```

Related commands

- **display role**
- **permit vpn-instance**
- **role**

Login management commands

Some login management commands are available in both user line view and user line class view. This chapter describes only the login management commands available in user line view.

If you configure a login management command in user line view, the configuration is applied only to the specified user lines. If you configure a login management command in user line class view, the configuration is applied to all user lines of the class. The configuration in user line view takes precedence over the configuration in user line class view. If a parameter is not configured in user line view or user line class view, the factory default setting is used.

Some login management commands are not supported in some user line views but can be configured in the corresponding user line class views. However, the commands do not take effect.

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

activation-key

Use **activation-key** to define a shortcut key for starting a terminal session.

Use **undo activation-key** to restore the default.

Syntax

activation-key *character*

undo activation-key

Default

Pressing **Enter** starts a terminal session.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

character: Specifies the shortcut key. It can be a single character, a key sequence, or the ASCII code value (in the range of 0 to 127) of the character or key sequence.

Usage guidelines

This command is not supported in VTY line view or VTY line class view.

To display the shortcut key you have defined, use the **display current-configuration | include activation-key** command.

Examples

```
# Configure character s as the shortcut key for starting a terminal session on the console line.
<Sysname> system-view
[Sysname] line console 0
```

```
[Sysname-line-console0] activation-key s
```

To verify the configuration:

1. Exit the console session.

```
[Sysname-line-console0] return  
<Sysname> quit
```

2. Log in again through the console line.

The following message appears:

```
Press ENTER to get started.
```

3. Press **Enter**.

Pressing **Enter** does not start a session.

4. Enter **s**.

A terminal session is started.

```
<Sysname>
```

authentication-mode

Use **authentication-mode** to set the authentication mode for a user line.

Use **undo authentication-mode** to restore the default.

Syntax

In non-FIPS mode:

```
authentication-mode { none | password | scheme }
```

```
undo authentication-mode
```

In FIPS mode:

```
authentication-mode scheme
```

```
undo authentication-mode
```

Default

In non-FIPS mode, the authentication mode is **password** for VTY lines, and **none** for AUX lines.

In FIPS mode, the authentication mode is **scheme**.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

none: Performs no authentication.

password: Performs local password authentication.

scheme: Performs AAA authentication. For more information about AAA, see *Security Configuration Guide*.

Usage guidelines

When the authentication mode is **none**, any user can log in without authentication. To improve device security, use the password or scheme authentication mode.

Examples

Enable the **none** authentication mode for user line VTY 0.

```
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] authentication-mode none
```

Enable password authentication for user line VTY 0 and set the password to **321**.

```
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] authentication-mode password
[Sysname-line-vty0] set authentication password simple 321
```

Enable scheme authentication for user line VTY 0, set the username to **123** and the password to **321**, and authorize the user to use the Telnet service.

```
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] authentication-mode scheme
[Sysname-line-vty0] quit
[Sysname] local-user 123
[Sysname-luser-123] password simple 321
[Sysname-luser-123] service-type telnet
```

Related commands

set authentication password

auto-execute command

CAUTION:

After configuring this command for a user line, you might be unable to access the CLI through the user line. Make sure you can access the CLI through a different user line before you configure this command and save the configuration.

Use **auto-execute command** to specify a command that is automatically executed when a user logs in through the current user line.

Use **undo auto-execute command** to remove the configuration.

Syntax

auto-execute command *command*

undo auto-execute command

Default

Command auto-execution is disabled.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

command: Specifies the command to be automatically executed.

Usage guidelines

This command is not supported in console line view or console line class view.

This command is not supported in AUX line view or AUX line class view.

The device automatically executes the specified command when a user logs in through the user line, and closes the user connection after the command is executed. If the command triggers another task, the device does not close the user connection until the task is completed.

Typically, you configure the **auto-execute command telnet X.X.X.X** command on the device so the device redirects a Telnet user to the host at X.X.X.X. In this case, the connection to the current device is closed when the user terminates the Telnet connection to X.X.X.X.

Examples

Configure the device to automatically Telnet to 192.168.1.41 after a user logs in through user line VTY 0.

```
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] auto-execute command telnet 192.168.1.41
% This action will lead to configuration failure through line-vty0. Are you sure?
[Y/N]:y
[Sysname-line-vty0]
```

To verify the configuration, Telnet to 192.168.1.40.

The device automatically Telnets to 192.168.1.41, and the following output is displayed:

```
C:\> telnet 192.168.1.40
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.          *
* Without the owner's prior written consent,                                *
* no decompiling or reverse-engineering shall be allowed.                  *
*****

<Sysname>
Trying 192.168.1.41 ...
Press CTRL+K to abort
Connected to 192.168.1.41 ...
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.          *
* Without the owner's prior written consent,                                *
* no decompiling or reverse-engineering shall be allowed.                  *
*****

<Sysname.41>
```

This operation is the same as directly logging in to the device at 192.168.1.41 through Telnet. When you break the Telnet connection to 192.168.1.41, the Telnet connection to 192.168.1.40 is broken at the same time.

command accounting

Use **command accounting** to enable command accounting.

Use **undo command accounting** to restore the default.

Syntax

command accounting

undo command accounting

Default

Command accounting is disabled, and the accounting server does not record executed commands.

Views

User line view, user line class view

Predefined user roles

network-admin

Usage guidelines

When command accounting is enabled but command authorization is not, every executed command is recorded on the HWTACACS server.

When both command accounting and command authorization are enabled, only authorized commands that are executed are recorded on the HWTACACS server.

Invalid commands issued by users are not recorded.

Examples

```
# Enable command accounting for user line VTY 0.  
<Sysname> system-view  
[Sysname] line vty 0  
[Sysname-line-vty0] command accounting
```

Related commands

- **command authorization**
- **accounting command** (*Security Command Reference*)

command authorization

Use **command authorization** to enable command authorization.

Use **undo command authorization** to restore the default.

Syntax

command authorization

undo command authorization

Default

Command authorization is disabled. Logged-in users can execute commands without authorization.

Views

User line view, user line class view

Predefined user roles

network-admin

Usage guidelines

When command authorization is enabled, a command is available only if the user has the commensurate user role and is authorized to use the command by the AAA scheme.

Examples

```
# Enable command accounting for VTY 0 so a user logged in through VTY 0 can execute only authorized commands that are permitted by the user role.
```

```
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] command authorization
```

Related commands

- **command accounting**
- **authorization command** (*Security Command Reference*)

databits

Use **databits** to specify the number of data bits for each character.

Use **undo databits** to restore the default.

Syntax

```
databits { 5 | 6 | 7 | 8 }
```

```
undo databits
```

Default

Eight data bits are used for each character.

Views

User line view

Predefined user roles

network-admin

Parameters

- 5**: Uses five data bits for each character.
- 6**: Uses six data bits for each character.
- 7**: Uses seven data bits for each character.
- 8**: Uses eight data bits for each character.

Usage guidelines

This command is not supported in VTY line view.

This setting must be the same as that on the configuration terminal.

Examples

```
# Configure AUX 0 to use five data bits for each character.
<Sysname> system-view
```

```
[Sysname] line aux 0
[Sysname-line-aux0] databits 5
```

display line

Use **display line** to display user line information.

Syntax

```
display line [ number1 | { aux | console | tty | vty } number2 ] [ summary ]
```

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

number1: Specifies the absolute number of a user line. It typically starts from 0.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

number2: Specifies the relative number of a user line.

summary: Displays summary information about user lines. If you do not specify this keyword, the detailed information is displayed.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>number1</i>	0 to 128	0 to 240	0 to 499
<i>number2</i>	aux : 0	aux : 0	aux : 0 to 1
	tty : 1 to 64	tty : 1 to 176	console : 0 to 1
	vty : 0 to 63	vty : 0 to 63	tty : 1 to 432
			vty : 0 to 63

Examples

Display user line information.

```
<Sysname> display line 0
  Idx  Type   Tx/Rx   Modem Auth  Int
  ---  ---   ---    ---   ---   ---
  0    CON 0    9600    -     N     -
```

+ : Line is active.
 F : Line is active and in async mode.
 Idx : Absolute index of line.
 Type : Type and relative index of line.
 Auth : Login authentication mode.
 Int : Physical port of the line.
 A : Authentication use AAA.
 N : No authentication is required.
 P : Password authentication.

Table 4 Command output

Field	Description
Modem	Whether the modem allows calling in or out. By default, this attribute is not configured and a hyphen (-) is displayed.

Display summary information about all user lines.

```

<Sysname> display line summary
Line type : [TTY]
    0:XXXX XXXX XXXX XXXX
    16:XXXX XXXX XXXX XXXX
    32:XXXX XXXX XXXX XXXX
    48:XXXX XXXX XXXX XXXX

Line type : [AUX]
    64:X

Line type : [VTY]
    65:UUUX XXXX XXXX XXXX
    81:XXXX XXXX XXXX XXXX
    97:XXXX XXXX XXXX XXXX
   113:XXXX XXXX XXXX XXXX

    3 lines used.      (U)
   126 lines not used. (X)
  
```

Table 5 Command output

Fields	Description
<i>number:status</i>	<p>The <i>number</i> indicates the absolute number of the first user line of the user line class, starting from 0. The <i>status</i> indicates whether the user lines of the user line class are being used (X for unused and U for used).</p> <p>For example, if "2:UXXX X" is displayed, there are five user lines of the user line class, which use the absolute numbers 2 through 6. User line 2 is in use, and the other user lines are not.</p>

display telnet client

Use **display telnet client** to display the source IPv4 address or source line configured for the device to use for outgoing Telnet packets when serving as a Telnet client.

Syntax

display telnet client

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display the Telnet client configuration of the device when it serves as a Telnet client.

```
<Sysname> display telnet client
The source IP address is 1.1.1.1.
```

The output shows that the device uses the source IPv4 address 1.1.1.1 for outgoing Telnet packets when it serves as a Telnet client.

Related commands

telnet client source

display user-interface

Use **display user-interface** to display user line information.

Syntax

display user-interface [*number1* | { **aux** | **console** | **tty** | **vty** } *number2*] [**summary**]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

number1: Specifies the absolute number of a user line. It typically starts from 0.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

number2: Specifies the relative number of a user line.

summary: Displays summary information about user lines. If you do not specify this keyword, the detailed information is displayed.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>number1</i>	0 to 128	0 to 240	0 to 499
<i>number2</i>	aux: 0 tty: 1 to 64 vty: 0 to 63	aux: 0 tty: 1 to 176 vty: 0 to 63	aux: 0 to 1 console: 0 to 1 tty: 1 to 432 vty: 0 to 63

Usage guidelines

This is an older command reserved for backward compatibility purposes. Although it has the same functionality and output as the **display line** command, HP recommends that you use the **display line** command.

Examples

Display user line information.

```
<Sysname> display user-interface 0
  Idx  Type   Tx/Rx   Modem Auth  Int
  0    CON 0    9600    -    N    -
+    : Line is active.
F    : Line is active and in async mode.
Idx  : Absolute index of line.
Type : Type and relative index of line.
Auth : Login authentication mode.
Int  : Physical port of the line.
A    : Authentication use AAA.
N    : No authentication is required.
P    : Password authentication.
```

Table 6 Command output

Field	Description
Modem	Whether the modem allows calling in or out. By default, this attribute is not configured and a hyphen (-) is displayed.

Display summary information about all user lines.

```
<Sysname> display user-interface summary
Line type : [TTY]
          0:XXXX XXXX XXXX XXXX
          16:XXXX XXXX XXXX XXXX
          32:XXXX XXXX XXXX XXXX
          48:XXXX XXXX XXXX XXXX
Line type : [AUX]
          64:X
```

```

Line type : [VTY]
        65:UUUU XXXX XXXX XXXX
        81:XXXX XXXX XXXX XXXX
        97:XXXX XXXX XXXX XXXX
       113:XXXX XXXX XXXX XXXX

```

```

4 lines used.      (U)
125 lines not used. (X)

```

Table 7 Command output

Fields	Description
<i>number:status</i>	<p>The <i>number</i> indicates the absolute number of the first user line of the user line class, starting from 0. The <i>status</i> indicates whether the user lines of the user line class are being used (X for unused and U for used).</p> <p>For example, if "2:UXXX X" is displayed, there are five user lines of the user line class, which use the absolute numbers 2 through 6. User line 2 is in use, and the other user lines are not.</p>

display users

Use **display users** to display online CLI user information.

Syntax

```
display users [ all ]
```

Views

Any view

Predefined user roles

```

network-admin
network-operator

```

Parameters

all: Displays all user lines supported by the device.

Examples

```

# Display online user information.
<Sysname> display users
  Idx  Line   Idle           Time                Pid    Type
  10   VTY 0    00:10:49      Jun 11 11:27:32    320    TEL
+ 11   VTY 1    00:00:00      Jun 11 11:39:40    334    TEL
Following are more details.
VTY 0   :
        Location: 192.168.1.12
VTY 1   :
        Location: 192.168.1.26
+       : Current operation user.
F       : Current operation user works in async mode.

```


The output shows that two users have logged in to the device: one is using user line VTY 0 and the other (yourself) is using VTY 1. Your IP address is 192.168.1.26.

Table 8 Command output

Field	Description
Idx	Absolute number of the user line.
Line	Type and relative number of the user line.
Idle	Time elapsed after the user's most recent input, in the format <i>hh:mm:ss</i> .
Time	Login time of the user.
Pid	Process ID of the user session.
Type	User type, such as Telnet, SSH, or PAD.
+	Indicates the user line you are using.
Location	IP address of the user.

escape-key

Use **escape-key** to define a shortcut key for terminating a task.

Use **undo escape-key** to disable the shortcut key for terminating a task.

Syntax

escape-key { *character* | **default** }

undo escape-key

Default

Pressing **Ctrl+C** terminates a task.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

character: Specifies the shortcut key. It can be a single character, a key sequence, or the ASCII code value (in the range of 0 to 127) of the character or key sequence.

default: Restores the default escape key sequence **Ctrl+C**.

Usage guidelines

In some situation, some commands might take a long time to complete, for example, when the **ping** command has 1000 packets to send or the **tracert** command is used for an unreachable destination. Before such a command is completed, you can stop the command by pressing the shortcut key for terminating tasks.

Whether a command can be terminated by **Ctrl+C** by default depends on the software implementation of the command. For more information, see the description of the command.

If you define a single character as the shortcut key for terminating tasks, pressing the character when a command is being executed stops the command. If no command is being executed, pressing the character enters the character as a common character.

It is a good practice to use a key sequence as the shortcut key. If you define a single character as the shortcut key on a user line, the character acts as the shortcut key or a common character on the user line, depending on whether a command is being executed. If you Telnet to another device from the user line, the character acts only as the control character to terminate a task.

You can execute this command multiple times, but only the most recent configuration takes effect. To view the current shortcut key definition, use the **display current-configuration** command.

Examples

Define character **a** as the shortcut key for terminating a task.

```
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] escape-key a
```

To verify the configuration:

1. Ping IP address 192.168.1.49, specifying the **-c** keyword to set the number of ICMP echo request packets to 20.

```
<Sysname> ping -c 20 192.168.1.49
  PING 192.168.1.49: 56 data bytes, press escape sequence to break
    Reply from 192.168.1.49: bytes=56 Sequence=1 ttl=255 time=3 ms
    Reply from 192.168.1.49: bytes=56 Sequence=2 ttl=255 time=3 ms
```

2. Press **a**.

The task is terminated, and the system returns to user view.

```
--- 192.168.1.49 ping statistics ---
  2 packet(s) transmitted
  2 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 3/3/3 ms
<Sysname>
```

flow-control

Use **flow-control** to configure the flow control mode.

Use **undo flow-control** to restore the default.

Syntax

```
flow-control { hardware | none | software }
flow-control hardware flow-control-type1 [ software flow-control-type2 ]
flow-control software flow-control-type1 [ hardware flow-control-type2 ]
undo flow-control
```

Default

Flow control is disabled.

Views

User line view

Predefined user roles

network-admin

Parameters

hardware: Performs hardware flow control.

none: Disables flow control.

software: Performs software flow control.

flow-control-type1, *flow-control-type2*: Specifies the flow control direction, **in** or **out**. If **in** is specified, the local device receives flow control information from the remote device. If **out** is specified, the local device sends flow control information to the remote device.

Usage guidelines

This command is not supported in VTY line view.

The device supports flow control in both the inbound and outbound directions. In outbound flow control (**in**), the local device listens to flow control information from the remote device and controls its transmission rate as required. In inbound flow control (**out**), the local device sends flow control information to the remote device so the remote device controls its transmission rate.

You can specify only one flow control mode for one direction.

To specify the same flow control mode for two directions, use the **flow-control { hardware | software | none }** command.

To specify different flow control modes for two directions, use the **flow-control hardware flow-control-type1 [software flow-control-type2]** or **flow-control software flow-control-type1 [hardware flow-control-type2]** command. If you do not specify the optional keyword and argument combination, the flow control mode **none** applies to the direction represented by the optional argument.

For two devices to communicate, make sure their flow control modes match.

Examples

```
# Configure software flow control in the inbound and outbound directions for user line Console 0.
```

```
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] flow-control software
```

```
# Configure hardware flow control in the inbound direction and disable flow control in the outbound direction for user line Console 0.
```

```
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] flow-control hardware in
```

```
# Configure hardware flow control in the inbound direction and software flow control in the outbound direction for user line Console 0.
```

```
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] flow-control hardware in software out
```

free line

Use **free line** to release a user line.

Syntax

free line { *number1* | { **aux** | **console** | **tty** | **vty** } *number2* }

Views

User view

Predefined user roles

network-admin

Parameters

number1: Specifies the absolute number of a user line. It typically starts from 0.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

number2: Specifies the relative number of a user line.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>number1</i>	0 to 128	0 to 240	0 to 499
<i>number2</i>	aux : 0 tty : 1 to 64 vty : 0 to 63	aux : 0 tty : 1 to 176 vty : 0 to 63	aux : 0 to 1 console : 0 to 1 tty : 1 to 432 vty : 0 to 63

Usage guidelines

This command does not release the line you are using.

Examples

Release user line VTY 1:

1. Display online users.

```
<Sysname> display users
  Idx  Line  Idle      Time                Pid  Type
  ---  ---  ---      ---                ---  ---
  10   VTY 0   00:10:49   Jun 11 11:27:32   320  TEL
+ 11   VTY 1   00:00:00   Jun 11 11:39:40   334  TEL
```

Following are more details.

```
VTY 0   :
          Location: 192.168.1.12
VTY 1   :
```

```

Location: 192.168.1.26
+      : Current operation user.
F      : Current operation user works in async mode.

```

2. If the operations of the user on VTY 1 impact your operations, log out the user.

```

<Sysname> free line vty 1
Are you sure to free line vty1? [Y/N]:y
[OK]

```

free user-interface

Use **free user-interface** to release a user line.

Syntax

```
free user-interface { number1 | { aux | console | tty | vty } number2 }
```

Views

User view

Predefined user roles

network-admin

Parameters

number1: Specifies the absolute number of a user line. It typically starts from 0.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

number2: Specifies the relative number of a user line.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>number1</i>	0 to 128	0 to 240	0 to 499
<i>number2</i>	aux : 0 tty : 1 to 64 vty : 0 to 63	aux : 0 tty : 1 to 176 vty : 0 to 63	aux : 0 to 1 console : 0 to 1 tty : 1 to 432 vty : 0 to 63

Usage guidelines

This command does not release the line you are using.

This is an older command reserved for backward compatibility purposes. Although it has the same functionality and output as the **free line** command, HP recommends you use the **free line** command.

Examples

Release user line VTY 1:

1. Display online users.

```
<Sysname> display users
   Idx  LINE   Idle      Time                Pid   Type
   ---  ---   ---      ---                ---   ---
   10   VTY 0   00:10:49   Jun 11 11:27:32   320   TEL
+ 11   VTY 1   00:00:00   Jun 11 11:39:40   334   TEL
Following are more details.
VTY 0   :
        Location: 192.168.1.12
VTY 1   :
        Location: 192.168.1.26
+       : Current operation user.
F       : Current operation user works in async mode.
```

2. If the operations of the user on VTY 1 impact your operations, log out the user.

```
<Sysname> free user-interface vty 1
Are you sure to free line vty1? [Y/N]:y
[OK]
```

history-command max-size

Use **history-command max-size** to set the size of the command history buffer for a user line.

Use **undo history-command max-size** to restore the default.

Syntax

history-command max-size *size-value*

undo history-command max-size

Default

The buffer of a user line saves up to 10 history commands.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

size-value: Specifies the maximum number of history commands the buffer can store, in the range of 0 to 256.

Usage guidelines

Each user line uses a separate command history buffer to save commands successfully executed by its user. The size of the buffer determines how many history commands the buffer can store.

To view stored history commands on your user line, press the up arrow key or down arrow key or execute the **display history-command** command.

Terminating a CLI session clears the commands in the history buffer.

Examples

```
# Set the size of the command history buffer to 20 for user line Console 0.
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] history-command max-size 20
```

idle-timeout

Use **idle-timeout** to set the session idle timeout.

Use **undo idle-timeout** to restore the default.

Syntax

idle-timeout *minutes* [*seconds*]

undo idle-timeout

Default

The idle-timeout interval is 10 minutes.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

minutes: Specifies the number of minutes for the idle timeout, in the range of 0 to 35791. The default is 10 minutes.

seconds: Specifies the number of seconds for the idle timeout, in the range of 0 to 59. The default is 0 seconds.

Usage guidelines

The system automatically terminates the user connection on the user line if there is no information interaction between the device and the user within the idle-timeout interval.

Setting the idle timeout to 0 disables the idle timeout function.

Examples

```
# Set the idle timeout to 1 minute and 30 seconds for user line Console 0.
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] idle-timeout 1 30
```

line

Use **line** to enter one or multiple user line views.

Syntax

line { *first-number1* [*last-number1*] | { **aux** | **console** | **tty** | **vty** } *first-number2* [*last-number2*] }

Views

System view

Predefined user roles

network-admin

Parameters

first-number1: Specifies the absolute number of the first user line. It typically starts from 0.

last-number1: Specifies the absolute number of the last user line. The value range varies with devices and typically starts from 0. This number cannot be smaller than *first-number1*.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

first-number2: Specifies the relative number of the first user line.

last-number2: Specifies the relative number of the last user line. This number cannot be smaller than *first-number2*.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>first-number1</i>	0 to 128	0 to 240	0 to 499
<i>last-number1</i>			
<i>first-number2</i>	aux : 0	aux : 0	aux : 0 to 1
<i>last-number2</i>	tty : 1 to 64	tty : 1 to 176	console : 0 to 1
	vty : 0 to 63	vty : 0 to 63	tty : 1 to 432
			vty : 0 to 63

Usage guidelines

To configure settings for a single user line, use this command to enter the user line view.

To configure the same settings for multiple user lines, use this command to enter multiple user line views.

Examples

Enter the view of user line Console 0.

```
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0]
```

Enter the views of user lines VTY 0 to VTY 63.

```
<Sysname> system-view
```



```
[Sysname] line vty 0 63
[Sysname-line-vty0-63]
```

Related commands

line class

line class

Use **line class** to enter user line class view.

Syntax

```
line class { aux | console | tty | vtty }
```

Views

System view

Predefined user roles

network-admin

Parameters

aux: Specifies the AUX line class view.

console: Specifies the console line class view.

tty: Specifies the TTY line class view.

vtty: Specifies the VTY line class view.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

Usage guidelines

To configure the same settings for all user lines of a line class, use this command to enter the user line class view.

Settings configured in a user line class view are applied as user-defined default settings to all user lines of the line class. Settings configured in a user line view are applied to only the user line and take precedence over the user-defined default settings. If a parameter is not configured in user line view or user line class view, the factory default setting is used.

Settings in a user line view take effect immediately and affect the online user. Settings in the line class view do not affect online users and take effect only for users logged in after the configuration is completed.

In user line class view, you can execute the following commands:

- **activation-key**
- **auto-execute command**
- **authentication-mode**
- **command accounting**
- **command authorization**

- **escape-key**
- **history-command max-size**
- **idle-timeout**
- **protocol inbound**
- **screen-length**
- **set authentication password**
- **shell**
- **terminal type**
- **user-role**

Examples

```
# Set the user connection timeout to 15 minutes in VTY line class view.
<Sysname> system-view
[Sysname] line class vty
[Sysname-line-class-vty] idle-timeout 15
```

Related commands

line

lock

Use **lock** to lock the current user line. This method prevents unauthorized users from using the user line.

Syntax

lock

Default

By default, the system does not lock any user line.

Views

User view

Predefined user roles

network-admin

Usage guidelines

After executing the **lock** command, enter the password for unlocking the user line and confirm the password by entering it again.

To unlock the user line, press **Enter** and enter the correct password.

This command is not supported in FIPS mode.

Examples

```
# Lock the current user line and then unlock it.
<Sysname> lock
Please input password<1 to 16> to lock current line:
Password:
Again:
```

```
locked !
// The user line is locked. To unlock it, press Enter and enter the password:
Password:
<Sysname>
```

parity

Use **parity** to specify a parity check mode.

Use **undo parity** to restore the default.

Syntax

```
parity { even | mark | none | odd | space }
undo parity
```

Default

The setting is **none**, and no parity check is performed.

Views

User line view

Predefined user roles

network-admin

Parameters

even: Performs even parity check.

mark: Performs mark parity check.

none: Disables parity check.

odd: Performs odd parity check.

space: Performs space parity check.

Usage guidelines

This command is not supported in VTY line view.

The configuration terminal and the device must be configured with the same parity check mode to communicate.

Examples

```
# Configure user line AUX 0 to perform odd parity check.
<Sysname> system-view
[Sysname] line aux 0
[Sysname-line-aux0] parity odd
```

protocol inbound

Use **protocol inbound** to enable a user line to support Telnet, PAD, SSH, or all three protocols.

Use **undo protocol inbound** to restore the default.

Syntax

In non-FIPS mode:

```
protocol inbound { all | pad | ssh | telnet }
```

```
undo protocol inbound
```

In FIPS mode:

```
protocol inbound ssh
```

```
undo protocol inbound
```

Default

In non-FIPS mode, all three protocols are supported.

In FIPS mode, SSH is supported.

Views

VTY line view, VTY line class view

Predefined user roles

network-admin

Parameters

all: Supports all three protocols.

pad: Supports PAD only.

ssh: Supports SSH only.

telnet: Supports Telnet only.

Usage guidelines

This configuration is effective only for a user who logs in through the user line after the configuration is completed.

Before configuring a user line to support SSH, set the authentication mode to **scheme** for the user line. For more information, see **authentication-mode**.

Examples

```
# Enable user lines VTY 0 through VTY 63 to support only SSH.
```

```
<Sysname> system-view
```

```
[Sysname] line vty 0 63
```

```
[Sysname-line-vty0-63] authentication-mode scheme
```

```
[Sysname-line-vty0-63] protocol inbound ssh
```

screen-length

Use **screen-length** to set the maximum number of lines to be displayed on a screen.

Use **undo screen-length** to restore the default.

Syntax

screen-length *screen-length*

undo screen-length

Default

Up to 24 lines are displayed on a screen.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

screen-length: Specifies the maximum number of lines to be displayed on a screen, in the range of 0 to 512. Setting it to 0 disables pausing between screens of output.

Usage guidelines

This command sets the maximum number of lines that can be displayed on one screen when the screen pause function is enabled. If the screen pause function is disabled, the system displays command output without any pause.

The actual number of lines that can be displayed on a screen is restricted by the display specification of the configuration terminal. For example, if the display specification is 24 lines but the specified maximum number of lines for a screen is 40, the device sends 40 lines to the screen at a time but only the last 24 lines are displayed on the screen. To view the previous 16 lines, you must press **PgUp**.

The screen pause function is enabled by default. To disable this function, execute the **screen-length 0** command or the **screen-length disable** command.

Examples

```
# Set the maximum number of lines to be displayed on a screen to 30 for user line Console 0.
<Sysname> system-view
[Sysname] line console 0
[Sysname-line-console0] screen-length 30
```

Related commands

screen-length disable

send

Use **send** to send messages to user lines.

Syntax

send { **all** | *number1* | { **aux** | **console** | **tty** | **vty** } *number2* }

Views

User view

Predefined user roles

network-admin

Parameters

all: Specifies all user lines.

number1: Specifies the absolute number of a user line. It typically starts from 0.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vtty: Specifies the VTY line.

number2: Specifies the relative number of a user line.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>number1</i>	0 to 128	0 to 240	0 to 499
<i>number2</i>	aux : 0 tty : 1 to 64 vtty : 0 to 63	aux : 0 tty : 1 to 176 vtty : 0 to 63	aux : 0 to 1 console : 0 to 1 tty : 1 to 432 vtty : 0 to 63

Usage guidelines

To end a message, press **Enter**. To cancel a message and return to user view, press **Ctrl+C**.

Examples

```
# Before you restart the device, send a notification to VTY 1 to inform the user.
```

```
<Sysname> send vty 1
```

```
Input message, end with Enter; abort with CTRL+C:
```

```
Your attention, please. I will reboot the system in 3 minutes.
```

```
Send message? [Y/N]:y
```

The message should appear on the screen of the user's configuration terminal, as shown in the following example:

```
[Sysname]
```

```
***
```

```
***
```

```
***Message from vty0 to vty1
```

```
***
```

```
Your attention, please. I will reboot the system in 3 minutes.
```

set authentication password

Use **set authentication password** to set a password for password authentication.

Use **undo set authentication password** to remove the password.

Syntax

```
set authentication password { hash | simple } password
```

```
undo set authentication password
```

Default

No password is set for password authentication.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

hash: Sets a hashed password.

simple: Sets a plaintext password.

password: Specifies the password string. This argument is case sensitive. If **simple** is specified, it must be a string of 1 to 16 characters. If **hash** is specified, it must be a string of 1 to 110 characters.

Usage guidelines

For security purposes, the password is hashed before being saved, whether you specify the **hash** or **simple** keyword.

This command is not supported in FIPS mode.

Examples

```
# Set the password for password authentication on user line Console 0 to hello.
```

```
<Sysname> system-view
```

```
[Sysname] line console 0
```

```
[Sysname-line-console0] authentication-mode password
```

```
[Sysname-line-console0] set authentication password simple hello
```

When you log in again through user line Console 0, you must enter the password **hello** to pass authentication.

Related commands

authentication-mode

shell

Use **shell** to enable the terminal service for a user line.

Use **undo shell** to disable the terminal service for a user line.

Syntax

```
shell
```

undo shell

Default

The terminal service is enabled on all user lines.

Views

User line view, user line class view

Predefined user roles

network-admin

Usage guidelines

The **undo shell** command is not supported in console line view or console line class view.

The **undo shell** command is not supported in AUX line view or AUX line class view.

You cannot disable the terminal service on the user line you are using.

To configure the device to act as a Telnet or SSH server on a user line, you cannot configure the **undo shell** command for the user line.

Examples

```
# Disable the terminal service for user line VTY 0 through VTY 63 so no user can log in to the device through the user lines.
```

```
<Sysname> system-view
[Sysname] line vty 0 63
[Sysname-line-vty0-63] undo shell
Disable ui-vty0-63 , are you sure? [Y/N]:y
[Sysname-line-vty0-63]
```

speed

Use **speed** to set the transmission rate (also called the "baud rate") on a user line.

Use **undo speed** to restore the default.

Syntax

```
speed speed-value
```

```
undo speed
```

Default

The transmission rate is 9600 bps.

Views

User line view

Predefined user roles

network-admin

Parameters

speed-value: Transmission rate in bps. The transmission rates available for asynchronous serial interfaces include: 300 bps, 600 bps, 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600 bps, and 115200 bps. The transmission rate varies with devices and configuration environments.

Usage guidelines

This command is not supported in VTY line view.

The configuration terminal and the device must be configured with the same transmission rate to communicate.

Examples

```
# Set the transmission rate to 19200 bps for user line AUX 0.
<Sysname> system-view
[Sysname] line aux 0
[Sysname-line-aux0] speed 19200
```

stopbits

Use **stopbits** to specify the number of stop bits for a character.

Use **undo stopbits** to restore the default.

Syntax

```
stopbits { 1 | 1.5 | 2 }
undo stopbits
```

Default

One stop bit is used.

Views

User line view

Predefined user roles

network-admin

Parameters

1: Uses one stop bit.

1.5: Uses one and a half stop bits. The device does not support using one and a half stop bits. If you specify this keyword, two stop bits are used.

2: Uses two stop bits.

Usage guidelines

This command is not supported in VTY line view.

The configuration terminal and the device must be configured to use the same number of stop bits to communicate.

Examples

```
# Set the number of stop bits to 1 for user line AUX 0.
<Sysname> system-view
[Sysname] line aux 0
[Sysname-line-aux0] stopbits 1
```

telnet

Use **telnet** to Telnet to a host in an IPv4 network.

Syntax

```
telnet remote-host [ service-port ] [ vpn-instance vpn-instance-name ] [ source { interface interface-type interface-number | ip ip-address } ] [ dscp dscp-value ]
```

Views

User view

Predefined user roles

network-admin

Parameters

remote-host: Specifies the IPv4 address or host name of a remote host. A host name can be a case-insensitive string of 1 to 253 characters. Valid characters for a host name include letters, digits, hyphens (-), underscores (_), and dots (.).

service-port: Specifies the TCP port number for the Telnet service on the remote host. The value range is 0 to 65535 and the default is 23.

vpn-instance vpn-instance-name: Specifies the VPN instance to which the remote host belongs, where *vpn-instance-name* is a case-sensitive string of 1 to 31 characters. If the remote host belongs to the public network, do not specify this option.

source: Specifies a source IPv4 address or source interface for outgoing Telnet packets.

interface interface-type interface-number: Specifies the source interface. The primary IPv4 address of the interface will be used as the source IPv4 address for outgoing Telnet packets.

ip ip-address: Specifies the source IPv4 address for outgoing Telnet packets.

dscp dscp-value: Specifies the DSCP value for IP to use in outgoing Telnet packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 48.

Usage guidelines

To terminate the current Telnet connection, press **Ctrl+K** or execute the **quit** command.

The source IPv4 address or source interface that is specified by this command is only applicable to the current Telnet connection.

This command is not supported in FIPS mode.

Examples

```
# Telnet to host 1.1.1.2, using 1.1.1.1 as the source IP address for outgoing Telnet packets.  
<Sysname> telnet 1.1.1.2 source ip 1.1.1.1
```

Related commands

telnet client source

telnet client source

Use **telnet client source** to specify a source IPv4 address or source interface for outgoing Telnet packets when the device serves as a Telnet client.

Use **undo telnet client source** to remove the configuration.

Syntax

telnet client source { **interface** *interface-type interface-number* | **ip** *ip-address* }

undo telnet client source

Default

No source IPv4 address or source interface is specified for outgoing Telnet packets. The source IPv4 address is the primary IPv4 address of the outbound interface.

Views

System view

Predefined user roles

network-admin

Parameters

interface *interface-type interface-number*: Specifies a source interface. The primary IPv4 address of the interface will be used as the source IPv4 address for outgoing Telnet packets.

ip *ip-address*: Specifies a source IPv4 address.

Usage guidelines

The source IPv4 address or source interface that is specified by this command applies to all Telnet connections. However, if a user specifies a source IPv4 address or source interface when executing the **telnet** command, the setting specified by the user takes effect.

This command is not supported in FIPS mode.

Examples

Set the source IPv4 address for outgoing Telnet packets to 1.1.1.1 when the device serves as a Telnet client.

