



# H3C MSR Router Series

## Comware 5 Terminal Access Command Reference

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# Preface

This command reference describes the Terminal Access configuration commands.

This preface includes the following topics about the documentation:

- [Audience](#).
- [Conventions](#).
- [Documentation feedback](#).

## Audience

This documentation is intended for:

- Network planners.
- Field technical support and servicing engineers.
- Network administrators working with the routers.

## Conventions

The following information describes the conventions used in the documentation.

### Command conventions

Convention	Description
<b>Boldface</b>	<b>Bold</b> 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 a minimum of 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
<b>Boldface</b>	Window names, button names, field names, and menu items are in Boldface. For example, the <b>New User</b> window opens; click <b>OK</b> .
>	Multi-level menus are separated by angle brackets. For example, <b>File &gt; Create &gt; Folder</b> .

## Symbols

Convention	Description
 <b>WARNING!</b>	An alert that calls attention to important information that if not understood or followed can result in personal injury.
 <b>CAUTION:</b>	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.
 <b>IMPORTANT:</b>	An alert that calls attention to essential information.
<b>NOTE:</b>	An alert that contains additional or supplementary information.
 <b>TIP:</b>	An alert that provides helpful information.

## Network topology icons

Convention	Description
	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 access controller engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a wireless terminator unit.
	Represents a wireless terminator.
	Represents a mesh access point.
	Represents omnidirectional signals.
	Represents directional signals.
	Represents a security product, such as a firewall, UTM, multiservice security gateway, or load balancing device.
	Represents a security module, such as a firewall, load balancing, NetStream, SSL VPN, IPS, or ACG module.

## Examples provided in this document

Examples in this document might use devices that differ from your device in hardware model, configuration, or software version. It is normal that the port numbers, sample output, screenshots, and other information in the examples differ from what you have on your device.

# Documentation feedback

You can e-mail your comments about product documentation to [info@h3c.com](mailto:info@h3c.com).

We appreciate your comments.

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# Terminal access configuration commands

The H3C MSR800, MSR 900, MSR900-E, MSR 50-06, and MSR 930 (except the MSR 930-SA) routers do not support interface modules. These routers cannot provide terminal access through an asynchronous serial interface module.

## auto-close

Use **auto-close** to enable automatic link teardown and set the automatic link teardown time.

Use **undo auto-close** to restore the default.

### Syntax

**auto-close** *time*

**undo auto-close**

### Default

The automatic link teardown function is disabled and the automatic link teardown time is 0.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*time*: Automatic link teardown time, in seconds. It ranges from 5 to 240.

### Usage guidelines

When the automatic link teardown function is enabled, if a terminal is disconnected from the router, the router sets the terminal to DOWN state, and will tear down the TCP connection to the front-end processor (FEP) after the specified time period. If the function is disabled, the TCP connection will never be torn down.

### Examples

```
# Set the automatic link teardown time to 10 seconds.
```

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

```
[Sysname] rta template abc
```

```
[Sysname-rta-template-abc] auto-close 10
```

## auto-link

Use **auto-link** to configure the automatic link establishment time.

Use **undo auto-link** to restore the default.

### Syntax

**auto-link** *time*

**undo auto-link**

### Default

The automatic link establishment function is disabled and the automatic link establishment time is 0.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*time*: Specifies the automatic link establishment time, in the range of 5 to 240 seconds.

## Usage guidelines

When the terminal is in OK state (meaning the physical connection is normal), the router automatically establishes a TCP connection to the remote router or FEP after the specified period of time.

When the automatic link establishment function is disabled on the terminal, a link needs to be established manually (manual link establishment is the default mode). The router establishes a TCP connection to the FEP only after the user enters a character (except hotkeys and the special characters for terminals) on the terminal. Special characters are the characters that the terminal process directly, such as <Shift+F2>. For more information, see the related terminal documents.

## Examples

```
# Set the automatic link establishment time to 10 seconds.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] auto-link 10
```

# bind vpn-instance

Use **bind vpn-instance** to bind a VPN instance to the terminal template.

Use **undo bind vpn-instance** to remove the bound VPN instance.

## Syntax

**bind vpn-instance** *vpn-name*

**undo bind vpn-instance**

## Default

No VPN instance is bound to a terminal template.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vpn-name*: Specifies a MPLS L3VPN instance by its name, a case-sensitive string of 1 to 31 characters.

## Usage guidelines

This configuration is required when the TTY terminal access initiator also acts as an MPLS provider edge (PE) router at the same time. When you apply a terminal template (configured with the **bind vpn-instance** command) to an asynchronous interface, the terminal corresponding to the asynchronous interface is bound to the VPN instance. Thus, the terminal access initiator can group the terminals into different VPN domains.

The RTC server can receive the connection request from any VPN without being configured with the **bind vpn-instance** command.

You can bind only one VPN instance to each template. If you execute this command multiple times, the latest configuration takes effect.

## Examples

```
# Bind the VPN instance vpn1 to the terminal template.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] bind vpn-instance vpn1
```

## data protect router-unix

Use **data protect router-unix** to enable data encryption between the router and the FEP.

Use **undo data protect router-unix** to restore the default.

### Syntax

**data protect router-unix**

**undo data protect router-unix**

### Default

Data encryption is disabled between the router and the FEP.

### Views

Terminal template view

### Default command level

2: System level

### Usage guidelines

In terminal access, you can configure whether to encrypt the data exchanged between the router and the FEP. The supported encryption algorithm is AES (advanced encryption standard) and the supported key length is 128-bit.

## Examples

```
# Enable the data encryption between the router and the FEP.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] data protect router-unix
```

## data read block

Use **data read block** to enable data read blocking.

Use **undo data read block** to restore the default.

### Syntax

**data read block**

**undo data read block**

### Default

Data read blocking is disabled.

## Views

Terminal template view

## Default command level

2: System level

## Usage guidelines

With data read blocking enabled, when the router fails to send data received from the terminal, the router stops receiving data from the terminal until the data is successfully sent.

## Examples

```
# Enable data read blocking.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] data read block
```

# data send delay

Use **data send delay** to set the data send delay for a terminal.

Use **undo data send delay** to restore the default.

## Syntax

**data send delay** *milliseconds*

**undo data send delay**

## Default

The data send delay is 0 milliseconds. That is, there is no data send delay.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*milliseconds*: Specifies the data send delay in the range of 1 to 1000 milliseconds,.

## Usage guidelines

A router configured with data send delay begins to send the data received from a terminal to an FEP when the configured data send delay time expires.

## Examples

```
# Set the data send delay time to 50 milliseconds.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] data send delay 50
```

# display rta

Use **display rta** to display information about terminals.

## Syntax

```
display rta { all | statistics | terminal-number { vty-number | brief | detail | statistics } } [ | { begin | exclude | include } regular-expression ]
```

## Views

Any view

## Default command level

1: Monitor level

## Parameters

**all:** Displays information about all terminals.

**statistics:** Displays terminal statistics.

*terminal-number:* Specifies a terminal by number, in the range of 1 to 255.

*vty-number:* Displays information about the specified VTY. The VTY number ranges from 0 to 7.

**brief:** Displays brief information about the specified terminal.

**detail:** Displays detailed information about the specified terminal.

**|:** Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin:** Displays the first line that matches the specified regular expression and all lines that follow.

**exclude:** Displays all lines that do not match the specified regular expression.

**include:** Displays all lines that match the specified regular expression.

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

## Examples

# Display information about terminal VTY1.

```
<Sysname> display rta 1 1
VTY 1
  APP Index: 0
  APP Type: TTY
  APP Name: (null)
  APP State: Kept
  Remote IP: 192.168.0.110
  Source IP: 0.0.0.0
  Actual Source IP: 0.0.0.0
  Remote Port: 9010
  Local Port: 0
  Encrypt Now: no
  Receive remote buffer address: 593c904
  Receive buffer head: 499
  Receive buffer tail: 499
  Time from APP is linked till now: 00h00m00s
```

**Table 1 Command output**

Field	Description
APP Index	Application index.
APP Type	Application type: TTY, Telnet, RTC client, or RTC server.

Field	Description
APP Name	Application name. It defaults to "null".
APP State	Application state: <ul style="list-style-type: none"> <li>• <b>Kept</b>—Application is not connected.</li> <li>• <b>Linking</b>—Application is being connected.</li> <li>• <b>Linked</b>—Application is connected.</li> <li>• <b>Disconnect</b>—Application is disconnected.</li> </ul>
Remote IP	Remote IP address.
Source IP	Source IP address configured for the VTY under the terminal template.
Actual Source IP	Actual source IP address used for establishing a connection. This field applies only when the global source IP address for terminal access is configured or when the source IP address is configured for the VTY under the terminal template. In any other case, it is 0.0.0.0.
Remote Port	Remote port.
Local Port	Local port.
Encrypt Now	Whether to encrypt data.
Receive remote buffer address	Buffer address for receiving remote data.
Receive buffer head	Receive buffer head.
Receive buffer tail	Receive buffer tail.
Time from APP is linked till now	Time since the application was connected.

#### # Display brief information about TTY 1.

```
<Sysname> display rta 1 brief
```

```
TTY 1
```

```

Interface Used      : Async1/0
Current State      : Ok
Flow Control       : Stop
Current Debug      : 0x3c
Current VTY        : 0
Current APP        : 0
APP Type           : TTY
  APP Name          : <empty>
  APP State         : Kept
Socket RecvBuf Size : 2048 Bytes
Socket SendBuf Size : 2048 Bytes
TTY Recv Bytes     : 1371 Bytes
TTY Send Bytes     : 63696 Bytes
Last Recv Time     : 19:39:33
Last Send Time     : 03:39:34
Current VTY Recv   : 1371 Bytes
Current VTY Send   : 63696 Bytes
Current APP Recv   : 55280 Bytes
Current APP Send   : 1524 Bytes
Time from APP is linked: 00h00m00s
Encrypt(Router to Unix): no

```

```

Receive remote buffer address: 593c904
Receive buffer head: 2032
Receive buffer tail: 2032

```

```

-----
VTY      APP      Type      State
0        0        TTY      Kept

```

**Table 2 Command output**

Field	Description
TTY 1	"TTY" indicates the terminal access type and "1" the terminal number.
Interface Used	Physical interface corresponding to the terminal number.
Current State	Current terminal state: <ul style="list-style-type: none"> <li>• <b>Down</b>—Physical connection is down.</li> <li>• <b>OK</b>—Physical connection is normal.</li> <li>• <b>Menu</b>—Menu state.</li> </ul>
Flow Control	Flow control for the current application: <ul style="list-style-type: none"> <li>• <b>Start</b>—Does not receive data from the FEP.</li> <li>• <b>Stop</b>—Receives data from the FEP.</li> </ul>
Current Debug	Whether current debugging is enabled or disabled.
Current VTY	Operating VTY.
Current APP	Current application.
APP Type	Application type.
APP Name	Application name.
APP State	Application state.
Socket RecvBuf Size	TCP receive buffer size.
Socket SendBuf Size	TCP send buffer size.
TTY Recv Bytes	Received data in bytes.
TTY Send Bytes	Transmitted data in bytes.
Last Recv Time	Time when last data was received.
Last Send Time	Time when last data was sent.
Current VTY Recv	Data, in bytes, received by the current VTY.
Current VTY Send	Data, in bytes, sent by the current VTY.
Current APP Recv	Data, in bytes, received by the current application.
Current APP Send	Data, in bytes, sent by the current application.
Time from APP is linked	Time since the application was connected.
Encrypt(Router to Unix)	Whether to encrypt data.
Receive Remote Buffer Address	Buffer address for receiving remote data.
Receive Buffer Head	Receive buffer head.
Receive Buffer Tail	Receive buffer tail.
VTY State	VTY list configured on the terminal: <ul style="list-style-type: none"> <li>• <b>VTY</b>—VTY number.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>APP</b>—Application.</li> <li>• <b>Type</b>—Application type.</li> <li>• <b>State</b>—Application state.</li> </ul>

# Display statistics about terminal 1.

```
<Sysname> display rta 1 statistics
```

```
TTY 1
```

```
Receive from terminal: 0
Send to terminal:      0
Receive from remote:  0
Send to remote:       0
```

```
VTY 0
```

```
Receive from terminal: 0          Last receive time: 00:00:00
Send to terminal:      0          Last send time:     00:00:00
Receive from remote:  0          Last receive time: 00:00:00
Send to remote:       0          Last send time:     00:00:00
```

**Table 3 Command output**

Field	Description
Receive from terminal	Data, in bytes, received from the terminal.
Send to terminal	Data, in bytes, sent to the terminal.
Receive from remote	Data, in bytes, received from the remote terminal.
Send to remote	Data, in bytes, sent to the remote terminal.
Last receive time	Time when last data was received.
Last send time	Time when last data was sent.