```
<Sysname> system-view  
[Sysname] telnet client source ip 1.1.1.1
```

Related commands

display telnet client configuration

telnet ipv6

Use **telnet ipv6** to Telnet to a host in an IPv6 network.

Syntax

telnet ipv6 *remote-host* [**-i** *interface-type interface-number*] [*port-number*] [**vpn-instance** *vpn-instance-name*] [**dscp** *dscp-value*]

Views

User view

Predefined user roles

network-admin

Parameters

remote-host: Specifies the IP address or host name of a remote host. A host name can be a case-insensitive string of 1 to 253 characters. Valid characters for a host name include letters, digits, hyphens (-), underscores (_), and dots (.).

-i *interface-type interface-number*: Specifies the outbound interface for sending Telnet packets. This option is required when the destination address is a link-local address.

port-number: Specifies the TCP port number for the Telnet service on the remote host. The value range is 0 to 65535 and the default is 23.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the remote host belongs, where *vpn-instance-name* is a case-sensitive string of 1 to 31 characters. If the remote host belongs to the public network, do not specify this option.

dscp *dscp-value*: Specifies the DSCP value for IPv6 to use in outgoing Telnet packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 48.

Usage guidelines

To terminate the current Telnet connection, press **Ctrl+K** or execute the **quit** command.

This command is not supported in FIPS mode.

Examples

```
# Telnet to the host at 5000::1.  
<Sysname> telnet ipv6 5000::1
```

telnet server acl

Use **telnet server acl** to apply an ACL to filter Telnet logins.

Use **undo telnet server acl** to restore the default.

Syntax

telnet server acl *acl-number*

undo telnet server acl

Default

No ACL is used to filter Telnet logins.

Views

System view

Predefined user roles

network-admin

Parameters

acl-number: Specifies an ACL by its number:

- **Basic ACL**—2000 to 2999.
- **Advanced ACL**—3000 to 3999.
- **Ethernet frame header ACL**—4000 to 4999.

Usage guidelines

Only one ACL can be used to filter Telnet logins, and only users permitted by the ACL can Telnet to the device.

This command does not take effect on existing Telnet connections.

You can specify an ACL that has not been created yet in this command. The command takes effect after the ACL is created.

For more information about ACL, see *ACL and QoS Configuration Guide*.

This command is not supported in FIPS mode.

Examples

```
# Permit only the user at 1.1.1.1 to Telnet to the device.
<Sysname> system-view
[Sysname] acl number 2001
[Sysname-acl-basic-2001] rule permit source 1.1.1.1 0
[Sysname-acl-basic-2001] quit
[Sysname] telnet server acl 2001
```

telnet server dscp

Use **telnet server dscp** to set the DSCP value for IPv4 to use for outgoing Telnet packets on a Telnet server.

Use **undo telnet server dscp** to restore the default.

Syntax

```
telnet server dscp dscp-value
undo telnet server dscp
```

Default

IPv4 uses the DSCP value 48 for outgoing Telnet packets on a Telnet server.

Views

System view

Predefined user roles

network-admin

Parameters

dscp-value: Specifies a DSCP value in the range of 0 to 63.

Usage guidelines

The DSCP value is carried in the ToS field of an IP packet, and it indicates the transmission priority of the packet.

This command is not supported in FIPS mode.

Examples

```
# Set the DSCP value for IPv4 to use for outgoing Telnet packets to 30 on a Telnet server.
<Sysname> system-view
[Sysname] telnet server dscp 30
```

telnet server ipv6 acl

Use **telnet server ipv6 acl** to apply an IPv6 ACL to filter IPv6 Telnet logins.

Use **undo telnet server ipv6 acl** to restore the default.

Syntax

```
telnet server ipv6 acl [ ipv6 ] acl-number
```

```
undo telnet server ipv6 acl
```

Default

No ACL is used to filter IPv6 Telnet logins.

Views

System view

Predefined user roles

network-admin

Parameters

acl-number: Specifies an IPv6 ACL by its number:

- **Basic ACL**—2000 to 2999. The **ipv6** option is required.
- **Advanced ACL**—3000 to 3999. The **ipv6** option is required.
- **Ethernet frame header ACL**—4000 to 4999. Do not specify the **ipv6** option.

Usage guidelines

If the ACL does not exist or does not have a rule, all users are permitted to Telnet to the device.

When the ACL exists and has rules, only users permitted by the ACL can Telnet to the device.

This command is not effective for existing Telnet connections.

If you execute this command multiple times, the most recent configuration takes effect.

For more information about ACL, see *ACL and QoS Configuration Guide*.

This command is not supported in FIPS mode.

Examples

```
# Permit only the user at 2000::1 to Telnet to the device.
<Sysname> system-view
[Sysname] acl ipv6 number 2001
[Sysname-acl6-basic-2001] rule permit source 2000::1 128
[Sysname-acl6-basic-2001] quit
[Sysname] telnet server ipv6 acl ipv6 2001
```

telnet server ipv6 dscp

Use **telnet server ipv6 dscp** to set the DSCP value for IPv6 to use for outgoing Telnet packets on a Telnet server.

Use **undo telnet server ipv6 dscp** to restore the default.

Syntax

telnet server ipv6 dscp *dscp-value*

undo telnet server ipv6 dscp

Default

IPv6 uses the DSCP value 48 for outgoing Telnet packets on a Telnet server.

Views

System view

Predefined user roles

network-admin

Parameters

dscp-value: Specifies a DSCP value in the range of 0 to 63.

Usage guidelines

The DSCP value is carried in the Traffic class field of an IPv6 packet, and it indicates the transmission priority of the packet.

This command is not supported in FIPS mode.

Examples

Set the DSCP value for IPv6 to use for outgoing Telnet packets to 30 on a Telnet server.

```
<Sysname> system-view
```

```
[Sysname] telnet server ipv6 dscp 30
```

telnet server enable

Use **telnet server enable** to enable the Telnet server function.

Use **undo telnet server enable** to disable the Telnet server function.

Syntax

telnet server enable

undo telnet server enable

Default

The Telnet server function is disabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

Administrators can Telnet to the device only when the Telnet server function is enabled.

This command is not supported in FIPS mode.

Examples

Enable the Telnet server function.

```
<Sysname> system-view
[Sysname] telnet server enable
```

terminal type

Use **terminal type** to specify the terminal display type.

Use **undo terminal type** to restore the default.

Syntax

```
terminal type { ansi | vt100 }
```

```
undo terminal type
```

Default

The terminal display type is ANSI.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

ansi: Specifies the terminal display type ANSI.

vt100: Specifies the terminal display type VT100.

Usage guidelines

The device supports two terminal display types: ANSI and VT100. HP recommends that you set the display type to VT100 on both the device and the configuration terminal. If either side uses the ANSI type, a display problem such as cursor positioning error might occur when a command line has more than 80 characters.

Examples

```
# Set the terminal display type to VT100.
<Sysname> system-view
[Sysname] line vty 0
[Sysname-line-vty0] terminal type vt100
```

user-interface

Use **user-interface** to enter one or multiple user line views.

Syntax

```
user-interface { first-number1 [ last-number1 ] | { aux | console | tty | vtty } first-number2
[ last-number2 ] }
```

Views

System view

Predefined user roles

network-admin

Parameters

first-number1: Specifies the absolute number of the first user line. It typically starts from 0.

last-number1: Specifies the absolute number of the last user line. The value range varies with devices and typically starts from 0. This number cannot be smaller than *first-number1*.

aux: Specifies the AUX line.

console: Specifies the console line.

tty: Specifies the TTY line.

vty: Specifies the VTY line.

first-number2: Specifies the relative number of the first user line.

last-number2: Specifies the relative number of the last user line. This number cannot be smaller than *first-number2*.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

The following matrix shows the argument and router compatibility:

Argument	MSR2000	MSR3000	MSR4000
<i>first-number1</i>	0 to 128	0 to 240	0 to 499
<i>last-number1</i>			
<i>first-number2</i>	aux : 0	aux : 0	aux : 0 to 1
<i>last-number2</i>	tty : 1 to 64	tty : 1 to 176	console : 0 to 1
	vty : 0 to 63	vty : 0 to 63	tty : 1 to 432
			vty : 0 to 63

Usage guidelines

To configure settings for a single user line, use this command to enter the user line view.

To configure the same settings for multiple user lines, use this command to enter multiple user line views.

This is an older command reserved for backward compatibility purposes. Although it has the same functionality and output as the **line** command, HP recommends you use the **line** command.

Examples

Enter the view of user line Console 0.

```
<Sysname> system-view
[Sysname] user-interface console 0
[Sysname-line-console0]
```

Enter the views of user lines VTY 0 to VTY 63.

```
<Sysname> system-view
[Sysname] user-interface vty 0 63
[Sysname-line-vty0-63]
```

Related commands

user-interface class

user-interface class

Use **user-interface class** to enter user line class view.

Syntax

user-interface class { **aux** | **console** | **tty** | **vty** }

Views

System view

Predefined user roles

network-admin

Parameters

aux: Specifies the AUX line class view.

console: Specifies the console line class view.

tty: Specifies the TTY line class view.

vty: Specifies the VTY line class view.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
console	No	No	Yes

Usage guidelines

To configure the same settings for all user lines of a line class, use this command to enter the user line class view.

Settings configured in a user line class view are applied as user-defined default settings to all user lines of the line class. Settings configured in a user line view are applied to only the user line and take precedence over the user-defined default settings. If a parameter is not configured in user line view or user line class view, the factory default setting is used.

Settings in a user line view take effect immediately and affect the online user. Settings in the line class view do not affect online users and take effect only for users who log in after the configuration is completed.

This is an older command reserved for backward compatibility purposes. Although it has the same function and output as the **line class** command, HP recommends you use the **line class** command.

The following commands are available in user line class view:

- **activation-key**
- **auto-execute command**
- **authentication-mode**
- **command accounting**
- **command authorization**

- **escape-key**
- **history-command max-size**
- **idle-timeout**
- **protocol inbound**
- **screen-length**
- **set authentication password**
- **shell**
- **terminal type**
- **user-role**

Examples

```
# Set the user connection timeout to 15 minutes in VTY line class view.
<Sysname> system-view
[Sysname] user-interface class vty
[Sysname-line-class-vty] idle-timeout 15
```

Related commands

user-interface

user-role

Use **user-role** to assign a user role to a user line so users logged in through the user line get the user role at login.

Use **undo user-role** to remove a user role or restore the default.

Syntax

```
user-role role-name
undo user-role [ role-name ]
```

Default

A console line user is assigned the user role network-admin. Users of other user lines are assigned the user role network-operator.

Views

User line view, user line class view

Predefined user roles

network-admin

Parameters

role-name: Specifies a user role name, a case-sensitive string of 1 to 63 characters. The user role can be predefined (network-admin, network-operator, or level-0 to level-15) or user-defined. If you do not specify this argument for the **undo user-role** command, the command restores the default user role.

Usage guidelines

You can assign up to 64 user roles to a user line. A user logged in through the user line gets all the user roles.

For more information about user roles, see "Configuring RBAC."

This command is not supported in FIPS mode.

Examples

Assign user role network-admin through the user line AUX 0.

```
<Sysname> system-view
```

```
[Sysname] line aux 0
```

```
[Sysname-line-aux0] user-role network-admin
```

FTP commands

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

In FIPS mode, the device does not support FTP.

FTP server commands

display ftp-server

Use **display ftp-server** to display FTP server configuration and status information.

Syntax

display ftp-server

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display FTP server configuration and status information.

```
<Sysname> display ftp-server
FTP server is running.
User count:                               1
Idle-timeout timer (in minutes):         30
```

Table 9 Command output

Field	Description
User count	Number of the current logged-in users.
Idle-timeout timer (in minutes)	If no packet is exchanged between the FTP server and client during this period, the FTP connection is broken.

Related commands

- **ftp server enable**
- **ftp timeout**

display ftp-user

Use **display ftp-user** to display detailed information about logged-in FTP users.

Syntax

display ftp-user

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display detailed information about logged-in FTP users.

```
<Sysname> display ftp-user
UserName      HostIP          Port    HomeDir
root          192.168.20.184 46539   cfa0:
```

If a username exceeds 10 characters, a host IP address exceeds 15 bits, or a directory name exceeds 37 bits, the exceeded part is displayed in the next line and right justified, as shown below.

```
<Sysname> display ftp-user
UserName      HostIP          Port    HomeDir
user2         2000:2000:2000: 1499    cfa0:/user2
              2000:2000:2000:
              2000:2000
administra    100.100.100.100 10001   cfa0:/123456789/123456789/123456789/
tor           tor              123456789/123456789/123456789/1234567
              89/123456789
```

Table 10 Command output

Field	Description
UserName	Name of the user.
HostIP	IP address of the user.
Port	Port number of the user.
HomeDir	Authorized directory for the user.

free ftp user

Use **free ftp user** to manually release the FTP connection that was established by using a specific user account.

Syntax

free ftp user *username*

Views

User view

Predefined user roles

network-admin

Parameters

username: Specifies a username. You can use the **display ftp-user** command to display FTP user information.

Examples

```
# Manually release the FTP connection that was established by using the user account named ftpuser.  
<Sysname> free ftp user ftpuser  
Are you sure to free FTP connection? [Y/N]:y  
<Sysname>
```

free ftp user-ip

Use **free ftp user-ip** to manually release the FTP connection that was established from a specific IPv4 address.

Syntax

```
free ftp user-ip ipv4-address [ port port ]
```

Views

User view

Predefined user roles

network-admin

Parameters

ipv4-address: Specifies the source IP address of an FTP connection to be released. You can use the **display ftp-user** command to view the source IP address of the FTP connection.

port *port*: Specifies the source port of an FTP connection to be released. You can use the **display ftp-user** command to view the source port of the FTP connection.

Examples

```
# Manually release the FTP connection that was established from IP address 192.168.20.184.  
<Sysname> free ftp user-ip 192.168.20.184  
Are you sure to free FTP connection? [Y/N]:y  
<Sysname>
```

free ftp user-ip ipv6

Use **free ftp user-ip ipv6** to manually release the FTP connection that was established from a specific IPv6 address.

Syntax

```
free ftp user-ip ipv6 ipv6-address [ port port ]
```

Views

User view

Predefined user roles

network-admin

Parameters

ipv6-address: Specifies the source IPv6 address of an FTP connection to be released. You can use the **display ftp-user** command to view the source IPv6 address of the FTP connection.

port port: Specifies the source port of an FTP connection to be released. You can use the **display ftp-user** command to view the source port of the FTP connection.

Examples

```
# Manually release the FTP connection that was established from IPv6 address 2000::154.
<Sysname> free ftp user-ip ipv6 2000::154
Are you sure to free FTP connection? [Y/N]:y
<Sysname>
```

ftp server acl

Use **ftp server acl** to use an ACL to control FTP clients' access to the FTP server.

Use **undo ftp server acl** to restore the default.

Syntax

```
ftp server acl { acl-number | ipv6 acl-number6 }
undo ftp server acl [ ipv6 ]
```

Default

No ACL is used to control FTP clients' access to the FTP server.

Views

System view

Predefined user roles

network-admin

Parameters

acl-number: Specifies an IPv4 ACL number in the range of 2000 to 3999.

ipv6 *acl-number6*: Specifies an IPv6 ACL number in the range of 2000 to 3999.

Usage guidelines

You can use this command to permit only FTP requests from specific FTP clients. This configuration takes effect only for FTP connections to be established. It does not impact existing FTP connections. If you execute the command multiple times, the most recently specified ACL takes effect.

Examples

```
# Use ACL 2001 to allow only client 1.1.1.1 to access the FTP server.
<Sysname> system-view
[Sysname] acl number 2001
[Sysname-acl-basic-2001] rule 0 permit source 1.1.1.1 0
[Sysname-acl-basic-2001] rule 1 deny source any
[Sysname-acl-basic-2001] quit
[Sysname] ftp server acl 2001
```


ftp server dscp

Use **ftp server dscp** to set the DSCP value for IPv4 to use for outgoing FTP packets on an FTP server.

Use **undo ftp server dscp** to restore the default.

Syntax

ftp server dscp *dscp-value*

undo ftp server dscp

Default

IPv4 uses the DSCP value 0 for outgoing FTP packets on an FTP server.

Views

System view

Predefined user roles

network-admin

Parameters

dscp-value: Specifies a DSCP value in the range of 0 to 63.

Usage guidelines

The DSCP value is carried in the ToS field of an IP packet, and it indicates the transmission priority of the packet.

Examples

Set the DSCP value for IPv4 to use for outgoing FTP packets to 30 on an FTP server.

```
<Sysname> system-view  
[Sysname] ftp server dscp 30
```

ftp server enable

Use **ftp server enable** to enable the FTP server.

Use **undo ftp server enable** to disable the FTP server.

Syntax

ftp server enable

undo ftp server enable

Default

The FTP server is disabled.

Views

System view

Predefined user roles

network-admin

Examples

Enable the FTP server.

```
<Sysname> system-view
[Sysname] ftp server enable
```

ftp server ipv6 dscp

Use **ftp server ipv6 dscp** to set the DSCP value for IPv6 to use for outgoing FTP packets on an FTP server.

Use **undo ftp server ipv6 dscp** to restore the default.

Syntax

```
ftp server ipv6 dscp dscp-value
```

```
undo ftp server ipv6 dscp
```

Default

IPv6 uses the DSCP value 0 for outgoing FTP packets on an FTP server.

Views

System view

Predefined user roles

network-admin

Parameters

dscp-value: Specifies a DSCP value in the range of 0 to 63.

Usage guidelines

The DSCP value is carried in the Traffic class field of an IPv6 packet, and it indicates the transmission priority of the packet.

Examples

```
# Set the DSCP value for IPv6 to use for outgoing FTP packets to 30 on an FTP server.
```

```
<Sysname> system-view
[Sysname] ftp server ipv6 dscp 30
```

ftp timeout

Use **ftp timeout** to set the idle-timeout interval for FTP connections.

Use **undo ftp timeout** to restore the default.

Syntax

```
ftp timeout minute
```

```
undo ftp timeout
```

Default

The FTP idle-timeout interval is 30 minutes.

Views

System view

Predefined user roles

network-admin

Parameters

Minute: Specifies an idle-timeout interval in the range of 1 to 35791 minutes.

Usage guidelines

If no packet is exchanged on an FTP connection within the idle-timeout interval, the FTP server breaks the FTP connection to release resources.

Examples

```
# Set the idle-timeout interval to 36 minutes.
<Sysname> system-view
[Sysname] ftp timeout 36
```

FTP client commands

Before executing FTP client configuration commands, make sure you have configured authorization settings for users on the FTP server. Authorized operations include viewing the files in the working directory, reading/downloading/uploading/renaming/removing files, and creating directories.

The FTP client commands in this section are supported by the device, but whether they can be executed successfully depends on the FTP server.

The output in the examples of this section varies with FTP server types.

append

Use **append** to add the content of a file on the FTP client to a file on the FTP server.

Syntax

```
append localfile [ remotefile ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

localfile: Specifies a local file on the FTP client.

remotefile: Specifies a remote file on the FTP server.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```
# Append the content of the local a.txt file to the b.txt file on the FTP server.
ftp> append a.txt b.txt
local: a.txt remote: b.txt
150 Connecting to port 50190
226 File successfully transferred
1657 bytes sent in 0.000736 seconds (2.15 Mbyte/s)
```

ascii

Use **ascii** to set the file transfer mode to ASCII.

Syntax

ascii

Default

The file transfer mode is ASCII.

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

The carriage return characters vary with operating systems. For example, HP and Windows use **/r/n**, and Linux uses **/n**. To transfer files between two systems that use different carriage return characters, select the FTP transfer mode according to the file type.

FTP transfers files in either of the following modes:

- **Binary mode**—Transfers image files or pictures.
- **ASCII mode**—Transfers text files.

Examples

```
# Set the file transfer mode to ASCII.  
ftp> ascii  
200 TYPE is now ASCII
```

Related commands

binary

binary

Use **binary** to set the file transfer mode to binary, which is also called the "flow mode."

Syntax

binary

Default

The file transfer mode is ASCII.

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

The carriage return characters vary with operating systems. For example, HP and Windows use `/r/n`, and Linux uses `/n`. To transfer files between two systems that use different carriage return characters, determine FTP transfer mode according to the file type.

FTP transfers files in the following modes:

- **Binary mode**—Transfers program file or pictures.
- **ASCII mode**—Transfers text files.

Examples

```
# Set the file transfer mode to binary.  
ftp> binary  
200 TYPE is now 8-bit binary
```

Related commands

ascii

bye

Use `bye` to terminate the connection to the FTP server and return to user view.

If no connection is established between the device and the remote FTP server, use this command to return to user view.

Syntax

bye

Views

FTP client view

Predefined user roles

network-admin

Examples

```
# Terminate the connection to the FTP server and return to user view.  
ftp> bye  
221-Goodbye. You uploaded 2 and downloaded 2 kbytes.  
221 Logout.  
<Sysname>
```

Related commands

quit

cd

Use `cd` to change the current working directory to another directory on the FTP server.

Syntax

```
cd { directory | .. | / }
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

directory: Specifies the name of the target directory in the format `[drive:][/]path`, where *drive* represents the storage medium name, typically `cf`. If the target directory does not exist, the `cd` command does not change the current working directory. If no drive information is provided, the argument represents a folder or subfolder in the current directory. For more information about the *drive* and *path* arguments, see *Fundamentals Configuration Guide*.

`..`: Returns to the upper directory. Executing the `cd ..` command is the same as executing the `cdup` command. If the current working directory is the FTP root directory, the `cd ..` command does not change the current working directory.

`/`: Returns to the FTP root directory.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

The directory that can be accessed must be authorized by the FTP server.

Examples

Change the working directory to the subdirectory **logfile** of the current directory.

```
ftp> cd logfile
250 OK. Current directory is /logfile
```

Change the working directory to the subdirectory **folder** of the FTP root directory.

```
ftp> cd /diagfile
250 OK. Current directory is /diagfile
```

Change the working directory to the upper directory of the current directory.

```
ftp> cd ..
250 OK. Current directory is /
```

Change the working directory to the FTP root directory.

```
ftp> cd /
250 OK. Current directory is /
```

Related commands

- **cdup**
- **pwd**

cdup

Use **cdup** to enter the upper directory of the FTP server.

This command does not change the working directory if the current directory is the FTP root directory.

Syntax

cdup

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```
# Change the working directory to the upper directory.
```

```
ftp> pwd
257 "/ftp/subdir" is your current location
ftp> cdup
250 OK. Current directory is /ftp
ftp> pwd
257 "/ftp" is your current location
```

Related commands

- **cd**
- **pwd**

close

Use **close** to terminate the connection to the FTP server without exiting FTP client view.

Syntax

```
close
```

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```
# Terminate the connection to the FTP server without exiting the FTP client view.
```

```
ftp> close
221-Goodbye. You uploaded 0 and downloaded 0 kbytes.
221 Logout.
ftp>
```

Related commands

disconnect

debug

Use **debug** to enable or disable FTP client debugging.

Syntax

debug

Default

FTP client debugging is disabled.

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

When FTP client debugging is enabled, executing this command disables FTP client debugging.

When FTP client debugging is disabled, executing this command enables FTP client debugging.

Examples

Enable and then disable FTP client debugging.

```
ftp> debug
Debugging on (debug=1).
ftp> debug
Debugging off (debug=0).
```

When the device serves as the FTP client, enable FTP client debugging and download file **a.txt** from the current directory of the FTP server.

```
ftp> debug
Debugging on (debug=1).
ftp> get a.txt
local: a.txt remote: a.txt
--> EPRT |2|8::124|50198|
200 PORT command successful
--> RETR a.txt
150 Connecting to port 50198
226 File successfully transferred
1569 bytes received in 0.0104 seconds (147.2 kbyte/s)
```

Table 11 Command output

Field	Description
--> EPRT 2 8::124 50198	FTP command. <ul style="list-style-type: none">• 2—IPv6 (1 for IPv4).• 8::124—IPv6 address of the FTP server.• 50198—Port number of the FTP server.
200 PORT command successful	Received FTP reply code. 200 represents the reply code, defined in RFC 959.
--> RETR a.txt	Downloads file a.txt .

delete

Use **delete** to permanently delete a file on the FTP server.

Syntax

```
delete remotefile
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies the name of a file on the FTP server.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

To perform this operation, you must have delete permission on the FTP server.

Examples

```
# Delete file b.txt.  
ftp> delete b.txt  
250 Deleted b.txt
```

dir

Use **dir** to display detailed information about the files and subdirectories in the current directory on the FTP server.

Use **dir** *remotefile* to display detailed information about a specific file or directory on the FTP server.

Use **dir** *remotefile* *localfile* to save detailed information about a specific file or directory on the FTP server to a local file.

Syntax

```
dir [ remotefile [ localfile ] ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies the name of a file or directory on the FTP server.

localfile: Specifies the name of the local file used for saving the displayed information.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

In FTP client view, executing the **dir** command is the same as executing the **ls** command.

Examples

Display detailed information about the files and subdirectories in the current directory on the FTP server.

```
ftp> dir
150 Connecting to port 50201
-rwxr-xr-x  1 0      0          1481 Jul  7 15:36 a.txt
-rwxr-xr-x  1 0      0           0 Sep 27 2010 base.bin
drwxr-xr-x  2 0      0          8192 Jul  2 14:33 diagfile
drwxr-xr-x  3 0      0          8192 Jul  7 15:21 ftp
-rwxr-xr-x  1 0      0           0 Sep 27 2010 kernel.bin
drwxr-xr-x  2 0      0          8192 Jul  5 09:15 logfile
drwxr-xr-x  2 0      0          8192 Jul  2 14:33 seclog
-rwxr-xr-x  1 0      0      40808448 Jul  2 14:33 simware-cmw710-sys
tem-a1801.bin
-rwxr-xr-x  1 0      0          3050 Jul  7 12:26 startup.cfg
-rwxr-xr-x  1 0      0         54674 Jul  4 09:24 startup.mdb
-rwxr-xr-x  1 0      0          1481 Jul  7 12:34 x.cfg
226 11 matches total
```

Save detailed information about file **a.txt** to **s.txt**.

```
ftp> dir a.txt s.txt
output to local-file: a.txt ? [Y/N]y
150 Connecting to port 50203
226-Glob: a.txt
```

Display the content of file **s.txt**.

```
ftp> bye
221-Goodbye. You uploaded 0 and downloaded 2 kbytes.
221 Logout.
<Sysname> more s.txt
-rwxr-xr-x  1 0      0          1481 Jul  7 12:34 a.txt
```

Related commands

ls

disconnect

Use **disconnect** to terminate the connection to the FTP server without exiting FTP client view.

Syntax

disconnect

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```
# Terminate the connection to the FTP server without exiting the FTP client view.
ftp> disconnect
221-Goodbye. You uploaded 0 and downloaded 0 kbytes.
221 Logout.
ftp>
```

Related commands

close

display ftp client source

Use **display ftp client source** to display the source address settings on the FTP client.

Syntax

display ftp client source

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display the source address settings on the FTP client.
<Sysname> display ftp client source
The source IP address of the FTP client is 1.1.1.1.
The source IPv6 address of the FTP client is 2001::1.
```

ftp

Use **ftp** to log in to an FTP server and enter FTP client view.

Syntax

```
ftp [ server-address [ service-port ] [ vpn-instance vpn-instance-name ] [ dscp dscp-value | source { interface interface-type interface-number | ip source-ip-address } ] ] *
```

Views

User view

Parameters

server-address: Specifies the IPv4 address or host name of an FTP server. A host name can be a case-insensitive string of 1 to 253 characters. Valid characters for a host name include letters, digits, hyphens (-), underscores (_), and dots (.).

service-port: Specifies the TCP port number of the FTP server, in the range of 0 to 65535. The default value is 21.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the FTP server belongs. The *vpn-instance-name* argument is a case-sensitive string of 1 to 31 characters. If the FTP server belongs to the public network, do not specify this option.

dscp *dscp-value*: Specifies the DSCP value for IPv4 to use in outgoing FTP packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 0.

source { **interface** *interface-type interface-number* | **ip** *source-ip-address* }: Specifies the source address used to establish the FTP connection.

- **interface** *interface-type interface-number*: Specifies an interface by its type and number. The primary IPv4 address of this interface will be used as the source address for outgoing FTP packets. If no primary IPv4 address is configured on the source interface, the connection cannot be established.
- **ip** *source-ip-address*: Specifies an IPv4 address. This address must have been configured on the device.

Usage guidelines

This command is only applicable to IPv4 networks.

If no parameters are specified, this command enters the FTP client view without logging in to the FTP server.

If the server parameters are specified, you are prompted to enter the username and password for logging in to the FTP server.

Examples

```
# Log in to the FTP server 192.168.0.211, and specify the source IPv4 address for outgoing FTP packets as 192.168.0.212.
```

```
<Sysname>ftp 192.168.0.211 source ip 192.168.0.212
Connected to 192.168.0.211 (192.168.0.211).
220 WFTPD 2.0 service (by Texas Imperial Software) ready for new user
User (192.168.0.211:(none)): abc
331 Give me your password, please
Password:
230 Logged in successfully
Remote system type is MSDOS.
ftp>
```

ftp client source

Use **ftp client source** to specify the source IPv4 address for outgoing FTP packets.

Use **undo ftp client source** to restore the default.

Syntax

```
ftp client source { interface interface-type interface-number | ip source-ip-address }
```

```
undo ftp client source
```

Default

No source IPv4 address is configured for outgoing FTP packets. The device uses the primary IPv4 address of the output interface for the route to the server as the source IP address.

Views

System view

Predefined user roles

network-admin

Parameters

interface *interface-type interface-number*: Specifies the source interface for establishing FTP connections. The primary IPv4 address of the source interface is used as the source IP address of packets sent to a FTP server. Make sure the interface is up and has the primary IPv4 address configured. Otherwise, the transmission fails.

ip source-ip-address: Specifies the source IP address for outgoing FTP packets. It must be the IPv4 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

If you execute this command multiple times, the most recent configuration takes effect.

The source address specified with the **ftp** command takes precedence over the source address specified with the **ftp client source** command.

The source address specified with the **ftp client source** command applies to all FTP connections. The source address specified with the **ftp** command applies only to the current FTP connection.

Examples

```
# Specify the source IPv4 address for outgoing FTP packets as 192.168.20.222.  
<Sysname> system-view  
[Sysname] ftp client source ip 192.168.20.222
```

Related commands

ftp

ftp client ipv6 source

Use **ftp client ipv6 source** to specify the source address for FTP packets sent by the IPv6 FTP client.

Use **undo ftp client ipv6 source** to restore the default.

Syntax

ftp client ipv6 source { **interface** *interface-type interface-number* | **ipv6** *source-ipv6-address* }

undo ftp client ipv6 source

Default

No source address is configured. The device automatically selects a source IPv6 address as defined in RFC 3484.

Views

System view

Predefined user roles

network-admin

Parameters

interface *interface-type interface-number*: Specifies the source interface by its type and number. The IPv6 address configured on the source interface is the source address of outgoing FTP packets. Make sure the interface is up. Otherwise, the transmission fails.

ipv6 *source-ipv6-address*: Specifies the source IPv6 address for outgoing FTP packets. It must be the IPv6 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

If you execute this command multiple times, the most recent configuration takes effect.

The source address specified with the **ftp ipv6** command takes precedence over the source address specified with the **ftp client ipv6 source** command.

The source address specified with the **ftp client ipv6 source** command applies to all FTP connections. The source address specified with the **ftp ipv6** command applies only to the current FTP connection.

Examples

```
# Specify source IPv6 address 2000::1 for outgoing FTP packets.  
<Sysname> system-view  
[Sysname] ftp client ipv6 source ipv6 2000::1
```

Related commands

ftp ipv6

ftp ipv6

Use **ftp ipv6** to log in to an FTP server and enter FTP client view.

Syntax

```
ftp ipv6 [ server-address [ service-port ] [ vpn-instance vpn-instance-name ] [ dscp dscp-value | source { ipv6 source-ipv6-address | interface interface-type interface-number } ] ] * [ -i interface-type interface-number ] ]
```

Views

User view

Predefined user roles

network-admin

Parameters

server-address: Specifies the IPv6 address or host name of an FTP server. A host name can be a case-insensitive string of 1 to 253 characters. Valid characters for a host name include letters, digits, hyphens (-), underscores (_), and dots (.).

service-port: Specifies the TCP port number of the FTP server, in the range of 0 to 65535. The default value is 21.

dscp *dscp-value*: Specifies the DSCP value for IPv6 to use in outgoing FTP packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 0.

source { **ipv6** *source-ipv6-address* | **interface** *interface-type interface-number* }: Specifies the source address used to establish the FTP connection.

- **interface** *interface-type interface-number*: Specifies an interface by its type and number. This parameter can be used only when the FTP server address is a link local address and the specified output interface has a link local address. For more information about link local addresses, see *Layer 3—IP Services Configuration Guide*.
- **ipv6** *source-ipv6-address*: Specifies an IPv6 address. This address must be an address that has been configured on the device.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the FTP server belongs. The *vpn-instance-name* argument is a case-sensitive string of 1 to 31 characters. If the FTP server belongs to the public network, do not specify this option.

-i *interface-type interface-number*: Specifies an output interface by its type and number. This parameter can be used only when the FTP server address is a link local address and the specified output interface has a link local address.

Usage guidelines

This command is only applicable to IPv6 networks.

If no parameters are specified, this command enters the FTP client view.

If the FTP server parameters are specified, you are prompted to enter the username and password for logging in to the FTP server.

Examples

```
# Log in to the FTP server 2000::154.
<Sysname>ftp ipv6 2000::154
Connected to 2000::154 (2000::154).
220 FTP service ready.
User (2000::154): root
331 Password required for root.
Password:
230 User logged in
Remote system type is HP
```

get

Use **get** to download a file from the FTP server and save the file.

Syntax

```
get remotefile [ localfile ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies the name of the file to be downloaded.

localfile: Specifies a name for the downloaded file.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

To save the downloaded file to the working directory accessed by the **ftp** command, the *localfile* argument must specify a file name such as a.cfg. If you do not provide the *localfile* argument, the downloaded file uses its original name.

To save the downloaded file to some other directory, the *localfile* argument must specify the target directory plus the file name such as cfa0:/subdirectory/a.cfg. Otherwise, the command fails to take effect.

Examples

Download file **a.txt** and save it as **b.txt** in the working directory accessed by the **ftp** command.

```
ftp> get a.txt b.txt
local: b.txt remote: a.txt
150 Connecting to port 47457
226 File successfully transferred
1569 bytes received in 0.00527 seconds (290.6 kbyte/s)
```

Download file **a.txt** to the folder **test** from the working directory accessed by the **ftp** command.

```
ftp> get a.txt cfa0:/test/b.txt
local: cfa0:/test/b.txt remote: a.txt
150 Connecting to port 47457
226 File successfully transferred
1569 bytes received in 0.00527 seconds (290.6 kbyte/s)
```

On an MSR4000, download file **a.txt** to the CF card root directory of the standby MPU (in slot 1) and save it as **c.txt**.

```
ftp> get a.txt slot1#cfa0:/c.txt
local: slot1#cfa0:/c.txt remote: a.txt
150 Connecting to port 47460
226 File successfully transferred
1569 bytes received in 0.0564 seconds (27.2 kbyte/s)
```

Related commands

put

help

Use **help** to display all commands supported by an FTP client.

Use **help** *command-name* to display the help information of a specific command.

Syntax

```
help [ command-name ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

command-name: Specifies a command supported by the FTP client.

Usage guidelines

In FTP client view, executing the **help** command is the same as entering?

Examples

Display all commands supported by the FTP client.

```
ftp> help
```

Commands may be abbreviated. Commands are:

append	delete	ls	quit	rmdir
ascii	debug	mkdir	reget	status
binary	dir	newer	rstatus	system
bye	disconnect	open	rhelP	user
cd	get	passive	rename	verbose
cdup	help	put	reset	?
close	lcd	pwd	restart	

Display the help information for the **dir** command.

```
ftp> help dir
```

```
dir          list contents of remote directory
```

Related commands

?

lcd

Use **lcd** to display the local working directory of the FTP client.

Use **lcd *directory*** to change the local working directory of the FTP client to the specified directory.

Use **lcd /** to change the local working directory of the FTP client to the local root directory.

Syntax

```
lcd [ directory | / ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

directory: Specifies a local directory of the FTP client. There must be a slash sign (/) before the name of the storage medium, for example, /cfa0:/logfile.

/: Specifies the root directory of the FTP client.

Examples

Display the local working directory.

```
ftp> lcd
```

```
Local directory now /cfa0:
```

Change the local working directory to **cfa0:/logfile**.

```
ftp> lcd /cfa0:/logfile
```

Local directory now /cfa0:/logfile

ls

Use **ls** to display detailed information about the files and subdirectories under the current directory on the FTP server.

Use **ls remotefile** to display detailed information about a specific file or directory on the FTP server.

Use **ls remotefile localfile** to save detailed information about a specific file or directory on the FTP server to a local file.

Syntax

```
ls [ remotefile [ localfile ] ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies the file name or directory on the FTP server.

localfile: Specifies the local file used to save the displayed information.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

In FTP client view, executing the **ls** command is the same as executing the **dir** command.

Examples

```
# Display detailed information about the files and subdirectories under the current directory on the FTP server.
```

```
ftp> ls
150 Connecting to port 50201
-rwxr-xr-x  1 0      0          1481 Jul  7 15:36 a.txt
-rwxr-xr-x  1 0      0           0 Sep 27 2010 base.bin
drwxr-xr-x  2 0      0          8192 Jul  2 14:33 diagfile
drwxr-xr-x  3 0      0          8192 Jul  7 15:21 ftp
-rwxr-xr-x  1 0      0           0 Sep 27 2010 kernel.bin
drwxr-xr-x  2 0      0          8192 Jul  5 09:15 logfile
drwxr-xr-x  2 0      0          8192 Jul  2 14:33 seclog
-rwxr-xr-x  1 0      0       40808448 Jul  2 14:33 simware-cmw710-sys
tem-a1801.bin
-rwxr-xr-x  1 0      0          3050 Jul  7 12:26 startup.cfg
-rwxr-xr-x  1 0      0         54674 Jul  4 09:24 startup.mdb
-rwxr-xr-x  1 0      0          1481 Jul  7 12:34 x.cfg
226 11 matches total
```

```
# Save detailed information about file a.txt to s.txt.
```

```
ftp> ls a.txt s.txt
output to local-file: a.txt ? [Y/N]y
```

```
150 Connecting to port 50203
226-Glob: a.txt
# Display the content of file s.txt.
ftp> bye
221-Goodbye. You uploaded 0 and downloaded 2 kbytes.
221 Logout.
<Sysname> more s.txt
-rwxr-xr-x  1 0          0          1481 Jul  7 12:34 a.txt
```

Related commands

dir

mkdir

Use **mkdir** to create a subdirectory in the current directory on the FTP server.

Syntax

```
mkdir directory
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

directory: Specifies the name of the directory to be created.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

You must have permission to perform this operation on the FTP server.

Examples

```
# Create subdirectory newdir in the current directory of the remote FTP server.
ftp> mkdir newdir
257 "newdir" : The directory was successfully created
```

newer

Use **newer** to update a local file by using a remote file on the FTP server.

Syntax

```
newer remotefile [ localfile ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies the name of the remote file on the FTP server.

localfile: Specifies the name of the local file to be updated.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

If the local file does not exist, this command downloads the file from the FTP server and saves it locally.

If the remote file on the FTP server is not newer than the local file, this command does not update the local file.

Examples

```
# Update the local file with the file a.txt on the FTP server.
ftp> newer a.txt
local: a.txt remote: a.txt
150 Connecting to port 63513
226 File successfully transferred
1573 bytes received in 0.0293 seconds (52.3 kbyte/s)
```

open

Use **open** to log in to the FTP server in FTP client view.

Syntax

```
open server-address [ service-port ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

server-address: Specifies the IP address or host name of the FTP server.

service-port: Specifies the TCP port number of the FTP server, in the range of 0 to 65535. The default value is 21.

Usage guidelines

After you issue this command, the system will prompt you to enter the username and password.

After you log in to one FTP server, you must disconnect from the server before you can use the **open** command to log in to another server.

Examples

```
# In FTP client view, log in to the FTP server 192.168.40.7.
<Sysname>ftp
ftp> open 192.168.40.7
Connected to 192.168.40.7 (192.168.40.7).
220 FTP service ready.
User (192.168.40.7:(none)): root
331 Password required for root.
```

```
Password:  
230 User logged in.  
Remote system type is HP.  
ftp>
```

passive

Use **passive** to set the FTP operation mode to **passive**.

Syntax

```
passive
```

Default

The FTP operation mode is **passive**.

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

FTP can operate in either of the following modes:

- **Active mode**—The FTP server initiates the TCP connection.
- **Passive mode**—The FTP client initiates the TCP connection.

You can use this command multiple times to change between active and passive modes.

This command is mainly used together with a firewall to control FTP session establishment between private network users and public network users.

Examples

```
# Set the FTP operation mode to passive.  
ftp> passive  
Passive mode on.  
ftp> passive  
Passive mode off.
```

put

Use **put** to upload a file on the client to the remote FTP server.

Syntax

```
put localfile [ remotefile ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

localfile: Specifies the name of the local file to be uploaded.

remotefile: Specifies the file name for saving the uploaded file on the FTP server.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

To upload a file in the working directory accessed by the **ftp** command, the *localfile* argument must specify a file name such as *a.cfg*.

To upload a file in some other directory, the *localfile* argument must specify the target directory plus the file name such as *cfa0:/subdirectory/a.cfg*. Otherwise, the command fails to take effect.

Examples

Upload the file **a.txt** in the working directory accessed by the **ftp** command and save the file as **b.txt** on the FTP server.

```
ftp> put a.txt b.txt
local: a.txt remote: b.txt
150 Connecting to port 47461
226 File successfully transferred
1569 bytes sent in 0.000671 seconds (2.23 Mbyte/s)
```

Upload the file **a.txt** in the folder **test** from the working directory accessed by the **ftp** command and save the file as **b.txt** on the FTP server.

```
ftp> put cfa0:/test/a.txt b.txt
local: cfa0:/test/a.txt remote: b.txt
150 Connecting to port 47461
226 File successfully transferred
1569 bytes sent in 0.000671 seconds (2.23 Mbyte/s)
```

On an MSR4000, upload the file **a.txt** in the root directory of the storage medium on the standby MPU (in slot 1) and save the file as **b.txt** on the FTP server.

```
ftp> put slot1#cfa0:/test/a.txt b.txt
local: slot1#cfa0:/test/a.txt remote: b.txt
150 Connecting to port 47461
226 File successfully transferred
1569 bytes sent in 0.000671 seconds (2.23 Mbyte/s)
```

Related commands

get

pwd

Use **pwd** to display the currently accessed directory on the FTP server.

Syntax

pwd

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```
# Display the currently accessed directory on the remote FTP server.
ftp> cd subdir
250 OK. Current directory is /subdir
ftp> pwd
257 "/subdir" is your current location
```

quit

Use quit to terminate the connection to the FTP server and return to user view.

Syntax

quit

Views

FTP client view

Predefined user roles

network-admin

Examples

```
# Terminate the connection to the FTP server and return to user view
ftp> quit
221-Goodbye. You uploaded 0 and downloaded 0 kbytes.
221 Logout.
<Sysname>
```

Related commands

bye

reget

Use reget to get the missing part of a file from the FTP server.

Syntax

reget *remotefile* [*localfile*]

Views

FTP client view

Predefined user roles

network-admin

network-operator

Parameters

remotefile: Specifies the name of the file on the FTP server.

localfile: Specifies the name of the local file.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

If a file download is not completed due to network problems or insufficient storage space, you can use the **reget** command to get the missing part of the file from the FTP server after you solve the problem.

Examples

Get the part of the **s.bin** file that is missing due to transmission interruption.

```
ftp> reget s.bin
local: s.bin remote: s.bin
350 Restarting at 1749706
150-Connecting to port 47429
150 38143.3 kbytes to download
226 File successfully transferred
39058742 bytes received in 66.2 seconds (576.1 kbyte/s)
```

rename

Use **rename** to rename a file.

Syntax

```
rename [ oldfilename [ newfilename ] ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

oldfilename: Specifies the original file name.

newfilename: Specifies the new file name.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

Rename the file **a.txt** as **b.txt**:

- Method 1

```
ftp> rename
(from-name) a.txt
(to-name) b.txt
350 RNFR accepted - file exists, ready for destination
250 File successfully renamed or moved
```
- Method 2

```
ftp> rename a.txt
```



```
(to-name) b.txt
350 RNFR accepted - file exists, ready for destination
250 File successfully renamed or moved
```

- Method 3

```
ftp> rename a.txt b.txt
350 RNFR accepted - file exists, ready for destination
250 File successfully renamed or moved
```

reset

Use **reset** to clear the reply information received from the FTP server in the buffer.

Syntax

reset

Views

FTP client view

Predefined user roles

network-admin

Examples

```
# Clear the reply information received from the FTP server.
ftp> reset
```

restart

Use **restart** to specify the marker to retransmit a file.

Syntax

restart *marker*

Views

FTP client view

Predefined user roles

network-admin

Parameters

marker: Specifies the retransmit marker.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Support for this command varies with FTP servers.

Examples

```
# Retransmit the file h.c (82 bytes) from 2 bytes.
ftp> restart 2
restarting at 2. execute get, put or append to initiate transfer
ftp> put h.c h.c
```

```

local: h.c remote: h.c
350 Restart position accepted (2).
150 Ok to send data.
226 File receive OK.
80 bytes sent in 0.000445 seconds (175.6 kbyte/s)
ftp> dir
150 Here comes the directory listing.
-rw-r--r--  1 0      0          80 Jul 18 02:58 h.c

```

rhel

Use **rhel** to display the FTP-related commands supported by the FTP server.

Use **rhel** *protocol-command* to display the help information of an FTP-related command supported by the FTP server.

Syntax

```
rhel [ protocol-command ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

protocol-command: Specifies an FTP-related command.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```

# Display the FTP-related commands supported by the FTP.
ftp> rhel
214-The following FTP commands are recognized
  USER PASS NOOP QUIT SYST TYPE
  HELP CWD  XCWD PWD  CDUP XCUP
  XPWD LIST NLST MLSD PORT EPRT
  PASV EPSV REST RETR STOR APPE
  DELE MKD  XMKD RMD  XRMD ABOR
  SIZE RNFR RNT0
4 UNIX Type: L8

```

Table 12 Command output

Field	Description
USER	Username, corresponding to the xx command in FTP client view.
PASS	Password.
NOOP	Null operation.

Field	Description
SYST	System parameters.
TYPE	Request type.
CWD	Changes the current working directory.
XCWD	Extended command with the meaning of CWD.
PWD	Prints the working directory.
CDUP	Changes the directory to the upper directory.
XCUP	Extended command with the meaning of CDUP.
XPWD	Extended command with the meaning of PWD.
LIST	Lists files.
NLST	Lists brief file description.
MLSD	Lists file content.
PORT	Active mode (IPv4).
EPRT	Active mode (IPv6).
PASV	Passive mode (IPv4).
EPSV	Passive mode (IPv6).
REST	Restarts.
RETR	Downloads files.
STOR	Uploads files.
APPE	Appends uploading.
DELE	Deletes files.
MKD	Creates folders.
XMKD	Extended command with the meaning of MKD.
RMD	Removes folders.
XRMD	Extended command with the meaning of RMD.
ABOR	Aborts the transmission.
SIZE	Size of the transmission file.
RNFR	Original name.
RNTO	New name.

rmdir

Use **rmdir** to permanently delete a directory on the FTP server.

Syntax

rmdir *directory*

Views

FTP client view

Predefined user roles

network-admin

Parameters

directory: Specifies the name of a directory on the remote FTP server.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

To perform this operation, you must have delete permission on the FTP server.

Delete all files and subdirectories in a directory before you delete the directory. For more information about how to delete files, see the **delete** command.

Executing the **rmdir** command also deletes the files in the recycle bin of the specified directory.

Examples

```
# Delete the empty directory subdir1.
ftp>rmdir subdir1
250 The directory was successfully removed
```

Related commands

delete

rstatus

Use rstatus to display FTP server status.

Use rstatus *remotefile* to display detailed information about a specific directory or file on the FTP server.

Syntax

```
rstatus [ remotefile ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

remotefile: Specifies a directory or file on the FTP server.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Support for this command varies with FTP servers.

Examples

```
# Display FTP server status.
ftp> rstatus
211-FTP server status:
  Connected to 192.168.20.177
  Logged in as root
  TYPE: ASCII
```

```

No session bandwidth limit
Session timeout in seconds is 300
Control connection is plain text
Data connections will be plain text
At session startup, client count was 1
vsFTPD 2.0.6 - secure, fast, stable
211 End of status

```

Table 13 Command output

Field	Description
211-FTP server status:	Beginning of the display of FTP server status, where 211 specifies the FTP command.
Connected to 192.168.20.177	IP address of the FTP client.
Logged in as root	Login username root.
TYPE: ASCII	File transfer mode ASCII.
Session timeout in seconds is 300	Timeout interval is 300 seconds.
Control connection is plain text	Control connection type is plain text.
Data connections will be plain text	Data connection type is plain text.
At session startup, client count was 1	FTP connection number is 1.
vsFTPD 2.0.6 - secure, fast, stable	FTP version is 2.0.6.
211 End of status	End of the display of FTP server status.

Display file **a.txt**.

```

ftp> rstatus a.txt
213-Status follows:
-rw-r--r--  1 0      0      80 Jul 18 02:58 a.txt
213 End of status

```

Table 14 Command output

Field	Description
213-Status follows:	Beginning of the display of the file, where 213 specifies the FTP command.

Field	Description
-rw-r--	<p>The first bit specifies the file type:</p> <ul style="list-style-type: none"> • --Common. • B—Block. • c—Character. • d—Directory. • l—Symbol connection file. • p—Pipe. • s—socket. <p>The second bit through the tenth bit are divided into three groups. Each group contains three characters, representing the access permission of the owner, group, and other users.</p> <ul style="list-style-type: none"> • --No permission. • r—Read permission. • w—Write permission. • x—Execution permission.
1	Number of connections.
0	Name of the file owner.
0	Group number of the file owner.
80	File size, in bytes.
Jul 18 02:58	Date and time when the file was most recently modified.
a.txt	File name.
213 End of status	End of the display of the file information.

status

Use **status** to display FTP status.

Syntax

status

Views

FTP client view

Predefined user roles

network-admin

Examples

```
# Display FTP status.
ftp> status
Connected to 192.168.1.56.
No proxy connection.
Not using any security mechanism.
Mode: stream; Type: ascii; Form: non-print; Structure: file
Verbose: on; Bell: off; Prompting: on; Globbing: off
```

```

Store unique: off; Receive unique: off
Case: off; CR stripping: on
Ntrans: off
Nmap: off
Hash mark printing: off; Use of PORT cmds: on

```

Table 15 Command output

Field	Description
Connected to 192.168.1.56.	IP address of the FTP server that is connected to the FTP client.
Verbose: on; Bell: off; Prompting: on; Globbing: off	Displays debugging information.
Store unique: off; Receive unique: off	The name of the file on the FTP server is unique and the name of the local file is unique.
Case: off; CR stripping: on	Does not support obtaining multiple files once and deletes "\r" when downloading text files.
Ntrans: off	Does not use the input-output transmission table.
Nmap: off	The file name does not use the input-to-output mapping template.
Hash mark printing: off; Use of PORT cmds: on	Does not end with a pound sign (#) and uses "PORT" data transmission.

system

Use system to display the system information of the FTP server.

Syntax

```
system
```

Views

FTP client view

Predefined user roles

network-admin

Usage guidelines

You can perform this operation only after you log in to the FTP server.

Examples

```

# Display the system information of the FTP server.
ftp> system
215 UNIX Type: L8

```

user

Use user to change to another user account after login.

Syntax

```
user username [ password ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

username: Specifies the username of the target user account.

password: Specifies the password of the target user account.

Usage guidelines

You can perform this operation only after you log in to the FTP server.

The username and password of the target user account must have been configured. Otherwise, the user account change operation fails and the FTP connection is closed.

Examples

After logging in to the FTP server, use the username **ftp** and password **123456** to re-log in to the FTP server (the output might vary by the FTP server):

- Method 1

```
ftp> user ftp 123456
331 Password required for ftp.
230 User logged in.
```
- Method 2

```
ftp> user ftp
331 Password required for ftp.
Password:
230 User logged in.
```

verbose

Use **verbose** to enable or disable the device to display FTP operation information.

Syntax

```
verbose
```

Default

The device displays FTP operation information.

Views

FTP client view

Predefined user roles

network-admin

Examples

Disable and then enable the device to display FTP operation information.

```
ftp> verbose
```



```
Verbose mode off.
```

```
ftp> verbose
```

```
Verbose mode on.
```

Execute the **get** command when FTP operation information display is disabled.

```
ftp> verbose
```

```
Verbose mode off.
```

```
ftp> get a.txt
```

Execute the **get** command when FTP operation information display is enabled.

```
ftp> verbose
```

```
Verbose mode on.
```

```
ftp> get a.txt
```

```
local: a.txt remote: a.txt
```

```
150 Connecting to port 47455
```

```
226 File successfully transferred
```

```
1569 bytes received in 0.0117 seconds (130.8 kbyte/s)
```

?

Use ? to display all commands supported by an FTP client.

Use ? *command-name* to display the help information for a specific command.

Syntax

```
? [ command-name ]
```

Views

FTP client view

Predefined user roles

network-admin

Parameters

command-name: Specifies a command supported by the FTP client.

Usage guidelines

In FTP client view, entering **?** is the same as executing the **help** command.

Examples

Display all commands supported by the FTP client.

```
ftp> ?
```

Commands may be abbreviated. Commands are:

append	delete	ls	quit	rmdir
ascii	debug	mkdir	reget	status
binary	dir	newer	rstatus	system
bye	disconnect	open	rhel	user
cd	get	passive	rename	verbose
cdup	help	put	reset	?
close	lcd	pwd	restart	

Display the help information for the **dir** command.

```
ftp> ? dir
```

```
dir                list contents of remote directory
```

Related commands

help

TFTP commands

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

In FIPS mode, the device does not support TFTP.

tftp

Use **tftp** to download a file from the TFTP server to the local device or upload a local file to the TFTP server in an IPv4 network.

Syntax

```
tftp server-address { get | put | sget } source-filename [ destination-filename ] [ vpn-instance vpn-instance-name ] [ dscp dscp-value | source { interface interface-type interface-number | ip source-ip-address } ]
```

Views

User view

Predefined user roles

network-admin

Parameters

server-address: Specifies the IPv4 address or host name of a TFTP server. The host name can be a case-insensitive string of 1 to 253 characters and can contain only letters, digits, hyphens (-), underscores (_), and dots (.).

get: Downloads a file and writes the file directly to the destination folder. If the destination folder already has a file using the name, the system deletes the existing file before starting the download operation. In this operation mode, the existing file is lost even if the download operation fails.

put: Uploads a file.

sget: Downloads a file and saves the file to memory first. If the file is downloaded and written to memory successfully, the system copies the file from memory to the destination folder and deletes the file from memory. If the destination folder already has a file using the name, the system overwrites the existing file when copying the file from memory to the destination folder. This operation mode is safer than the operation mode indicated by the **get** keyword.

source-filename: Specifies the source file name, a case-insensitive string of 1 to 255 characters.

destination-filename: Specifies the destination file name, a case-insensitive string of 1 to 255 characters. If this argument is not specified, the file uses the source file name.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the TFTP server belongs. The *vpn-instance-name* argument is a case-sensitive string of 1 to 31 characters. If the TFTP server belongs to the public network, do not specify this option.

dscp *dscp-value*: Specifies the DSCP value for IPv4 to use for outgoing TFTP packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 0.

source { **interface** *interface-type interface-number* | **ip** *source-ip-address* }: Specifies the source address for outgoing TFTP packets. If this keyword is not specified, the device uses the primary IPv4 address of the output interface for the route to the server as the source IPv4 address of outgoing TFTP packets.

- **interface** *interface-type interface-number*: Specifies an interface by its type and number. The primary IPv4 address of this interface will be used as the source IPv4 address for outgoing TFTP packets. Make sure the interface is up and has the primary IPv4 address configured. Otherwise, the transmission fails.
- **ip** *source-ip-address*: Specifies an IPv4 address. This address must be the IPv4 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

The source address specified with the **tftp** command takes precedence over the source address specified with the **tftp client source** command.

The source address specified with the **tftp client source** command applies to all TFTP connections. The source address specified with the **tftp** command applies only to the current TFTP connection.

Examples

Download the **new.bin** file from the TFTP server at 192.168.1.1 and save it as **new.bin**.

```
<Sysname> tftp 192.168.1.1 get new.bin
  % Total      % Received % Xferd  Average Speed   Time    Time       Time   Current
                             Dload  Upload  Total  Spent    Left     Speed
100 13.9M  100 13.9M    0     0 1206k      0  0:00:11  0:00:11  --:--:-- 1206k
<System>
```

Table 16 Command output

Field	Description
%	Percentage of file transmission progress.
Total	Size of files to be transmitted, in bytes.
%	Percentage of received file size to total file size.
Received	Received file size, in bytes.
%	Percentage of sent file size to total file size.
Xferd	Sent file size, in bytes.
Average Dload	Average download speed, in bps.
Speed Upload	Average upload speed, in bps.

Related commands

tftp client source

tftp client source

Use **tftp client source** to specify the source IPv4 address for TFTP packets sent by the TFTP client.

Use **undo tftp client source** to restore the default.

Syntax

tftp client source { **interface** *interface-type interface-number* | **ip** *source-ip-address* }

undo tftp client source

Default

No source IPv4 address is configured for outgoing TFTP packets. The device uses the primary IPv4 address of the output interface for the route to the server as the source IP address.

Views

System view

Predefined user roles

network-admin

Parameters

interface *interface-type interface-number*: Specifies the source interface for establishing TFTP connections. The primary IPv4 address of the source interface is used as the source IPv4 address for packets sent to a TFTP server. Make sure the interface is up and has the primary IPv4 address configured. Otherwise, the transmission fails.

ip *source-ip-address*: Specifies the source IPv4 address for outgoing TFTP packets. It must be the IPv4 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

If you execute this command multiple times, the most recent configuration takes effect.

The source address specified with the **tftp** command takes precedence over the source address specified with the **tftp client source** command.

The source address specified with the **tftp client source** command applies to all TFTP connections. The source address specified with the **tftp** command applies only to the current TFTP connection.

Examples

```
# Specify the source IP address of sent TFTP packets as 192.168.20.222.
```

```
<Sysname> system-view  
[Sysname] tftp client source ip 192.168.20.222
```

Related commands

tftp

tftp ipv6

Use **tftp ipv6** to download a file from a TFTP server or upload a local file to a TFTP server in an IPv6 network.

Syntax

```
tftp ipv6 tftp-ipv6-server [ -i interface-type interface-number ] { get | put | sget } source-filename  
[ destination-filename ] [ vpn-instance vpn-instance-name ] [ dscp dscp-value | source { interface  
interface-type interface-number | ipv6 source-ipv6-address } ]
```

Views

User view

Predefined user roles

network-admin

Parameters

ftp-ipv6-server: Specifies the IPv6 address or host name of a TFTP server. The host name can be a case-insensitive string of 1 to 253 characters and can contain only letters, digits, hyphens (-), underscores (_), and dots (.).

-i *interface-type interface-number*: Specifies an output interface by its type and number. This parameter can be used only when the TFTP server address is a link local address and the specified output interface has a link local address. For link local address configuration, see *Layer 3—IP Services Configuration Guide*.

get: Downloads a file and writes the file directly to the destination folder. If the destination folder already has a file using the name, the system deletes the existing file before starting the download operation. In this operation mode, the existing file is lost even if the download operation fails.

put: Uploads a file.

sget: Downloads a file and saves the file to memory first. If the file is downloaded and written to memory successfully, the system copies the file from memory to the destination folder and deletes the file from memory. If the destination folder already has a file using the name, the system overwrites the existing file when copying the file from memory to the destination folder. This operation mode is safer than the operation mode indicated by the **get** keyword.

source-file: Specifies the source file name, a case-insensitive string of 1 to 255 characters.

destination-file: Specifies the destination file name, a case-insensitive string of 1 to 255 characters. If this argument is not specified, the file uses the source file name.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the TFTP server belongs. The *vpn-instance-name* argument is a case-sensitive string of 1 to 31 characters. If the TFTP server belongs to the public network, do not specify this option.

dscp *dscp-value*: Specifies the DSCP value for IPv6 to use in outgoing TFTP packets to indicate the packet transmission priority, in the range of 0 to 63. The default is 0.

source { **interface** *interface-type interface-number* | **ipv6** *source-ipv6-address* }: Specifies the source address for outgoing TFTP packets. If this keyword is not specified, the device uses the primary IPv6 address of the output interface for the route to the server as the source IPv6 address of outgoing TFTP packets.

- **interface** *interface-type interface-number*: Specifies an interface by its type and number. The primary IPv6 address of this interface will be used as the source IPv6 address for outgoing TFTP packets. Make sure the interface is up and has the primary IPv6 address configured. Otherwise, the transmission fails.
- **ipv6** *source-ipv6-address*: Specifies an IPv6 address. This address must be the IPv6 address of an interface in up state. Otherwise, the transmission fails.

source { **interface** *interface-type interface-number* | **ipv6** *source-ipv6-address* }: Specifies the source address for outgoing TFTP packets. If this keyword is not specified, the device automatically selects a source IPv6 address. For more information, see RFC 3484.

- **interface** *interface-type interface-number*: Specifies an interface by its type and number. The IPv6 address of this interface will be used as the source address for outgoing TFTP packets. Make sure the interface is up. Otherwise, the transmission fails.
- **ipv6** *source-ipv6-address*: Specifies an IPv6 address. This address must be the IPv6 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

The source address specified with the **tftp ipv6** command takes precedence over the source address specified with the **tftp client ipv6 source** command.

The source address specified with the **tftp client ipv6 source** command applies to all TFTP connections. The source address specified with the **tftp ipv6** command applies only to the current TFTP connection.

Examples

```
# Download the new.bin file from the TFTP server at 2001::1 and save it as new.bin.
```

```
<Sysname> tftp ipv6 2001::1 get new.bin new.bin
  % Total      % Received % Xferd  Average Speed   Time    Time       Time   Current
                             Dload  Upload  Total  Spent    Left     Speed
100 13.9M  100 13.9M    0     0 1206k      0  0:00:11  0:00:11  --:--:-- 1206k
```

For more information about the command output, see [Table 16](#).

tftp client ipv6 source

Use **tftp client ipv6 source** to specify the source address for TFTP packets sent by the IPv6 TFTP client.

Use **undo tftp client ipv6 source** to restore the default.

Syntax

```
tftp client ipv6 source { interface interface-type interface-number | ipv6 source-ipv6-address }
```

```
undo tftp client ipv6 source
```

Default

No source address is configured. The device automatically selects a source IPv6 address as defined in RFC 3484.

Views

System view

Predefined user roles

network-admin

Parameters

interface *interface-type interface-number*: Specifies the source interface by its type and number. The IPv6 address configured on the source interface is the source address of outgoing TFTP packets. Make sure the interface is up. Otherwise, the transmission fails.

ipv6 *source-ipv6-address*: Specifies the source IPv6 address of sent TFTP packets. It must be the IPv6 address of an interface in up state. Otherwise, the transmission fails.

Usages guidelines

If you execute this command multiple times, the most recent configuration takes effect.

The source address specified with the **tftp ipv6** command takes precedence over the source address specified with the **tftp client ipv6 source** command.

The source address specified with the **tftp client ipv6 source** command applies to all TFTP connections. The source address specified with the **tftp ipv6** command applies only to the current TFTP connection.

Examples

```
# Specify source IPv6 address 2000::1 for outgoing TFTP packets.
<Sysname> system-view
[Sysname] tftp client ipv6 source ipv6 2000::1
```

Related commands

tftp ipv6

tftp-server acl

Use **tftp-server acl** to use an ACL to control the device's access to TFTP servers in an IPv4 network.

Use **undo tftp-server acl** to restore the default.

Syntax

tftp-server acl *acl-number*

undo tftp-server acl

Default

No ACL is used to control the device's access to TFTP servers.

Views

System view

Predefined user roles

network-admin

Parameters

acl-number: Specifies the number of a basic ACL, in the range of 2000 to 2999.

Usages guidelines

You can use an ACL to deny or permit the device's access to specific TFTP servers.

Examples

```
# Allow the device to access only the TFTP server at 1.1.1.1.
<Sysname> System-view
[Sysname] acl number 2000
[Sysname-acl-basic-2000] rule permit source 1.1.1.1 0
[Sysname-acl-basic-2000] quit
[Sysname] tftp-server acl 2000
```

tftp-server ipv6 acl

Use **tftp-server ipv6 acl** to use an ACL to control the device's access to TFTP servers in an IPv6 network.

Use **undo tftp-server ipv6 acl** to restore the default.

Syntax

tftp-server ipv6 acl *acl-number*

undo tftp-server ipv6 acl

Default

No ACL is used to control the device's access to TFTP servers.

Views

System view

Predefined user roles

network-admin

Parameters

acl-number: Specifies the number of a basic ACL, in the range of 2000 to 2999.

Usages guidelines

You can use an ACL to deny or permit the device's access to specific TFTP servers.

Examples

```
# Allow the device to access only the TFTP server at 2001::1.  
<Sysname> System-view  
[Sysname] acl ipv6 number 2001  
[Sysname-acl6-basic-2001] rule permit source 2001::1/128  
[Sysname-acl6-basic-2001] quit  
[Sysname] tftp-server ipv6 acl 2001
```

File system management commands

! IMPORTANT:

- Before managing storage media, files, and directories, make sure you know the possible impacts.
- A file or directory whose name starts with a period (.) is considered a hidden file or directory. Do not give a common file or directory a name that starts with a period.
- Some system files and directories are hidden.

The following matrix shows the storage medium and router compatibility:

MSR2000	MSR3000	MSR4000
Flash	CF card	CF card

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

A file name must be specified in one of the file name formats allowed. For more information, see *Fundamentals Configuration Guide*.

Before you use the **copy**, **delete**, **fixdisk**, **format**, **gunzip**, **gzip**, **mkdir**, **move**, **rename**, **rmdir**, or **undelete** command on a USB disk, make sure the disk is not write protected.

cd

Use **cd** to change the current working directory.

Syntax

```
cd { directory | .. }
```

Views

User view

Predefined user roles

network-admin

Parameters

directory: Specifies the name of the destination directory, in the format `[drive:/]path`. For more information about how to enter the drive and path arguments, see *Fundamentals Configuration Guide*. If no drive information is provided, the argument represents a folder or subfolder in the current directory.

`..`: Returns to an upper directory. If the current working directory is the root directory, or if no upper directory exists, the system displays an error message when you execute the **cd ..** command. No online help information is available for this keyword.

Examples

```
# Access the test folder after logging in to the device.  
<Sysname> cd test
```

Return to the upper directory.

```
<Sysname> cd ..
```

On an MSR4000, change to the **test** folder in the root directory of the active MPU.

1. Display the number of the slot where the standby MPU resides.

```
<Sysname> display device
```

Slot No.	Board Type	Status	Primary	SubSlots
0	MPU-100	Normal	Master	0
1	MPU-100	Normal	Standby	0
2	SPU-300	Normal	N/A	10

The output shows that the slot number of the standby MPU is 1.

2. Access the root directory of the CF card on the standby MPU.

```
<Sysname> cd slot1#cfa0:/'
```

3. Change to the **test** folder in the root directory of the active MPU.

```
<Sysname> cd cfa0:/test
```

copy

Use **copy** to copy a file.

Syntax

In non-FIPS mode:

```
copy fileurl-source fileurl-dest [ vpn-instance vpn-instance-name ] [ source interface interface-type interface-number ]
```

In FIPS mode:

```
copy fileurl-source fileurl-dest
```

Views

User view

Predefined user roles

network-admin

Parameters

fileurl-source: Specifies the name or URL of the file to be copied. If the file resides on an FTP or TFTP server rather than on the device, specify the URL of the file. Whether a URL is case sensitive depends on the server. In FIPS mode, you cannot specify a URL.

fileurl-dest: Specifies the name or URL of the destination file or directory. To copy the source file to an FTP or TFTP server, specify a URL. If you specify a directory, the device copies the specified file to the directory and saves it with its original file name. Whether a URL is case sensitive depends on the server. In FIPS mode, you cannot specify a URL.

vpn-instance *vpn-instance-name*: Specifies the VPN instance to which the destination FTP or TFTP server belongs. The *vpn-instance-name* argument is a case-sensitive string of 1 to 31 characters. If the server belongs to the public network, do not specify this option.

source interface *interface-type interface-number*: Specifies the source interface used to connect to the server. After you specify the source interface, the device uses the primary IP address of the source

interface as the source IP address for outgoing packets. If you do not specify this option, the device uses the outgoing interface as the source interface.

Usage guidelines

In non-FIPS mode, you can use the **copy** command to perform the following operations:

- Copy a local file and save it locally.
- Copy a local file and save it to an FTP or TFTP server.
- Copy a file on an FTP or TFTP server and save it locally.

In FIPS mode, you can only copy a local file and save it locally.