# Display all the information about terminal access.

```
<Sysname> display rta all
```

```
TTYID   TTY State   Current VTY   Current APP   APP Type   APP State
1       OK          0             0             TTY       Kept
```

**Table 4 Command output**

Field	Description
TTYID	Terminal number.
TTY State	Terminal state.
Current VTY	VTY currently operating on the terminal.
Current APP	Current application.
APP Type	Application type.
APP State	Application state.

# Display terminal access statistics

```
<Sysname> display rta statistics
```

```
RTA Template Number: 2
```

```

RTA TTY Number: 1
RTA APP Number: 1
RTA Listen Port Number: 0

```

**Table 5 Command output**

Field	Description
RTA Template Number	Number of terminal templates configured on the router.
RTA TTY Number	Number of terminals configured on the router.
RTA APP Number	Number of applications generated after terminal configuration.
RTA Listen Port Number	Number of listening ports on the router.

## Related commands

**reset rta statistics**

## display rta relay statistics

Use **display rta relay statistics** to display the forwarding statistics of a relay server. A relay server calculates the bytes and packets received from and sent to clients.

## Syntax

**display rta relay statistics** [ | { **begin** | **exclude** | **include** } *regular-expression* ]

## Views

Any view

## Default command level

1: Monitor level

## Parameters

**]**: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

## Examples

# Display the forwarding statistics of a relay server.

```

<Sysname> display rta relay statistics
Server   Port    Client-IP  recv-packets  recv-bytes  sent-packets  sent-bytes
0        1026    1.1.1.2    15             190         30            370
0        1026    1.1.1.3    15             110         35            421
1        1027    1.1.1.4    0              0           0             0

```

**Table 6 Command output**

Field	Description
Server	Forwarding group ID.
Port	TCP listening port.

Field	Description
Client-IP	Client IP address.
recv-packets	Number of packets received from a client.
recv-bytes	Bytes received from a client.
sent-packets	Number of packets sent to a client.
sent-bytes	Bytes sent to a client.

## display rta relay status

Use **display rta relay status** to display information about all client connections and negotiation statuses. A forwarding group, identified by a port number, can receive connections from up to ten clients.

### Syntax

```
display rta relay status [ | { begin | exclude | include } regular-expression ]
```

### Views

Any view

### Default command level

1: Monitor level

### Parameters

**|**: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

### Examples

# Display information about all client connections and negotiation statuses.

```
<Sysname> display rta relay status
```

```
Server-ID  Port  Client-ID  Client-IP  State
0          1026  0          1.1.1.2    LINKED
0          1026  1          1.1.1.3    LINKED
1          1027  0          1.1.1.4    LINKING
1          1027  2          1.1.1.6    LINKED
```

**Table 7 Command output**

Field	Description
Server-ID	Forwarding group ID.
Port	TCP listening port.
Client-ID	Client ID in a forwarding group.
Client-IP	Client IP address.
State	Client negotiation status: <ul style="list-style-type: none"> <li><b>LINKING</b>—The negotiation field has not been received from the client.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li><b>LINKED</b>—The client has completed the negotiation process.</li> </ul>

## driverbuf save

Use **driverbuf save** to configure the router to preserve the terminal receive buffer after the TCP connection is established

Use **undo driverbuf save** to restore the default.

### Syntax

**driverbuf save**

**undo driverbuf save**

### Default

The router clears the terminal receive buffer after the TCP connection is established.

### Views

Terminal template view

### Default command level

2: System level

### Usage guidelines

The terminal receive buffer is used to store terminal data.

### Examples

```
# Configure the router to preserve the terminal receive buffer after the TCP connection is established
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] driverbuf save
```

## driverbuf size

Use **driverbuf size** to configure the size of the terminal receive buffer.

Use **undo driverbuf size** to restore the default setting.

### Syntax

**driverbuf size** *number*

**undo driverbuf size**

### Default

The size of the terminal receiver buffer is 8 KB.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*number*: Buffer size, in kilobytes (KB), ranging from 8 to 32.

## Usage guidelines

This command takes effect only after the template is reapplied on the interface.

## Examples

```
# Set the terminal buffer size to 8 KB.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] driverbuf size 8
```

# filter flow-control character

Use **filter flow-control character** to enable filtering of flow control characters.

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

## Syntax

**filter flow-control character**

**undo filter flow-control character**

## Default

Filtering of flow control characters is disabled.

## Views

Terminal view

## Default command level

2: System level

## Usage guidelines

The **filter flow-control character** command only filters control characters 0x11 and 0x13 carried in the data flows sent from the terminal to the FEP.

- **0x13**—Enables flow control.
- **0x11**—Disables flow control.

Access devices send flow control character strings received from terminals to the FEP. If the FEP receives a packet that contains flow control characters 0x13, which enables flow control, and 0x11, which disables flow control, the FEP enables flow control but does not disable it. As a result, the FEP stops sending data to the corresponding terminal, and the display pauses until you disable flow control by pressing the shortcut keys. To prevent this problem, configure the device to filter flow control characters out of the data received from terminals and to perform flow control by itself.

## Examples

```
# Enable filtering of flow control characters 0x11 and 0x13 carried in the received data flows.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] filter flow-control character
```

# idle-timeout

Use **idle-timeout** to set the TCP connection idle timeout time for terminal access.

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

## Syntax

**idle-timeout** *seconds*

## **undo idle-timeout**

### **Default**

The TCP connection never times out.

### **Views**

Terminal template view

### **Default command level**

2: System level

### **Parameters**

*seconds*: Connection idle timeout time, in seconds, ranging 10 to 3600.

### **Usage guidelines**

When the idle timeout time is configured, if no data is transmitted over the terminal access connection for the specified period of time, the connection is automatically torn down.

### **Examples**

```
# Set the terminal access idle timeout time to 1000 seconds.  
<Sysname> system-view  
[Sysname] rta template abc  
[Sysname-rta-template-abc] idle-timeout 1000
```

## menu hotkey

Use **menu hotkey** to configure the menu hotkey.

Use **undo menu hotkey** to cancel the menu hotkey.

### **Syntax**

**menu hotkey** *ascii-code*&<1-3>

**undo menu hotkey**

### **Default**

No menu hotkey is configured.

### **Views**

Terminal template view

### **Default command level**

2: System level

### **Parameters**

*ascii-code*&<1-3>: Sets the ASCII value of the menu hotkey, in the range of 1 to 255. The &<1-3> means that you can provide up to three hotkey values.

### **Usage guidelines**

If the current terminal operates on the service interface, you can switch to the menu interface by entering the menu hotkey configured.

RTC terminal access does not support the menu function.

The ASCII value of the hotkey must be different from any other hotkey configured on the device. Otherwise, hotkey conflicts will occur. For example, the hotkey value cannot be 17 or 19 because these values are used for flow control.

Using the hotkey may not get a fast response when the terminal display is busy.

Before using this command, enable the router to print characters to the terminal and enable menu printing.

## Examples

```
# Configure the menu hotkey <Alt+A> with ASCII values 1, 96, and 13.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] menu hotkey 1 96 13
```

## Related commands

- **print information**
- **print menu**

## menu screencode

Use **menu screencode** to configure a menu screen code.

Use **undo menu screencode** to remove the menu screen code.

## Syntax

```
menu screencode string
undo menu screencode
```

## Default

No screen code is configured.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*string*: Sets the screen code of the terminal, a string of 1 to 15 case-insensitive characters.

## Usage guidelines

Some types of terminals provide a screen saving function. When such a terminal receives a specific screen code, such as \E!10Q (for more information about screen codes, see the related terminal documents), it saves the current interface and switches to the corresponding screen.

This function requires terminal support, and the screen code configured on the router and that specified on the terminal must be the same.

Screen codes vary with terminal types. For more information, see the corresponding terminal documents. For example, Start terminals support \E!8Q, \E!9Q, \E!10Q, \E!11Q, \E!12Q, and \E!13Q screen codes.

## Examples

```
# Configure a menu screen code of \E!10Q.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] menu screencode \E!10Q
```

## print connection-info

Use **print connection-info** to enable the printing of terminal connection information on the terminal.

Use **undo print connection-info** to disable the printing of terminal connection information.

### Syntax

**print connection-info**  
**undo print connection-info**

### Default

Terminal connection information is printed on the terminal.

### Views

Terminal template view

### Default command level

2: System level

### Usage guidelines

After a TCP connection is established between the terminal and the FEP, the terminal displays a success message. To disable the message from being printed, use the **undo print connection-info** command.

Enable the router to print characters on the terminal before using this command.

### Examples

```
# Enable the printing of terminal connection information on the terminal.  
<Sysname> system-view  
[Sysname] rta template abc  
[Sysname-rta-template-abc] print connection-info
```

### Related commands

**print information**

## print information

Use **print information** to enable the router to print characters on the terminal.

Use **undo print information** to disable the router from printing characters on the terminal.

### Syntax

**print information**  
**undo print information**

### Default

The router can print characters on the terminal.

### Views

Terminal template view

### Default command level

2: System level

### Usage guidelines

You can use this command when the terminal is connected to a printer for printing.

### Examples

```
# Disable the router from printing characters on the terminal.  
<Sysname> system-view
```

```
[Sysname] rta template abc
[Sysname-rta-template-abc] undo print information
```

## Related commands

- **print connection-info**
- **print menu**

## print language

Use **print language** to set the language of the printed prompt information.