To specify a file or directory, use the following guidelines:

Location	Name format	Remarks
On the device	Use the file name guidelines in <i>Fundamentals Configuration Guide</i> .	N/A
On an FTP server	Enter the URL in the format <code>ftp://FTP username[:password]@server address[:port number]/file path[/file name]</code> .	<p>The username and password must be the same as those configured on the FTP server. If the server authenticates users only by the username, you are not required to enter the password.</p> <p>For example, to use the username 1 and password 1 and specify the startup.cfg file in the authorized working directory on FTP server 1.1.1.1, enter the URL <code>ftp://1:1@1.1.1.1/startup.cfg</code>.</p> <p>To specify an IPv6 address, enclose the IPv6 address in square brackets ([]), for example, <code>ftp://test:test@[2001::1]:21/test.cfg</code>.</p>
On a TFTP server	Enter the URL in the format <code>tftp://server address[:port number]/file path[/file name]</code> .	<p>For example, to specify the startup.cfg file in the working directory on TFTP server 1.1.1.1, enter the URL <code>tftp://1.1.1.1/startup.cfg</code>.</p> <p>To enter an IPv6 address, enclose the IPv6 address in square brackets ([]), for example, <code>ftp://test:test@[2001::1]:21/test.cfg</code>.</p>

Examples

Copy the **test.cfg** file in the current folder and save it to the current folder as **testbackup.cfg**.

```
<Sysname> copy test.cfg testbackup.cfg
Copy cfa0:/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file cfa0:/test.cfg to cfa0:/testbackup.cfg...Done.
```

Copy the **1.cfg** file from the **test** folder of the CF card and save it to the **testbackup** folder in the root directory with the file name **1backup.cfg**.

```
<Sysname> copy cfa0:/test/1.cfg cfa0:/testbackup/1backup.cfg
Copy cfa0:/test/1.cfg to cfa0:/testbackup/1backup.cfg?[Y/N]:y
Copying file cfa0:/test/1.cfg to cfa0:/testbackup/1backup.cfg...Done.
```

Copy **test.cfg** from the working directory on FTP server 1.1.1.1 and save it to the local current folder as **testbackup.cfg**. In this example, the FTP username and password are **user** and **private**.

```
<Sysname> copy ftp://user:private@1.1.1.1/test.cfg testbackup.cfg
Copy ftp://user:private@1.1.1.1/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file ftp://user:private@1.1.1.1/test.cfg to cfa0:/testbackup.cfg... Done.
```

Copy **test.cfg** from the current folder and save it to the working directory on FTP server 1.1.1.1 as **testbackup.cfg**. In this example, the FTP username and password are **user** and **private**.

```
<Sysname> copy test.cfg ftp://user:private@1.1.1.1/testbackup.cfg
Copy cfa0:/test.cfg to ftp://user:private@1.1.1.1/testbackup.cfg?[Y/N]:y
Copying file cfa0:/test.cfg to ftp://user:private@1.1.1.1/testbackup.cfg... Done.
```

Copy **test.cfg** from the working directory on TFTP server 1.1.1.1 and save it to the local current folder as **testbackup.cfg**.

```
<Sysname> copy tftp://1.1.1.1/test.cfg testbackup.cfg
Copy tftp://1.1.1.1/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file tftp://1.1.1.1/test.cfg to cfa0:/testbackup.cfg... Done.
```

Copy **test.cfg** from the current folder and save it to the working directory on TFTP server 1.1.1.1 as **testbackup.cfg**.

```
<Sysname> copy test.cfg tftp://1.1.1.1/testbackup.cfg
Copy cfa0:/test.cfg to tftp://1.1.1.1/testbackup.cfg?[Y/N]:y
Copying file cfa0:/test.cfg to tftp://1.1.1.1/testbackup.cfg... Done.
```

Copy **test.cfg** from the working directory on FTP server 1.1.1.1 and save it to the local current folder as **testbackup.cfg**. In this example, the FTP username and password are **user** and **private**, and the FTP server belongs to VPN instance vpn1.

```
<Sysname> copy ftp://user:private@1.1.1.1/test.cfg testbackup.cfg vpn-instance vpn1
Copy ftp://user:private@1.1.1.1/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file ftp://user:private@1.1.1.1/test.cfg to cfa0:/testbackup.cfg... Done.
```

Copy **test.cfg** from the working directory on TFTP server 1.1.1.1 and save it to the local current folder as **testbackup.cfg**. In this example, the TFTP server belongs to VPN instance vpn1.

```
<Sysname> copy tftp://1.1.1.1/test.cfg testbackup.cfg vpn-instance vpn1
Copy tftp://1.1.1.1/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file tftp://1.1.1.1/test.cfg to cfa0:/testbackup.cfg... Done.
```

Copy **test.cfg** from the working directory on FTP server 2001::1 and save it to the local current folder as **testbackup.cfg**. In this example, the FTP username and password are **user** and **private**, respectively.

```
<Sysname> copy ftp://user:private@[2001::1]/test.cfg testbackup.cfg
Copy ftp://user:private@[2001::1]/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file ftp://user:private@[2001::1]/test.cfg to cfa0:/testbackup.cfg... Done.
```

Copy **test.cfg** from the working directory on TFTP server 2001::1 and save it to the local current folder as **testbackup.cfg**.

```
<Sysname> copy tftp://[2001::1]/test.cfg testbackup.cfg
Copy tftp://[2001::1]/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Copying file tftp://[2001::1]/test.cfg to cfa0:/testbackup.cfg... Done.
```

On an MSR4000, copy the active MPU's configuration file **test.cfg** to the standby MPU's CF card root directory.

```
<Sysname> copy test.cfg slot1#cfa0:/
Copy cfa0:/test.cfg to slot1#cfa0:/test.cfg?[Y/N]:y
Copying file cfa0:/test.cfg to slot1#cfa0:/test.cfg...Done.
```

delete

Use **delete** to delete a file.

Syntax

delete [**/unreserved**] *file-url*

Views

User view

Predefined user roles

network-admin

Parameters

/unreserved: Permanently deletes the specified file. If you do not specify this keyword, the command moves the file to the recycle bin.

file-url: Specifies the name of the file to be deleted. Asterisks (*) are acceptable as wildcards. For example, to remove files with the **.txt** extension in the current directory, enter **delete *.txt**.

Usage guidelines

Use the **delete /unreserved file-url** command with caution. You cannot restore a file deleted with this command.

The **delete file-url** command (without the **/unreserved** option) moves the specified file to the recycle bin unless the device is running out of storage space. If the device is running out of storage space, the command permanently deletes the file.

A file moved to the recycle bin can be restored by using the **undelete** command.

Do not use the **delete** command to delete files from the recycle bin. To delete files from the recycle bin, use the **reset recycle-bin** command.

If you successively delete two files that have the same name from the same directory, the file deleted later overwrites the file moved earlier to the recycle bin. If you delete two files that have the same name but reside in different directories, both files are retained in the recycle bin.

Examples

On an MSR2000 or MSR3000, remove file **1.cfg** from the current directory. The output was created on an MSR3000.

```
<Sysname> delete 1.cfg
Delete cfa0:/1.cfg? [Y/N]:y
Deleting file cfa0:/1.cfg...Done.
```

On an MSR2000 or MSR3000, permanently delete file **2.cfg** from the current directory. The output was created on an MSR3000.

```
<Sysname> delete /unreserved 2.cfg
The file cannot be restored. Delete cfa0:/2.cfg?[Y/N]:y
Deleting the file permanently will take a long time. Please wait...
Deleting file cfa0:/2.cfg...Done.
```

On an MSR4000, remove file **1.cfg** from the root directory of the active MPU's storage medium.

```
<Sysname> delete 1.cfg
Delete cfa0:/1.cfg? [Y/N]:y
Deleting file cfa0:/1.cfg...Done.
```

On an MSR4000, permanently delete file **2.cfg** from the root directory of the active MPU's storage medium.

```
<Sysname> delete /unreserved 2.cfg
The file cannot be restored. Delete cfa0:/2.cfg?[Y/N]:y
```

```
Deleting the file permanently will take a long time. Please wait...
Deleting file cfa0:/2.cfg...Done.
```

On an MSR4000, remove the **1.cfg** file from the root directory of the storage medium on the standby MPU (in slot 1):

- Method 1

```
<Sysname> delete slot1#cfa0:/1.cfg
Delete slot1#cfa0:/1.cfg?[Y/N]:y
Deleting file slot1#cfa0:/1.cfg...Done.
```
- Method 2

```
<Sysname> cd slot1#cfa0:/
<Sysname> delete 1.cfg
Delete slot1#cfa0:/1.cfg?[Y/N]:y
Deleting file slot1#cfa0:/1.cfg...Done.
```

Related commands

- **reset recycle-bin**
- **undelete**

dir

Use **dir** to display files or folders.

Syntax

```
dir [ /all ] [ file-url | /all-file systems ]
```

Views

User view

Predefined user roles

network-admin

Parameters

/all: Displays all files and folders in the current directory, visible or hidden. If you do not specify this option, only visible files and folders are displayed.

file-url: Displays a specific file or folder. The *file-url* argument can use the asterisk (*) as a wildcard. For example, to display files with the **.txt** extension in the current directory, enter **dir *.txt**.

/all-file systems: Displays files and folders in the root directory of all storage media on the device.

Usage guidelines

If no option is specified, the command displays all visible files and folders in the current directory.

The folder name of the recycle bin is **.trash**. To display files in the recycle bin, use either of the following methods:

- Execute the **dir /all .trash** command.
- Execute the **cd .trash** command and then the **dir** command.

Examples

On an MSR2000 or MSR3000, display information about all files and folders in the current directory. The output was created on an MSR3000.

```

<Sysname> dir /all
Directory of cfa0:/
...
# On an MSR2000 or MSR3000, display files and folders in the root directory of all storage media on
the device. The output was created on an MSR3000.
<Sysname> dir /all-file systems
Directory of cfa0:/
...

Directory of cfa0:/
...
# On an MSR4000, display information about all files and folders in the current directory.
<Sysname> dir /all
Directory of cfa0:/
...

# On an MSR4000, display files and folders in the root directory of all storage media on the device.
<Sysname> dir /all-file systems
Directory of cfa0:/
...
Directory of slot1#cfa0:/
...

# On an MSR4000, display information about all files and folders in the storage medium of the standby
MPU (in slot 1).
<Sysname> cd slot1#cfa0:/
<Sysname> dir /all
Directory of slot1#cfa0:/
...

```

Table 17 Command output

Field	Description
Directory of	Current directory.
0 -rwh 3144 Apr 26 2008 13:45:28 xx.xx	<p>File or folder information:</p> <ul style="list-style-type: none"> • 0—File or folder number, which is automatically allocated by the system. • -rwh—Attributes of the file or folder. The first character is the folder indicator (d for folder and - for file). The second character indicates whether the file or folder is readable (r for readable). The third character indicates whether the file or directory is writable (w for writable). The fourth character indicates whether the file or directory is hidden (h for hidden, - for visible). Modifying, renaming, or deleting hidden files might affect functions. • 3144—File size in bytes. For a folder, a hyphen (-) is displayed. • Apr 26 2008 13:45:28—Last date and time when the file or folder was modified. • xx.xx—File or folder name.

file prompt

Use **file prompt** to set the operation mode for files and folders.

Syntax

```
file prompt { alert | quiet }
```

```
undo file prompt
```

Default

The **alert** mode is activated and the system prompts for confirmation when you perform a destructive file or folder operation.

Views

System view

Predefined user roles

network-admin

Parameters

alert: Prompts for confirmation when a destructive file or folder operation is being performed.

quiet: Gives no confirmation prompt for file or folder operations.

Usage guidelines

In quiet mode, the system does not prompt for confirmation when a user performs a file or folder operation. The **alert** mode provides an opportunity to cancel a disruptive operation.

Examples

```
# Set the file and folder operation mode to alert.  
<Sysname> system-view  
[Sysname] file prompt alert
```

fixdisk

Use **fixdisk** to examine a storage medium and repair any damage.

Syntax

```
fixdisk medium-name
```

Views

User view

Predefined user roles

network-admin

Parameters

medium-name: Specifies the name of a storage medium name.

Usage guidelines

Use this command to fix a storage medium when space on the medium cannot be used or released due to abnormal operations.

Before you repair a storage medium, make sure no other users are accessing the medium. Otherwise, the repair operation fails.

Examples

```
# Examine and repair the CF card.
<Sysname> fixdisk cfa0:
Restoring cfa0: may take some time...
Restoring cfa0:...Done.
```

format

Use **format** to format a storage medium.

Syntax

```
format medium-name
```

Views

User view

Predefined user roles

network-admin

Parameters

medium-name: Specifies the name of a storage medium.

Usage guidelines

Formatting a storage medium permanently deletes all files on the storage medium. If a startup configuration file exists on the storage medium, back it up if necessary.

You can format a storage medium only when no one is accessing the medium.

Examples

```
# Format the CF card.
<Sysname> format cfa0:
All data on cfa0: will be lost, continue? [Y/N]:y
Formatting cfa0:... Done.
```

gunzip

Use **gunzip** to decompress a file.

Syntax

```
gunzip filename
```

Views

User view

Predefined user roles

network-admin

Parameters

filename: Specifies the name of the file to be decompressed. This argument must have `.gz` as the extension.

Usage guidelines

This command deletes the specified file after decompressing it.

Examples

Decompress the file **system.bin.gz**.

1. Before decompressing the file, you can display files whose names start with the **system.** string.

```
<Sysname> dir system.*
Directory of cfa0:
  1 -rw-                20 Jun 14 2012 10:18:53  system.bin.gz
472972 KB total (472840 KB free)
```

2. Decompress the file **system.bin.gz**.

```
<Sysname> gunzip system.bin.gz
```

3. Verify the decompress operation.

```
<Sysname> dir system.*
Directory of cfa0:
  1 -rw-                0 May 30 2012 11:42:25  system.bin
472972 KB total (472844 KB free)
```

gzip

Use **gzip** to compress a file.

Syntax

```
gzip filename
```

Views

User view

Predefined user roles

network-admin

Parameters

filename: Specifies the name of the file to be compressed. The compressed file will be saved to file *filename.gz*.

Usage guidelines

This command deletes the specified file after compressing it.

Examples

Compress the file **system.bin**.

1. Before compressing the file, you can display files whose names start with **system.**

```
<Sysname> dir system.*
Directory of cfa0:
  1 -rw-                0 May 30 2012 11:42:24  system.bin
472972 KB total (472844 KB free)
```

2. Compress the file **system.bin**.

```
<Sysname> gzip system.bin
```

3. Verify the compress operation.

```
<Sysname> dir system.*
```

```
Directory of cfa0:
```

```
1 -rw-          20 Jun 14 2012 10:18:53  system.bin.gz
```

```
472972 KB total (472840 KB free)
```

mkdir

Use **mkdir** to create a folder in the current directory.

Syntax

```
mkdir directory
```

Views

User view

Predefined user roles

network-admin

Parameters

directory: Specifies the name of a folder.

Usage guidelines

The name of the folder to be created must be unique in the specified directory.

To use this command to create a folder, the specified directory must exist. For example, to create the **cfa0:/test/mytest** folder, the **test** folder must exist. Otherwise, the **mytest** folder is not created.

Examples

```
# Create the test folder in the current directory.
```

```
<Sysname> mkdir test
```

```
Creating directory cfa0:/test... Done.
```

```
# Create the test/subtest folder in the current directory.
```

```
<Sysname> mkdir test/subtest
```

```
Creating directory cfa0:/test/subtest... Done.
```

```
# On an MSR4000, create the test folder on the standby MPU (in slot 1).
```

```
<Sysname> mkdir slot1# cfa0:/test
```

```
Creating directory slot1# cfa0:/test... Done.
```

more

Use **more** to display the contents of a text file.

Syntax

```
more file-url
```

Views

User view

Predefined user roles

network-admin

Parameters

file-url: Specifies a file name.

Examples

Display the contents of the **test.txt** file.

```
<Sysname> more test.txt
```

```
Have a nice day.
```

Display the contents of the **testcfg.cfg** file.

```
<Sysname> more testcfg.cfg
```

```
#
```

```
version 5.20, Beta 1201, Standard
```

```
#
```

```
sysname Sysname
```

```
#
```

```
vlan 2
```

```
#
```

```
return
```

```
<Sysname>
```

On an MSR4000, display the contents of the **testcfg.cfg** file on the standby MPU (in slot 1).

```
<Sysname> more slot1#cfa0:/testcfg.cfg
```

```
#
```

```
version 5.20, Release 0000
```

```
#
```

```
sysname Sysname
```

```
#
```

```
---- More ----
```

mount

Use **mount** to mount a hot swappable storage medium.

Syntax

```
mount medium-name
```

Default

A storage medium is automatically mounted and in mounted state after being connected to the device, and you can use it without mounting it.

Views

User view

Predefined user roles

network-admin

Parameters

medium-name: Specifies the name of a storage medium.

Usage guidelines

To avoid file system corruption:

- On an MSR2000 or MSR3000, do not install or remove a storage medium while the system is mounting it.
- On an MSR4000, do not install or remove storage media or cards or perform active/standby switchover while the system is mounting a storage medium.

Examples

On an MSR2000 or MSR3000, mount a CF card.

```
<Sysname> mount cfa0:
```

On an MSR4000, mount a CF card on an MPU.

```
<Sysname> mount cfa0:
```

Related commands

umount

move

Use **move** to move a file.

Syntax

```
move fileurl-source fileurl-dest
```

Views

User view

Predefined user roles

network-admin

Parameters

fileurl-source: Specifies the name of the source file.

fileurl-dest: Specifies the name of the destination file or folder.

Usage guidelines

If you specify a destination folder, the system moves the source file to the specified folder without changing the file name.

Examples

Move the **cfa0:/test/sample.txt** file to **cfa0:/**, and save it as **1.txt**.

```
<Sysname> move test/sample.txt 1.txt
```

```
Move cfa0:/test/sample.txt to cfa0:/1.txt?[Y/N]:y
```

```
Moving file cfa0:/test/sample.txt to cfa0:/1.txt ...Done.
```

Move the **b.cfg** file to the folder **test2**.

```
<Sysname> move b.cfg test2
```

```
Move cfa0:/b.cfg to cfa0:/test2/b.cfg?[Y/N]:y
```

```
Moving file cfa0:/b.cfg to cfa0:/test2/b.cfg... Done.
```

pwd

Use **pwd** to display the current working directory.

Syntax

```
pwd
```

Views

User view

Predefined user roles

network-admin

Examples

```
# Display the current working directory.  
<Sysname> pwd  
cfa0:
```

rename

Use **rename** to rename a file or folder.

Syntax

```
rename fileurl-source fileurl-dest
```

Views

User view

Predefined user roles

network-admin

Parameters

fileurl-source: Specifies the name of the source file or folder.

fileurl-dest: Specifies the name of the destination file or folder.

Usage guidelines

If the destination file or folder name is the same as the name of an existing file or folder in the current working directory, this command is not executed.

Examples

```
# Rename the copy.cfg file as test.cfg.  
<Sysname> rename copy.cfg test.cfg  
Rename cfa0:/copy.cfg as cfa0:/test.cfg?[Y/N]:y  
Renaming cfa0:/copy.cfg as cfa0:/test.cfg... Done.
```

reset recycle-bin

Use **reset recycle-bin** to delete files from the recycle bin.

Syntax

```
reset recycle-bin [ /force ]
```

Views

User view

Parameters

/force: Deletes all files in the recycle bin without prompting for confirmation. If you do not specify this option, the command prompts you to confirm the deletion.

Usage guidelines

The **delete file-url** command only moves a file to the recycle bin. To permanently delete the file, use the **reset recycle-bin** command to clear the recycle bin.

If a file is corrupted, you might not be able to delete the file by using the **reset recycle-bin** command. In this case, use the **reset recycle-bin /force** command.

Examples

Empty the recycle bin. (In this example there are two files in the recycle bin.)

```
<Sysname> reset recycle-bin
Clear cfa0:/a.cfg?[Y/N]:y
Clearing file cfa0:/a.cfg... Done.
Clear cfa0:/b.cfg?[Y/N]:y
Clearing file cfa0:/b.cfg... Done.
```

Delete the **b.cfg** file from the recycle bin. (In this example there are two files in the recycle bin.)

```
<Sysname> reset recycle-bin
Clear cfa0:/a.cfg?[Y/N]:n
Clear cfa0:/b.cfg?[Y/N]:y
Clearing file cfa0:/b.cfg... Done.
```

Related commands

delete

rmdir

Use **rmdir** to remove a folder.

Syntax

```
rmdir directory
```

Views

User view

Predefined user roles

network-admin

Parameters

directory: Specifies a folder name.

Usage guidelines

To remove a directory, you must delete all files and subfolders in the directory permanently or move them to the recycle bin. If you move them to the recycle bin, executing the **rmdir** command permanently deletes them.

Examples

```
# Remove the subtest folder.  
<Sysname>rmdir subtest/  
Remove directory cfa0:/test/subtest and the files in the recycle-bin under this directory  
will be deleted permanently. Continue?[Y/N]:y  
Removing directory cfa0:/test/subtest... Done.
```

sha256sum

Use **sha256sum** to use the SHA-256 algorithm to calculate the digest of a file.

Syntax

```
sha256sum file-url
```

Views

User view

Predefined user roles

network-admin

Parameters

file-url: Specifies the name of a file.

Usage guidelines

The digest of a file can be used to verify file integrity. For example, you can calculate a software image file's digest and compare it with the digest on the HP website.

Examples

```
# Use the SHA-256 algorithm to calculate the digest of file system.bin.  
<Sysname> sha256sum system.bin  
SHA256 digest:  
0851e0139f2770e87d01ee8c2995ca9e59a8f5f4062e99af14b141b1a36ca152
```

undelete

Use **undelete** to restore a file from the recycle bin.

Syntax

```
undelete file-url
```

Views

User view

Predefined user roles

network-admin

Parameters

file-url: Specifies the name of the file to be restored.

Usage guidelines

If another file that has the same name exists in the directory, the system prompts you about whether to overwrite the existing file. If you enter **Y**, the existing file is overwritten. If you enter **N**, the command is not executed.

Examples

Restore the **copy.cfg** file, which was moved from the **cfa0:** directory to the recycle bin.

```
<Sysname>undelete copy.cfg
Undelete cfa0:/copy.cfg?[Y/N]:y
Undeleting file cfa0:/copy.cfg... Done.
```

Restore the **startup.cfg** file, which was moved from the **cfa0:/seclog** directory to the recycle bin:

- Method 1

```
<Sysname>undelete seclog/startup.cfg
Undelete cfa0:/seclog/startup.cfg?[Y/N]:y
Undeleting file cfa0:/seclog/startup.cfg... Done.
<Sysname>
```

- Method 2

```
<Sysname> cd seclog
<Sysname> undelete startup.cfg
Undelete cfa0:/seclog/startup.cfg?[Y/N]:y
Undeleting file cfa0:/seclog/startup.cfg... Done.
```

umount

Use **umount** to unmount a hot swappable storage medium.

Syntax

umount *medium-name*

Default

A storage medium is automatically mounted and placed in mounted state.

Views

User view

Predefined user roles

network-admin

Parameters

medium-name: Specifies the name of a storage medium.

Usage guidelines

Before you remove a mounted storage medium from the system, first unmount it to avoid damaging the medium.

Before you unmount a storage medium, make sure no other users are accessing the medium. Otherwise, the unmount operation fails.

To avoid file system corruption:

- On an MR2000 or MR3000, do not install or remove a storage medium while the system is unmounting it.

- On an MR4000, do not install or remove storage media or cards or perform active/standby switchover while the system is unmounting a storage medium.

Examples

On an MR2000 or MR3000, unmount a CF card.

```
<Sysname> umount cfa0:
```

On an MR4000, unmount a CF card from an MPU.

```
<Sysname> umount cfa0:
```

Related commands

mount

Configuration file management commands

The device supports the FIPS mode that complies with NIST FIPS 140-2 requirements. Support for features, commands, and parameters might differ in FIPS mode and non-FIPS mode. For more information about FIPS mode, see *Security Configuration Guide*.

archive configuration

Use **archive configuration** to manually archive the running configuration to the configuration archive directory.

Syntax

archive configuration

Views

User view

Predefined user roles

network-admin

Usage guidelines

Before manually archiving the running configuration, you must use the **archive configuration location** command to specify a directory as the configuration archive directory and specify an archive name prefix.

Configuration archive facilitates configuration rollback. It provides manual and automatic methods for saving the running configuration as checkpoint references. For more information about the archiving mechanism, see the section about configuration rollback in *Fundamentals Configuration Guide*.

To avoid decreasing system performance:

- If the device configuration does not change frequently, manually archive the running configuration as needed.
- If a low-speed storage medium (such as a flash memory) is used, archive the running configuration manually, or configure automatic archiving with an interval longer than 1440 minutes (24 hours).
- If a high-speed storage medium (such as a CF card) is used and the device configuration changes frequently, set a shorter saving interval.

Examples

```
# Archive the running configuration.
<Sysname> archive configuration
Save the running configuration to an archive file. Continue? [Y/N]: Y
The archive configuration file myarchive_1.cfg is saved.
```

Related commands

- **archive configuration interval**
- **archive configuration location**
- **archive configuration max**

- **display archive configuration**

archive configuration interval

Use **archive configuration interval** to enable automatic running-configuration archiving and set the archiving interval.

Use **undo archive configuration interval** to restore the default.

Syntax

archive configuration interval *minutes*

undo archive configuration interval

Default

The system does not automatically archive the running configuration.

Views

System view

Predefined user roles

network-admin

Parameters

minutes: Specifies the interval (in minutes) for automatically saving the running configuration. The value range is 10 to 525600 (365 days).

Usage guidelines

Before enabling automatic configuration archiving, use the **archive configuration location** command to specify the configuration archive directory and archive file name prefix.

Configuration archive is a function that facilitates configuration rollback. It provides manual and automatic methods for saving the running configuration as checkpoint references.

Automatic configuration archiving enables the system to automatically save the running configuration to the archive directory. For more information about the archiving mechanism, see the section about configuration rollback in *Fundamentals Configuration Guide*.

To avoid decreasing system performance, follow these guidelines:

- If the device configuration does not change frequently, manually archive the running configuration as needed.
- If a low-speed storage medium (such as a flash memory) is used, archive the running configuration manually, or configure automatic archiving with an interval longer than 1440 minutes (24 hours).
- If a high-speed storage medium (such as a CF card) is used and the device configuration changes frequently, set a shorter saving interval.
- Change the archiving interval depending on the available storage space. The shorter the interval, the more free storage space is required.

Examples

```
# Configure the system to archive the running configuration every 60 minutes.
```

```
<Sysname> system-view
```

```
[Sysname] archive configuration interval 60
```

```
Archive files will be saved every 60 minutes.
```

Related commands

- **archive configuration**
- **archive configuration location**
- **archive configuration max**
- **display archive configuration**

archive configuration location

Use **archive configuration location** to configure the directory and file name prefix for archiving the running configuration.

Use **undo archive configuration location** to restore the default.

Syntax

archive configuration location *directory filename-prefix filename-prefix*

undo archive configuration location

Default

No configuration archive directory or configuration archive file name prefix has been set.

Views

System view

Predefined user roles

network-admin

Parameters

directory: Specifies a configuration archive directory, a case-insensitive string of 1 to 63 characters. The directory must take the format *storage-medium-name:/folder-name*. On an MSR4000, this directory must already exist on the active MPU. On an MSR2000 or MSR3000, this directory must already exist on the device.

filename-prefix: Specifies a file name prefix for configuration archives, a case-insensitive string of 1 to 30 characters. Valid characters are letters, digits, underscores (_), and hyphens (-).

Usage guidelines

Before a manual or automatic configuration archiving, you must specify the archive directory and file name prefix.

On an MSR4000, the configuration archive function saves the running configuration only on the active MPU. To make sure the system can archive the running configuration after an active/standby switchover, create the configuration archive directory on both active and standby MPUs.

Configuration archives take the file name format *prefix_serial number.cfg*, for example, **20080620archive_1.cfg** and **20080620archive_2.cfg**. The serial number is automatically assigned from 1 to 1000, increasing by 1. After the serial number reaches 1000, it restarts from 1.

After you change the file directory or file name prefix, or reboot the device, the old configuration archives are regarded as common configuration files, the configuration archive counter resets, and the **display archive configuration** command no longer displays them. The serial number for new configuration archives starts at 1.

The **undo archive configuration location** command not only removes the configuration archive directory and file name prefix settings but also disables the configuration archive function (both manual and automatic methods), restores the default settings of the **archive configuration interval** and **archive configuration max** commands, and clears all configuration archives.

Examples

```
# Configure the configuration archive directory as cfa0:/archive/ and the archive file name prefix as my_archive.
<Sysname> mkdir cfa0:/archive
Creating directory cfa0:/archive... Done.
<Sysname> system-view
[Sysname] archive configuration location cfa0:/archive filename-prefix my_archive
```

Related commands

- **archive configuration**
- **archive configuration location**
- **archive configuration max**
- **display archive configuration**

archive configuration max

Use **archive configuration max** to set the maximum number of configuration archives.

Use **undo archive configuration max** to restore the default.

Syntax

archive configuration max *file-number*

undo archive configuration max

Default

Up to five configuration archives can be saved.

Views

System view

Predefined user roles

network-admin

Parameters

file-number: Sets the maximum number of configuration archives that can be saved. The value range is 1 to 10. Adjust the setting depending on the amount of storage space available.

Usage guidelines

Before you can set a limit on configuration archives, use the **archive configuration location** command to specify a configuration archive directory and archive file name prefix.

After the maximum number of configuration archives is reached, the system deletes the oldest archive for the new archive.

Changing the limit setting to a lower value does not cause immediate deletion of excess archives. Instead, the configuration archive function deletes the oldest n files when a new archive is manually or automatically saved, where $n = \text{current archive count} - \text{new archive limit} + 1$.

Suppose seven configuration archives have been saved before the archive limit is set to four. When saving a new configuration archive, the system first deletes the oldest four (7 – 4 + 1) archives.

If you execute the **undo archive configuration location** command, the default archive limit is restored.

Examples

```
# Set the maximum number of configuration archives to 10.
<Sysname> system-view
[Sysname] archive configuration max 10
```

Related commands

- **archive configuration**
- **archive configuration location**
- **archive configuration interval**
- **display archive configuration**

backup startup-configuration

Use **backup startup-configuration** to back up the main next-startup configuration file to a TFTP server.

Syntax

```
backup startup-configuration to tftp-server [dest-filename ]
```

Views

User view

Predefined user roles

network-admin

Parameters

tftp-server: Specifies a TFTP server by its IPv4 address or host name. The host name is a case-insensitive string of 1 to 253 characters. Valid characters include letters, digits, hyphens (-), underscores (_), and dots (.).

dest-filename: Specifies the target file name used for saving the file on the server. The file name must use the .cfg extension. If you do not specify a target file name, the source file name is used.

Usage guidelines

This command is not supported in FIPS mode.

Examples

```
# Back up the main next-startup configuration file to the TFTP server at 2.2.2.2, and set the target file name to 192-168-1-26.cfg.
```

```
<Sysname> backup startup-configuration to 2.2.2.2 192-168-1-26.cfg
Backup next startup-configuration file to 2.2.2.2, please wait...finished
```

Related commands

```
restore startup-configuration
```

configuration encrypt

Use **configuration encrypt** to enable configuration encryption.

Use **undo configuration encrypt** to restore the default.

Syntax

```
configuration encrypt { private-key | public-key }  
undo configuration encrypt
```

Default

Configuration encryption is disabled. The running configuration is saved to a configuration file without encryption.

Views

System view

Predefined user roles

network-admin

Parameters

private-key: Encrypts configuration with a private key. Any HP device running Comware V7 software can decrypt the encrypted configuration file.

public-key: Encrypts configuration with a public key. Any HP device running the same software version as the encrypting device can decrypt the encrypted configuration file.

Usage guidelines

Configuration encryption enables the device to automatically encrypt a configuration file when saving the running configuration to the file.

Examples

```
# Enable the public-key method for configuration encryption.  
<Sysname> system-view  
[Sysname] configuration encrypt public-key
```

configuration replace file

Use **configuration replace file** to perform configuration rollback.

Syntax

```
configuration replace file filename
```

Views

System view

Predefined user roles

network-admin

Parameters

filename: Specifies the name of the replacement configuration file for configuration rollback.

Usage guidelines

To replace the running configuration with the configuration in a configuration file without rebooting the device, use the configuration rollback function. This function helps you revert to a previous configuration state or adapt the running configuration to different network environments.

To ensure a successful rollback:

- Make sure the replacement configuration file is created by using the configuration archive function or the **save** command on the device.
- If the configuration file is not created on the device, make sure the configuration file content format is fully compatible with the device.
- Make sure the replacement configuration file is not encrypted.

Examples

```
# Replace the running configuration with the configuration in the my_archive_1.cfg configuration file.
<Sysname> system-view
[Sysname] configuration replace file my_archive_1.cfg
Current configuration will be lost, save current configuration? [Y/N]:n
Now replacing the current configuration. Please wait...
Succeeded in replacing current configuration with the file my_archive_1.cfg.
```

display archive configuration

Use **display archive configuration** to display configuration archive information, including the archive directory, archive prefix, archive interval, maximum number of archives, and saved archives.

Syntax

display archive configuration

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display configuration archive information.
<Sysname> display archive configuration
Location: cfa0:/archive
Filename prefix: my_archive
Archive interval in minutes: 120
Maximum number of archive files: 10
Saved archive files:
  No.  TimeStamp                FileName
  ---  -
  1    Wed Jan 15 14:20:18 2012  my_archive_1.cfg
  2    Wed Jan 15 14:33:10 2012  my_archive_2.cfg
# 3    Wed Jan 15 14:49:37 2012  my_archive_3.cfg
'#' indicates the most recent archive file.
Next archive file to be saved: my_archive_4.cfg
```

Table 18 Command output

Field	Description
Location	Absolute path of the directory for saving running-configuration archives.
Filename prefix	File name prefix for configuration archives.
Archive interval in minutes	Interval (in minutes) for the system to automatically archive the running configuration. If automatic configuration saving is disabled, this field is not available.
Maximum number of archive files	Maximum number of configuration archives that can be saved.
Saved archive files	Configuration archives that have been saved.
TimeStamp	Time when the configuration archive was created.

Related commands

- **archive configuration**
- **archive configuration interval**
- **archive configuration location**
- **archive configuration max**

display current-configuration

Use **display current-configuration** to display the running configuration.

Syntax

```
display current-configuration [ configuration [ module-name ] | interface [ interface-type [ interface-number ] ] ]
```

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

configuration [*module-name*]: Displays feature configuration. The *module-name* argument specifies a feature module. If no feature module is specified, this command displays all feature settings you have made. Available feature modules depend on your configuration.

interface [*interface-type* [*interface-number*]]: Displays interface configuration, where the *interface-type* argument represents the interface type and the *interface-number* argument represents the interface number.

Usage guidelines

Use this command to verify the running configuration you have made.

Typically, this command does not display parameters that are set to their default settings.

If the system has automatically changed the setting you have made for a parameter, for example, due to a system restriction, this command displays the effective setting rather than the configured one.

Examples

```
# Display local user configuration.
<Sysname> display current-configuration configuration local-user
#
local-user ftp
  password simple 123
  service-type ftp
  authorization-attribute user-role network-operator
#
local-user root
  password simple admin
  service-type ssh telnet terminal
  authorization-attribute user-role network-admin
#
return

# Display Ethernet interface configuration.
<Sysname> display current-configuration interface ethernet
#
interface Ethernet1/1
  port link-mode route
#
return
```

display default-configuration

Use **display default-configuration** to display the factory defaults.

Syntax

```
display default-configuration
```

Views

Any view

Predefined user roles

network-admin
network-operator

Usage guidelines

The device is shipped with some basic settings called "factory defaults." These default settings make sure the device can start up and run correctly when it has no configuration file or the configuration file is corrupt.

Factory defaults might differ from the default settings of commands.

Examples

```
# Display the factory defaults.
<Sysname> display default-configuration
```

display saved-configuration

Use **display saved-configuration** to display the configuration saved to the main next-startup configuration file.

Syntax

```
display saved-configuration
```

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

Use this command to verify that important settings have been saved to the main next-startup configuration file.

If no next-startup configuration file has been specified, or the specified next-startup configuration does not exist, this command displays nothing.

Examples

Display the main next-startup configuration file. Command output varies with device models.

```
<Sysname> display saved-configuration
#
 version 1.00, Alpha 2009
#
 sysname Sysname
#
 ftp server enable
#
 telnet server enable
#
 domain default enable system
#
 vlan 1
#
 domain system
#
 ---- More ----
```

Related commands

- **reset saved-configuration**
- **save**

display startup

Use **display startup** to display the current startup configuration file and the next-startup configuration files.

Syntax

display startup

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

Current startup configuration file is the configuration file that has been loaded. Next-startup configuration file is the configuration file used at the next startup.

On an MSR4000, the standby MPU always uses the same current startup configuration file as the active MPU. After an active/standby switchover, it is normal that the current startup configuration files on them are displayed as NULL, because the new active MPU continues to run with the running configuration rather than rebooting with the previous current startup configuration file.

Examples

On an MSR2000 or MSR3000, display startup configuration files. The output is from an MSR3000.

```
<Sysname> display startup
Current startup saved-configuration file: cfa0:/startup.cfg
Next main startup saved-configuration file: cfa0:/startup.cfg
Next backup startup saved-configuration file: NULL
```

Table 19 Command output

Field	Description
Current startup saved-configuration file	Configuration file that the device has started up with.
Next main startup saved-configuration file	Primary configuration file to be used at the next startup.
Next backup startup saved-configuration file	Backup configuration file to be used at the next startup.

On an MSR4000, display startup configuration files.

```
<Sysname> display startup
MainBoard:
Current startup saved-configuration file: cfa0:/startup.cfg
Next main startup saved-configuration file: cfa0:/startup.cfg
Next backup startup saved-configuration file: NULL
Slot 1:
Current startup saved-configuration file: cfa0:/startup.cfg
Next main startup saved-configuration file: cfa0:/startup.cfg
Next backup startup saved-configuration file: NULL
```

Table 20 Command output

Field	Description
MainBoard	Displays the startup configuration files on the active MPU.
Current Startup saved-configuration file	Configuration file that the active MPU has started up with.

Field	Description
Next main startup saved-configuration file	Primary startup configuration file to be used at the next startup.
Next backup startup saved-configuration file	Backup startup configuration file to be used at the next startup.
Slot <i>n</i>	Displays the startup configuration files on the MPU in slot <i>n</i> .

Related commands

startup saved-configuration

display this

Use **display this** to display the running configuration in the current view.

Syntax

display this

Views

Any view

Predefined user roles

network-admin

network-operator

Usage guidelines

Use this command to verify the configuration you have made in a certain view.

Typically, this command does not display parameters that are set to their default settings.

For some parameters that can be successfully configured even if their dependent features are not enabled, this command displays their settings after the dependent features are enabled.

This command can be executed in any user interface view to display the running configuration of all user view interfaces.

Examples

Display the running configuration on interface Ethernet 1/1.

```
<Sysname> system-view
[Sysname] interface ethernet 1/1
[Sysname-Ethernet1/1] display this
#
interface Ethernet1/1
  port link-mode route
#
return
```

Display the running configuration on user interfaces.

```
<Sysname> system-view
[Sysname] user-interface vty 0
[Sysname-ui-vty0] display this
#
user-interface aux 0
```

```
user-role network-operator
#
user-interface con 0
user-role network-admin
#
user-interface vty 0 63
authentication-mode none
user-role network-admin
#
return
```

reset saved-configuration

Use **reset saved-configuration** to delete next-startup configuration files.

Syntax

```
reset saved-configuration [ backup | main ]
```

Views

User view

Predefined user roles

network-admin

Parameters

backup: Deletes the backup next-startup configuration file.

main: Deletes the main next-startup configuration file.

Usage guidelines

Delete a next-startup configuration file if it does not match the software version or is corrupt.

Use this command with caution. This command deletes a next-startup configuration file permanently from the device.

You can delete the main, the backup, or both.

To delete a file that is set as both main and backup next-startup configuration files, you must execute both the **reset saved-configuration backup** command and the **reset saved-configuration main** command. Using only one of the commands removes the specific file attribute instead of deleting the file.

For example, if the **reset saved-configuration backup** command is executed, the backup next-startup configuration file setting is set to NULL, but the file is still used as the main file. To delete the file, you must also execute the **reset saved-configuration main** command.

If no configuration file attribute is specified, the **reset saved-configuration** command deletes the main next-startup configuration file.

Examples

On an MSR2000 or MSR3000, delete the main next-startup configuration file. The output is from an MSR3000.

```
<Sysname> reset saved-configuration
The saved configuration file will be erased. Are you sure? [Y/N]:y
Configuration file in cfa0 is being cleared.
```



```

Please wait .....
Configuration file is cleared.

# On MSR4000, delete the main next-startup configuration file.
<Sysname> reset saved-configuration
The saved configuration file will be erased. Are you sure? [Y/N]:y
Configuration file in cfa0 is being cleared.
Please wait ...
..
MainBoard:
Configuration file is cleared.
Slot 1:
Erase next configuration file successfully

```

Related commands

display saved-configuration

restore startup-configuration

Use **restore startup-configuration** to download a configuration file from a TFTP server and specify it as the main next-startup configuration file.

Syntax

restore startup-configuration from *tftp-server src-filename*

Views

User view

Predefined user roles

network-admin

Parameters

tftp-server: Specifies a TFTP server's IPv4 address or host name. The host name is a case-insensitive string of 1 to 253 characters. Valid characters include letters, digits, hyphens (-), underscores (_), and dots (.).

src-filename: Specifies the file name of the configuration file to be downloaded.

Usage guidelines

This command is not supported in FIPS mode.

Before restoring the configuration file for the next startup, make sure the server is reachable, the server is enabled with TFTP service, and you have read and write permissions.

This command provides an easy method for configuration file restoration by automatically performing all operations required for restoring the main next-startup configuration file.

On an MSR4000, this command downloads the configuration file to the root directory of the storage medium on each MPU and specifies the file as the main next-startup configuration file.

Examples

On an MSR2000 or MSR3000, download the configuration file **test.cfg** from the TFTP server at 2.2.2.2 and specify the file as the main next-startup configuration file.

```

<Sysname> restore startup-configuration from 2.2.2.2 test.cfg
Restoring the next startup-configuration file from 2.2.2.2. Please wait...finished.

```

On an MSR4000, download the configuration file **test.cfg** from the TFTP server at 2.2.2.2, and specify the file as the main next-startup configuration file.

```
<Sysname> restore startup-configuration from 2.2.2.2 config.cfg
```

```
Restoring the next startup-configuration file from 2.2.2.2. Please wait...finished.
```

```
Now restoring the next startup-configuration file from main board to backup board. Please wait...finished.
```

Related commands

backup startup-configuration

save

On an MSR2000 or MSR3000:

Use **save** *file-url* to save the running configuration to a configuration file, without specifying the file as a next-startup configuration file.

Use **save** [**safely**] [**backup** | **main**] [**force**] to save the running configuration to the root directory of the storage medium, and specify the file as a next-startup configuration file.

On an MSR4000:

Use **save** *file-url* [**all** | **slot** *slot-number*] to save the running configuration to a configuration file, without specifying the file as a next-startup configuration file.

Use **save** [**safely**] [**backup** | **main**] [**force**] to save the running configuration to the root directory of the storage media on both active MPU and standby MPU, and specify the file as a next-startup configuration file.

Syntax

On an MSR2000 or MSR3000:

```
save file-url
```

```
save [ safely ] [ backup | main ] [ force ]
```

On an MSR4000:

```
save file-url [ all | slot slot-number ]
```

```
save [ safely ] [ backup | main ] [ force ]
```

Views

Any view

Predefined user roles

network-admin

Parameters

file-url: Specifies a file path, where the file extension must be .cfg. (MSR2000/MSR3000.)

file-url: Specifies a file path, where the file extension must be .cfg. If the keyword **all** or an MPU slot is specified, the file path cannot include a slot number. If the file path includes a folder name, you must first create the folder on the specified MPU. (MSR4000.)

all: Saves the running configuration with the specified file name to both MPUs. (MSR4000.)

slot *slot-number*: Saves the running configuration with the specified file name to the standby MPU. The *slot-number* represents the standby MPU's slot number. (MSR4000.)

safely: Saves the configuration file in safe mode. If this keyword is not specified, the device saves the configuration file in fast mode. Safe mode is slower than fast mode, but more secure. In safe mode, the system saves configuration in a temporary file and starts overwriting the target next-startup configuration file after the save operation is complete. If a reboot, power failure, or out of memory event occurs during the save operation, the next-startup configuration file is retained. In fast mode, the device directly overwrites the target next-startup configuration file. If a reboot, power failure, or out of memory event occurs during this process, the next-startup configuration file is lost. For reliable configuration saving, HP recommends that you specify the **safely** keyword when you save the running configuration to a next-startup configuration file.

backup: Saves the running configuration to a configuration file, and specifies the file as the backup next-startup configuration file.

main: Saves the running configuration to a configuration file, and specifies the file as the main next-startup configuration file.

force: Saves the running configuration to the main next-startup configuration file that has been specified in the system. Without this keyword, the system asks you to confirm the operation. If you do not confirm the operation within 30 seconds, the system automatically aborts the operation. If you enter **Y** within the time limit, you can continue the save process and change the next-startup configuration file during this process.

Usage guidelines

If the base file name specified for the *file-url* argument does not exist, the system creates the file before saving the configuration. If the file already exists, the system asks you to confirm whether to overwrite the file. If you choose to not overwrite the file, the system cancels the save operation.

If neither the **main** keyword nor the **backup** keyword is specified, the **save** command saves configuration to the main next-startup configuration file.

Examples

Save the running configuration to the configuration file **backup.cfg**, without specifying the file as the next-startup configuration file.

```
<Sysname> save backup.cfg
The current configuration will be saved to cfa0:/backup.cfg. Continue? [Y/N]:y
Now saving current configuration to the device.
Saving configuration
cfa0:/backup.cfg. Please wait...
Configuration is saved to cfa0 successfully.
```

Save the running configuration to the main next-startup configuration file without any confirmation required.

```
<Sysname> save force
Validating file. Please wait...
Configuration is saved to device successfully.
```

On an MSR2000 or MSR3000, save the running configuration to a file in the root directory of the storage medium, and specify the file as the main next-startup configuration file. The output is from an MSR3000.

```
<Sysname> save
The current configuration will be written to the device. Are you sure? [Y/N]:y
Please input the file name(*.cfg)[cfa0:/backup.cfg]
(To leave the existing filename unchanged, press the enter key):test.cfg
Validating file. Please wait.....
```

Configuration is saved to device successfully.

On an MSR4000, save the running configuration to a file in the root directory of the storage medium, and specify the file as the main next-startup configuration file.

```
<Sysname> save
```

```
The current configuration will be written to the device. Are you sure? [Y/N]:y
```

```
Please input the file name(*.cfg)[cfa0:/startup.cfg]
```

```
(To leave the existing filename unchanged, press the enter key):
```

```
Validating file. Please wait...
```

```
Saved the current configuration to mainboard device successfully.
```

```
Slot 1:
```

```
Save next configuration file successfully.
```

Related commands

- **display current-configuration**
- **display saved-configuration**

startup saved-configuration

On an MSR2000 or MSR3000:

Use **startup saved-configuration** to specify a file as a next-startup configuration file.

Use **undo startup saved-configuration** to configure the system to start up with factory defaults at the next startup.

On MSR4000:

Use **startup saved-configuration** to specify a file as a next-startup configuration file for both active MPU and standby MPU.

Use **undo startup saved-configuration** to configure the active MPU and the standby MPU to start up with factory defaults at the next startup.

Syntax

```
startup saved-configuration cfgfile [ backup | main ]
```

```
undo startup saved-configuration
```

Default

By default, no startup configuration file is configured.

Views

User view

Predefined user roles

network-admin

Parameters

cfgfile: Specifies the name of a .cfg file. This .cfg file must already exist in the root directory of storage medium.

backup: Specifies the configuration file as the backup next-startup configuration file.

main: Specifies the configuration file as the main next-startup configuration file. This is the primary configuration file that the device attempts to load at startup. If the loading attempt fails, the device tries the backup next-startup configuration file.

Usage guidelines

On an MSR4000, the **startup saved-configuration** command applies to both MPUs. To successfully configure the command, verify that the specified file already exists in the root directory of the storage medium on both active MPU and standby MPU.

If neither **backup** nor **main** is specified, the **startup saved-configuration** command specifies the main next-startup configuration file.

Even though the main and backup next-startup configuration files can be the same one, specify them as separate files for high availability.

The **undo startup saved-configuration** command changes the file attribute of the main and backup next-startup configuration files to NULL, but it does not delete the two configuration files.

You can also specify a configuration file as a next startup file when you use the **save** command to save the running configuration to it.

Examples

```
# Specify the main next-startup configuration file.  
<Sysname> startup saved-configuration testcfg.cfg  
Please wait ....  
... Done!
```

Related commands

display startup

Software upgrade commands

boot-loader file

Use **boot-loader file** to specify startup software image files.

Syntax

On an MSR2000 or MSR3000:

```
boot-loader file boot boot-package system system-package [ feature feature-package&<1-30> ]  
{ backup | main }
```

```
boot-loader file ipe-filename { backup | main }
```

On an MSR4000:

```
boot-loader file boot boot-package system system-package [ feature feature-package&<1-30> ] slot  
slot-number { backup | main }
```

```
boot-loader file ipe-filename slot slot-number { backup | main }
```

Views

User view

Predefined user roles

network-admin

Parameters

boot *boot-package*: Specifies a .bin boot image file, a case-insensitive string of 1 to 63 characters. The file path specified for the *boot-package* argument takes the *storage-medium:/base-filename.bin* format, for example, cfa0:/startup-boot.bin. For an MSR4000, the file path must not include the slot ID.

system *system-package*: Specifies a .bin system image file, a case-insensitive string of 1 to 63 characters. The file path specified for the *system-package* argument takes the *storage-medium:/base-filename.bin* format, for example, cfa0:/startup-system.bin. For an MSR4000, the file path must not include the slot ID.

feature *feature-package*: Specifies a space-separated list of up to 30 .bin feature package files. Each feature package file name must be a case-insensitive string of 1 to 63 characters and takes the *storage-medium:/base-filename.bin* format, for example, cfa0:/startup-a.bin. For an MSR4000, the file path must not include the slot ID.

ipe-filename: Specifies an .ipe Comware image file name, a case-insensitive of 1 to 63 characters. The file path must take the *storage-medium:/base-filename.ipe* format, for example, cfa0:/startup.ipe. For an MSR4000, the file path must not include the slot ID.

slot *slot-number*: Specifies the slot number of the MPU for which the startup images are specified. (MSR4000.)

backup: Specifies the files as backup startup files. Backup startup images are used only when main images are not available.

main: Specifies the files as main startup files. The device always first attempts to start up with main startup files.

Usage guidelines

On an MSR2000 or MSR3000:

Before specifying startup software image files, you must perform the following tasks:

- Save the upgrade files to the root directory of the storage medium.
- If the specified software images require a license, register and activate a license for each image. If a license-based software image lacks a license, the command execution result is as follows:
 - The **boot-loader file boot boot-package system system-package [feature feature-package<1-30>] slot slot-number { backup | main }** command cannot be issued.
 - The **boot-loader file ipe-filename { backup | main }** command can set all the images except the license-based image that lacks a license.

For more information about licensing, see *Fundamentals Configuration Guide*.

On an MSR4000:

Use this command to upgrade the startup software images on both MPUs. To upgrade only the standby MPU, you can also use the **boot-loader update** command.

Before specifying startup software image files, you must perform the following tasks:

- Save the upgrade files to the root directory of the storage medium on the active MPU.
- If the specified software images require a license, register and activate a license for each image. If a license-based software image lacks a license, the command execution result is as follows:
 - The **boot-loader file boot boot-package system system-package [feature feature-package<1-30>] { backup | main }** command cannot be issued.
 - The **boot-loader file ipe-filename slot slot-number { backup | main }** command can set all the images except the license-based image that lacks a license.

For more information about licensing, see *Fundamentals Configuration Guide*.

If the standby MPU is specified, the system examines the root directory of the storage medium on the standby MPU for any file with the same name as the file on the active MPU. If no such a file exists, the system copies the specified file from the active MPU to the standby MPU and sets it as a startup image file. If a file with the same name exists, you must choose whether to overwrite the file already on the standby MPU.

The **boot-loader file** command overwrites the entire startup software image list. To add new startup feature images, specify all feature package files, including feature package files in the old startup software image list. The new startup software image list will contain only the feature package files that are specified in the command.

Examples

On an MSR2000 or MSR3000, specify **cfa0:/all.ipe** as the backup startup image file. The following is the output from the MSR3000.

```
<Sysname> boot-loader file cfa0:/all.ipe backup
Images in IPE:
  boot.bin
  system.bin
ssh.bin
This command will set the backup startup software images. Continue? [Y/N]:Y
Add images to the device.
  cfa0:/boot.bin already exists on the device.
  cfa0:/system.bin already exists on the device.
```

```

cfa0:/ssh.bin already exists on the device.
Overwrite it? [Y/N]:y
The specified file list will be used as the backup startup software images at the next
reboot on the device.

# On an MSR4000, specify cfa0:/all.ipe as the backup startup image file for the MPU in slot 0.
<Sysname> boot-loader file cfa0:/all.ipe slot 0 backup
Images in IPE:
  boot.bin
  system.bin
ssh.bin
This command will set the backup startup software images. Continue? [Y/N]:Y
Add images to target slot.
  cfa0:/boot.bin already exists on slot 0.
  cfa0:/system.bin already exists on slot 0.
  cfa0:/ssh.bin already exists on slot 0.
Overwrite it? [Y/N]:y
The specified file list will be used as the backup startup software images at the next
reboot on slot 0.

```

Related commands

display boot-loader

boot-loader update

Use **boot-loader update** to synchronize startup images from the active MPU to the standby MPU.

Syntax

boot-loader update slot *slot-number*

Views

User view

Predefined user roles

network-admin

Parameters

slot *slot-number*: Specifies the slot number of the standby MPU.

Usage guidelines

The following matrix shows the command and chassis compatibility:

Command	MSR2000	MSR3000	MSR4000
boot-loader update	No	No	Yes

You can use this command to synchronize startup images after adding a new MPU.

If any of the startup software images require a license, register and activate a license for the image on the new MPU before executing this command. Use the **display license feature** command to verify the licensing state of software images.

The startup images synchronized to the standby MPU are set as main startup images, regardless of whether the source startup images are main or backup.

If the active MPU has started up with main startup images, its main startup images are synchronized to the standby MPU, regardless of whether any change has been made to this set of startup images.

If the active MPU has started up with backup startup images, its backup startup images are synchronized to the standby MPU, regardless of whether any change has been made to this set of startup images.

Startup image synchronization fails if any software image being synchronized is corrupted or is not available.

Examples

```
# Synchronize startup images from the active MPU to the standby MPU in slot 1.
<Sysname> boot-loader update slot 1
This command will update the specified standby MPU. Continue? [Y/N]:y
Updating. Please wait...
Copying main startup software images to slot 1. Please wait...
Done.
Setting copied images as main startup software images for slot 1...
The images that have passed all examinations will be used as the main startup software images at the next reboot on slot 1.
Done.
Successfully updated the startup software images of slot 1.
```

Related commands

- **display boot-loader**
- **install commit**

bootrom update

Use **bootrom update** to load the Boot ROM image in the storage medium to the Normal area of Boot ROM.

Syntax

On an MSR2000 or MSR3000:

```
bootrom update file file-url [ slot subslot-number-list ]
```

On an MSR4000:

```
bootrom update file file-url slot slot-number-list [ subslot subslot-number-list ]
```

Views

User view

Predefined user roles

network-admin

Parameters

file *file-url*: Specifies the file that contains the Boot ROM image in the storage medium. The *file-url* argument represents the file name, a string of 1 to 63 characters.

slot *subslot-number-list*: Specifies a list of up to seven subslot number items. Each item specifies a subcard by its subslot number or a range of subcards in the form of *start-subslot-number* **to** *end-subslot-number*. If

you do not specify a subcard for a base card, this command performs Boot ROM loading for the base card. (MSR2000/MSR3000.)

slot *slot-number-list*: Specifies a space-separated list of up to seven slot number items. Each item specifies a card by its slot number or a range of cards in the form of *start-slot-number to end-slot-number*. For example, **slot 0 to 1 2**. (MSR4000.)

subslot *subslot-number-list*: Specifies a list of up to seven subslot number items. Each item specifies a subcard by its subslot number or a range of subcards in the form of *start-subslot-number to end-subslot-number*. If you do not specify a subcard for a base card, this command performs Boot ROM loading for the base card. (MSR4000.)

Usage guidelines

If a software upgrade requires upgrading the Boot ROM image, you can use this command to preload the new Boot ROM image to the Boot ROM before upgrading Comware images. This command helps shorten the subsequent upgrade time, reducing the risk of upgrade failure caused by unexpected electricity failure.

To complete the upgrade, reboot the device.

To save space, you can delete the Boot ROM image in the storage medium after completing the Boot ROM image upgrade.

Examples

Use the file **a.btm** to upgrade the Boot ROM image.

```
<Sysname> bootrom update file a.btm
```

```
    This command will update the Boot ROM file on the specified board(s), Continue? [Y/N]:y
```

```
    Now updating the Boot ROM, please wait...
```

```
.....Done.
```

Related commands

boot-loader file

bootrom-update security-check enable

Use **bootrom-update security-check enable** to enable Boot ROM image validity check.

Use **undo bootrom-update security-check enable** to disable Boot ROM image validity check.

Syntax

bootrom-update security-check enable

undo bootrom-update security-check enable

Default

Boot ROM image validity check is enabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

Before a Boot ROM image upgrade starts, this function examines the upgrade Boot ROM image for file validity and incompatibility with hardware. If the Boot ROM image passes the check, the upgrade process starts. If not, the system does not perform the upgrade.

Examples

```
# Enable Boot ROM image validity check.
<Sysname> system-view
[Sysname] bootrom-update security-check enable
```

display boot-loader

Use **display boot-loader** to display current software images and startup software images.

Syntax

On an MSR2000 or MSR3000:

```
display boot-loader
```

On an MSR4000:

```
display boot-loader [ slot slot-number ]
```

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

slot *slot-number*: Specifies the slot number of an MPU. If you do not specify an MPU, this command displays the software images on each MPU. (MSR4000.)

Examples

On an MSR2000 or MSR3000, display current software images and startup software images. The following is the output from the MSR3000.

```
<Sysname> display boot-loader
Software images on the device:
Current software images:
  cfa0:/msr36-cmw710-boot-e000603.bin
  cfa0:/msr36-cmw710-system-e000603.bin
  cfa0:/msr36-cmw710-security-e000603.bin
  cfa0:/msr36-cmw710-voice-e000603.bin
  cfa0:/msr36-cmw710-data-e000603.bin
Main startup software images:
  cfa0:/msr36-cmw710-boot-e000603.bin
  cfa0:/msr36-cmw710-system-e000603.bin
  cfa0:/msr36-cmw710-security-e000603.bin
  cfa0:/msr36-cmw710-voice-e000603.bin
  cfa0:/msr36-cmw710-data-e000603.bin
Backup startup software images:
```

```

None
# On an MSR4000, display current software images and startup software images.
<Sysname> display boot-loader
Software images on slot 0:
Current software images:
  cfa0:/msr56-cmw710-boot-e000603.bin
  cfa0:/msr56-cmw710-system-e000603.bin
  cfa0:/msr56-cmw710-security-e000603.bin
  cfa0:/msr56-cmw710-voice-e000603.bin
  cfa0:/msr56-cmw710-data-e000603.bin
Main startup software images:
  cfa0:/msr56-cmw710-boot-e000603.bin
  cfa0:/msr56-cmw710-system-e000603.bin
  cfa0:/msr56-cmw710-security-e000603.bin
  cfa0:/msr56-cmw710-voice-e000603.bin
  cfa0:/msr56-cmw710-data-e000603.bin
Backup startup software images:
  None
Software images on slot 1:
Current software images:
  cfa0:/msr56-cmw710-boot-e000603.bin
  cfa0:/msr56-cmw710-system-e000603.bin
  cfa0:/msr56-cmw710-security-e000603.bin
  cfa0:/msr56-cmw710-voice-e000603.bin
  cfa0:/msr56-cmw710-data-e000603.bin
Main startup software images:
  cfa0:/msr56-cmw710-boot-e000603.bin
  cfa0:/msr56-cmw710-system-e000603.bin
  cfa0:/msr56-cmw710-security-e000603.bin
  cfa0:/msr56-cmw710-voice-e000603.bin
  cfa0:/msr56-cmw710-data-e000603.bin
Backup startup software images:
  None

```

Table 21 Command output

Field	Description
Software images on slot <i>slot-number</i>	Displays the boot images and system images on the MPU in a specific slot. (MSR4000.)
Current software images	Boot image and system image that have been loaded.
Main startup software images	Main boot image and system image to be loaded at the next startup.
Backup startup software images	Backup boot image and system image to be loaded at the next startup.

Related commands

boot-loader file

version auto-update enable

Use **version auto-update enable** to enable software synchronization from the active MPU to the standby MPU at startup.

Use **undo version auto-update enable** to disable the function.

Syntax

version auto-update enable

undo version auto-update enable

Default

If software inconsistency is detected at startup, the standby MPU loads the current software images of the active MPU.

Views

System view

Predefined user roles

network-admin

Usage guidelines

The following matrix shows the command and chassis compatibility:

Command	MSR2000	MSR3000	MSR4000
version auto-update enable	No	No	Yes

To make sure the standby MPU always runs the same software images as the active MPU, configure both the **version auto-update enable** command and the **undo version check ignore** command.

The startup software version check function examines the standby MPU's startup software images for version inconsistency with the active MPU's current software images at startup. If their software versions are different, the standby MPU copies the current software images of the active MPU, specifies them as main startup software images, and reboots with these images.

To ensure a successful synchronization in a multi-user environment, do not reboot or swap MPUs during the software synchronization process. You can configure the information center to output the synchronization status to configuration terminals (see *Network Management and Monitoring Configuration Guide*).

Examples

```
# Enable software auto-update for the standby MPU.  
<Sysname> system-view  
[Sysname] version auto-update enable
```

Related commands

version check ignore

version check ignore

Use **version check ignore** to disable startup software version check for the standby MPU at startup.

Use **undo version check ignore** to enable this function.

Syntax

version check ignore

undo version check ignore

Default

The startup software images on the standby MPU are checked for version inconsistency with the current software images on the active MPU.

Views

System view

Predefined user roles

network-admin

Usage guidelines

The following matrix shows the command and chassis compatibility:

Command	MSR2000	MSR3000	MSR4000
version check ignore	No	No	Yes

When the standby MPU starts up, this command disables the system to examine the standby MPU's startup software images for version inconsistency with the active MPU's current software images. The standby MPU can start up with a different software version than the active MPU.

Even though you can use this command for upgrading software, HP recommends the ISSU method to software upgrade. The startup software version check function might fail to work because the software versions of the MPUs are incompatible.

To avoid anomalies, do not disable startup software version check for the standby MPU unless for software upgrade.

To make sure the standby MPU always runs the same software images as the active MPU, configure both the **version auto-update enable** command and the **undo version check ignore** command.

Examples

```
# Enable startup software version check for the standby MPU.
```

```
<Sysname> system-view
```

```
[Sysname] undo version check ignore
```

Related commands

version auto-update enable

Emergency shell commands

Unless otherwise stated, a file name or path argument for an MSR2000 or MSR3000 is case insensitive and must indicate the storage medium. The path information might contain multiple levels of directories, and each can include 1 to 255 characters. The file name alone (without the path information) can include 1 to 255 characters. The argument, including the storage medium, the path information, and the file name, can include 1 to 511 characters.

Unless otherwise stated, a file name or path argument for an MSR4000 is case insensitive, and must indicate the storage medium and contain no slot information. The path information might contain multiple levels of directories, and each can include 1 to 255 characters. The file name alone (without the path information) can include 1 to 255 characters. The argument, including the storage medium, the path information, and the file name, can include 1 to 511 characters.

copy

Use **copy** to copy a file.

Syntax

```
copy fileurl-source fileurl-dest
```

Views

User view

Parameters

fileurl-source: Specifies the name of the file to be copied.

fileurl-dest: Specifies the name of the destination file or directory. If you specify a destination directory, the system copies the file to the specified directory and uses the name of the source file as the file name.

Usage guidelines

If the destination file already exists, the system prompts whether to overwrite it.

Examples

Copy the **test.cfg** file and save it in the same directory as **testbackup.cfg**.

```
<boot> copy cfa0:/testcfg.cfg cfa0:/testbackup.cfg
Copy cfa0:/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
Start to copy cfa0:/test.cfg to cfa0:/testbackup.cfg...Done.
```

Copy the **test.cfg** file and save it in the same directory by using the name of existing file **testbackup.cfg**. (The existing file is overwritten.)

```
<boot> copy cfa0:/testcfg.cfg cfa0:/testbackup.cfg
Copy cfa0:/test.cfg to cfa0:/testbackup.cfg?[Y/N]:y
cfa0:/testbackup.cfg already exists. Overwrite it?[Y/N]:y
Start to copy cfa0:/test.cfg to cfa0:/testbackup.cfg...Done.
```

delete

Use **delete** to permanently delete a file.

Syntax

delete *file-url*

Views

User view

Parameters

file-url: Specifies the name of the file to be deleted.

Examples

```
# Delete the tt.cfg file from the current directory.
<boot> delete cfa0:/tt.cfg
Delete cfa0:/tt.cfg? [Y/N]:y
Deleting the file permanently will take a long time. Please wait...
Start to delete cfa0:/tt.cfg...Done.
```

dir

Use **dir** to display files or directories.

Syntax

dir [*/all*] [*file-url*]

Views

User view

Parameters

/all: Displays both hidden and non-hidden files and subdirectories.

file-url: Specifies a specific file or directory.

Usage guidelines

Task	Command	Remarks
Display all non-hidden files and subdirectories in the current directory.	dir	N/A
Display all files and subdirectories in the current directory.	dir /all	N/A
Display all non-hidden files and subdirectories in a specific directory.	dir <i>file-url</i>	Specify a directory for the <i>file-url</i> argument.
Display all files and subdirectories in a specific directory.	dir /all <i>file-url</i>	Specify a directory for the <i>file-url</i> argument.
Display a specific file.	dir <i>file-url</i>	Specify a file for the <i>file-url</i> argument.

Examples

```
# Display information about all files and directories in the system.
<boot> dir /all
Directory of cfa0:
  0      drw-          -   Apr 17 2013 17:47:00      license
```



```

1      drw-          - Apr 16 2013 15:46:32      logfile
2      drw-          - Mar 07 2013 00:04:48      diagfile
3      drw-          - Mar 07 2013 00:04:48      seclog
4      -rw-    47854592 Apr 16 2013 15:44:50      msr36.ipe
5      -rw-    11892736 Apr 16 2013 15:45:28      msr36-cmw710-boot-e000603
.bin
6      -rw-          777 Apr 17 2013 17:47:18      ifindex.dat
7      -rw-          3606 Apr 17 2013 17:47:18      startup.cfg
8      -rw-          2304 Apr 17 2013 17:45:34      3640a_security.ak
9      -rw-          2298 Apr 17 2013 17:45:46      3640a_voice.ak
10     -rw-          2296 Apr 17 2013 17:45:58      3640a_data.ak
11     -rwh           20 Apr 18 2013 10:46:28      .snmpboots
12     -rw-          27 Apr 18 2013 16:48:04      vlan.txt
13     -rwh           17 Apr 19 2013 10:57:58      .pathfile
14     drw-          - Apr 19 2013 10:57:58      core
15     drwh          - Apr 26 2013 09:49:58      .trash

```

252164 KB total (193346 KB free)

Display all unhidden files and directories in the system.

```
<boot> dir
```

Directory of cfa0:

```

0      drw-          - Apr 17 2013 17:47:00      license
1      drw-          - Apr 16 2013 15:46:32      logfile
2      drw-          - Mar 07 2013 00:04:48      diagfile
3      drw-          - Mar 07 2013 00:04:48      seclog
4      -rw-    47854592 Apr 16 2013 15:44:50      msr36.ipe
5      -rw-    11892736 Apr 16 2013 15:45:28      msr36-cmw710-boot-e000603
.bin
6      -rw-          777 Apr 17 2013 17:47:18      ifindex.dat
7      -rw-          3606 Apr 17 2013 17:47:18      startup.cfg
8      -rw-          2304 Apr 17 2013 17:45:34      3640a_security.ak
9      -rw-          2298 Apr 17 2013 17:45:46      3640a_voice.ak
10     -rw-          2296 Apr 17 2013 17:45:58      3640a_data.ak
11     -rw-          27 Apr 18 2013 16:48:04      vlan.txt
12     drw-          - Apr 19 2013 10:57:58      core

```

252164 KB total (193346 KB free)

Display information about the **config.cfg** file.

```
<boot> dir cfa0:/config.cfg
```

Directory of cfa0:

```

0      -rw-          3231 Aug 31 2012 09:01:41      startup.cfg

```

252164 KB total (193346 KB free)

Table 22 Command output

Field	Description
Directory of	Current directory.

Field	Description
0 drw- - Apr 17 2013 17:47:00 license	<p>Information about a file or directory:</p> <ul style="list-style-type: none"> • 0—Index number, automatically assigned by the system. • -rw-—Attributes of the file or directory. The first character is the directory indicator (d for directory and - for file). The second character indicates whether the file or directory is readable (r for readable). The third character indicates whether the file or directory is writable (w for writable). The last character indicates whether the file or directory is hidden (h for hidden and - for visible). • 26043—Size of the file, in bytes. For a directory, the value of this field is a hyphen (-). • Jan 01 2012 00:04:37—Time when the file was most recently modified. • config.mdb—Name of the file or directory.
252164 KB total (193346 KB free)	Total size of the storage medium and size of the free space, in kilobytes.

display copyright

Use **display copyright** to display the copyright information.

Syntax

display copyright

Views

Any view

Examples

```
# Display the copyright information.
<boot> display copyright
...
```

display install package

Use **display install package** to display information about a software package.

Syntax

display install package *package*

Views

Any view

Parameters

package: Specifies a software package name with the extension `.bin`, a case-insensitive string of 1 to 63 characters. This argument must indicate the name of the storage medium, such as `cfa0:/a.bin`. The software package must be saved in the root directory of the storage medium.

Examples

```
# Display information about the system.bin software package.
<boot> display install package cfa0:/system.bin
```

```

cfa0:/system.bin
[Package]
Vendor: HP
Product: MSR3000
Service name: boot
Platform version: 7.1.042P01
Product version: ESS 000603
Supported board: MSR3012,MSR3024,MSR3044,MSR3064
[Component]
Component: boot
Description: boot package

```

Table 23 Command output

Field	Description
Product	Product name.
Service name	Type of the service package: <ul style="list-style-type: none"> • boot—Boot image. • system—System image. • patch—Patch package. The value of this field is any other value for feature packages.
Platform version	Platform version number.
Product version	Product version number. You determine whether the version of a system image matches that of a boot image by checking the value of this field.
Supported board	Types of cards that the software package supports: <ul style="list-style-type: none"> • mpu—MPU. • lc—Service card. • sfc—Switching fabric card.
Version type	Version type, indicates whether the version is a debug version or release version.
[Component]	Information about the components of the software package.

display interface m-eth0

Use **display interface m-eth0** to display information about the management Ethernet port M-Eth 0.

Syntax

display interface m-eth0

Views

Any view

Examples

Display information about the management Ethernet port.