### Syntax

```
print language { chinese | english }
```

### Default

The prompt information is printed in Chinese on the terminal.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

**chinese**: Prints prompt information in Chinese.

**english**: Prints prompt information in English.

### Examples

```
# Set the language of the prompt information printed on the terminal to English.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] print language english
```

## print menu

Use **print menu** to print menu information on the terminal.

Use **undo print menu** to disable the printing of terminal menu information.

### Syntax

```
print menu
```

```
undo print menu
```

### Default

Terminal menu information is printed.

### Views

Terminal template view

### Default command level

2: System level

## Usage guidelines

This command takes effect only in TTY and Telnet terminal access. Make sure you enable the router to print characters on the terminal before using this command.

## Examples

```
# Enable the printing of terminal menu information on the terminal.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] print menu
```

## Related commands

**print information**

# redrawkey

Use **redrawkey** to set the hotkey for terminal redrawing.

Use **undo redrawkey** to cancel the hotkey configured for terminal redrawing.

## Syntax

```
redrawkey ascii-code&<1-3>
undo redrawkey
```

## Default

No hotkey is configured for terminal redrawing.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*ascii-code*&<1-3>: Sets the ASCII value of the redraw hotkey, in the range of 1 to 255. The &<1-3> means that you can provide up to three ASCII values.

## Usage guidelines

The terminal redrawing hotkey can be set in TTY terminal access only. Terminal redrawing works in a similar way as the screen saving function of VTY switching. When a terminal does not display the normal terminal interface for some reasons (for example, when illegible characters appear), pressing the terminal redrawing hotkey can restore the original terminal interface.

Before performing terminal redrawing, you must add the screen 1 command to the configuration file `tyd` on the FEP.

The ASCII value of the redrawing hotkey configured must be different from that of any other hotkey configured on the device. Otherwise, hotkey conflicts will occur. For example, the hotkey value cannot be 17 or 19 because these values are used for flow control.

Using the hotkey may not get a fast response when the terminal display is busy.

## Examples

```
# Configure the terminal redrawing hotkey as <Ctrl+A> by setting its ASCII value to 1.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] redrawkey 1
```

## reset rta connection

Use **reset rta connection** to forcibly tear down the TCP connection corresponding to a VTY of a terminal.

### Syntax

**reset rta connection** *terminal-number vty-number*

### Views

User view

### Default command level

1: Monitor level

### Parameters

*terminal-number*: Specifies a terminal by number, in the range of 1 to 255.

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

### Examples

# Tear down the TCP connection corresponding to VTY 1 of terminal 1.

```
<Sysname> reset rta connection 1 1
```

## reset rta relay statistics

Use **reset rta relay statistics** to clear the packet statistics of all clients connected to the relay server.

### Syntax

**reset rta relay statistics**

### Views

User view

### Default command level

2: System level

### Examples

# Clear the packet statistics of all clients.

```
<Sysname> reset rta relay statistics
```

## reset rta statistics

Use **reset rta statistics** to clear the statistics of a terminal.

### Syntax

**reset rta statistics** *terminal-number*

### Views

User view

### Default command level

1: Monitor level

### Parameters

*terminal-number*: Specifies a terminal by number, in the range of 1 to 255.

## Examples

```
# Clear all statistics for terminal 1.  
<Sysname> reset rta statistics 1
```

## Related commands

**display rta**

# resetkey

Use **resetkey** to set the terminal reset hotkey.

Use **undo resetkey** to cancel the configured terminal reset hotkey.

## Syntax

```
resetkey ascii-code&<1-3>  
undo resetkey
```

## Default

No terminal reset hotkey is configured.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*ascii-code*&<1-3>: Sets the ASCII value of the terminal reset hotkey, in the range of 1 to 255. The &<1-3> means that you can provide up to three ASCII values.

## Usage guidelines

When you press the terminal reset hotkey after a terminal fault occurs, the router tears down and then re-establishes the TCP connection with the FEP.

The ASCII value of the redrawing hotkey configured must be different from that of any other hotkey configured on the device. Otherwise, hotkey conflicts will occur. For example, the hotkey value cannot be 17 or 19 because these values are used for flow control. In addition, using the hotkey may not get a fast response when the terminal display is busy.

## Examples

```
# Configure the terminal reset hotkey as <Ctrl+A> by setting its ASCII value to 1.  
<Sysname> system-view  
[Sysname] rta template abc  
[Sysname-rta-template-abc] resetkey 1
```

# rta bind

Use **rta bind** to configure a character string for router authentication.

Use **undo rta bind** to restore the default.

## Syntax

```
rta bind { mac-address interface interface-type interface-number | string string }  
undo rta bind
```

## Default

No authentication string is configured on the router.

## Views

System view

## Default command level

2: System level

## Parameters

**mac-address interface** *interface-type interface-number*: Uses the specified interface's MAC address as the character string for router authentication.

**string** *string*: Uses a user-defined string for router authentication. *string* is a user-defined string of 1 to 30 characters.

## Usage guidelines

This configuration is used to authenticate the connection between the router and the FEP. If the authentication succeeds (that is, if the MAC address sent by the router and that configured on the FEP are consistent), the connection is established; otherwise, no connection can be established between the router and the FEP.

Either a MAC address or a character string can be configured, and the last one configured takes effect.

The authentication type and character string configured on the router and FEP must be the same. Otherwise, the authentication fails and no connection can be established.

## Examples

# Bind the MAC address of Ethernet 0/0 for router authentication.

```
<Sysname> system-view  
[Sysname] rta bind mac-address interface ethernet 0/0
```

# Bind the character string abc for router authentication.

```
<Sysname> system-view  
[Sysname] rta bind string abc
```

# rta relay buffer-size

Use **rta relay buffer-size** to set the forward buffer size of a client.

Use **undo rta relay buffer-size** to restore the default.

## Syntax

**rta relay buffer-size** *buffer-size*

**undo rta relay buffer-size**

## Default

The forward buffer size of a client is 8 KB.

## Views

System view

## Default command level

2: System level

## Parameters

*buffer-size*: Sets the forward buffer size, in the range of 1 to 64 kilobytes (KB).

## Usage guidelines

If the number of packets to be sent out reaches the specified buffer size, new data will overwrite existing data.

You can use the **rtm relay tcp sendbuf-size** command to set the packet buffer size at the transport layer. A very small packet buffer size will affect the transmit efficiency but will not cause packet loss.

## Examples

```
# Configure the forward buffer size as 2 KB.
<Sysname> system-view
[Sysname] rtm relay buffer-size 2
```

## rtm relay disconnect

Use **rtm relay disconnect** to forcibly disconnect a specific client connection or all client connections.

### Syntax

```
rtm relay disconnect { server-id client-id | all }
```

### Views

System view

### Default command level

2: System level

### Parameters

*server-id*: Specifies a forwarding group ID, in the range of 0 to 63.

*client-id*: Specifies a client ID in the forwarding group, in the range of 0 to 9.

## Examples

```
# Disconnect all client connections.
<Sysname> system-view
[Sysname] rtm relay disconnect all
```

## rtm relay enable

Use **rtm relay enable** to enable relay forwarding.

Use **undo rtm relay enable** to restore the default.

### Syntax

```
rtm relay enable
undo rtm relay enable
```

### Default

Relay forwarding is disabled.

### Views

System view

### Default command level

2: System level

## Usage guidelines

Relay forwarding is applicable to TCP-based RTC only.

## Examples

```
# Enable RTC relay forwarding.
<Sysname> system-view
[Sysname] rta relay enable
```

## rta relay listen-port

Use **rta relay listen-port** to set a TCP listening port.

Use **undo rta relay listen-port** to remove the configuration.

### Syntax

```
rta relay listen-port port-number
undo rta relay listen-port port-number
```

### Default

No TCP listening port is configured.

### Views

System view

### Default command level

2: System level

### Parameters

*port-number*: Specifies a TCP listening port, in the range of 1024 to 50000.

### Usage guidelines

A forwarding group can receive connections from up to ten clients.

Deleting a listening port will disconnect all the clients on this port.

The system supports up to 64 TCP listening ports. A forwarding group contains the connections established through the same port and allows data from a terminal to be forwarded within the group.

## Examples

```
# Set TCP listening ports to 1026 and 1027.
<Sysname> system-view
[Sysname] rta relay listen-port 1026
[Sysname] rta relay listen-port 1027
```

## rta relay tcp keepalive

Use **rta relay tcp keepalive** to configure the TCP keepalive attributes on a relay server.

Use **undo rta relay tcp keepalive** to restore the default.

### Syntax

```
rta relay tcp keepalive time count
undo rta relay tcp keepalive
```

### Default

A relay server sends a TCP keepalive packet every 50 seconds for three times.

## Views

System view

## Default command level

2: System level

## Parameters

*time*: Sets the interval for sending keepalives, in the range of 10 to 7200 seconds.

*count*: Sets the keepalive number, in the range of 1 to 100.

## Usage guidelines

This configuration uses the TCP keepalive feature to detect the reachability of a client. If no keepalive is received from a client before the timeout time expires, the server disconnects the client.

## Examples

```
# Set the keepalive interval as 100 seconds and the keepalive number as 3.
```

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

```
[Sysname] rta relay tcp keepalive 100 3
```

## rta relay tcp nodelay

Use **rta relay tcp nodelay** to enable the TCP\_NODELAY function.

Use **undo rta relay tcp nodelay** to restore the default.

## Syntax

```
rta relay tcp nodelay
```

```
undo rta relay tcp nodelay
```

## Default

The TCP\_NODELAY function is disabled.

## Views

System view

## Default command level

2: System level

## Usage guidelines

Enabling this function disables the Nagle algorithm, so the time delay caused by this algorithm during TCP traffic transmission is avoided and the forwarding performance of the relay server is improved.

## Examples

```
# Enable the TCP_NODELAY function.
```

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

```
[Sysname] rta relay tcp nodelay
```

## rta relay tcp

Use **rta relay tcp** to set the send buffer size and receive buffer size for TCP connections between the relay server and a client.

Use **undo rta relay tcp** to restore the default.

## Syntax

```
rta relay tcp { recvbuf-size recvbuff-size | sendbuf-size sendbuff-size }  
undo rta relay tcp { recvbuf-size | sendbuf-size }
```

## Default

The send buffer size and receive buffer size are both 2048 bytes.

## Views

System view

## Default command level

2: System level

## Parameters

*recvbuff-size*: Sets the socket receive buffer size, in the range of 512 to 16384 bytes.

*sendbuff-size*: Sets the socket send buffer size, in the range of 512 to 16384 bytes.

## Usage guidelines

H3C recommends that you use the default settings, because an improper configuration of the send buffer size and receive buffer size can affect data forwarding efficiency and may cause system overload.

## Examples

```
# Set the send buffer size and the receive buffer size for TCP connections on the relay server to 8194 bytes and 2046 bytes, respectively.
```

```
<Sysname> system-view  
[Sysname] rta relay tcp sendbuf-size 8194  
[Sysname] rta relay tcp recvbuf-size 2046
```

# rta rtc-server listen-port

Use **rta rtc-server listen-port** to configure the listening port on the RTC server.

Use **undo rta rtc-server listen-port** to cancel the configured listening port.

## Syntax

```
rta rtc-server listen-port port-number  
undo rta rtc-server listen-port port-number
```

## Default

No listening port is configured on the RTC server.