```

<boot> display interface m-eth0
m-eth0 current state: UP
Line protocol current state: UP
The Maximum Transmit Unit is 1500

```

```

Inet6 Address is FE80::54D5:4EFF:FE4D:451C/10 Scope:Link
IP Packet Frame Type:PKTFMT_ETHNT_2, Hardware Address:56D5-4E4D-451C
IPV6 Packet Frame Type:PKTFMT_ETHNT_2, Hardware Address:56D5-4E4D-451C
Input:513 packets, 0 errors, 0 dropped, 0 overruns, 0 frame
Output:6 packets, 0 errors, 0 dropped, 0 overruns, 0 carrier
      0 collisions, 0 txqueuelen
Input bytes:68702
Output bytes:468

```

Table 24 Command output

Field	Description
m-eth0 current state	Physical layer status of the management Ethernet interface: <ul style="list-style-type: none"> • Administratively DOWN—The interface has been shut down by using the shutdown command. • DOWN—The interface has been enabled by using the undo shutdown command but its physical status is down because, for example, no cable is connected or a line failure occurred. • UP—The interface has been enabled by using the undo shutdown command but its physical status is up.
Line protocol current state	Link layer status of the interface.
The Maximum Transmit Unit	MTU of the interface.
Inet4 Address	IPv4 address of the interface. This field is displayed only when the device is configured with an IPv4 address.
Inet6 Address	IPv6 global unicast address of the interface. This field is displayed only when the device is configured with an IPv6 address.
Inet6 Address is FE80::202:3FF:FE04:506/10 Scope:Link	IPv6 link-local address of the interface.
IP Packet Frame Type:PKTFMT_ETHNT_2, Hardware Address: c4ca-d94c-e201	Link layer encapsulation type and hardware address for IPv4 packets.
IPV6 Packet Frame Type:PKTFMT_ETHNT_2, Hardware Address: c4ca-d94c-e201	Link layer encapsulation type and hardware address for IPv6 packets.
Input: 8983 packets, 0 errors, 0 dropped, 0 overruns, 2 frame	Statistics for received packets: <ul style="list-style-type: none"> • Total number. • Number of erroneous packets. • Number of dropped packets. • Number of packets encountering queue overflow errors. • Number of packets encountering frame queue errors.

Field	Description
Output: 431 packets, 0 errors, 0 dropped, 0 overruns, 0 carrier, 0 collisions, 1000 txqueuelen	Statistics for sent packets: <ul style="list-style-type: none"> • Total number. • Number of erroneous packets. • Number of dropped packets. • Number of packets encountering queue overflow errors. • Number of packets encountering carrier failures. • Number of packets with collision. • Number of packets permitted by the queue.
Input bytes	Total number of received bytes.
Output bytes	Total number of sent bytes.

display ip routing-table

Use **display ip routing-table** to display IPv4 routing information.

Syntax

display ip routing-table

Views

Any view

Examples

Display IPv4 routing information.

```
<boot> display ip routing-table
```

```
Kernel IP routing table
```

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
192.168.116.0	*	255.255.255.0	U	0	0	0	m-eth0
default	192.168.116.1	0.0.0.0	UG	0	0	0	m-eth0

Table 25 Command output

Field	Description
Kernel IP routing table	IPv4 routing information.
Destination	Destination address. For the default route, the value of this field is default .
Gateway	Gateway address. If no gateway is needed, the value of this field is an asterisk (*).
Genmask	Subnet mask. For the default route, the value of this field is 0.0.0.0.
Flags	Flags: <ul style="list-style-type: none"> • A—The route was learned from a route advertisement. • C—The route is a cached route used to fast forward packets. • D—The route is the default route learned through neighbor discovery. • G—The route is a gateway route. • H—The route is a host route. • U—The route can be used.
Metric	Cost of the route.

Field	Description
Ref	Number of times the route has been referenced by other route entries.
Use	Number of times the route has been matched.
Iface	Outbound interface.

display ipv6 routing-table

Use **display ipv6 routing-table** to display IPv6 routing information.

Syntax

display ipv6 routing-table

Views

Any view

Examples

Display IPv6 routing information.

```
<boot> display ipv6 routing-table
Kernel IPv6 routing table
Destination                                     Next Hop
  Flags Metric Ref    Use Iface
::1/128
  U      0      0      1 lo
FE80::201:2FF:FE03:406/128
  U      0      0      1 lo
FE80::/64
  U     256      0      0 m-eth0
FF02::1:2/128
  UC     0     2888      0 m-eth0
FF00::/8
  U     256      0      0 m-eth0
                                     FF02::1:2
```

Table 26 Command output

Field	Description
Kernel IPv6 routing table	IPv6 routing information.
Flags	Flags: <ul style="list-style-type: none"> • A—The route was learned from a route advertisement. • C—The route is a cached route used to fast forward packets. • D—The route is the default route learned through neighbor discovery. • G—The route is a gateway route. • H—The route is a host route. • U—The route can be used.
Metric	Cost of the route.
Ref	Number of times the route has been referenced by other route entries.

Field	Description
Use	Number of times the route has been matched.
lface	Outbound interface. If it is a loopback interface, the value of this field is lo .

display version

Use **display version** to display the version information of the boot image.

Syntax

display version

Views

Any view

Examples

```
# Display the version information of the boot image.
<boot> display version
...
```

format

Use **format** to format a storage medium.

Syntax

format *storage-medium*

Views

User view

Parameters

storage-medium: Specifies the name of a storage medium.

The following matrix shows the storage medium and router compatibility:

MSR2000	MSR3000	MSR4000
Flash	CF card	CF card

Usage guidelines

Use the **format** command with caution. This command permanently deletes all files and directories from a storage medium, including the startup boot image and startup configuration files. The deleted files and directories cannot be restored. Without a boot image, the device cannot reboot.

Examples

```
# Format the CF card.
<boot> format cfa0:
All data on cfa0: will be lost, continue?[Y/N]:y
Formatting cfa0:... Done.
```

ftp

Use **ftp** to access a remote FTP server.

Syntax

```
ftp { server-ipv4-address | ipv6 server-ipv6-address } user username password password { get remote-file  
local-file | put local-file remote-file }
```

Views

User view

Parameters

server-ipv4-address: Specifies the IPv4 address of the FTP server.

server-ipv6-address: Specifies the IPv6 address of the FTP server.

user *username*: Specifies the login username, a case-sensitive string of 1 to 15 characters.

password *password*: Specifies the login password, a case-sensitive string of 1 to 15 characters.

get *remote-file* *local-file*: Downloads a file from the FTP server. The *remote-file* argument indicates the file to be downloaded. The *local-file* argument indicates the name for the downloaded file.

put *local-file* *remote-file*: Uploads a file to the FTP server. The *local-file* argument indicates the file to be uploaded. The *remote-file* argument indicates the name for the uploaded file.

Usage guidelines

If the traffic is heavy on the network and the file transfer speed is low, you can press **Ctrl+C** to abort the transfer and try again later.

Examples

```
# Log in to FTP server 192.168.1.100 by using the username test and password 123, download the 111.txt  
file, and save it to a local file named 222.txt.
```

```
<boot> ftp 192.168.1.100 user test password 123 get 111.txt cfa0:/222.txt
```

install load

Use **install load** to load a system image and start the Comware system.

Syntax

```
install load system-package
```

Views

User view

Parameters

system-package: Specifies the name of the system image, a case-insensitive string of 1 to 63 characters. This file must be saved in the root directory of the storage medium on the device, using the extension `.bin`. The file name must indicate the storage medium, for example, `cfa0:/startup-system.bin`. (On an MSR2000 or MSR3000.)

system-package: Specifies the name of the system image, a case-insensitive string of 1 to 63 characters. This file must be saved in the root directory of the current MPU's storage medium, with the extension `.bin`. The file name must indicate the storage medium and cannot contain slot information, for example, `cfa0:/startup-system.bin`. (On an MSR4000.)

Usage guidelines

When you execute this command, the system modifies the main startup software image set to include only the boot image and system image so the device can reboot correctly.

After the Comware system is started, you can load feature images and patch images as described in the chapters about software upgrade and ISSU in *Fundamentals Configuration Guide*.

Examples

```
# Load a system image and start the Comware system.
```

```
<boot> install load cfa0:/system.bin
```

```
Check package cfa0:/system.bin ...
```

```
Extracting package ...
```

```
Loading...
```

```
System application is starting...
```

```
Set bootargs.
```

```
CPIO Length: 0x96e7d8.
```

```
  cpio=0x96e7d8@0x13000000
```

```
CPIO Length: 0x96e7d8.
```

```
Starting application at 0x02000000 ..HA_Register OK, ulModuleID = 252772352, ulS  
ubID = 6.HA_Register OK, ulModuleID = 254803968, ulSubID = 0.HA_Register OK, ulM  
oduleID = 252706816, ulSubID = 0.HA_Register OK, ulModuleID = 255983616, ulSubID  
  = 2.HA_Register OK, ulModuleID = 256442368, ulSubID = 0.HA daemon start as 1 (b  
uild Jul 29 2011 11:50:56).
```

```
System service initialization completed, cost 28 seconds.
```

```
Autorun service initialization completed, cost 5 seconds.
```

```
Ondemand service initialization completed, cost 30 seconds.
```

```
User interface con1 is available.
```

```
Press ENTER to get started.
```

interface m-eth0

Use **interface m-eth0** to enter management Ethernet port view.

Syntax

```
interface m-eth0
```

Views

System view

Usage guidelines

In management Ethernet port view, you can assign an IP address to the port and specify a gateway.

Examples

```
# Enter management Ethernet port view.
```

```
<boot> system-view
```

```
[boot] interface m-eth0
```

```
[boot-m-eth0]
```

Related commands

quit

ip address

Use **ip address** to assign an IPv4 address to the management Ethernet port.

Use **undo ip address** to restore the default.

Syntax

ip address *ip-address* { *mask-length* | *mask* }

undo ip address

Default

The management Ethernet port has no IPv4 address.

Views

Management Ethernet port view

Parameters

ip-address: Specifies an IPv4 address in dotted decimal notation.

mask-length: Specifies the length of the subnet mask, in the range of 0 to 32.

mask: Specifies the subnet mask in dotted decimal notation.

Usage guidelines

The management Ethernet port can have only one IPv4 address. If you execute this command multiple times, the most recent configuration takes effect.

When the management Ethernet port is manually shut down, assigning it an IPv4 address or removing its IPv4 address activates it at the same time.

The IP address assigned to the management Ethernet port must be different from the IP addresses of the other devices on the network.

Examples

Assign IPv4 address 192.168.1.1/24 to the management Ethernet port.

```
<boot> system-view
[boot] interface m-eth0
[boot-m-eth0] ip address 192.168.1.1 24
```

ip gateway

Use **ip gateway** to specify an IPv4 gateway for the management Ethernet port.

Use **undo ip gateway** to restore the default.

Syntax

ip gateway *ip-address*

undo ip gateway

Default

The management Ethernet port has no IPv4 gateway configured.

Views

Management Ethernet port view

Parameters

ip-address: Specifies an IPv4 gateway address in dotted decimal notation.

Usage guidelines

When the device needs to communicate with a device on a remote IPv4 network, you must specify an IPv4 gateway for the management Ethernet port.

If you execute this command multiple times, the most recent configuration takes effect.

Changing or removing the IPv4 address of the management Ethernet port removes the port's IPv4 gateway configuration.

Examples

```
# Configure the management Ethernet port to use IPv4 gateway 192.168.1.5.  
<boot> system-view  
[boot] interface m-eth0  
[boot-m-eth0] ip gateway 192.168.1.5
```

ipv6 address

Use **ipv6 address** to assign an IPv6 address to the management Ethernet port.

Use **undo ipv6 address** to restore the default.

Syntax

ipv6 address *ipv6-address* *prefix-length*

undo ipv6 address

Default

The management Ethernet port has no IPv6 address.

Views

Management Ethernet port view

Parameters

ipv6-address: Specifies an IPv6 address.

prefix-length: Specifies a prefix length in the range of 1 to 128.

Usage guidelines

The management Ethernet port can have only one IPv6 address. If you execute this command multiple times, the most recent configuration takes effect.

When the management Ethernet port is manually shut down, assigning it an IPv6 address or removing its IPv6 address activates it at the same time.

Examples

```
# Assign IPv6 address 2001::1/64 to the management Ethernet port.
```

```
<boot> system-view
[boot] interface m-eth0
[boot-m-eth0] ipv6 address 2001::1 64
```

ipv6 gateway

Use **ipv6 gateway** to specify an IPv6 gateway for the management Ethernet port.

Use **undo ipv6 gateway** to restore the default.

Syntax

ipv6 gateway *link-local*

undo ipv6 gateway

Default

The management Ethernet port has no IPv6 gateway configured.

Views

Management Ethernet port view

Parameters

link-local: Specifies the Link-local address of an IPv6 gateway.

Usage guidelines

When the device needs to communicate with a device on a remote IPv6 network, you must specify an IPv6 gateway for the management Ethernet port.

If you execute this command multiple times, the most recent configuration takes effect.

Changing or removing the IPv6 address of the management Ethernet port removes the port's IPv6 gateway configuration.

Examples

```
# Configure the management Ethernet port to use FE80::BAAF:67FF:FE27:DCD0.
```

```
<boot> system-view
[boot] interface m-eth0
[boot-m-eth0] ipv6 gateway fe80::baaf:67ff:fe27:dcd0
```

mkdir

Use **mkdir** to create a directory on a storage medium.

Syntax

mkdir *directory*

Views

User view

Parameters

directory: Specifies a directory name.

Usage guidelines

The path must already exist. For example, to create the **cfa0:/test/mytest** directory, the directory **test** must already exist on the CF card.

The name for the new directory must be unique in the upper-level directory.

Examples

Create a directory named **test** in the current directory.

```
<boot> mkdir cfa0:/test  
Directory cfa0:/test created.
```

Create a directory named **subtest** in the **test** directory.

```
<boot> mkdir cfa0:/test/subtest  
Directory cfa0:/test/subtest created.
```

Related commands

- **dir**
- **rmdir**

more

Use **more** to display the contents of a file.

Syntax

```
more file-url
```

Views

User view

Parameters

file-url: Specifies a file name.

Examples

Display the contents of file **test.txt**.

```
<boot> more cfa0:/test.txt  
Have a nice day.
```

move

Use **move** to move a file.

Syntax

```
move fileurl-source fileurl-dest
```

Views

User view

Parameters

fileurl-source: Specifies the name of the file to be moved, a case-insensitive string of 1 to 63 characters.

fileurl-dest: Specifies the name of the destination file or directory, a case-insensitive string of 1 to 63 characters.

Usage guidelines

If you specify a non-existent destination file name, the command moves the source file to the destination directory and renames it.

If you specify an existing destination file name, the system prompts whether to overwrite the existing file.

Examples

```
# Move the config.cfg file to the cfa0:/002 directory.
<boot>move cfa0:/config.cfg cfa0:/test/
Move cfa0:/config.cfg to cfa0:/test/config.cfg?[Y/N]:y
<boot> dir cfa0:/test
Directory of cfa0:/test
      0      -rw-      77065  Oct 20 1939 06:15:02      test.mdb

61440 KB total (11108 KB free)
```

ping

Use **ping** to check the connectivity to an IPv4 address.

Syntax

```
ping [ -c count | -s size ] * ip-address
```

Views

Any view

Parameters

-c *count*: Specifies the number of ICMP echo requests to send, in the range of 1 to 2147483647. The default is 5.

-s *size*: Specifies the length (in bytes) of each ICMP echo request, in the range of 20 to 8100. The default is 56.

ip-address: Specifies the IPv4 address of the destination in dotted decimal notation.

Usage guidelines

When you execute the **ping** command, the device sends ICMP echo requests to the destination. You can press **Ctrl+C** to abort the ping operation.

Examples

```
# Check the connectivity to the destination 1.2.1.1.
<boot> ping 1.2.1.1
PING 1.2.1.1 (1.2.1.1): 56 data bytes
56 bytes from 1.2.1.1: seq=0 ttl=128 time=2.243 ms
56 bytes from 1.2.1.1: seq=1 ttl=128 time=0.717 ms
56 bytes from 1.2.1.1: seq=2 ttl=128 time=0.891 ms
56 bytes from 1.2.1.1: seq=3 ttl=128 time=0.745 ms
56 bytes from 1.2.1.1: seq=4 ttl=128 time=0.911 ms
--- 1.2.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.717/1.101/2.243 ms
```

Table 27 Command output

Field	description
PING 1.2.1.1 (1.2.1.1)	Checking the connectivity to the device at 1.2.1.1.
56 data bytes	Number of data bytes in each ICMP echo request.
56 bytes from 1.2.1.1: seq=0 ttl=128 time=2.243 ms	Received an ICMP reply from the device at 1.2.1.1. Fields of the reply: <ul style="list-style-type: none"> • bytes—Number of data bytes in the ICMP reply. • seq—Sequence number of the reply. You can examine the sequence numbers of replies to determine whether packets are missing, disordered, or duplicated. • ttl—TTL value in the ICMP reply. • time—Response time.
-- 1.2.1.1 ping statistics --	Statistics for packets sent and received during the ping operation.
5 packets transmitted	Number of ICMP echo requests sent.
5 packets received	Number of ICMP echo replies received.
0% packet loss	Percentage of echo requests that failed to be echoed back.
round-trip min/avg/max = 0.717/1.101/2.243 ms	Minimum/average/maximum response time, in milliseconds.

ping ipv6

Use **ping ipv6** to check the connectivity to an IPv6 address.

Syntax

```
ping ipv6 [ -c count | -s size ] * ipv6-address
```

Views

Any view

Parameters

-c *count*: Specifies the number of ICMPv6 echo requests to send, in the range of 1 to 2147483647. The default is 5.

-s *size*: Specifies the length (in bytes) of each ICMPv6 echo request, in the range of 20 to 8100. The default is 56.

ipv6-address: Specifies the IPv6 address of the destination.

Usage guidelines

When you execute the **ping ipv6** command, the device sends ICMPv6 echo requests to the destination. You can press **Ctrl+C** to abort the ping operation.

Examples

```
# Check the connectivity to the destination 2001::2.
```

```
<boot> ping ipv6 2001::2
```

```
ping ipv6 2001::2
```

```
PING 2001::2 (2001::2): 56 data bytes
```

```
56 bytes from 2001::2: seq=0 ttl=64 time=5.420 ms
```

```
56 bytes from 2001::2: seq=1 ttl=64 time=1.140 ms
56 bytes from 2001::2: seq=2 ttl=64 time=2.027 ms
56 bytes from 2001::2: seq=3 ttl=64 time=0.887 ms
56 bytes from 2001::2: seq=4 ttl=64 time=0.791 ms
--- 2001::2 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.791/2.053/5.420 ms
```

For more information about the fields, see [Table 27](#).

pwd

Use **pwd** to display the current path.

Syntax

```
pwd
```

Views

User view

Examples

```
# Display the current path.
<boot> pwd
cfa0:
```

quit

Use **quit** to return to the upper level view.

Syntax

```
quit
```

Views

System view, management Ethernet port view

Examples

```
# Return from management Ethernet port view to user view.
[boot-m-eth0] quit
[boot] quit
<boot>
```

reboot

Use the **reboot** command to reboot the device on an MSR2000 or MSR3000.

Use the **reboot** command to reboot the current MPU on an MSR4000.

Syntax

```
reboot
```


Views

User view

Examples

```
# On an MSR2000 or MSR3000, reboot the device.
```

```
<boot> reboot
```

```
# On an MSR4000, reboot the current MPU.
```

```
<boot> reboot
```

reset ssh public-key

Use **reset ssh public-key** to delete all server public keys saved on the device.

Syntax

```
reset ssh public-key
```

Views

User view

Usage guidelines

When you use the **ssh2** command to connect to an SSH server for the first time, the device saves a copy of the server's public key locally so it can use the public key to authenticate the server when you connect to the server again. If the server changes its public key, the public keys will not match anymore and you cannot connect to the server. To solve this problem, use this command to delete all server public keys saved on the device.

Examples

```
# Delete all server public keys saved on the device.
```

```
<boot> ssh2 192.168.1.59
```

```
login as:client001
```

```
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
```

```
@    WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!    @
```

```
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
```

```
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
```

```
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
```

```
It is also possible that a host key has just been changed.
```

```
The fingerprint for the RSA key sent by the remote host is
```

```
83:2d:b6:90:4a:1b:0e:c1:ea:af:09:3a:65:09:8a:b3.
```

```
Please contact your system administrator.
```

```
RSA host key for 192.168.1.59 has changed and you have requested strict checking
```

```
.
```

```
Host key verification failed.
```

```
<boot> reset ssh public-key
```

```
<boot> ssh2 192.168.1.59
```

```
login as:client001
```

```
The authenticity of host '192.168.1.59 (192.168.1.59)' can't be established.
```

```
RSA key fingerprint is 83:2d:b6:90:4a:1b:0e:c1:ea:af:09:3a:65:09:8a:b3.
```

```
Are you sure you want to continue connecting (yes/no)? yes
```

```
Warning: Permanently added '192.168.1.59' (RSA) to the list of known hosts.
```

```
client001@192.168.1.59's password:
*****
* Copyright (c) 2010-2013 Hewlett-Packard Development Company, L.P.      *
* Without the owner's prior written consent,                             *
* no decompiling or reverse-engineering shall be allowed.                *
*****
<Sysname.59>
```

rmmdir

Use **rmmdir** to delete an existing directory.

Syntax

```
rmmdir directory
```

Views

User view

Parameters

directory: Specifies the name of the directory to be deleted.

Usage guidelines

To delete a directory, first delete the files and subdirectories in the directory. To delete files, use the **delete** command.

Examples

```
# Delete the mydir directory.
<boot> rmmdir cfa0:/mydir
Remove directory cfa0:/mydir?[Y/N]:y
Directory cfa0:/1 removed.
```

Related commands

- **delete**
- **dir**
- **mkdir**

shutdown

Use **shutdown** to shut down the management Ethernet port.

Use **undo shutdown** to bring up the management Ethernet port.

Syntax

```
shutdown
```

```
undo shutdown
```

Default

The management Ethernet port is up.

Views

Management Ethernet port view

Usage guidelines

When the management Ethernet port is not operating correctly, you can shut it down and then bring it up.

Examples

```
# Shut down the management Ethernet port.
```

```
<boot> system-view
[boot] interface m-eth0
[boot-m-eth0] shutdown
```

```
# Bring up the management Ethernet port.
```

```
[boot-m-eth0] undo shutdown
```

ssh2

Use **ssh2** to log in to an SSH server.

Syntax

```
ssh2 { server-ipv4-address | ipv6 server-ipv6-address }
```

Views

User view

Parameters

server-ipv4-address: Specifies the IPv4 address of the SSH server in dotted decimal notation.

ipv6 *server-ipv6-address*: Specifies the IPv6 address of the SSH server.

Usage guidelines

If the SSH server does not respond, you can press **Ctrl+C** to abort the login attempt and try again later.

Examples

```
# Use SSH to connect to SSH server 192.168.1.59 for the first time.
```

```
<boot> ssh2 192.168.1.59
login as:client001
The authenticity of host '192.168.1.59 (192.168.1.59)' can't be established.
RSA key fingerprint is 3d:ee:1f:f9:81:be:4f:aa:42:88:1c:ab:81:4e:95:6f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.59' (RSA) to the list of known hosts.
client001@192.168.1.59's password:
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.          *
* Without the owner's prior written consent,                                *
* no decompiling or reverse-engineering shall be allowed.                  *
*****
```

```
<Sysname.59>
```

```
# Use SSH to connect to SSH server 192.168.1.59 for the second time.
```

```
<boot> ssh2 192.168.1.59
login as:client001
client001@192.168.1.59's password:
```

```
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.      *
* Without the owner's prior written consent,                               *
* no decompiling or reverse-engineering shall be allowed.                 *
*****
```

```
<Sysname.59>
```

system-view

Use **system-view** to enter system view from user view.

Syntax

```
system-view
```

Views

User view

Usage guidelines

After the device enters emergency shell mode, you are placed in user view.

Examples

```
# Enter system view from user view.
<boot> system-view
[boot]
```

Related commands

quit

telnet

Use **telnet** to log in to a Telnet server.

Syntax

```
telnet { server-ipv4-address | ipv6 server-ipv6-address }
```

Views

User view

Parameters

server-ipv4-address: Specifies the IPv4 address of the Telnet server in dotted decimal notation.

server-ipv6-address: Specifies the IPv6 address of the Telnet server.

Usage guidelines

If the Telnet server does not respond, you can press **Ctrl+K** to abort the login attempt and try again later.

Examples

```
# Telnet to Telnet server 192.168.100.1.
<boot> telnet 192.168.100.1
```

tftp

Use **tftp** to log in to a TFTP server.

Syntax

```
tftp server-ipv4-address { get remote-file local-file | put local-file remote-file }
```

```
tftp ipv6 server-ipv6-address { get remote-file local-file | put local-file remote-file }
```

Views

User view

Parameters

server-ipv4-address: Specifies the IPv4 address of the TFTP server in dotted decimal notation.

server-ipv6-address: Specifies the IPv6 address of the TFTP server.

get *remote-file local-file*: Downloads a file from the TFTP server. The *remote-file* argument indicates the file to be downloaded. The *local-file* argument indicates the name for the downloaded file.

put *local-file remote-file*: Uploads a file to the TFTP server. The *local-file* argument indicates the file to be uploaded. The *remote-file* argument indicates the name for the uploaded file.

Usage guidelines

If the traffic is heavy on the network and the file transfer speed is low, you can press **Ctrl+C** to abort the transfer and try again later.

Examples

Log in to TFTP server 192.168.1.100, download the **111.txt** file, and save it to a local file named **222.txt**.

```
<boot> tftp 192.168.1.100 get 111.txt cfa0:/222.txt
```

Upload the startup configuration file named **startup.cfg** to TFTP server 192.168.1.100.

```
<boot> tftp 192.168.1.100 put cfa0:/startup.cfg startup.cfg
```

Device management commands

card-mode

Use **card-mode** to set the operating mode of an interface card.

Syntax

On an MSR2000 or MSR3000:

card-mode slot *slot-number mode-name*

On an MSR4000:

card-mode slot *slot-number subslot* *subslot-number mode-name*

Views

System view

Predefined user roles

network-admin

Parameters

slot *slot-number*: Specifies a subcard by its subslot number. (On an MSR2000 or MSR3000.)

slot *slot-number*: Specifies a card by its slot number. (On an MSR4000.)

subslot *subslot-number*: Specifies a subcard by its subslot number.

mode-name: Specifies an operating mode. This argument might take one of the following values, depending on the interface card type.

- **e**: Specifies the E mode, including E1 and E3.
- **t**: Specifies the T mode, including T1 and T3.
- **e1**: Specifies the E1 mode.
- **t1**: Specifies the T1 mode.
- **e3**: Specifies the E3 mode.
- **t3**: Specifies the T3 mode.
- **pos**: Specifies the POS mode.
- **e-cpos**: Specifies the E-CPOS mode.
- **oc-3**: Specifies the OC-3c/STM-1c mode (155 Mbps).
- **oc-12**: Specifies the OC-12c/STM-4c mode (622 Mbps).
- **ipsec**: Specifies the IPsec mode.
- **ssl**: Specifies the SSL mode.
- **atm**: Specifies the ATM mode.
- **auto**: Specifies the auto-negotiation mode.
- **efm**: Specifies the EFM mode.

Usage guidelines

The new operating mode takes effect immediately.

Examples

```
# Set the operating mode to E3 for the interface card in slot 2.
```

```
<Sysname> system-view
```

```
[Sysname] card-mode slot 2 e3
```

Please reboot or hot-swap the board or card (if supported) to make the configuration take effect.

clock datetime

Use **clock datetime** to set the UTC time.

Syntax

```
clock datetime time date
```

Views

User view

Predefined user roles

network-admin

Parameters

time: Specifies a time in the format *hh:mm:ss*. The *hh* value is in the range of 0 to 23, the *mm* value is in the range of 0 to 59, and the *ss* value is in the range of 0 to 59. The leading zero in a segment can be omitted. If the seconds segment is 0 (*hh:mm:00*), you can omit it. If both the minutes and seconds segments are 0 (*hh:00:00*), you can omit both of the segments. For example, to specify 08:00:00, you can enter 8.

date: Specifies a date in the format *MM/DD/YYYY* or *YYYY/MM/DD*. The *YYYY* value is in the range of 2000 to 2035, the *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value.

Usage guidelines

The UTC time, together with the local time zone and daylight saving time, determines the system time. You can use the **display clock** command to view the system time.

A correct system time setting is essential to network management and communication. Set the system time correctly or use NTP to synchronize your device with a trusted time source before you run it on the network.

Examples

```
# Set the UTC time to 08:08:08 01/01/2012.
```

```
<Sysname> clock datetime 8:8:8 1/1/2012
```

```
# Set the UTC time to 08:10:00 01/01/2012.
```

```
<Sysname> clock datetime 8:10 2012/1/1
```

Related commands

- **clock timezone**
- **clock summer-time**
- **display clock**

clock summer-time

Use **clock summer-time** to configure the device to use daylight saving time during a specific period of time.

Use **undo clock summer-time** to cancel the configuration.

Syntax

clock summer-time *name start-time start-date end-time end-date add-time*

undo clock summer-time

Default

Daylight saving time is disabled.

Views

System view

Pre-defined user roles

network-admin

Parameters

name: Specifies a name for the daylight saving time schedule, a case-sensitive string of 1 to 32 characters.

start-time: Specifies the start time in the format *hh:mm:ss*. The *hh* value is in the range of 0 to 23, the *mm* value is in the range of 0 to 59, and the *ss* value is in the range of 0 to 59. The leading zero in a segment can be omitted. If the seconds segment is 0 (*hh:mm:00*), you can omit it. If both the minutes and seconds segments are 0 (*hh:00:00*), you can omit both of the segments. For example, to specify 08:00:00, you can enter 8.

start-date: Specifies the start date in one of the following formats:

- *MM/DD*. The *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value.
- *month week date*, where:
 - *month*—Takes **January, February, March, April, May, June, July, August, September, October, November** or **December**.
 - *week*—Represents week of the month. It takes **first, second, third, fourth, fifth**, or **last**.
 - *day*—Takes **Sunday, Monday, Tuesday, Wednesday, Thursday, Friday**, or **Saturday**.

end-time: Specifies the end time in the format *hh:mm:ss*. The *hh* value is in the range of 0 to 23, the *mm* value is in the range of 0 to 59, and the *ss* value is in the range of 0 to 59. The leading zero in a segment can be omitted. If the seconds segment is 0 (*hh:mm:00*), you can omit it. If both the minutes and seconds segments are 0 (*hh:00:00*), you can omit both of the segments. For example, to specify 08:00:00, you can enter 8.

end-date: Specifies the end date in one of the following formats:

- *MM/DD*. The *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value.
- *month week date*, where:
 - *month*—Takes **January, February, March, April, May, June, July, August, September, October, November** or **December**.

- *week*—Represents week of the month. It takes **first**, **second**, **third**, **fourth**, **fifth**, or **last**.
- *day*—Takes **Sunday**, **Monday**, **Tuesday**, **Wednesday**, **Thursday**, **Friday**, or **Saturday**.

add-time: Specifies the time to be added to the standard time, in the format *hh:mm:ss*. The *hh* value is in the range of 0 to 23, the *mm* value is in the range of 0 to 59, and the *ss* value is in the range of 0 to 59. The leading zero in a segment can be omitted. If the seconds segment is 0 (*hh:mm:00*), you can omit it. If both the minutes and seconds segments are 0 (*hh:00:00*), you can omit both of the segments. For example, to specify 08:00:00, you can enter 8.

Usage guidelines

The daylight saving time, together with the UTC time and local time zone, determines the system time. You can use the **display clock** command to view the system time.

A correct system time setting is essential to network management and communication. Set the system time correctly or use NTP to synchronize your device with a trusted time source before you run it on the network.

Examples

```
# Set the system time ahead 1 hour for the period between 06:00:00 on 08/01 and 06:00:00 on 09/01.
```

```
<Sysname> system-view
[Sysname] clock summer-time PDT 6 08/01 6 09/01 1
```

Related commands

display clock

clock timezone

Use **clock timezone** to set the local time zone.

Use **undo clock timezone** to restore the default.

Syntax

```
clock timezone zone-name { add | minus } zone-offset
```

```
undo clock timezone
```

Default

The local time zone is the UTC time zone.

Views

System view

Predefined user roles

network-admin

Parameters

zone-name: Specifies a time zone by its name, a case-sensitive string of 1 to 32 characters.

add: Adds a specified offset to the UTC time.

minus: Decreases the UTC time by a specified offset.

zone-offset: Specifies an offset to the UTC time, in the format *hh:mm:ss*. The *hh* value is in the range of 0 to 23, the *mm* value is in the range of 0 to 59, and the *ss* value is in the range of 0 to 59. The leading zero in a segment can be omitted. If the seconds segment is 0 (*hh:mm:00*), you can omit it. If both the

minutes and seconds segments are 0 (*hh:00:00*), you can omit both of the segments. For example, to specify 08:00:00, you can enter 8.

Usage guidelines

The local time zone, together with the UTC time and daylight saving time, determines the system time. You can use the **display clock** command to view the system time.

A correct system time setting is essential to network management and communication. Set the system time correctly or use NTP to synchronize your device with a trusted time source before you run it on the network.

Examples

```
# Set the name of the local time zone to Z5, and add 5 hours to the UTC time.
<Sysname> system-view
[Sysname] clock timezone Z5 add 5
```

Related commands

- **clock datetime**
- **clock summer-time**
- **display clock**

command

Use **command** to assign a command to a job.

Use **undo command** to revoke a command.

Syntax

command *id* *command*

undo command *id*

Default

No command is assigned to a job.

Views

Job view

Predefined user roles

network-admin

Parameters

id: Specifies the command ID, in the range of 0 to 4294967295.

command: Specifies the command to be assigned to the job.

Usage guidelines

A job can have multiple commands. Commands in a job are uniquely identified by their IDs. A command with a smaller ID is executed earlier.

If a command uses the ID of an existing command, the existing command is replaced.

A job cannot contain any of these commands: **telnet**, **ftp**, **ssh2**, or **monitor process**.

The system does not check the validity of the *command* argument. You must make sure the command is supported by the device, is input in the correct format, and uses valid values. Otherwise, the command cannot be executed automatically.

Examples

```
# Assign commands to job backupconfig to back up configuration file startup.cfg to the TFTP server at 192.168.100.11.
<Sysname> system-view
[Sysname] scheduler job backupconfig
[Sysname-job-backupconfig] command 2 tftp 192.168.100.11 put cfa0:/startup.cfg backup.cfg
```

Related commands

scheduler job

copyright-info enable

Use **copyright-info enable** to enable displaying the copyright statement.

Use **undo copyright-info enable** to disable displaying the copyright statement.

Syntax

copyright-info enable

undo copyright-info enable

Default

The copyright statement is displayed.

Views

System view

Predefined user roles

network-admin

Examples

Enable displaying the copyright statement.