## Views

System view

## Default command level

2: System level

## Parameters

*port-number*: Specifies the listening TCP port number of the RTC server, in the range of 1024 to 50000.

## Usage guidelines

Only one listening port can be configured.

## Examples

```
# Configure the RTC server listening port number as 9010.
<Sysname> system-view
[Sysname] rta rtc-server listen-port 9010
```

## rta server enable

Use **rta server enable** to enable terminal access on the router.

Use **undo rta server enable** to disable terminal access.

### Syntax

**rta server enable**

**undo rta server enable**

### Default

Terminal access is disabled on the router.

### Views

System view

### Default command level

2: System level

### Usage guidelines

After you disable terminal access, the settings of templates, terminals, and VTYs will be kept.

## Examples

```
# Enable terminal access.
<Sysname> system-view
[Sysname] rta server enable
```

## rta rtc version

Use **rta rtc version** to switch the RTC terminal access version.

### Syntax

**rta rtc version { v3 | v5 }**

### Default

RTC terminal access version is Comware 5.

### Views

System view

### Default command level

2: System level

### Usage guidelines

If you specify the keyword **v3** on an RTC terminal, the host-id field is added to the negotiation packets between clients and servers. This method applies to the network that comprises both Comware 3 and 5 devices.

When you specify the keyword **v5** on an RTC terminal, the host-id field is not added to the negotiation packets between clients and servers. This method applies to the network that comprises only Comware 5 devices.

## Examples

```
# Switch the RTC terminal access version to v3.
```

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

```
[Sysname] rta rtc version v3
```

## rta source-ip

Use **rta source-ip** to configure the global source IP address of TCP connections.

Use **undo rta source-ip** to cancel the source IP address configured.

### Syntax

```
rta source-ip ip-address
```

```
undo rta source-ip
```

### Default

No source IP address is configured globally for TCP connections.

### Views

System view

### Default command level

2: System level

### Parameters

*ip-address*: Sets the source IP address for TCP connections. It cannot be a loopback address, such as 127.0.0.1.

### Usage guidelines

You can use this command to configure an IP address other than the outbound interface's IP address as the TCP connection source IP address. Generally, the loopback interface or dialer interface of the router is used as the TCP connection source IP address for dial-up backup and address hiding.

If a source IP address is also configured in a terminal template, this address is preferred as the source IP address for the corresponding terminal to establish TCP connections.

After the global TCP connection source IP address is configured, a TCP connection must be re-established for this address to take effect.

## Examples

```
# Set the global TCP connection source IP address to 1.1.1.1.
```

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

```
[Sysname] rta source-ip 1.1.1.1
```

## rta template

Use **rta template** to create a terminal template and enter terminal template view. If you specify an existing terminal template, you will enter the corresponding terminal template view.

Use **undo rta template** to delete a terminal template.

### Syntax

```
rta template template-name
```

**undo rta template** *template-name*

## Views

System view

## Default command level

2: System level

## Parameters

*template-name*: Specifies a name for the terminal template, a string of 1 to 15 characters.

## Examples

# Create terminal template abc and enter terminal template view.

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

```
[Sysname] rta template abc
```

```
[Sysname-rta-template-abc]
```

# rta terminal

Use **rta terminal** to apply a template on the interface.

Use **undo rta terminal** to cancel the template application.

## Syntax

**rta terminal** *template-name terminal-number* [ **backup** ] [ **transparent** ]

**undo rta terminal**

## Default

No template is applied on the interface.

## Views

Interface view

## Default command level

2: System level

## Parameters

*template-name*: Specifies a terminal template by its name, a string of 1 to 15 characters.

*terminal-number*: Specifies a terminal by its number, in the range of 1 to 255.

**backup**: Specifies the interface as a backup interface.

**transparent**: Enables the transparent transmission mode for the synchronous interface. By default, the HDLC mode is used. In HDLC mode, when the synchronous interface receives a frame, the router checks for and removes the end flag (0x7e) of the frame before it forwards the frame. In transparent transmission mode, the router directly forwards the frame.

## Usage guidelines

You can specify the **transparent** keyword only when you apply a terminal template to a synchronous interface.

An interface can use only one template, but a template can be applied to multiple interfaces. When multiple interfaces use one template, the interface serves as the primary interface if the **backup** keyword is not configured, and the interface serves as the backup interface if the **backup** keyword is configured.

The system detects the primary interface every five seconds. If one of the following situations occurs, the system changes the backup interface to the primary interface, and the original primary interface becomes a backup interface. The system detects the new primary interface in the same way.

- The primary interface does not receive data within five seconds.
- The primary interface receives five or more CRC error packets within five seconds.
- The primary interface goes down.

---

**!** **IMPORTANT:**

Data loss might occur during a primary/backup switchover.

---

A terminal can be created only after the configured terminal template is applied on the interface to implement terminal access. Use the *terminal-number* argument to specify the terminal number. An interface can be connected to only one physical terminal. The router identifies physical terminals by terminal number.

At least one VTY should be configured in the terminal template for the template to be applied on the interface. This command supports asynchronous serial interfaces, synchronous/asynchronous serial interfaces, and AUX interfaces. When a synchronous/asynchronous serial interface operates in the synchronous mode, you can configure RTC terminal access on the interface only. When a synchronous/asynchronous serial interface operates in the asynchronous mode, you can configure all access types except UDP-based RTC on the interface.

---

**NOTE:**

The **transparent** keyword is supported only on the fixed E1 interfaces of MSR 2012 routers and following routers that are installed with the SIC-E1 card: MSR 201X series, MSR 3010, MSR 3011, MSR 3016, MSR 3011E, MSR 3011F, and MSR3600-51F.

---

## Examples

```
# Apply the terminal template abc with the terminal number of 1 to interface Async 1/1.
<Sysname> system-view
[Sysname] interface async 1/1
[Sysname-rtasync1/1] rta terminal abc 1
```

## rta vty-style smart

Use **rta vty-style smart** to enable pressing any key to return.

Use **undo rta vty-style smart** to restore the default.

### Syntax

**rta vty-style smart**

**undo rta vty-style smart**

### Default

Pressing any key to return is disabled:

- If you press an invalid menu option, the VTY displays the menu interface.
- If you press a key after a connection is terminated, the VTY re-establishes the connection.
- If the FEP providing a certain service is unreachable, the VTY initiates a connection attempt after you press a key.

### Views

System view

## Default command level

2: System level

## Usage guidelines

With pressing any key to return enabled, the virtual terminal displays an error message and allows you to press any key to return to the menu interface in the following cases:

- An invalid menu option is entered.
- The FEP providing the service you select is unreachable.
- A connection is terminated.

## Examples

```
# Configure the virtual terminal to permit pressing any key to return.
```

```
<Sysname> system-view  
[Sysname] rta vty-style smart
```

# rtc-multiplepeer

Use **rtc-multiplepeer** to configure the client list on a VTY serving as a one-to-many UDP RTC server.

Use **undo rtc-multiplepeer** to remove the configuration.

## Syntax

```
rtc-multiplepeer vty-number remote ip-address port-number
```

```
undo rtc-multiplepeer vty-number remote ip-address port-number
```

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

*ip-address*: Specifies a client by IP address.

*port-number*: Specifies the UDP port of the client, in the range of 1024 to 50000.

## Usage guidelines

You need to create a UDP\_1N\_Server VTY before you can configure a client list for it. You can configure up to ten clients for a VTY.

Deleting a UDP\_1N\_Server VTY will delete the client list of the VTY.

## Examples

```
# Configure the client list of VTY 1 serving as a one-to-many UDP RTC server. The client list includes a client with IP address 1.1.1.2 and UDP port 1024, and a client with IP address 1.1.1.3 and UDP port 1023.
```

```
<Sysname> system-view  
[Sysname] rta template temp3  
[Sysname-rta-template-temp3] vty 1 rtc-multiplepeer 1.1.1.1 1024  
[Sysname-rta-template-temp3] rtc-multiplepeer 1 remote 1.1.1.2 1024  
[Sysname-rta-template-temp3] rtc-multiplepeer 1 remote 1.1.1.3 1023
```

## Related commands

`vty rtc-multiplepeer`

# screen save enable

Use **screen save enable** to enable screen saving.

Use **undo screen save enable** to disable screen saving.

## Syntax

**screen save enable**

**undo screen save enable**

## Default

Screen saving is enabled.

## Views

Terminal template view

## Default command level

2: System level

## Usage guidelines

This function is effective for RTA access only, including Telnet, ETelnet, and SSH.

## Examples

```
# Disable screen saving on temp1.  
<Sysname> system-view  
[Sysname] rta template temp1  
[Sysname-rtc-template-temp1] undo screen save enable
```

# screen-size

Use **screen-size** to set the terminal screen display size. The size determines the maximum lines (screen height) and columns (screen width) of characters that can be displayed on the screen.

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

## Syntax

**screen-size height** *height-in-characters* **width** *width-in-characters*

**undo screen-size**

## Default

The screen can display up to 24 lines and 80 columns of characters.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*height-in-characters*: Sets the screen display height, in the range of 20 to 100 characters.

*width-in-characters*: Sets the screen display width, in the range of 80 or 132 characters.

## Usage guidelines

You cannot modify the screen display size for terminals that have established connections.

## Examples

```
# On RTA template temp1, set the screen to display up to 25 lines and 132 columns of characters.
<Sysname> system-view
[Sysname] rta template temp1
[Sysname-rta-template-temp1] screen-size height 25 width 132
```

# sendbuf bufsize

Use **sendbuf bufsize** to configure the maximum size of data to be sent to the terminal.

Use **undo sendbuf bufsize** to restore the default.

## Syntax

**sendbuf bufsize** *size*

**undo sendbuf bufsize**

## Default

The maximum size of data to be sent to the terminal at one time is 500 bytes.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*size*: Sets the maximum size of data sent to the terminal at one time, in the range of 2 to 500 bytes.

## Usage guidelines

The router sends data in packets to the terminal. The sizes of the sent packets are different. Use the *size* argument to specify the maximum data packet size.

## Examples

```
# Configure the maximum size of data to be sent at one time as 200 bytes.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] sendbuf bufsize 200
```

# sendbuf threshold

Use **sendbuf threshold** to set the threshold of the terminal send buffer.

Use **undo sendbuf threshold** to cancel the configured threshold of the terminal send buffer.

## Syntax

**sendbuf threshold** *value*

**undo sendbuf threshold**

## Default

No threshold is configured.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*value*: Sets the threshold of the terminal send buffer, in the range of 50 to 2048 bytes.

## Usage guidelines

The send buffer is used to store the data that the router is to send to the terminal. The threshold specifies the maximum data in bytes that the send buffer can store.

## Examples

```
# Set the terminal send buffer threshold to 1000 bytes.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] sendbuf threshold 1000
```

## tcp

Use **tcp** to configure TCP parameters, including the receive buffer size, the send buffer size, no delay, keepalive interval, and keepalive number.

Use **undo tcp** to restore the default TCP settings.

## Syntax

```
tcp { keepalive time count | nodelay | rcvbuf-size recvsize | sendbuf-size sendsize }
undo tcp { keepalive | nodelay | rcvbuf-size | sendbuf-size }
```

## Default

The receive buffer size is 2048 bytes, the send buffer size is 2048 bytes, delay is enabled, the keepalive interval is 50 seconds, and the keepalive number is 3.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*time*: Sets the keepalive interval, in the range of 10 to 7200 seconds.

*count*: Sets the keepalive number, in the range of 1 to 100.

**nodelay**: Specifies not to use the TCP Nagle algorithm, that is, no TCP delay.

**rcvbuf-size** *recvsize*: Sets the TCP receive buffer size, in the range of 512 to 16384 bytes.

**sendbuf-size** *sendsize*: Sets the TCP send buffer size, in the range of 512 to 16384 bytes.

## Usage guidelines

If you specify the **nodelay** keyword, the TCP Nagle algorithm will not be used.

The configured TCP parameters take effect for only new TCP connections.

## Examples

```
# Set the TCP receive buffer size to 512 bytes.
```

```

<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] tcp recvbuf-size 512
# Set the TCP send buffer size to 512 bytes.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] tcp sendbuf-size 512
# Disable TCP delay.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] tcp nodelay
# Set the TCP keepalive interval to 1800 seconds and the keepalive number to 2.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] tcp keepalive 1800 2

```

## terminal type

Use **terminal type** to configure the terminal type.

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

### Syntax

```
terminal type { vt100 | vt220 }
```

```
undo terminal type
```

### Default

The terminal type is VT100.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

**vt100**: Specifies the terminal type as VT100.

**vt220**: Specifies the terminal type as VT220.

### Examples

```
# Configure the terminal type of temp1 as VT220.
```

```

<Sysname> system-view
[Sysname] rta template temp1
[Sysname-rta-template-temp1]terminal type vt220

```

## testkey

Use **testkey** to configure the terminal connectivity test hotkey.

Use **undo testkey** to cancel the hotkey configured.

## Syntax

```
testkey ascii-code&<1-3>
```

```
undo testkey
```

## Default

No hotkey is configured for connectivity test.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*ascii-code*&<1-3>: Sets the ASCII value of the hotkey, in the range of 1 to 255. The &<1-3> means that you can provide up to three ASCII values.

## Usage guidelines

With the terminal connectivity test hotkey configured on the router, you can press the hotkey to test the TCP connectivity between the terminal and the router and that between the terminal and the FEP.

When you configure this command, follow these guidelines:

- This command takes effect only in Telnet terminal access and TTY terminal access.
- The ASCII value of the hotkey configured must be different from that of any other hotkey configured on the device. Otherwise, hotkey conflicts will occur. For example, the hotkey value cannot be 17 or 19 because these values are used for flow control.
- Using the hotkey may not get a fast response when the terminal display is busy.

## Examples

```
# Configure the terminal connectivity test hotkey as <Alt+A> by setting the ASCII values 1 96 13.
```

```
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] testkey 1 96 13
```

# update changed-config

Use **update changed-config** to update template configurations.

## Syntax

```
update changed-config
```

## Views

Terminal template view

## Default command level

2: System level

## Usage guidelines

If the template has been applied on the corresponding interface, the configurations made in template view will take effect after the **update changed-config** command is executed. H3C recommends you complete all terminal template configurations before applying the template on the interface.

Executing this command will disconnect connections. Make sure critical services will not be affected.

Some configurations, such as source IP address configuration and encryption, take effect only after they are updated and the connection is re-established.

## Examples

```
# Set the menu hotkey under the template and update the configuration.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] menu hotkey 1
[Sysname-rta-template-abc] update changed-config
```

## vty description

Use **vty description** to configure a description for a VTY.

Use **undo vty description** to remove the description for a VTY.

### Syntax

```
vty vty-number description string
undo vty vty-number description
```

### Default

No description is configured for a VTY.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*string*: Configures a description for the VTY, a string of 1 to 31 characters.

### Usage guidelines

For a VTY of a service, you can use the service name as the description information of the VTY.

## Examples

```
# Set the description information of VTY 1 to chuxu.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 description chuxu
```

## vty etelnet remote

Use **vty etelnet remote** to create a VTY for ETelnet terminal access.

Use **undo vty** to remove the specified VTY.

### Syntax

```
vty vty-number etelnet remote ip-address [ port-number ] [ source source-ip ]
undo vty vty-number
```

### Views

Terminal template view

### Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

*ip-address*: Specifies the FEP IP address.

*port-number*: Specifies the listening port of the ccbtelnetd program on the FEP, in the range of 1 to 50000. The default is 2080.

**source** *source-ip*: Specifies the source IP address.

## Example

# Create a VTY for ETelnet terminal access, setting the FEP IP address to 1.1.1.1, listening port to 9010, and source IP address to 2.2.2.2.

```
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 etelnet remote 1.1.1.1 9010 source 2.2.2.2
```

## vty hotkey

Use **vty hotkey** to set the hotkey for VTY fast switching.

Use **undo vty hotkey** to cancel the hotkey configured.

## Syntax

**vty** *vty-number* **hotkey** *ascii-code*&<1-3>

**undo vty** *vty-number* **hotkey**

## Default

No hotkey is configured for VTY fast switching.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

*ascii-code*&<1-3>: Specifies the ASCII value of the hotkey, in the range of 1 to 255. The &<1-3> means that you can provide up to three ASCII values.

## Usage guidelines

Terminal access supports VTY switching, allowing you to switch between applications. In terminal access, each terminal can be logically divided into eight VTYS and each VTY corresponds to one application. When multiple VTYS are configured on a terminal with the corresponding switching hotkeys, you can press the switching hotkeys to quickly switch between the VTYS without making any selection on the menu. The connection of the original VTY application is not torn down. This way, dynamic switching between the VTYS (in other words, different applications) on a terminal is implemented.

The ASCII value of the hotkey must be different from any other hotkey configured on the device. Otherwise, hotkey conflicts will occur. For example, the hotkey value cannot be 17 or 19 because these values are used for flow control. Using a hotkey may not get a fast response when the terminal display is busy.

## Examples

# Configure the hotkey for VTY 1 as <Ctrl+A>, which is 1.

```
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 hotkey 1
```

## vty password

Use **vty password** to configure the password for VTY authentication.

Use **undo vty password** to cancel the password configured.

### Syntax

```
vty vty-number password { simple | cipher } string
undo vty vty-number password
```

### Default

No password is configured for VTY authentication.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

**cipher**: Sets a ciphertext password.

**simple**: Sets a plaintext password.

*string*: Specifies the ciphertext or plaintext password string. The argument is a case sensitive. If **simple** is specified, it must be a string of 1 to 16 characters. If **cipher** is specified, it must be a ciphertext string of 1 to 53 characters.

### Usage guidelines

For security purposes, all passwords, including passwords configured in plain text, are saved in cipher text to the configuration file.

This command takes effect in RTC terminal access only and is used by the RTC server to authenticate RTC clients. To support terminal access authentication, passwords must be configured on the RTC server and the RTC clients, and authentication succeeds only if the passwords match. If no authentication is need, do not set any password on the RTC server or any RTC client.

### Examples

# Configure the authentication password for VTY 1 as plaintext password **abc**.

```
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 password simple abc
```

## vty rtc-client remote

Use **vty rtc-client remote** to create a VTY to serve as an RTC client.

Use **undo vty** to remove the specified VTY.

### Syntax

```
vty vty-number rtc-client remote ip-address port-number [ source source-ip ]
```

**undo vty** *vty-number*

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by number, in the range of 0 to 7.

*ip-address*: Specifies the IP address of the RTC server.

*port-number*: Specifies the listening port number of the RTC server, in the range of 1024 to 50000.

**source** *source-ip*: Specifies the source IP address.

## Usage guidelines

After you configure this command, no more Telnet VTYS, TTY VTYS, or RTC server VTYS can be configured in the template of the VTY.

## Examples

# Create VTY 1 to serve as an RTC client, setting the IP address of the corresponding RTC server to 1.1.1.1, the listening port of the RTC server to 9010, and the source IP address to be used for establishing TCP connections to 2.2.2.2.

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

```
[Sysname] rta template abc
```

```
[Sysname-rta-template-abc] vty 1 rtc-client remote 1.1.1.1 9010 source 2.2.2.2
```

## Related commands

- **rta rtc-server listen-port**
- **vty rtc-server remote**

# vty rtc-client remote remote-port

Use **vty rtc-client remote remote-port** to create a VTY to serve as a UDP RTC client.

Use **undo vty** to remove the specified VTY.

## Syntax

**vty** *vty-number* **rtc-client remote** *ip-address* **remote-port** *remote-port-number* **udp** [ **local-port** *local-port-number* ] [ **source** *source-ip-address* ]

**undo vty** *vty-number*

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies the RTC server IP address.

*remote-port-number*: Specifies the UDP port number of the RTC server, in the range of 1024 to 50000.

*source-ip-address*: Specifies the local IP address.

*local-port-number*: Specifies the local UDP listening port, in the range of 1024 to 50000.

## Usage guidelines

After this configuration, no VTY of another type can be configured in the template.

## Examples

# Create a VTY to serve as the UDP RTC client, setting the RTC server IP address to 1.1.1.1, UDP port to 1024, local address to 1.1.1.2, and local UDP listening port to 1025.

```
<Sysname> system-view
[Sysname] rta template temp2
[Sysname-rta-template-temp2] vty 1 rtc-client remote 1.1.1.1 remote-port 1024 udp
local-port 1025 source 1.1.1.2
```

## vty rtc-multiplepeer

Use **vty rtc-multiplepeer** to create a VTY to serve as a one-to-many UDP RTC server.

Use **undo vty** to remove the specified VTY.

## Syntax

**vty** *vty-number* **rtc-multiplepeer** [ *ip-address* ] *port-number*

**undo vty** *vty-number*

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies the local IP address.

*port-number*: Specifies the local UDP port, in the range of 1024 to 50000.

## Usage guidelines

Deleting a VTY serving as a one-to-many UDP RTC server will delete the client list of the VTY.

After this configuration, no VTY of another type can be configured in the template.

## Examples

# Create a VTY to serve as a one-to-many UDP RTC server, setting the local UDP listening port to 1024 and the local IP address to 1.1.1.1.

```
<Sysname> system-view
[Sysname] rta template temp3
[Sysname-rta-template-temp3] vty 1 rtc-multiplepeer 1.1.1.1 1024
```

## Related commands

**rtc-multiplepeer remote**

## vty rtc-server remote

Use **vty rtc-server remote** to create a VTY to serve as the RTC server.

Use **undo vty** to remove the specified VTY.

## Syntax

```
vty vty-number rtc-server remote ip-address terminal-number  
undo vty vty-number
```

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: RTC client IP address.

*terminal-number*: Terminal number corresponding to the RTC client, in the range of 1 to 255.

## Usage guidelines

After this configuration, no more Telnet VTYS, TTY VTYS, or RTC client VTYS can be configured in the template of the VTY.