```
<Sysname> system-view
[Sysname] copyright-info enable
```

- When a Telnet user logs in, the following statement appears:

```
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.      *
* Without the owner's prior written consent,                             *
* no decompiling or reverse-engineering shall be allowed.                *
*****
```

```
<Sysname>
```

- When a console user quits user view, the following message appears:

```
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.      *
* Without the owner's prior written consent,                             *
* no decompiling or reverse-engineering shall be allowed.                *
*****
```

User interface con0 is available.

Press ENTER to get started.

Disable displaying the copyright statement.

<Sysname> system-view

[Sysname] undo copyright-info enable

- When a Telnet user logs in, the user view prompt appears:
<Sysname>
- When a console user quits user view, the following message appears:
User interface con0 is available.

Press ENTER to get started.

display alarm

Use **display alarm** to display alarm information.

Syntax

display alarm [slot *slot-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot *slot-number*: Specifies the entire device. The value is always 0. (On an MSR2000 or MSR3000.)

slot *slot-number*: Specifies a card by its slot number. Without this option, the command displays the alarm information of all cards. (On an MSR4000.)

Examples

On an MSR2000 or MSR3000, display alarm information.

<Sysname> display alarm

Slot Level Info

0 ERROR faulty

Table 28 Command output

Field	Description
Slot	If the alarm was generated by a card in a slot, the value of this field is a hyphen (-). Otherwise, the value of this field is 0.

Field	Description
Level	Alarm severity. Possible values include ERROR , WARNING , NOTICE , and INFO , in descending order.
Info	Detailed alarm information.
faulty	The card is starting up or is faulty.

On an MSR4000, display alarm information.

```
<Sysname> display alarm
Slot Level   Info
2   ERROR   faulty
5   ERROR   faulty
8   ERROR   faulty
```

Table 29 Command output

Field	Description
Slot	Slot number of the card with an alarm. If the value is a hyphen (-), the alarm was generated by the chassis.
Level	Alarm severity. Possible values include ERROR , WARNING , NOTICE , and INFO , in descending order.
Info	Detailed alarm information.
faulty	The card is starting up or is faulty.

display clock

Use **display clock** to display the system time, date, local time zone, and daylight saving time.

Syntax

display clock

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

Display the system time and date when the local time zone is not specified.

```
<Sysname> display clock
10:09:00 UTC Fri 03/16/2012
```

Display the system time and date when the local time zone Z5 is specified.

```
<Sysname> display clock
15:10:00 Z5 Fri 03/16/2012
Time Zone : Z5 add 05:00:00
```

Display the system time and date when the local time zone Z5 and daylight saving time PDT are specified.

```
<Sysname> display clock
15:11:00 Z5 Fri 03/16/2012
Time Zone : Z5 add 05:00:00
Summer Time : PDT 06:00:00 08/01 06:00:00 09/01 01:00:00
```

Related commands

- **clock datetime**
- **clock timezone**
- **clock summer-time**

display copyright

Use **display copyright** to display the copyright statement, including software and hardware copyright statements, and third-party software license agreements.

Syntax

```
display copyright
```

Views

Any view

Predefined user roles

network-admin
network-operator

Examples

```
# Display the copyright statement.
<Sysname> display copyright
```

display cpu-usage

Use **display cpu-usage** to display CPU usage statistics.

Syntax

On an MSR2000 or MSR3000:

```
display cpu-usage
```

On an MSR4000:

```
display cpu-usage [ slot slot-number [ cpu cpu-number ] ]
```

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

slot *slot-number*: Specifies a card by its slot number. Without this option, the command displays the CPU usage statistics for all cards. (On an MSR4000.)

cpu *cpu-number*: Displays the CPU usage statistics for the specified CPU. If this option is not provided, the command displays the CPU usage statistics for all CPUs on the card in the specified slot.

Usage guidelines

The system regularly (typically at 60-second intervals) collects CPU usage statistics and saves the statistical results in the history record area.

Examples

On an MSR2000 or MSR3000, display the current CPU usage statistics.

```
<Sysname> display cpu-usage
Unit CPU usage:
    1% in last 5 seconds
    1% in last 1 minute
    1% in last 5 minutes
```

On an MSR4000, display the current CPU usage statistics.

```
<Sysname> display cpu-usage
Slot 0 CPU 0 CPU usage:
    1% in last 5 seconds
    0% in last 1 minute
    0% in last 5 minutes
```

```
Slot 1 CPU 0 CPU usage:
    1% in last 5 seconds
    1% in last 1 minute
    1% in last 5 minutes
```

Table 30 Command output

Field	Description
Unit CPU usage	CPU usage statistics. (On an MSR2000 or MSR3000.)
1% in last 5 seconds	Average CPU usage during the last 5 seconds.
1% in last 1 minute	Average CPU usage during the last minute.
1% in last 5 minutes	Average CPU usage during the last 5 minutes.
Slot x CPU y CPU usage	Usage statistics for CPU y of the card in slot x. (On an MSR4000.)

display cpu-usage history

Use **display cpu-usage history** to display the historical CPU usage statistics in charts.

Syntax

On an MSR2000 or MSR3000:

```
display cpu-usage history [ job job-id ]
```

On an MSR4000:

display cpu-usage history [**job** *job-id*] [**slot** *slot-number* [**cpu** *cpu-number*]]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

job *job-id*: Specifies a process by its ID. Without this option, the command displays the historical CPU usage statistics for the entire system, which is the sum of the historical CPU usage statistics for all processes in the system. To view the IDs and names of the running processes, use the **display process** command. For more information, see *Network Management and Monitoring Configuration Guide*.

slot *slot-number*: Specifies a card by its slot number. Without this option, the command displays the historical CPU usage statistics for the active MPU. (On an MSR4000.)

cpu *cpu-number*: Displays the historical CPU usage statistics for the specified CPU. If this option is not provided, the command displays the historical CPU usage statistics for all CPUs on the card in the specified slot.

Usage guidelines

The system regularly collects CPU usage statistics and saves the statistics in the history record area. This command displays the CPU usage statistics for the last 60 minutes in axes as follows:

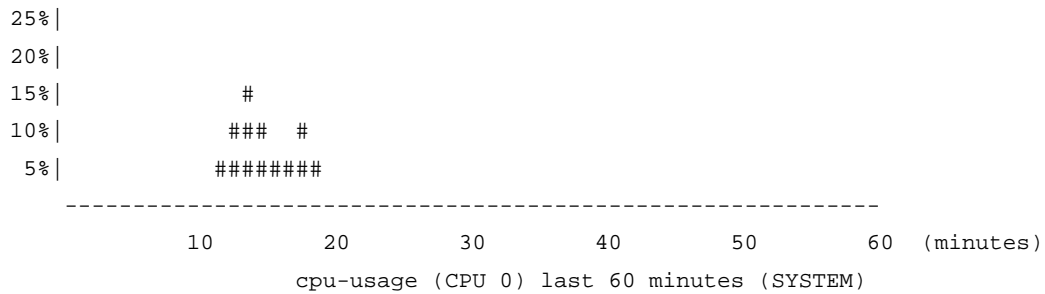
- The vertical axis represents the CPU usage. If a statistic is not a multiple of the usage step, it is rounded up or down to the closest multiple of the usage step, whichever is closer. For example, if the CPU usage step is 5%, the statistic 53% is rounded up to 55%, and the statistic 52% is rounded down to 50%.
- The horizontal axis represents the time.
- Consecutive pound signs (#) indicate the CPU usage at a specific time. The value on the vertical axis for the topmost pound sign at a specific time represents the CPU usage at that time.

Examples

Display the historical CPU usage statistics for the entire system.

```
<Sysname> display cpu-usage history
```

```
100% |
 95% |
 90% |
 85% |
 80% |
 75% |
 70% |
 65% |
 60% |
 55% |
 50% |
 45% |
 40% |
 35% |
 30% |
```

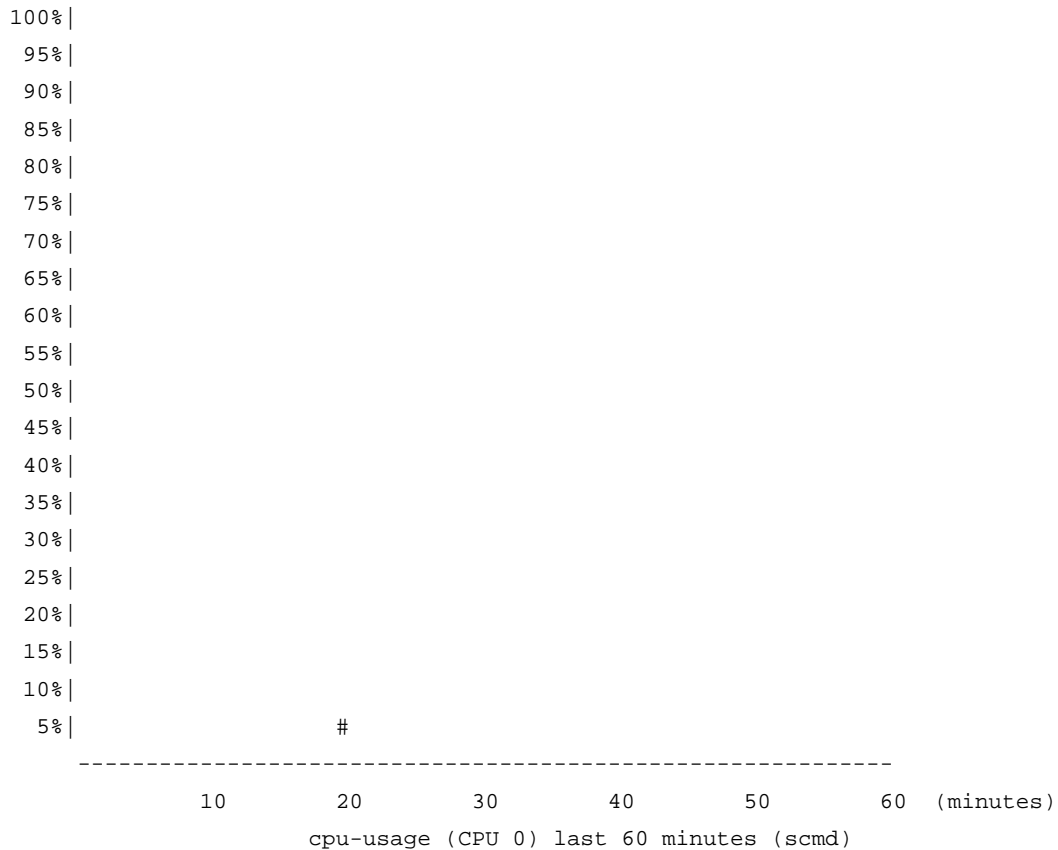



The output shows the historical CPU usage statistics for the entire system (with the name **SYSTEM**) in the last 60 minutes:

- 5%: 12 minutes ago
- 10%: 13 minutes ago
- 15%: 14 minutes ago
- 10%: 15 minutes ago
- 5%: 16 and 17 minutes ago
- 10%: 18 minutes ago
- 5%: 19 minutes ago
- 2% or lower than 2%: Other time

Display the historical CPU usage statistics for process 1.

```
<Sysname> display cpu-usage history job 1
```



The output shows the historical CPU usage statistics of process 1 (with the process name **scmd**) in the last 60 minutes. A process name with square brackets ([]) means that the process is a kernel process.

- 5%: 20 minutes ago
- 2% or lower than 2%: Other time

display device

Use **display device** to display device information.

Syntax

On an MSR2000 or MSR3000:

```
display device [ cf-card | usb ] [ slot slot-number | verbose ]
```

On an MSR4000:

```
display device [ cf-card | usb ] [ slot slot-number [ subslot subslot-number ] | verbose ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

cf-card: Specifies the CF cards.

usb: Specifies the device connected to the USB interface.

slot *slot-number*: Specifies a card by its slot number.

subslot *subslot-number*: Specifies a subcard by its subslot number.

verbose: Displays detailed hardware information. Without this keyword, the command displays brief information.

The following matrix shows the keyword and router compatibility:

Keyword	MSR2000	MSR3000	MSR4000
cf-card	No	Yes	Yes

Usage guidelines

If the **cf-card** and **usb** keywords are not provided, this command displays information about all cards on the device.

Examples

On an MSR2000 or MSR3000, display device information.

```
<Sysname> display device
```

```
Slot No.   Board Type           Status   Max Ports
-----
0          RPU                  Normal   4
2          DSIC-9FSW           Normal   9
```

Table 31 Command output

Field	Description
Slot No.	Slot number of the card.
Board Type	Hardware type of the card.
Status	Card status: <ul style="list-style-type: none"> • Fault—The card is faulty and cannot start up. • Normal—The card is operating correctly.
Max Ports	Maximum number of ports that the card supports.

On an MSR4000, display device information.

```
<Sysname> display device
```

Slot No.	Board Type	Status	Primary	SubSlots
0	MPU-100	Normal	Master	0
1	MPU-100	Normal	Standby	0
2	SPU-200	Normal	N/A	10

The output shows that the device has two MPUs and one interface card. The active MPU is in slot 0, the standby MPU is in slot 1, and the interface card is in slot 2.

Table 32 Command output

Field	Description
Slot No.	Slot number of the card.
Board Type	Hardware type of the card.
Status	Card status: <ul style="list-style-type: none"> • Absent—The slot is not installed with a card. • Fault—The card is faulty and cannot start up. • Normal—The card is operating correctly. • Standby—The card is the standby MPU. • Master—The card is the active MPU.
SubSlots	Maximum number of subcards that the card supports.

display device manuinfo

Use **display device manuinfo** to display the electronic label information of the device.

Syntax

On an MSR2000 or MSR3000:

```
display device manuinfo [ slot slot-number ]
```

On an MSR4000:

```
display device manuinfo [ slot slot-number [ subslot subslot-number ] ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot *slot-number*: Specifies a subcard by its subslot number. Without this option, the command displays the electronic label information of all subcards. (On an MSR2000 or MSR3000.)

slot *slot-number*: Specifies a card by its slot number. Without this option, the command displays the electronic label information of all cards. (On an MSR4000.)

subslot *subslot-number*: Specifies a subcard by its subslot number.

Usage guidelines

An electronic label is a profile of a device or card and contains the permanent configuration including the serial number, manufacturing date, MAC address, and vendor name. The data is written to the storage component during debugging or testing.

Examples

On an MSR2000 or MSR3000, display the electronic label information of the device.

```
<Sysname> display device manuinfo
slot 0
DEVICE_NAME           : MSR 2003
DEVICE_SERIAL_NUMBER  : 210235A0WAA129000001
MAC_ADDRESS           : 000F-E212-3450
MANUFACTURING_DATE    : 2012-09-15
VENDOR_NAME           : HP
slot 2
DEVICE_NAME           : NONE
DEVICE_SERIAL_NUMBER  : NONE
MAC_ADDRESS           : NONE
MANUFACTURING_DATE    : NONE
VENDOR_NAME           : NONE
slot 3
The card does not support manufacture information.
```

On an MSR4000, display the electronic label information of the device.

```
<Sysname> display device manuinfo
Slot 0
subslot 0
DEVICE_NAME           : RT-MPU-100
DEVICE_SERIAL_NUMBER  : 210231A1UXB133000076
MAC_ADDRESS           : 0CDA-41B2-9F95
MANUFACTURING_DATE    : 2013-03-10
VENDOR_NAME           : HP

Slot 1
subslot 0
DEVICE_NAME           : RT-MPU-100
DEVICE_SERIAL_NUMBER  : 210231A1UXB133000072
MAC_ADDRESS           : 0CDA-41B2-9FA1
```

```

MANUFACTURING_DATE : 2013-03-10
VENDOR_NAME        : HP

Slot 2
subslot 0
DEVICE_NAME         : RT-MPU-100
DEVICE_SERIAL_NUMBER : 210231A1UXA129000001
MAC_ADDRESS         : 000F-E212-3458
MANUFACTURING_DATE  : 2012-09-15
VENDOR_NAME         : HP
subslot 3
DEVICE_NAME         : RT-HMIM-Adapter
DEVICE_SERIAL_NUMBER : 210231A1V4B132000120
MAC_ADDRESS         : NONE
MANUFACTURING_DATE  : 2013-02-26
VENDOR_NAME         : HP

Fan 1
DEVICE_NAME         : NONE
DEVICE_SERIAL_NUMBER : NONE
MAC_ADDRESS         : NONE
MANUFACTURING_DATE  : NONE
VENDOR_NAME         : NONE

```

```

Power 2
DEVICE_NAME         : NONE
DEVICE_SERIAL_NUMBER : NONE
MAC_ADDRESS         : NONE
MANUFACTURING_DATE  : NONE
VENDOR_NAME         : NONE

```

Table 33 Command output

Field	Description
slot 1	Number of the slot where the card resides. (On an MSR4000.)
DEVICE_NAME	Device name.
DEVICE_SERIAL_NUMBER	Serial number.
MAC_ADDRESS	MAC address.
MANUFACTURING_DATE	Manufacturing date.
VENDOR_NAME	Vendor name.

display device manuinfo fan

Use **display device manuinfo fan** to display the electronic label information of a fan.

Syntax

display device manuinfo fan *fan-id*

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
display device manuinfo fan	No	No	Yes

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

fan-id: Specifies a fan by its ID. The value is always 1.

Examples

Display the electronic label information of fan 1.

```
<Sysname> display device manuinfo fan 1
```

```
Fan 1:
```

```
DEVICE_NAME           : fan
```

```
DEVICE_SERIAL_NUMBER  : 210235A36L1234567890
```

```
MAC_ADDRESS           : NONE
```

```
MANUFACTURING_DATE    : 2010-01-20
```

```
VENDOR_NAME           : HP
```

display device manuinfo power

Use **display device manuinfo power** to display the electronic label information of a power supply.

Syntax

display device manuinfo power *power-id*

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
display device manuinfo power	No	Yes	Yes

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

power-id: Specifies a power supply by its ID.

The following matrix shows the argument and router compatibility and the value ranges for the argument:

Argument	MSR2000	MSR3000	MSR4000
<i>power-id</i>	No	Yes 1 to 2	Yes 1 to 4

Examples

```
# Display the electronic label information of power supply 2.
```

```
<Sysname> display device manuinfo power 2
```

```
Power 2:
```

```
DEVICE_NAME           : power
```

```
DEVICE_SERIAL_NUMBER  : 210235A36L1234567890
```

```
MAC_ADDRESS           : NONE
```

```
MANUFACTURING_DATE    : 2010-01-20
```

```
VENDOR_NAME           : HP
```

display diagnostic-information

Use **display diagnostic-information** to display the operating statistics for multiple feature modules in the system.

Syntax

```
display diagnostic-information [ hardware | infrastructure | I2 | I3 | service ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

hardware: Displays hardware-related operating statistics.

infrastructure: Displays operating statistics for the fundamental modules.

I2: Displays operating statistics for the Layer 2 features.

I3: Displays operating statistics for the Layer 3 features.

service: Displays operating statistics for upper-layer features.

Usage guidelines

For diagnostics or troubleshooting, you can use separate **display** commands to collect running status data module by module or use the **display diagnostic-information** command to bulk collect running data for multiple modules.

This **display** command does not support the | **by-linenum** option, the > *filename* option, or the >> *filename* option. However, this command asks you whether you want to save the output to a file or

display the output on the screen. The file used to save the output is automatically compressed to save storage space.

Examples

```
# Display the operating statistics for multiple feature modules in the system.
<Sysname> display diagnostic-information
Save or display diagnostic information (Y=save, N=display)? [Y/N]:n
=====
=====display clock=====
14:03:55 UTC Thu 01/05/2012
=====
=====display version=====
...
```

display environment

Use **display environment** to display the temperature statistics for the temperature sensors, including the current temperature and temperature thresholds.

Syntax

On an MSR2000 or MSR3000:

display environment

On an MSR4000:

display environment [*slot slot-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot slot-number: Specifies a card by its slot number. If no card is specified, this command displays the temperature statistics for all temperature sensors on the device. (On an MSR4000.)

Examples

On an MSR2000 or MSR3000, display the temperature statistics for all temperature sensors on the device.

```
<Sysname> display environment
  Slot Subslot Sensor  ID Temperature LowerLimit WarningLimit AlarmLimit
-----
0    0      inflow 1  24          -7         53         61
0    0      hotspot 1  30           0         57         61
```

On an MSR4000, display the temperature statistics for all temperature sensors on the device.

```
<Sysname> display environment
  Slot Subslot Sensor  ID Temperature LowerLimit WarningLimit AlarmLimit
-----
```


0	0	hotspot 1	36	0	60	70
1	0	hotspot 1	37	0	60	70
2	0	inflow 1	31	0	60	70
2	0	hotspot 1	38	0	65	70

Table 34 Command output

Field	Description
Slot	The value vent indicates that the sensor is for the frame or fan tray. A number in this field indicates that the sensor is for the device. (On an MSR2000 or MSR3000.)
Slot	The value vent indicates that the sensor is for the frame or fan tray. A number in this field indicates that the sensor is for the card in the specified slot. (On an MSR4000.)
Subslot	A non-zero value indicates that the sensor is for the subcard in the specified subslot. The value 0 indicates that the sensor is for the device. (On an MSR2000 or MSR3000.)
Subslot	A non-zero value indicates that the sensor is for the subcard in the specified subslot. The value 0 indicates that the sensor is for the card where the subcard resides. (On an MSR4000.)
Sensor	Temperature sensor: <ul style="list-style-type: none"> • hotspot—Hotspot sensor. • inflow—Air inlet sensor. • outflow—Air outlet sensor.
ID	Index of the sensor.
Temperature	Current temperature.
LowerLimit	Lower temperature limit.
WarningLimit	Warning temperature threshold.
AlarmLimit	Alarming temperature threshold.

display fabric utilization

Use **display fabric utilization** to display the switching fabric channel utilization on interface cards.

Syntax

On an MSR4000:

display fabric utilization [slot *slot-number*]

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
display fabric utilization	No	No	Yes

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot *slot-number*: Specifies an interface card by its slot number. Without this option, the command displays the switching fabric channel utilization on all interface cards.

Examples

Display the switching fabric channel utilization on the interface card in slot 5.

```
<System> display fabric utilization slot 5
```

Chs	Slot	Chan	Speed	Input		Output					
				Uitl	Peak	Uitl	Peak	Time	Time		
0	5	0	10G	0%	0%	08:13:14	2012/10/30	0%	0%	08:13:14	2012/10/30
0	5	1	10G	0%	0%	08:13:14	2012/10/30	0%	0%	08:13:14	2012/10/30
0	5	2	10G	0%	0%	08:13:14	2012/10/30	0%	0%	08:13:14	2012/10/30
0	5	3	10G	0%	0%	08:13:14	2012/10/30	0%	0%	08:13:14	2012/10/30

Table 35 Command output

Field	Description
Chs	The value of this field is always 0.
Slot	Slot number of the interface card.
Chan	Channel number.
Speed	Speed of the channel.
Input	Statistics in the inbound direction.
Output	Statistics in the outbound direction.
Uitl	Channel utilization.
Peak	Peak utilization and peak time.

display fan

Use **display fan** to display the operating states of fans.

Syntax

```
display fan [ fan-id ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

fan-id: Specifies a fan by its ID. The value is always 1.

Examples

```
# Display the operating states of all fans.
<Sysname> display fan
```

display memory

Use **display memory** to display memory usage.

Syntax

On an MSR2000 or MSR3000:

```
display memory
```

On an MSR4000:

```
display memory [ slot slot-number ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

slot slot-number: Specifies a card by its slot number. Without this option, the command displays memory usage for all cards. (On an MSR4000.)

Examples

```
# Display memory usage.
<Sysname> display memory
The statistics about memory is measured in KB:
Slot 0:
```

	Total	Used	Free	Shared	Buffers	Cached	FreeRatio
Mem:	2008976	907892	1101084	0	320	198516	54.8%
-/+ Buffers/Cache:		709056	1299920				
Swap:	0	0	0				

Table 36 Command output

Field	Description
Slot	Specifies the entire device. The value of this field is always 0. (On an MSR2000 or MSR3000.) Slot number of a card. (On an MSR4000.)
Mem	Memory usage information.
Total	Total size of the physical memory space that can be allocated. The memory space is virtually divided into two parts. Part 1 is solely used for kernel codes, kernel management, and ISSU functions. Part 2 can be allocated and used for such tasks as running service modules and storing files. The size of part 2 equals the total size minus the size of part 1.
Used	Used physical memory.

Field	Description
Free	Free physical memory.
Shared	Physical memory shared by processes.
Buffers	Physical memory used for buffers.
Cached	Physical memory used for caches.
FreeRatio	Free memory ratio.
-/+ buffers/cache	-/+ buffers/cache:used = Mem:used – Mem:buffers – Mem:cached, which indicates the physical memory used by applications. -/+ buffers/cache:free = Mem:free + Mem:buffers + Mem:cached, which indicates the physical memory available for applications.
Swap	Swap memory.

display memory-threshold

Use **display memory-threshold** to display memory usage thresholds and memory usage notification statistics.

Syntax

On an MSR2000 or MSR3000:

display memory-threshold

On an MSR4000:

display memory-threshold [*slot slot-number*]

Views

Any view

Predefined user roles

network-admin

Parameters

slot slot-number: Specifies a card by its slot number. Without this option, the command displays the memory usage thresholds and memory usage notification statistics for the active MPU. (On an MSR4000.)

Usage guidelines

For more information about memory usage notifications, see log information containing **MEM_EXCEED_THRESHOLD** or **MEM_BELOW_THRESHOLD**.

Examples

```
# Display memory usage thresholds and memory usage notification statistics.
<Sysname> display memory-threshold
Memory usage threshold:
  Minor: 64M
  Severe: 48M
  Critical: 32M
  Normal: 96M
```

```
Current memory state: Normal
Event statistics:
[Back to normal state]
  First notification: 2012-5-15 09:21:35.546
  Latest notification: 2012-5-15 09:21:35.546
  Total number of notifications sent: 1
[Enter minor low-memory state]
  First notification at: 2012-5-15 09:07:05.941
  Latest notification at: 2012-5-15 09:07:05.941
  Total number of notifications sent: 1
[Back to minor low-memory state]
  First notification at: 0.0
  Latest notification at: 0.0
  Total number of notifications sent: 0
[Enter severe low-memory state]
  First notification at: 0.0
  Latest notification at: 0.0
  Total number of notifications sent: 0
[Back to severe low-memory state]
  First notification at: 0.0
  Latest notification at: 0.0
  Total number of notifications sent: 0
[Enter critical low-memory state]
  First notification at: 0.0
  Latest notification at: 0.0
  Total number of notifications sent: 0
```

display power-supply

Use **display power-supply** to display power supply information.

Syntax

```
display power-supply [ verbose ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

verbose: Displays detailed power supply information. If this keyword is not specified, the command displays the brief information.

Usage guidelines

The power supply information includes the following:

- Enabled/disabled status of the power supply management function.
- Power supply type, rated input voltage and rated output power.

- Number of redundant power supplies and the available, redundant, used, and remaining power of each power supply.
- Status of the installed power supplies.
- Power supply status of the interface cards.

Examples

```
# Display detailed power supply information. (Output not shown.)
<Sysname> display power-supply verbose
```

display scheduler job

Use **display scheduler job** to display job configuration information.

Syntax

```
display scheduler job [ job-name ]
```

Views

Any view

Predefined user roles

```
network-admin
network-operator
```

Parameters

job-name: Specifies a job by its name, a case-sensitive string of 1 to 47 characters. Without this option, the command displays the configuration information of all jobs.

Examples

```
# Display the configuration information of all jobs.
```

```
<Sysname> display scheduler job
Job name: saveconfig
  copy startup.cfg backup.cfg
```

```
Job name: backupconfig
```

```
Job name: creat-VLAN100
  system-view
  vlan 100
```

// The output shows that the device has three jobs: the first has one command, the second has no command, and the third has two commands. Jobs are separated by blank lines.

display scheduler logfile

Use **display scheduler logfile** to display job execution log information.

Syntax

```
display scheduler logfile
```

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display job execution log information.
```

```
<Sysname> display scheduler logfile
```

```
Logfile Size: 1902 Bytes.
```

```
Job name      : shutdown
```

```
Schedule name : shutdown
```

```
Execution time : Tue Dec 27 10:44:42 2011
```

```
Completion time : Tue Dec 27 10:44:47 2011
```

```
----- Job output -----
```

```
<Sysname>system-view
```

```
System View: return to User View with Ctrl+Z.
```

```
[Sysname]interface rang ethernet 1/1 to ethernet 1/3
```

```
[Sysname-if-range]shutdown
```

Table 37 Command output

Field	Description
Logfile Size	Size of the log file, in bytes.
Schedule name	Schedule to which the job belongs.
Execution time	Time when the job was started.
Completion time	Time when the job was completed. If the job has never been executed or the job has no commands, this field is blank.
Job output	Commands in the job and their output.

Related commands

reset scheduler logfile

display scheduler reboot

Use **display scheduler reboot** to display the automatic reboot schedule.

Syntax

display scheduler reboot

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display the automatic reboot schedule.
<Sysname> display scheduler reboot
System will reboot at 16:32:00 05/23/2011 (in 1 hours and 39 minutes).
```

Related commands

- **scheduler reboot at**
- **scheduler reboot delay**

display scheduler schedule

Use **display scheduler schedule** to display schedule information.

Syntax

```
display scheduler schedule [ schedule-name ]
```

Views

Any view

Predefined user roles

network-admin
network-operator

Parameters

schedule-name: Specifies a schedule by its name, a case-sensitive string of 1 to 47 characters. Without this option, the command displays information about all schedules.

Examples

```
# Display information about all schedules.
<Sysname> display scheduler schedule
Schedule name      : shutdown
Schedule type     : Run once after 0 hours 2 minutes
Start time        : Tue Dec 27 10:44:42 2011
Last execution time : Tue Dec 27 10:44:42 2011
Last completion time : Tue Dec 27 10:44:47 2011
Execution counts  : 1
-----
Job name           Last execution status
shutdown          Successful
```

Table 38 Command output

Field	Description
Schedule type	Execution time setting of the schedule. If no execution time is specified, this field is not displayed.
Start time	Time to execute the schedule for the first time. If no execution time is specified, this field is not displayed.
Last execution time	Last time when the schedule was executed. If no execution time is specified, this field is not displayed. If the schedule has never been executed, "Yet to be executed" is displayed for this field.

Field	Description
Last completion time	Last time when the schedule was completed. If no execution time is specified, this field is not displayed.
Execution counts	Number of times the schedule has been executed. If the schedule has never been executed, this field is not displayed.
Job name	Name of a job under the schedule.
Last execution status	<p>Result of the most recent execution:</p> <ul style="list-style-type: none"> • Successful. • Failed. • Waiting—The device is executing the schedule and the job is waiting to be executed. • In process—The job is being executed. • -NA-—The execution time has not arrived yet. <p>To view information about whether the commands in the job has been executed and the execution results, execute the display scheduler logfile command.</p>

display transceiver alarm

Use **display transceiver alarm** to display the alarms present on transceiver modules.

Syntax

display transceiver alarm interface [*interface-type interface-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

interface [*interface-type interface-number*]: Specifies an interface by its type and number. If no interface is specified, this command displays the alarms present on the transceiver modules on all interfaces.

Usage guidelines

Table 39 shows the alarms that might occur to the commonly used transceiver modules.

If no error occurs, "None" is displayed.

Table 39 Alarms on commonly used transceiver modules

Field	Remarks
GBIC/SFP:	
RX signal loss	Received signals are lost.
RX power high	The received optical power is high.
RX power low	The received optical power is low.
TX fault	Transmission error.
TX bias high	The transmitted bias current is high.

Field	Remarks
TX bias low	The transmitted bias current is low.
TX power high	The transmitted optical power is high.
TX power low	The transmitted optical power is low.
Temp high	The temperature is high.
Temp low	The temperature is low.
Voltage high	The voltage is high.
Voltage low	The voltage is low.
Transceiver info I/O error	Transceiver information read/write error.
Transceiver info checksum error	Transceiver information checksum error.
Transceiver type and port configuration mismatch	The type of the transceiver module does not match the port configuration.
Transceiver type not supported by port hardware	The port does not support this type of transceiver modules.
XFP:	
RX signal loss	Received signals are lost.
RX not ready	The receiving status is not ready
RX CDR loss of lock	Receiving CDR loss of lock.
RX power high	The received optical power is high.
RX power low	The received optical power is low.
TX not ready	The transmission status is ready.
TX fault	Transmission error.
TX CDR loss of lock	Transmission CDR loss of lock.
TX bias high	The transmitted bias current is high.
TX bias low	The transmitted bias current is low.
TX power high	The transmitted optical power is high.
TX power low	The transmitted optical power is low.
Module not ready	The module is not ready.
APD supply fault	Avalanche photo diode error.
TEC fault	Thermoelectric cooler error.
Wavelength unlocked	Wavelength loss of lock.
Temp high	The temperature is high.
Temp low	The temperature is low.
Voltage high	The voltage is high.
Voltage low	The voltage is low.
Transceiver info I/O error	Transceiver information read/write error.
Transceiver info checksum error	Transceiver information checksum error.

Field	Remarks
Transceiver type and port configuration mismatch	The type of the transceiver module does not match the port configuration.
Transceiver type not supported by port hardware	The port does not support this type of transceiver modules.
XENPAK:	
WIS local fault	WAN interface sublayer local error.
Receive optical power fault	Received optical power error.
PMA/PMD receiver local fault	Physical medium attachment/physical medium dependent local error.
PCS receive local fault	Physical coding sublayer local error.
PHY XS receive local fault	PHY extended sublayer local error.
RX power high	The received optical power is high.
RX power low	The received optical power is low.
Laser bias current fault	Laser bias current error.
Laser temperature fault	Laser temperature error.
Laser output power fault	Laser output optical power error.
TX fault	Transmitter error.
PMA/PMD receiver local fault	Physical medium attachment/physical medium dependent receiver local error.
PCS receive local fault	Physical coding sublayer receive local error.
PHY XS receive local fault	PHY extended sublayer receive local error.
TX bias high	The transmitted bias current is high.
TX bias low	The transmitted bias current is low.
TX power high	The transmitted optical power is high.
TX power low	The transmitted optical power is low.
Temp high	The temperature is high.
Temp low	The temperature is low.
Transceiver info I/O error	Transceiver information read/write error.
Transceiver info checksum error	Transceiver information checksum error.
Transceiver type and port configuration mismatch	The type of the transceiver module does not match the port configuration.
Transceiver type not supported by port hardware	The port does not support this type of transceiver modules.

Examples

```
# Display the alarms present on the transceiver module in interface GigabitEthernet 2/1.
<Sysname> display transceiver alarm interface gigabitethernet 2/1
GigabitEthernet2/1 transceiver current alarm information:
  RX signal loss
  RX power low
```

Table 40 Command output

Field	Description
transceiver current alarm information	Alarms present on the transceiver module.
RX loss of signal	Received signals are lost.
RX power low	Received power is low.

display transceiver diagnosis

Use **display transceiver diagnosis** to display the current measured values of the digital diagnosis parameters for transceiver modules.

Syntax

display transceiver diagnosis interface [*interface-type interface-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

interface [*interface-type interface-number*]: Specifies an interface by its type and number. If no interface is specified, this command displays the current measured values of the digital diagnosis parameters for the transceiver modules on all interfaces.

Usage guidelines

This command cannot display information for some transceiver modules.

Examples

Display the current measured values of the digital diagnosis parameters for the transceiver module on interface GigabitEthernet 2/2.