## Examples

```
# Create a VTY to serve as the RTC server, setting the IP address of the RTC client to 2.2.2.2 and  
the terminal number to 1.
```

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

```
[Sysname] rta template abc
```

```
[Sysname-rta-template-abc] vty 1 rtc-server remote 2.2.2.2 1
```

# vty rtc-server remote udp

Use **vty rtc-server remote udp** to create a VTY to serve as a UDP RTC server.

Use **undo vty** to remove the specified VTY.

## Syntax

```
vty vty-number rtc-server remote [ ip-address remote-port remote-port-number ] udp local-port  
local-port-number [ source source-ip-address ]
```

```
undo vty vty-number
```

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies a RTC client IP address.

*remote-port-number*: Specifies the UDP port of the RTC client, in the range of 1024 to 50000.

*source-ip-address*: Specifies the local IP address.

*local-port-number*: Specifies the local UDP listening port, in the range of 1024 to 50000.

## Usage guidelines

After this configuration, no VTY of another type can be configured in the template.

## Examples

```
# Create a VTY to serve as a UDP RTC server, setting the local IP address to 1.1.1.1, UDP listening
port to 1024, RTC client IP address to 1.1.1.2, and UDP port to 1025.
<Sysname> system-view
[Sysname] rta template temp1
[Sysname-rta-template-temp1] vty 1 rtc-server remote 1.1.1.2 remote-port 1025 udp
local-port 1024 source 1.1.1.1
```

## vty screencode

Use **vty screencode** to set the screen code for triggering screen saving.

Use **undo vty screencode** to cancel the screen code configured.

### Syntax

```
vty vty-number screencode string
undo vty vty-number screencode
```

### Default

No screen code is configured for terminal screen saving.

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*string*: Specifies the terminal screen code, a string of 1 to 15 characters.

### Usage guidelines

Some types of terminals provide the screen saving function. When such a terminal receives the specified screen code, such as `\E!10Q` (for more information about screen codes, see the related terminal documents), it saves the current interface and switch to the corresponding screen.

This function requires terminal support and the screen code configured on the router and that specified on the terminal must be the same. Screen codes configured vary with terminal types. For more information, see the corresponding terminal documents. For example, Start terminals support `\E!8Q`, `\E!9Q`, `\E!10Q`, `\E!11Q`, `\E!12Q`, and `\E!13Q`. To support screen saving and menu printing, the **menu screencode** command must be used.

### Examples

```
# Set the screen code for VTY 1 to \E!9Q.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 screencode \E!9Q
```

### Related commands

**menu screencode**

## vty ssh remote

Use **vty ssh remote** to create a VTY for SSH terminal access.

Use **undo vty** to remove the specified VTY.

## Syntax

```
vty vty-number ssh remote ip-address [port-number] [source source-ip]  
undo vty vty-number
```

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vt*y-number: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies the FEP IP address.

*port-number*: Specifies the listening port of the SSH program on the FEP. It ranges 1 to 50000 and defaults to 22.

**source** *source-ip*: Specifies the source IP address.

## Examples

```
# Create a VTY for SSH terminal access, setting the FEP IP address to 1.1.1.1, listening port to 9010,  
and source IP address to 2.2.2.2.
```

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

```
[Sysname] rta template abc
```

```
[Sysname-rta-template-abc] vty 1 ssh remote 1.1.1.1 9010 source 2.2.2.2
```

## vty telnet remote

Use **vty telnet remote** to create a VTY for Telnet terminal access.

Use **undo vty** to remove the specified VTY.

## Syntax

```
vty vty-number telnet remote ip-address [port-number] [source source-ip]  
undo vty vty-number
```

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*vt*y-number: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies the FEP IP address.

*port-number*: Specifies the listening Telnet port on the FEP. It ranges 1 to 50000 and defaults to 23.

**source** *source-ip*: Specifies the source IP address.

## Usage guidelines

After this configuration, no more RTC client VTYS or RTC server VTYS can be configured in the template of the VTY.

## Examples

```
# Create a VTY for Telnet terminal access, setting the FEP IP address to 1.1.1.1.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 telnet remote 1.1.1.1
```

## vty tty remote

Use **vty tty remote** to create a VTY for TTY terminal access.

Use **undo vty** to remove the specified VTY.

### Syntax

```
vty vty-number tty remote ip-address port-number [ source source-ip ]
undo vty vty-number
```

### Views

Terminal template view

### Default command level

2: System level

### Parameters

*vty-number*: Specifies a VTY by its number, in the range of 0 to 7.

*ip-address*: Specifies the FEP IP address.

*port-number*: Specifies the listening port number of the ttyd program on the FEP, in the range of 1024 to 50000.

**source** *source-ip*: Specifies the source IP address.

### Usage guidelines

After this configuration, no more RTC client VTYS or RTC server VTYS can be configured in the template of the VTY.

## Examples

```
# Create VTY 1 for TTY terminal access, setting FEP IP address to 1.1.1.1, listening port number to 9010, and source IP address to 2.2.2.2.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty 1 tty remote 1.1.1.1 9010 source 2.2.2.2
```

## vty-switch priority

Use **vty-switch priority** to configure the RTC server to perform VTY switching based on priority.

Use **undo vty-switch priority** to restore the default setting.

### Syntax

```
vty-switch priority
undo vty-switch priority
```

### Default

The VTY switching is performed not based on priority.

## Views

Terminal template view

## Default command level

2: System level

## Usage guidelines

This command takes effect in RTC terminal access. When VTY switching is performed based on priority (the lower the VTY number, the higher the priority), if the VTY number corresponding to the connection request received is less than the VTY number corresponding to the existing connection, the RTC server tears down the existing connection and uses the new connection for communication. If a connection has been established and this command is not used, any newer connection will be torn down.

## Examples

```
# Configure the RTC server to perform VTY switching based on priority.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty-switch priority
```

# vty-switch threshold

Use **vty-switch threshold** to configure the threshold for VTY automatic switching.

Use **undo vty-switch threshold** to restore the default.

## Syntax

**vty-switch threshold** *times*

**undo vty-switch threshold**

## Default

No threshold is configured; that is, no switching is performed.

## Views

Terminal template view

## Default command level

2: System level

## Parameters

*times*: Specifies the threshold for VTY automatic switching, in the range of 1 to 10000 times.

## Usage guidelines

This command takes effect only in RTC client terminal access. After this configuration, an RTC client first initiates a connection to the RTC server with the lowest VTY number. If the number of connection failures exceeds the threshold, the RTC client initiates a connection to the RTC server with the second lowest VTY number, and so on.

## Examples

```
# Set the threshold for automatic VTY switching.
<Sysname> system-view
[Sysname] rta template abc
[Sysname-rta-template-abc] vty-switch threshold 5
```

# POS terminal access commands

Only the MSR 50 router supports E1POS interfaces.

POS terminal access is not available on the following routers:

- MSR 2600.
- MSR 30-11.
- MSR 30-11E.
- MSR 30-11F.
- MSR3600-51F.

## auto-connect

Use **auto connect** to enable auto establishment of a normal connection for a POS application.

Use **undo auto connect** to remove the configuration.

### Syntax

**auto-connect** *retry-interval* *minutes*

**undo auto-connect**

### Default

Auto establishment of a normal connection for a POS application is disabled.

### Views

POS application view

### Parameters

*minutes*: Specifies an auto-connect interval in the range of 1 to 1440 minutes.

### Usage guidelines

Enable this feature for the router to proactively re-establish a normal connection with the primary FEP that becomes reachable. After the normal connection for a POS application terminates, the router automatically establishes a connection for the POS application after the auto-connect interval.

### Examples

# Enable auto establishment of a normal connection for POS application 1. Specify the auto-connect interval as 1 minute.

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

```
[Sysname] posa app 1 type tcp
```

```
[Sysname-posit1] auto-connect retry-interval 1
```

## backup app

Use **backup app** to specify a backup POS application that specifies a backup front-end processor (FEP).

Use **undo backup app** to remove the backup POS application.

### Syntax

**backup app** *app-id*

**undo backup app**

## Default

No backup application is configured.

## Views

POS application view

## Default command level

2: System level

## Parameters

*app-id*: Specifies a backup POS application by its ID in the range of 1 to 1024.

## Usage guidelines

This command is applicable only to a TCP-based POS application.

The primary FEP and the specified backup FEP must serve the same POS terminal in transparent mode. Do not configure the backup FEP to serve other POS terminals in transparent mode or configure any multi-application mapping for the backup FEP.

## Examples

```
# Specify backup POS application 2 for POS application 1.  
<Sysname> system-view  
[Sysname] posa app 1 type tcp  
[Sysname-posa-app1] backup app 2
```

## Related commands

**timer quiet**

# caller-number enable

Use **caller-number enable** to enable sending of the caller number in packets sent to the FEP.

Use **undo caller-number enable** to disable sending of the caller number.

## Syntax

**caller-number enable**  
**undo caller-number enable**

## Default

Sending of the caller number is disabled.

## Views

POS application view

## Default command level

2: System level

## Usage guidelines

You can enable sending of the caller number on the POS terminal access device only when the FEP supports displaying caller numbers.

---

### NOTE:

E1POS interfaces do not support caller number sending when using R2 signaling to exchange messages.

---

## Examples

```
# Configure POS application 1 in TCP mode.
<Sysname> system-view
[Sysname] posa app 1 type tcp
# Enable sending of the caller number.
[Sysname-posa-app1] caller-number enable
```

## calling-number

Use **calling-number** to specify a negotiation parameter group to match a calling number.

Use **undo calling-number** to delete the specified or all calling numbers.

### Syntax

```
calling-number calling-number apply group-number
undo calling-number { calling-number | all }
```

### Default

no negotiation parameter group is specified to match a calling number.

### Views

e1pos-adaptor view

### Default command level

2: System level

### Parameters

*calling-number*: Calling number matching a negotiation parameter group. The calling number is a string of up to 31 characters, which can be 0 to 9, period (.), and T.

- 0 to 9 represent the numbers between 0 and 9. One number is a digit.
- A period (.) is a wildcard and can match one effective digit. For example, 555. . . . matches any number string that starts with 555 and has four digits followed.
- T indicates the timer, and means that the user can dial any number until the number is too long, the number end is dialed, or the timer expires. T is used to match a number which is of any length and starts with the string before T. For example, 555T matches any number string that starts with 555.

*group-number*: Specifies a negotiation parameter group number for a calling number and ranges from 1 to 128.

### Usage guidelines

You can specify negotiation parameter groups for up to 512 calling numbers.

In negotiation parameter group view, you can use the **negotiation** and **threshold** commands to configure negotiation parameters.

## Examples

```
# Configure calling numbers starting with 555 to match negotiation parameter group 1.
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] calling-number 555T apply 1
```

## description

Use **description** to set a description for a POS application.

Use **undo description** to delete the description.

### Syntax

**description** *text*

**undo description**

### Default

No description is set for a POS application and the POS application is displayed on the MIB management platform as a string of "app + ID," such as app1.

### Views

POS application view

### Default command level

2: System level

### Parameters

*text*: Specifies a description, a case-sensitive string of 1 to 32 characters.

### Examples

```
# Create a TCP-based POS application and set the description as ChinaBank1.
```

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

```
[Sysname] posa app 1 type tcp
```

```
[Sysname-posit-app1] description ChinaBank1
```

## display fcm statistics

Use **display fcm statistics** to display POS terminal statistics on FCM interfaces.

### Syntax

**display fcm statistics** [ **interface** *interface-type interface-number* ] [ [ { **begin** | **exclude** | **include** } *regular-expression* ]

### Views

Any view

### Default command level

1: Monitor level

### Parameters

**interface** *interface-type interface-number*: Specifies an interface. FCM interfaces and E1POS interfaces are supported. If no interface is specified, the command displays statistics for all FCM interfaces.

**]**: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

## Examples

```
# Display statistics for interface FCM 1/0.
<Sysname> display fcm statistics interface fcm1/0
Interface   TerminalID   ConnectFailed   TimedOut
fcm1/0     5            2                1
```

**Table 8 Command output**

Field	Description
Interface	POS access port, which must be an FCM interface.
TerminalID	ID of a POS terminal.
ConnectFailed	Number of dial-up negotiation failures.
TimedOut	Number of disconnections due to transaction timeouts.

## display posa statistics app

Use **display posa statistics app** to display POS application statistics.

### Syntax

```
display posa statistics app [ app-id ] [ | { begin | exclude | include } regular-expression ]
```

### Views

Any view

### Default command level

1: Monitor level

### Parameters

*app-id*: Specifies a POS application by its ID in the range of 1 to 1024.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

## Examples

```
# Display all POS application statistics.
<Sysname> display posa statistics app
AppID  Receive   Send     PktErr   DisErr   InDiscarded   OutDiscarded
1      100      50       2         2         2              3
2       60      70       0         0         0              0
3      100      10       0         0         0              0
```

**Table 9 Command output**

Field	Description
AppID	ID of a POS application.
Receive	Number of packets received.

Field	Description
Send	Number of packets sent.
PktErr	Number of packets in incorrect format.
DisErr	Number of packets failed to be distributed.
InDiscarded	Number of incoming packets discarded due to a full buffer.
OutDiscarded	Number of outgoing packets discarded due to link failures.

## display posa statistics terminal

Use **display posa statistics terminal** to display POS terminal statistics.

### Syntax

**display posa statistics terminal** [ *terminal-id* ] [ | { **begin** | **exclude** | **include** } *regular-expression* ]

### Views

Any view

### Default command level

1: Monitor level

### Parameters

*terminal-id*: Specifies a POS terminal by its ID in the range of 1 to 255.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

### Examples

# Display all POS terminal statistics.

```
<Sysname> display posa statistics terminal
```

TerminalID	Receive	Send	PktErr	MapErr	InDiscarded	OutDiscarded
1	100	50	2	2	2	5
2	60	70	0	10	0	6
3	100	100	0	0	0	3
4	3	0	0	0	0	3

**Table 10 Command output**

Field	Description
TerminalID	ID of the POS terminal.
Receive	Number of packets received.
Send	Number of packets sent.
PktErr	Number of packets in incorrect format.
MapErr	Number of packets failed to be mapped.
InDiscarded	Number of incoming packets discarded due to a full buffer.

Field	Description
OutDiscarded	Number of outgoing packets discarded due to link failures.

## display posa status app

Use **display posa status app** to display POS application state information.

### Syntax

```
display posa status app [ app-id ] [ | { begin | exclude | include } regular-expression ]
```

### Views

Any view

### Default command level

1: Monitor level

### Parameters

*app-id*: Specifies a POS application by its ID in the range of 1 to 1024.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

### Examples

```
# Display state information for all POS applications.
```

```
<Sysname> display posa status app
```

AppID	Type	Mode	Interface	IPAddr:Port	State
1	TCP	Temporary	-	192.168.7.254:1000	linked
2	Flow	-	Asyl/0	-	Down
9	TCP	Normal	-	192.168.4.1:20	Unlinked
11	TCP	Normal	-	192.4.5.5:111	Unlinked
30	TCP	Temporary	-	192.168.7.52:4000	Unlinked
31	Flow	-	-	-	-

**Table 11 Command output**

Field	Description
AppID	ID of a POS application.
Type	Connection type of a POS application: <ul style="list-style-type: none"> <li><b>Flow</b>—Asynchronous mode.</li> <li><b>TCP</b>—TCP mode.</li> </ul>
Mode	POS application mode. For the flow mode, a hyphen (-) is displayed. For the TCP mode, this field can be: <ul style="list-style-type: none"> <li><b>Normal</b>—Normal connection mode.</li> <li><b>Temporary</b>—Temporary connection mode.</li> </ul>

Field	Description
Interface	POS application interface. If no interface is configured, or the POS application is in TCP mode, a hyphen (-) is displayed.
IPAddr:Port	IP address and port number of the corresponding FEP for the POS application. If no IP address and port number are configured, or the POS application is in flow mode, a hyphen (-) is displayed.
State	<p>Connection state of the POS application.</p> <p>For the flow mode, this field can be:</p> <ul style="list-style-type: none"> <li>• <b>Up</b>—The connection has been established.</li> <li>• <b>Down</b>—The connection has been terminated.</li> </ul> <p>For the TCP mode, this field can be:</p> <ul style="list-style-type: none"> <li>• <b>Unlinked</b>—The connection has not been established.</li> <li>• <b>Blocked</b>—The TCP connection cannot be established.</li> <li>• <b>Linking</b>—The connection is being established.</li> <li>• <b>Linked</b>—The connection has been established.</li> <li>• <b>Multilink</b>—Multiple TCP connections have been established for the POS application.</li> </ul> <p>If no interface, IP addresses or port number is configured, a hyphen (-) is displayed.</p>

## display posa status tcp trade

Use **display posa status tcp trade** to display the number of TCP-based concurrent trades for all POS terminals.

### Syntax

```
display posa status tcp trade [ | { begin | exclude | include } regular-expression ]
```

### Views

Any view

### Default command level

1: Monitor level

### Parameters

**|**: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

### Examples

**#** Display the number of concurrent trades for each TCP connection on all POS terminals.

```
<Sysname> display posa status tcp trade
```

```
Max Concurrent Trades:32768
```

```
Total Current Trades: 1580
```

```
TerminalID  SocketID  Local Addr:port          Foreign Addr:port        Trade Numbers
-----
128         1         172.31.99.50:23         172.32.73.12:53710     380
```

128	2	172.31.99.50:23	172.32.73.12:53980	200
129	3	172.31.99.50:1373	172.32.73.12:7777	1000

**Table 12 Command output**

Field	Description
Max Concurrent Trades	Maximum number of concurrent trades supported for TCP connections.
Total Current Trades	Total number of current concurrent trades for TCP connections.
TerminalID	ID of the POS terminal.
SocketID	ID of the socket.
Local Addr:port	Local IP address and port number of the TCP connection.
Foreign Addr:port	Foreign IP address and port number of the TCP connection.
Trade Numbers	Number of current concurrent trades for the TCP connection.

## display posa status terminal

Use **display posa status terminal** to display POS terminal state information.

### Syntax

**display posa status terminal** [ *terminal-id* ] [ | { **begin** | **exclude** | **include** } *regular-expression* ]

### Views

Any view

### Default command level

1: Monitor level

### Parameters

*terminal-id*: Specifies a POS terminal by its ID in the range of 1 to 255.

|: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

### Examples

# Display state information for all POS terminals.

```
<Sysname> display posa status terminal
```

```
Total TCP connections :101
```

```
Total FCM connections:50
```

```
Total Flow connections:1
```

TerminalID	Type	Interface	ListenPort	State
1	TCP	-	2000	Unlinked
2	FCM	Fcm10/0:0.0	-	Down
254	TCP	-	3000	Unlinked
255	Flow	Asy1/0	-	Up

**Table 13 Command output**

Field	Description
Total TCP connections	Total number of TCP connections.
Total FCM connections	Total number of FCM connections.
Total Flow connections	Total number of flow connections.
TerminalID	ID of the POS terminal.
Type	Connection type of the POS terminal: <ul style="list-style-type: none"> <li>• <b>Flow</b>—Flow access mode.</li> <li>• <b>FCM</b>—FCM synchronous access mode.</li> <li>• <b>TCP</b>—TCP access mode.</li> </ul>
Interface	Access interface. If no interface is configured, or the POS terminal is in the TCP access mode, a hyphen (-) is displayed.
ListenPort	Listening port. If no interface is configured, or the POS terminal is in the FCM or flow access mode, a hyphen (-) is displayed.
State	Connection state of the POS terminal. For the flow or FCM access mode, this field can be: <ul style="list-style-type: none"> <li>• <b>Up</b>—The connection has been established.</li> <li>• <b>Down</b>—The connection has been terminated.</li> </ul> For the TCP access mode, this field can be: <ul style="list-style-type: none"> <li>• <b>Unlinked</b>—The connection has not been established.</li> <li>• <b>Linking</b>—The connection is being established.</li> <li>• <b>Linked</b>—The connection has been established.</li> <li>• <b>Multilink</b>—Multiple TCP connections have been established for the POS terminal.</li> </ul> If no interface is configured, a hyphen (-) is displayed.

## e1pos-adaptor

Use **e1pos-adaptor** to create the E1POS interface maintenance service and enter its view.

Use **undo e1pos-adaptor** to delete the E1POS interface maintenance service.

### Syntax

**e1pos-adaptor**

**undo e1pos-adaptor**

### Default

No E1POS interface maintenance service is configured.

### Views

System view

### Default command level

2: System level

### Examples

# Create the E1POS interface maintenance service and enter its view.

```
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor]
```

## hello interval

Use **hello interval** to enable periodical detection for the state of the corresponding FEP of the current POS application.

Use **undo hello** to disable the detection.

### Syntax

```
hello interval minutes
undo hello
```

### Default

Detection for the state of the corresponding FEP of a POS application is disabled.

### Views

POS application view

### Parameters

*minutes*: Specifies the interval for detecting the current FEP state, in the range of 1 to 1440 minutes.

### Examples

# Specify the FEP state detection interval as 10 minutes.

```
<Sysname> system-view
[Sysname] posa app 1 type tcp
[Sysname-posa-app1] hello interval 10
```

## ip

Use **ip** to configure the IP address and port number of the corresponding FEP for a POS application.

Use **undo ip** to remove the configuration.

### Syntax

```
ip ip-address port port-number
undo ip
```

### Default

No IP address or port number is specified for the POS application.

### Views

POS application view

### Default command level

2: System level

### Parameters

*ip-address*: Specifies the IP address of the FEP for the POS application in TCP mode.

*port-number*: Specifies the port number of the FEP for the POS application in TCP mode, in the range of 1 to 65535.

## Usage guidelines

You can specify a Class A, B, or C address, but not a Class D address.

Each POS application can be configured with one pair of IP address and port number only. Use the **undo ip** command to remove the existing IP address and port number before specifying the new ones for the POS application.

Configure different IP addresses and port numbers for different POS applications.

## Examples

```
# Create POS application 1 in TCP mode.
```

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

```
[Sysname] posa app 1 type tcp
```

```
# Specify the IP address and port number of the corresponding FEP for POS application 1 as 1.1.1.1 and 3000.
```

```
[Sysname-posit-app1] ip 1.1.1.1 port 3000
```

## map

Use **map** to configure a POS multi-application mapping entry.