```
<Sysname> display transceiver diagnosis interface gigabitethernet 2/2
```

```
GigabitEthernet2/2 transceiver diagnostic information:
```

```
Current diagnostic parameters:
```

```
Temp.(°C) Voltage(V) Bias(mA) RX power(dBm) TX power(dBm)
36          3.31      6.13      -35.64      -5.19
```

Table 41 Command output

Field	Description
transceiver diagnostic information	Digital diagnosis information of the transceiver module on the interface.
Temp.(°C)	Temperature in °C, accurate to 1°C.
Voltage(V)	Voltage in V, accurate to 0.01 V.
Bias(mA)	Bias current in mA, accurate to 0.01 mA.
RX power(dBm)	RX power in dBm, accurate to 0.01 dBm.

Field	Description
TX power(dBm)	TX power in dBm, accurate to 0.01 dBm.

display transceiver interface

Use **display transceiver interface** to display the key parameters of transceiver modules.

Syntax

display transceiver interface [*interface-type interface-number*]

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

interface-type interface-number: Specifies an interface by its type and number. Without this option, the command displays the key parameters of the transceiver modules on all interfaces of the device.

Examples

Display the key parameters of the transceiver module on interface GigabitEthernet 2/3.

```
<Sysname> display transceiver interface gigabitethernet 2/3
GigabitEthernet2/3 transceiver information:
  Transceiver Type           : 1000_BASE_SX_SFP
  Connector Type             : LC
  Wavelength(nm)            : 850
  Transfer Distance(m)       : 550(50um) , 270(62.5um)
  Digital Diagnostic Monitoring : YES
  Vendor Name                 : HP
  Ordering Name               : SFP-GE-SX-MM850
```

Table 42 Command output

Field	Description
transceiver information	Transceiver module information.
Transceiver Type	Transceiver module type.
Connector Type	Connector type options: <ul style="list-style-type: none"> • SC—Fiber connector developed by NTT. • LC—1.25 mm/RJ-45 fiber connector developed by Lucent. • RJ-45. • CX 4.
Wavelength(nm)	<ul style="list-style-type: none"> • Fiber transceiver: Central wavelength (in nm) of the transmit laser. If the transceiver supports multiple wavelengths, every two wavelength values are separated by a comma. • Copper cable: Displayed as N/A.

Field	Description
Transfer Distance(xx)	<p>Transfer distance, with "xx" representing the distance unit: km (kilometers) for single-mode transceiver modules and m (meters) for other transceiver modules.</p> <p>If the transceiver module supports multiple transfer media, the transfer distances are separated by commas. The transfer medium is included in the bracket following the transfer distance value. The following are the transfer media:</p> <ul style="list-style-type: none"> • 9 um—9/125 um single-mode fiber. • 50 um—50/125 um multi-mode fiber. • 62.5 um—62.5/125 um multi-mode fiber. • TP—Twisted pair. • CX4—CX4 cable.
Digital Diagnostic Monitoring	<p>Support for the digital diagnosis function:</p> <ul style="list-style-type: none"> • YES—Supported. • NO—Not supported.
Ordering Name	Product code.

display version

Use **display version** to display system version information.

Syntax

display version

Views

Any view

Predefined user roles

network-admin

network-operator

Examples

```
# Display system version information.
<Sysname> display version
```

display version-update-record

Use **display version-update-record** to display the startup software image upgrade history records. (On an MSR2000 or MSR3000.)

Use **display version-update-record** to display the startup software image upgrade history records of the active MPU. (On an MSR4000.)

Syntax

display version-update-record

Views

Any view

Predefined user roles

network-admin
network-operator

Usage guidelines

The device records its current startup software version information and all subsequent version update information. Such information can survive reboots.

The maximum number of records is 10.

Examples

Display the startup software image upgrade history records.

```
<Sysname> display version-update-record
  Name                               Version                               Compile time
Record 1 (updated on Jul 27 2012 at 09:47:58):
* boot-e2205.bin                      7.1.035 ESS 2205                      Jul 26 2012 10:55:58
  system-e2205.bin                    7.1.035 ESS 2205                      Jul 26 2012 10:56:14
Record 2 (updated on Jul 25 2012 at 14:26:11):
* boot-e2205.bin                      1.1.0 ESS 2205                        Jul 23 2012 20:04:55
* system-e2205.bin                    7.1.035 ESS 2205                      Jul 23 2012 20:05:13
Record 3 (updated on Jul 11 2012 at 08:43:37):
* boot-a2203.bin                      1.1.0 Alpha 2203                      Jul 08 2012 11:32:51
* system-a2203.bin                    7.1.034 Alpha 2203                   Jul 08 2012 11:33:08
Record 4 (updated on Jun 05 2012 at 17:52:56):
* boot-t2202.bin                      1.1.0 Test 2202                       Jun 05 2012 16:23:45
* system-t2202.bin                    7.1.033 Test 2202                    Jun 05 2012 16:24:03
```

Table 43 Command output

Field	Description
Name	Software image file name.
*	The new software image is different from the old one.

Related commands

reset version-update-record

header

Use **header** to create a banner.

Use **undo header** to clear a banner.

Syntax

```
header { incoming | legal | login | motd | shell } text  
undo header { incoming | legal | login | motd | shell }
```

Views

System view

Predefined user roles

network-admin

Parameters

incoming: Configures the banner to be displayed before a modem dial-up user accesses user view. If authentication is required, the incoming banner appears after the authentication is passed.

legal: Configures the banner to be displayed before a user inputs the username and password to access the CLI.

login: Configures the banner displayed to be before password or scheme authentication is performed for a login user.

motd: Configures the greeting banner to be displayed before the legal banner appears.

shell: Configures the banner to be displayed before a non-modem dial-in user accesses user view.

text: Specifies the banner message, which can be entered in two formats. For more information, see *Fundamentals Configuration Guide*.

Examples

Create the incoming banner, legal banner, login banner, MOTD banner, and shell banner.

```
<Sysname> system-view
[Sysname] header incoming
Please input banner content, and quit with the character '%'.
Welcome to incoming(header incoming)%
[Sysname] header legal
Please input banner content, and quit with the character '%'.
Welcome to legal (header legal)%
[Sysname] header login
Please input banner content, and quit with the character '%'.
Welcome to login(header login)%
[Sysname] header motd
Please input banner content, and quit with the character '%'.
Welcome to motd(header motd)%
[Sysname] header shell
Please input banner content, and quit with the character '%'.
Welcome to shell(header shell)%
```

In this example, the percentage sign (%) is the starting and ending character of the *text* argument. Entering the percentage sign after the text quits the **header** command. Because it is the starting and ending character, the percentage sign is not included in the banner.

Test the configuration by using Telnet. The login banner appears only when password or scheme login authentication has been configured.

```
*****
* Copyright (c) 2004-2013 Hewlett-Packard Development Company, L.P.          *
* Without the owner's prior written consent,                                *
* no decompiling or reverse-engineering shall be allowed.                  *
*****
```

```
Welcome to legal (header legal)
Press Y or ENTER to continue, N to exit.
```



```
Welcome to motd(header motd)
```

```
Welcome to login(header login)
```

```
Login authentication
```

```
Password:
```

```
Welcome to shell(header shell)
```

job

Use **job** to assign a job to a schedule.

Use **undo job** to revoke a job.

Syntax

```
job job-name
```

```
undo job job-name
```

Default

No job is assigned to a schedule.

Views

Schedule view

Predefined user roles

network-admin

Parameters

job-name: Specifies the job name, a case-sensitive string of 1 to 47 characters.

Usage guidelines

You can assign multiple jobs to a schedule. The jobs in a schedule are executed concurrently.

The jobs to be assigned to a schedule must already exist. To create a job, use the **scheduler job** command.

Examples

```
# Assign job save-job to schedule saveconfig.
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-schedule-saveconfig] job save-job
```

Related commands

- **scheduler job**
- **scheduler schedule**

memory-threshold

Use **memory-threshold** to set memory usage thresholds.

Use **undo memory-threshold** to restore the defaults.

Syntax

On an MSR2000 or MSR3000:

```
memory-threshold minor minor-value severe severe-value critical critical-value normal normal-value  
undo memory-threshold
```

On an MSR4000:

```
memory-threshold [ slot slot-number ] minor minor-value severe severe-value critical critical-value normal normal-value  
undo memory-threshold [ slot slot-number ]
```

Default

- Minor alarm threshold: 96 MB.
- Severe alarm threshold: 64 MB.
- Critical alarm threshold: 48 MB.
- Normal state threshold: 128 MB.

Views

System view

Predefined user roles

network-admin

Parameters

minor *minor-value*: Specifies the minor alarm threshold in MB, in the range of 0 to the size of the memory. Setting this threshold to 0 disables the minor alarm function.

severe *severe-value*: Specifies the severe alarm threshold in MB, in the range of 0 to the size of the memory. This threshold must be equal to or less than the minor alarm threshold. Setting this threshold to 0 disables the severe alarm function.

critical *critical-value*: Specifies the critical alarm threshold in MB, in the range of 0 to the size of the memory. This threshold must be equal to or less than the severe alarm threshold. Setting this threshold to 0 disables the critical alarm function.

normal *normal-value*: Specifies the normal state threshold in MB, in the range of 0 to the size of the memory. This threshold must be equal to or greater than the minor alarm threshold.

slot *slot-number*: Specifies a card by its slot number. Without this option, the command sets memory usage thresholds for the active MPU. (On an MSR4000.)

The following matrix shows the default value ranges for the options:

Option	MSR2000	MSR3000	MSR4000
minor <i>minor-value</i>	0 to 1004	0 to 1961	0 to 1961
severe <i>severe-value</i>	0 to 1004	0 to 1961	0 to 1961

Option	MSR2000	MSR3000	MSR4000
critical <i>critical-value</i>	0 to 1004	0 to 1961	0 to 1961
normal <i>normal-value</i>	0 to 1004	0 to 1961	0 to 1961

Usage guidelines

To ensure correct operation and improve memory utilization, the system monitors the amount of free memory space in real time. When a threshold is exceeded, the system sends an alarm notification or an alarm-removed notification to affected feature modules or processes so they can take countermeasures. For more information about the conditions and rules for generating alarm notifications and alarm-removed notifications, see *Fundamentals Configuration Guide*.

Examples

Set the minor alarm, severe alarm, critical alarm, and normal state thresholds to 64 MB, 48 MB, 32 MB, and 96 MB, respectively.

```
<Sysname> system-view
```

```
[Sysname] memory-threshold minor 64 severe 48 critical 32 normal 96
```

password-recovery enable

Use **password-recovery enable** to enable password recovery capability.

Use **undo password-recovery enable** to disable password recovery capability.

Syntax

password-recovery enable

undo password-recovery enable

Default

Password recovery capability is enabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

Password recovery capability controls console user access to the device configuration and SDRAM from Boot ROM menus.

If password recovery capability is enabled, a console user can access the device configuration without authentication to configure new passwords.

If password recovery capability is disabled, console users must restore the factory-default configuration before they can configure new passwords. Restoring the factory-default configuration deletes the next-startup configuration files.

To enhance system security, disable password recovery capability.

Availability of Boot ROM menu options varies with the password recovery capability setting. For more information, see the release notes.

Examples

```
# Disable password recovery capability.  
<Sysname> system-view  
[Sysname] undo password-recovery enable
```

power-supply policy enable

Use **power-supply policy enable** to enable power supply management.

Use **undo power-supply policy enable** to disable power supply management.

Syntax

power-supply policy enable

undo power-supply policy enable

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
power-supply policy enable	No	No	Yes

Default

Power supply management is disabled.

Views

System view

Predefined user roles

network-admin

Examples

```
# Enable power supply management.  
<Sysname> system-view  
[Sysname] power-supply policy enable
```

power-supply policy redundant

Use **power-supply policy redundant** to specify the number of redundant power supplies.

Use **undo power-supply policy redundant** to restore the default.

Syntax

power-supply policy redundant *module-count*

undo power-supply policy redundant

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
power-supply policy redundant	No	No	Yes

Default

The number of redundant power supplies is 0.

Views

System view

Predefined user roles

network-admin

Parameters

module-count: Specifies the number of redundant power supplies. The upper limit of the value range is the maximum number of redundant power supplies supported by the system. Depending on the number of the inserted interface cards and power consumption, the actual number of redundant power supplies that you can configure is smaller than or equal to the maximum number of redundant power supplies supported by the system.

Usage guidelines

The configuration of this command takes effect only when power supply management is enabled.

Examples

```
# Set the number of redundant power supplies to 3.
<Sysname> system-view
[Sysname] power-supply policy redundant 3
```

reboot

Use **reboot** to reboot the device or a subcard. (On an MSR2000 or MSR3000.)

Use **reboot** to reboot a card, a subcard, or the entire system. (On an MSR4000.)

Syntax

On an MSR2000 or MSR3000:

```
reboot [ subslot subslot-number ] [ force ]
```

On an MSR4000:

```
reboot [ slot slot-number [ subslot subslot-number ] ] [ force ]
```

Views

User view

Predefined user roles

network-admin

Parameters

slot *slot-number*: Specifies a subcard by its subslot number. (On an MSR2000 or MSR3000.)

slot *slot-number*: Specifies a card by its slot number. (On an MSR4000.)

subslot *subslot-number*: Specifies a subcard by its subslot number.

force: Reboots the device immediately without performing any software check. If this keyword is not specified, the system checks, for example, whether the main system software image file exists and whether the hard disk is not being written. If any circumstance might affect data protection, the system does not reboot the device.

Usage guidelines

CAUTION:

- A device reboot can interrupt network services.
 - If the main startup software images are corrupted or missing, you must re-specify a set of main startup software images before using the **reboot** command to reboot the device. Otherwise, the device cannot start up.
-

For data security, the device does not reboot if you reboot the device while the device is performing file operations.

If you do not specify the *slot-number* argument, the command reboots the entire device.

If you specify the *slot-number* argument but do not specify the *subslot-number* argument, the command reboots the specified card.

Examples

Reboot the device when no configuration change has occurred since the last time you saved the running configuration.

```
<Sysname> reboot
Start to check configuration with next startup configuration file, please
wait.....DONE!
This command will reboot the device. Continue? [Y/N]:y
Now rebooting, please wait...
```

If any configuration has changed, reboot the device and save the configuration.

```
<Sysname> reboot
Start to check configuration with next startup configuration file, please
wait.....DONE!
Current configuration will be lost after the reboot, save current configuration? [Y/N]:y
Please input the file name(*.cfg)[flash:/startup.cfg]
(To leave the existing filename unchanged, press the enter key):
flash:/startup.cfg exists, overwrite? [Y/N]:y
Validating file. Please wait...
Configuration is saved to flash successfully.
This command will reboot the device. Continue? [Y/N]:y
Now rebooting, please wait...
```

If any configuration has changed, reboot the device but do not save the configuration.

```
<Sysname> reboot
Start to check configuration with next startup configuration file, please
wait.....DONE!
Current configuration will be lost after the reboot, save current configuration? [Y/N]:n
This command will reboot the device. Continue? [Y/N]:y
Now rebooting, please wait...
```

Reboot the device immediately without performing any software check.

```
<Sysname> reboot force
This command will reboot the device. Continue? [Y/N]:y
Now rebooting, please wait...
```

On an MSR4000, reboot the interface card in slot 2.

```
<Sysname> reboot slot 2 subslot 2
```

```
This command will reboot the specified subslot, Continue? [Y/N]:y
Now rebooting, please wait...

# On an MSR4000, reboot the interface card in slot 2 by force.
<Sysname> reboot slot 2 subslot 2 force
This command will reboot the specified subslot, Continue? [Y/N]:y
Now rebooting, please wait...
```

reset version-update-record

Use **reset version-update-record** to clear the startup software image upgrade history records. (On an MSR2000 or MSR3000.)

Use **reset version-update-record** to clear the startup software image upgrade history records of the active MPU. (On an MSR4000.)

Syntax

```
reset version-update-record
```

Views

System view

Predefined user roles

network-admin

Examples

```
# Clear the startup software image upgrade history records.
<Sysname> system-view
[Sysname] reset version-update-record
```

Related commands

```
display version-update-record
```

reset scheduler logfile

Use **reset scheduler logfile** to clear job execution log information.

Syntax

```
reset scheduler logfile
```

Default

None

Views

User view

Predefined user roles

network-admin

Examples

```
# Clear job execution log information.
<Sysname> reset scheduler logfile
```

Related commands

display scheduler logfile

restore factory-default

Use **restore factory-default** to restore the factory-default configuration for the device.

Syntax

restore factory-default

Views

User view

Predefined user roles

network-admin

Usage guidelines

CAUTION:

This command is disruptive.

If a device fails or you want to use it in a different scenario, you can restore the factory-default configuration for the device.

This command does the following:

- Deletes all configuration files (.cfg files) in the root directories of the storage media.
- Deletes all log files (.log files in the folder /logfile).
- Clears all log information (in the log buffer), trap information, and debugging information.
- Restores the parameters for the BootWare to the factory-default settings.

After this command is executed, only the items required for fundamental device operation are retained, including the .bin files, the MAC addresses, and the electronic label information.

Examples

```
# Restore the factory-default configuration for the device.
```

```
<Sysname> restore factory-default
```

```
This command will restore the system to factory-default status. Do you want to continue [Y/N]:y
```

```
Now restoring, this maybe take a few minutes, please wait.
```

```
.....  
.....Done.
```

```
Success to restore the factory-default configuration. Please reboot the system to take effect.
```

Related commands

reboot

save-power delay-timer

Use **save-power delay-timer** to set the wake-to-sleep delay timer.

Use **undo save-power delay-timer** to restore the default.

Syntax

save-power delay-timer *time*

undo save-power delay-timer

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
save-power delay-timer	Yes	Yes	No

Default

The wake-to-sleep delay time is 30 seconds.

Views

System view

Predefined user roles

network-admin

Parameters

time: Specifies the delay time in seconds, in the range of 10 to 100.

Usage guidelines

When the power saving function is enabled, the device operates in sleep mode or wake mode. The wake-to-sleep delay timer starts when the device transitions to wake mode. If you do not enter characters on the console terminal or press the **Mode** button before this timer expires, the device will transition to sleep mode.

Examples

```
# Set the wake-to-sleep delay timer for power saving to 30 seconds.  
<Sysname> system-view  
[Sysname] save-power delay-timer 30
```

Related commands

- **save-power enable**
- **save-power mode**

save-power enable

Use **save-power enable** to enable the power saving function.

Use **undo save-power enable** to restore the default.

Syntax

save-power enable

undo save-power enable

The following matrix shows the command and router compatibility:

Command	MSR2000	MSR3000	MSR4000
save-power enable	Yes	Yes	No

Default

The power saving function is disabled.

Views

System view

Predefined user roles

network-admin

Examples

```
# Enable the power saving function.
<Sysname> system-view
[Sysname] save-power enable
```

scheduler job

Use **scheduler job** to create a job and enter job view. If the job already exists, you enter job view directly.

Use **undo scheduler job** to delete a job.

Syntax

```
scheduler job job-name
undo scheduler job job-name
```

Default

No job exists.

Views

System view

Predefined user roles

network-admin

Parameters

job-name: Specifies the job name, a case-sensitive string of 1 to 47 characters.

Usage guidelines

A job can be referenced by multiple schedules. In job view, you can assign commands to the job.

Examples

```
# Create a job named backupconfig and enter job view.
<Sysname> system-view
[Sysname] scheduler job backupconfig
[Sysname-job-backupconfig]
```

Related commands

- **command**
- **scheduler schedule**

scheduler logfile size

Use **scheduler logfile size** to set the size of the job execution log file.

Syntax

```
scheduler logfile size value
```

Default

The size of the job execution log file is 16 KB.

Views

System view

Predefined user roles

network-admin

Parameters

value: Sets the size of the job execution log file, in KB. The value range is 16 to 1024.

Usage guidelines

The job execution log file saves the execution information of jobs. If the file is full, old records will be replaced by new records. If the size of the log information to be written to the file is larger than the size of the file, the excessive part is not written to the file.

Examples

```
# Set the size of the job execution log file to 32 KB.  
<Sysname> system-view  
[Sysname] scheduler logfile size 32
```

Related commands

```
display scheduler logfile
```

scheduler reboot at

Use **scheduler reboot at** to specify the reboot date and time.

Use **undo scheduler reboot** to remove the reboot schedule configuration.

Syntax

```
scheduler reboot at time [ date ]
```

```
undo scheduler reboot
```

Default

No reboot date or time is specified.

Views

User view

Predefined user roles

network-admin

Parameters

time: Specifies the reboot time in the format *hh:mm*, where *hh* is in the range of 0 to 23, and *mm* is in the range of 0 to 59.

date: Specifies the reboot date in the format *MM/DD/YYYY* or *YYYY/MM/DD*. The *YYYY* value is in the range of 2000 to 2035, the *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value.

Usage guidelines

CAUTION:

Device reboot interrupts network services.

When the *date* argument is not specified:

- If the reboot time is later than the current time, a reboot occurs at the reboot time of the current day.
- If the reboot time is earlier than the current time, a reboot occurs at the reboot time the next day.

For data security, if you are performing file operations at the reboot time, the system does not reboot.

The device supports only one device reboot schedule. If you configure both the **schedule reboot delay** and **schedule reboot delay** commands or configure one of the commands multiple times, the most recent configuration takes effect.

Examples

Configure the device to reboot at 12:00 p.m. This example assumes that the current time is 11:43 a.m. on June 6, 2011.

```
<Sysname> scheduler reboot at 12:00
```

```
Reboot system at 12:00:00 06/06/2011 (in 0 hours and 16 minutes). Confirm? [Y/N]:
```

Related commands

scheduler reboot delay

scheduler reboot delay

Use **scheduler reboot delay** to specify the reboot delay time.

Use **undo scheduler reboot** to remove the reboot schedule configuration.

Syntax

```
scheduler reboot delay time
```

```
undo scheduler reboot
```

Default

No reboot delay time is specified.

Views

User view

Predefined user roles

network-admin

Parameters

time: Specifies the reboot delay time in the format *hh:mm* or *mm*. This argument can consist up to 6 characters. When in the format *hh:mm*, *mm* must be in the range of 0 to 59.

Usage guidelines



CAUTION:

Device reboot interrupts network services.

For data security, if you are performing file operations at the reboot time, the system does not reboot.

The device supports only one device reboot schedule. If you configure both the **schedule reboot delay** and **schedule reboot delay** commands or configure one of the commands multiple times, the most recent configuration takes effect.

Examples

```
# Configure the device to reboot after 88 minutes. This example assumes that the current time is 11:48 a.m. on June 6, 2011.
```

```
<Sysname> scheduler reboot delay 88
```

```
Reboot system at 13:16 06/06/2011(in 1 hours and 28 minutes). Confirm? [Y/N]:
```

scheduler schedule

Use **scheduler schedule** to create a schedule and enter schedule view. If the schedule already exists, you enter schedule view directly.

Use **undo scheduler schedule** to delete a schedule.

Syntax

```
scheduler schedule schedule-name
```

```
undo scheduler schedule schedule-name
```

Default

No schedule exists.

Views

System view

Predefined user roles

network-admin

Parameters

schedule-name: Specifies the schedule name, a case-sensitive string of 1 to 47 characters.

Usage guidelines

You can schedule a job to have the device automatically run a command or a set of commands without administrative interference.

To configure a schedule:

1. Use the **scheduler job** command to create a job.
2. In job view, use the **command** command to assign commands to the job.
3. Use the **scheduler schedule** command to create a schedule.

4. In schedule view, use the **job** command to assign the job to the schedule. You can assign multiple jobs to a schedule. The jobs must already exist.
5. In schedule view, use the **time at**, **time once**, or **time repeating** command to specify an execution time for the schedule. You can specify only one execution time per schedule.

Examples

```
# Create a schedule named saveconfig.  
<Sysname> system-view  
[Sysname] scheduler schedule saveconfig
```

Related commands

- **job**
- **time at**
- **time once**
- **time interval**

shutdown-interval

Use **shutdown-interval** to set the detection timer.

Use **undo shutdown-interval** to restore the default.

Syntax

```
shutdown-interval time  
undo shutdown-interval
```

Default

The detection interval is 30 seconds.

Views

System view

Predefined user roles

network-admin

Parameters

time: Specifies a detection timer (in seconds) in the range of 1 to 300.

Usage guidelines

The device starts a detection timer when a port is shut down by a protocol. If the port is still down when the detection timer expires, the device automatically brings up the port so the port status reflects the port's actual physical status.

If you change the detection timer to $T1$ during port detection, the interval from when you change the timer to the time when the protocol module shuts down the port is T . If $T < T1$, the down port will be recovered after $T1 - T$ time. If $T \geq T1$, the down port is recovered immediately. For example, if the detection timer is set to 30 seconds and you change it to 10 seconds ($T1 = 10$) two seconds after the port is shut down ($T = 2$), this port will be recovered 8 seconds later. If the detection timer is set to 30 seconds and you change it to 2 seconds ten seconds after the port is shut down, this port is recovered immediately.

Examples

```
# Set the detection timer to 100 seconds.
```

```
<Sysname> system-view
[Sysname] shutdown-interval 100
```

sysname

Use **sysname** to set the device name.

Use **undo sysname** to restore the default.

Syntax

```
sysname sysname
```

```
undo sysname
```

Default

The device name is **HP**.

Views

System view

Predefined user roles

network-admin

Parameters

sysname: Specifies a name for the device, a string of 1 to 30 characters.

Usage guidelines

A device name identifies a device in a network and is used as the user view prompt at the CLI. For example, if the device name is **Sysname**, the user view prompt is <Sysname>.

Examples

```
# Set the name of the device to R2000.
<Sysname> system-view
[Sysname] sysname R2000
[R2000]
```

time at

Use **time at** to specify an execution date and time for a one-time schedule.

Use **undo time** to remove the execution time configuration for a schedule.

Syntax

```
time at time date
```

```
undo time
```

Default

No execution time or date is specified for a schedule.

Views

Schedule view

Predefined user roles

network-admin

Parameters

time: Specifies the schedule execution time in the format *hh:mm*, where *hh* is in the range of 0 to 23, and *mm* is in the range of 0 to 59.

date: Specifies the schedule execution date in the format *MM/DD/YYYY* or *YYYY/MM/DD*. The *YYYY* value is in the range of 2000 to 2035, the *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value.

Usage guidelines

The specified time (date plus time) must be later than the current system time.

The **time at** command, the **time once** command, and the **time repeating** command overwrite one another. The most recently configured command takes effect.

Examples

```
# Configure the device to execute schedule saveconfig at 01:01 a.m. on May 11, 2011.  
<Sysname> system-view  
[Sysname] scheduler schedule saveconfig  
[Sysname-schedule-saveconfig] time at 1:1 2011/05/11
```

Related commands

scheduler schedule

time once

Use **time once** to specify one or more execution days and the execution time for a one-time schedule.

Use **undo time** to remove the execution time configuration for a schedule.

Syntax

time once at *time* [**month-date** *month-day* | **week-day** *week-day*<1-7>]

time once delay *time*

undo time

Default

No execution time or day is specified for a schedule.

Views

Schedule view

Predefined user roles

network-admin

Parameters

at *time*: Specifies the execution time in the format *hh:mm*, where *hh* is in the range of 0 to 23, and *mm* is in the range of 0 to 59.

month-date *month-day*: Specifies a day in the current month, in the range of 1 to 31. If you specify a day that does not exist in the current month, the configuration takes effect on that day in the next month.

week-day *week-day*<1-7>: Specifies one or more week days for the schedule. Valid values include **Mon, Tue, Wed, Thu, Fri, Sat,** and **Sun.** <1-7> means that you can specify 1 to 7 week days. To specify multiple week days, separate the values with spaces.

delay *time*: Specifies the delay time for executing the schedule, in the format *hh:mm* or *mm*. This argument can consist up to 6 characters. When in the format *hh:mm*, *mm* must be in the range of 0 to 59.

Usage guidelines

After you specify an execution day and time for a schedule, the schedule will be executed once at the specified time point or each specified time point. If the specified time, the specified day in the month, or a specified day in a week is already past, the schedule will be executed at the specified time next day, the specified day in the next month, or the specified day in the next week.

The **time at** command, the **time once** command, and the **time repeating** command overwrite one another, whichever is configured most recently takes effect.

Examples

Configure the device to execute schedule **saveconfig** once at 15:00.

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-scheduler-saveconfig] time once at 15:00
Schedule starts at 15:00 5/11/2011.
```

Configure the device to execute schedule **saveconfig** once at 15:00 on the coming 15th day in a month.

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-scheduler-saveconfig] time once at 15:00 month-date 15
```

Configure the device to execute schedule **saveconfig** at 12:00 p.m. on the coming Monday and Friday.

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-scheduler-saveconfig] time once at 12:00 week-day mon fri
```

Configure the device to execute schedule **saveconfig** after 10 minutes.

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-scheduler-saveconfig] time once delay 10
```

Related commands

scheduler schedule

time repeating

Use **time repeating** to specify an execution time table for a periodic schedule.

Use **undo time** to remove the execution time configuration for a schedule.

Syntax

time repeating [*at time* [*date*]] **interval** *interval-time*

time repeating at *time* [**month-date** [*month-day* | **last**] | **week-day** *week-day*<1-7>]

undo time

Default

No execution time table is specified for a schedule.

Views

Schedule view

Predefined user roles

network-admin

Parameters

at time: Specifies the execution time in the format *hh:mm*, where *hh* is in the range of 0 to 23, and *mm* is in the range of 0 to 59. If you do not specify this option, the current system time is used as the execution time.

date: Specifies the start date for the periodic schedule, in the format *MM/DD/YYYY* or *YYYY/MM/DD*. The *YYYY* value is in the range of 2000 to 2035, the *MM* value is in the range of 1 to 12, and the value range of *DD* depends on the month value. If you do not specify this argument, the execution start date is the first day when the specified time arrives.

interval interval-time: Specifies the execution time interval in the format *hh:mm* or *mm*. This argument can consist up to 6 characters. When in the format *hh:mm*, *mm* must be in the range of 0 to 59. When in the format *mm*, this argument must be at least 1 minute.

month-date [month-day | last]: Specifies a day in a month, in the range 1 to 31. The **last** keyword indicates the last day of a month. If you specify a day that does not exist in a month, the configuration takes effect on that day in the next month.

week-day week-day&<1-7>: Specifies one or more week days. Valid values include **Mon, Tue, Wed, Thu, Fri, Sat,** and **Sun**. **<1-7>** means that you can specify 1 to 7 week days. To specify multiple week days, separate the values with spaces.

Usage guidelines

The **time repeating [at time [date]] interval interval-time** command configures the device to execute a schedule at an interval from the specified time on.

The **time repeating at time [month-date [month-day | last] | week-day week-day&<1-7>]** command configures the device to execute a schedule at the specified time on every specified day in a month or week.

The **time at** command, the **time once** command, and the **time repeating** command overwrite one another, whichever is configured most recently takes effect.

Examples

```
# Configure the device to execute schedule saveconfig once a hour from 8:00 a.m. on.
```

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-schedule-saveconfig] time repeating at 8:00 interval 60
```

```
# Configure the device to execute schedule saveconfig at 12:00 p.m. every day.
```

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-schedule-saveconfig] time repeating at 12:00
```

```
# Configure the device to execute schedule saveconfig at 8:00 a.m. on the 5th of every month.
```

```
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
```

```
[Sysname-schedule-saveconfig] time repeating at 8:00 month-date 5
# Configure the device to execute schedule saveconfig at 8:00 a.m. on the last day of every month.
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-schedule-saveconfig] time repeating at 8:00 month-date last
# Configure the device to execute schedule saveconfig at 8:00 a.m. every Friday and Saturday.
<Sysname> system-view
[Sysname] scheduler schedule saveconfig
[Sysname-schedule-saveconfig] time repeating at 8:00 week-day fri sat
```

Related commands

scheduler schedule

transceiver phony-alarm-disable

Use **transceiver phony-alarm-disable** to disable alarm traps for transceiver modules.

Use **undo transceiver phony-alarm-disable** to restore the default.

Syntax

transceiver phony-alarm-disable

undo transceiver phony-alarm-disable

Default

Alarm traps are enabled for transceiver modules.

Views

System view

Predefined user roles

network-admin

Usage guidelines

If you install a transceiver module that has no vendor name, the system repeatedly outputs traps and logs to notify the user to replace the module. To continue to use such a transceiver module that is manufactured or customized by HP but has no vendor information, you can disable alarm traps so the system stops outputting alarm traps.

Examples

```
# Disable alarm traps for transceiver modules.
<Sysname> system-view
[Sysname] transceiver phony-alarm-disable
```

usb disable

Use **usb disable** to disable all USB interfaces.

Use **undo usb disable** to enable all USB interfaces.

Syntax

usb disable

undo usb disable

Default

All USB interfaces are enabled.

Views

System view

Predefined user roles

network-admin

Usage guidelines

You can use USB interfaces to upload or download files or to connect a 3G modem. By default, all USB interfaces are enabled.

Before using this command, you must unmount all USB devices.

Examples

```
# Enable all USB interfaces.  
<Sysname> system-view  
[Sysname] undo usb disable
```

Tcl commands

tclsh

Use **tclsh** to enter Tcl configuration view from user view.

Syntax

tclsh

Views

User view

Predefined user roles

network-admin

Usage guidelines

From user view, you can use the **tclsh** command to enter Tcl configuration view, where you can execute the following commands:

- All Tcl 8.5 commands.
- Comware commands. In this case, the Tcl configuration view is equivalent to the user view. You can use Comware commands in Tcl configuration view in the same way they are used in user view.

Examples

```
# Enter Tcl configuration view from user view.  
<Sysname> tclsh  
<Sysname-tcl>
```

Related commands

tclquit

tclquit

Use **tclquit** to return from Tcl configuration view to user view.

Syntax

tclquit

Views

Tcl configuration view

Predefined user roles

network-admin

Usage guidelines

To return from Tcl configuration view to user view, you can also use the **quit** command.

To return to the upper-level view after you execute Comware commands to enter the system view or a Comware feature view, use the **quit** command. You cannot use the **tclquit** command for this purpose.

Examples

```
# Return from Tcl configuration view to user view.  
<Sysname-tcl> tclquit  
<Sysname>
```

Related commands

tclsh

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/wwalerts>

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms*.

Websites

- HP.com <http://www.hp.com>
- HP Networking <http://www.hp.com/go/networking>
- HP manuals <http://www.hp.com/support/manuals>
- HP download drivers and software <http://www.hp.com/support/downloads>
- HP software depot <http://www.software.hp.com>
- HP Education <http://www.hp.com/learn>

Conventions

This section describes the conventions used in this documentation set.





Command conventions

Convention	Description
Boldface	Bold text represents commands and keywords that you enter literally as shown.
<i>Italic</i>	<i>Italic</i> text represents arguments that you replace with actual values.
[]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x y ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x y ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x y ... } *	Asterisk-marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
[x y ...] *	Asterisk-marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.








GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in bold text. For example, the New User window appears; click OK .
>	Multi-level menus are separated by angle brackets. For example, File > Create > Folder .

Symbols

Convention	Description
 WARNING	An alert that calls attention to important information that if not understood or followed can result in personal injury.
 CAUTION	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
 IMPORTANT	An alert that calls attention to essential information.
NOTE	An alert that contains additional or supplementary information.
 TIP	An alert that provides helpful information.

Network topology icons

	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the switching engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a security product, such as a firewall, a UTM, or a load-balancing or security card that is installed in a device.
	Represents a security card, such as a firewall card, a load-balancing card, or a NetStream card.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

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