Use **undo map** to remove the configuration.

## Syntax

```
map { { destination des-code | source src-code } * | default }
```

```
undo map { { destination des-code | source src-code } * | default }
```

## Default

No POS multi-application mapping entry is configured.

## Views

POS application view

## Default command level

2: System level

## Parameters

*des-code*: Specifies the destination address in the TPDU header of POS packets. It is a four-hexadecimal-digit string such as FFFF to identify a bank, and is generally assigned from the transaction center.

*src-code*: Specifies the originator address in the TPDU header of a POS packet. It is a string of four hexadecimal digits such as 0001 to identify a POS terminal.

**default**: Specifies a default POS application, to which packets that do not match any mappings are sent.

## Usage guidelines

The POS terminal access device matches the originator address and/or destination address in the TPDU header of a received POS packet against the configured POS mapping table. If the TPDU originator address, destination address, or combination of the two matches an entry in the POS application mapping table, the packet is sent to the POS application. If no match is found, the packet is sent to the default POS application.

A POS multi-application mapping entry maps to one POS application only.

You can configure multiple POS multi-application mapping entries for the same POS application. The entry comprising both the originator and destination addresses has the highest priority, the entry

comprising only the originator address has the medium priority, and the entry comprising only the destination address has the lowest priority.

The router supports up to 32 POS multi-application mapping entries, including the default one.

## Examples

# Configure a multi-application entry that maps packets destined for 01f1 to POS application 2.

```
<Sysname> system-view
[Sysname] posa app 2 type flow
[Sysname-posa-app2] map destination 01f1
[Sysname-posa-app2] quit
```

# Configure a multi-application entry that maps unmatched packets to default POS application 1.

```
[Sysname] posa app 1 type tcp
[Sysname-posa-app1] map default
[Sysname-posa-app1] quit
```

# Configure a multi-application entry that maps packets with originator address 0001 and destination address 0103, and packets with originator address 0002 in the TPDU header to POS application 3.

```
[Sysname] posa app 3 type flow
[Sysname-posa-app3] map source 0001 destination 0103
[Sysname-posa-app3] map source 0002
```

## mirror (e1pos-adaptor view)

Use **mirror** to mirror the PCM data of the specified calling number.

Use **undo mirror** to delete the specified or all mirror entries.

### Syntax

```
mirror number pcm calling calling-number to { local-interface interface-type
interface-number [ mac H-H-H ] | remote-ip ip-address [ port port ] }
```

```
undo mirror [ number number ]
```

### Default

PCM data is not mirrored.

### Views

e1pos-adaptor view

### Default command level

2: System level

### Parameters

**number** *number*: Specifies a mirror entry number, which ranges from 1 to 64.

**pcm**: Mirrors PCM data.

**calling** *calling-number*: Specifies the calling number whose PCM data is to be mirrored. The calling number must be exactly matched, and is a string of up to 31 characters, which must be numbers 0 through 9.

**to**: Mirrors the packets to the specified interface or IP address.

**local-interface** *interface-type interface-number*: Mirrors the PCM data of the specified calling number to an interface specified by its type and number. The interface must be a Layer 2 or Layer 3 Ethernet interface.

**mac**: Specifies the destination MAC address of the mirrored packets.

**remote-ip** *ip-address*: Mirrors the PCM data of the specified calling number to the specified IP address.

**port** *port*: Mirrors the PCM data to the specified port number, which is 60000 by default.

## Usage guidelines

Only one PCM data mirror entry can exist on a router.

## Examples

```
# Mirror the PCM data of calling number 55501234 to interface Ethernet 1/1.
```

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

```
[Sysname] elpos-adaptor
```

```
[Sysname-elpos-adaptor] mirror number 1 pcm calling 55501234 to local-interface ethernet 1/1
```

## mirror (FCM interface view)

Use **mirror** to mirror the PCM data of the specified E1POS interface channel.

Use **undo mirror** to delete the specified or all mirror entries.

## Syntax

```
mirror number number pcm channel-number to { local-interface interface-type interface-number  
[ mac H-H-H ] | remote-ip ip-address [ port port ] }
```

```
undo mirror [ number number ]
```

## Default

PCM data is not mirrored.

## Views

FCM interface view

## Default command level

2: System level

## Parameters

**number** *number*: Specifies a mirror entry number, which ranges from 1 to 64.

**pcm**: Mirrors the PCM data.

*channel-number*: Number of the E1POS interface channel whose PCM data is to be mirrored. This argument ranges from 0 to 29.

**to**: Mirrors the packets to the specified interface or IP address.

**local-interface** *interface-type interface-number*: Mirrors the PCM data of the specified E1POS interface channel to an interface specified by its type and number. The interface must be a Layer 2 or Layer 3 Ethernet interface.

**mac**: Specifies the destination MAC address (in the format of H-H-H-H) of the mirrored packets. When inputting an MAC address, you can omit the starting zeros in each section. For example, you can simply input f-e2-1 for 000f-00e2-0001.

**remote-ip** *ip-address*: Mirrors the PCM data of the specified E1POS interface channel to the specified IP address.

**port** *port*: Mirrors the PCM data to the specified port number, which is 60000 by default.

## Usage guidelines

Only one PCM data mirror entry can exist on a router.

## Examples

```
# Mirror the PCM data of channel 2 on interface FCM 1/0:15 to interface Ethernet 1/1.
<Sysname> system-view
[Sysname] interface fcm 1/0:15
[Sysname-fcm1/0:15] mirror number 1 pcm 2 to local-interface ethernet 1/1
```

## mode temporary

Use **mode temporary** to configure a POS application to operate in temporary connection mode.  
Use **undo mode** to remove the configuration.

### Syntax

```
mode temporary
undo mode
```

### Default

A POS application operates in normal connection mode.

### Views

POS application view

### Default command level

2: System level

### Usage guidelines

This command is effective for POS applications operating in TCP mode only. If you switch between normal and temporary connection modes, the TCP connections already established by the POS application are terminated.

In temporary connection mode, the router terminates the connection to the FEP when the POS transaction finishes.

## Examples

```
# Create a TCP-based POS application 1.
<Sysname> system-view
[Sysname] posa app 1 type tcp
# Configure the temporary connection mode for POS application 1.
[Sysname-posa-app1] mode temporary
```

## negotiation fast-mode

Use **negotiation fast-mode** to enable fast negotiation.  
Use **undo negotiation fast-mode** to restore the default.

### Syntax

```
negotiation fast-mode
undo negotiation fast-mode
```

### Default

Fast negotiation is not configured.

## Views

FCM interface view, negotiation parameter group view

## Default command level

2: System level

## Usage guidelines

Fast negotiation refers to fast switching from V.22 negotiation stage to SDLC negotiation stage by line tone detection. When a POS terminal that runs V.22 sends SB1, the FCM interface can quickly switch to the SDLC negotiation stage, shortening the POS calling time.

Only FIC-E1POS supports this command.

## Examples

# Enable fast negotiation for an FCM interface.

```
<Sysname>system-view
[Sysname] interface fcm 5/0:15
[Sysname-Fcm5/0:15] negotiation fast-mode
```

# Enable fast negotiation for a negotiation parameter group.

```
<Sysname > system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] parameter-group 1
[Sysname-elpos-adaptor-group1] negotiation fast-mode
```

## negotiation hookoff

Use **negotiation hookoff** to set the offhook delay time after receiving ring tones.

Use **undo negotiation hookoff** to restore the default.

## Syntax

**negotiation hookoff value**

**undo negotiation hookoff**

## Default

the offhook delay time is 500 ms.

## Views

FCM interface view, negotiation parameter group view

## Examples

# Set the offhook delay time after the FCM interface receives ring tones.

```
<Sysname>system-view
[Sysname]interface fcm 4/0
[Sysname-Fcm4/0]negotiation hookoff 2000
```

## negotiation line-quality-detect enable

Use **negotiation line-quality-detect enable** to enable line quality detection.

Use **undo negotiation line-quality-detect enable** to disable line quality detection.

## Syntax

**negotiation line-quality-detect enable**

**undo negotiation line-quality-detect enable**

### Default

Line quality detection is disabled.

### Views

FCM interface view, negotiation parameter group view

### Examples

```
# Enable line quality detection.
<Sysname >system-view
[Sysname]interface fcm 4/0
[Sysname-Fcm4/0] negotiation line-quality-detect enable
```

## negotiation no-carrier-detect retry

Use **negotiation no-carrier-detect retry** to set the times for no carrier state detection.

Use **undo negotiation no-carrier-detect retry** to restore the default.

### Syntax

```
negotiation no-carrier-detect retry value
undo negotiation no-carrier-detect retry
```

### Default

The FCM interface detects whether the line is in the no carrier state once.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Times for no carrier state detection. The value ranges from 1 to 1000.

### Examples

```
# Set the FCM interface to continuously detect whether the line is in the no carrier state for 20 times.
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation no-carrier-detect retry 20
```

## negotiation no-carrier-detect software

Use **negotiation no-carrier-detect software** to enable no carrier state detection.

Use **undo negotiation no-carrier-detect software** to disable no carrier state detection.

### Syntax

```
negotiation no-carrier-detect software
undo negotiation no-carrier-detect software
```

### Default

No carrier state detection is disabled.

### Views

FCM interface view, negotiation parameter group view

## Examples

```
# Enable no carrier state detection.
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation no-carrier-detect software
```

## negotiation rx timeout

Use **negotiation rx timeout** to set the maximum wait time for the next character.

Use **undo negotiation rx timeout** to restore the default.

### Syntax

**negotiation rx timeout** *value*

**undo negotiation rx timeout**

### Default

The maximum wait time for the next character is 2500 ms.

### Views

FCM interface view, negotiation parameter group view

## Examples

```
# Set the maximum wait time for the next character to 1000 ms.
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation rx timeout 1000
```

## negotiation scramble-binary1

Use **negotiation scramble-binary1** to set the length of time for sending scramble binary 1.

Use **undo negotiation scramble-binary1** to restore the default.

### Syntax

**negotiation scramble-binary1** *value*

**undo negotiation scramble-binary1**

### Default

The length of time for sending scramble binary 1 is 250 ms.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Length of time for sending scramble binary 1, in the range of 100 to 1500 ms.

## Examples

```
# Set the length of time for sending scramble binary 1 to 200 ms.
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation scramble-binary1 200
```

## negotiation s-frame retry

Use **negotiation s-frame retry** to set the number of retries for sending an S frame.

Use **undo negotiation s-frame retry** to restore the default.

### Syntax

**negotiation s-frame retry** *value*

**undo negotiation s-frame retry**

### Default

The number of retries for sending an S frame is 3.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Number of retries for sending an S frame, in the range of 1 to 1000.

### Examples

# Set the number of retries for sending an S frame to 20.

```
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation s-frame retry 20
```

## negotiation s-frame timeout

Use **negotiation s-frame timeout** to set the maximum wait time for a response to a sent S frame.

Use **undo negotiation s-frame timeout** to restore the default.

### Syntax

**negotiation s-frame timeout** *value*

**undo negotiation s-frame timeout**

### Default

The maximum wait time for a response to a sent S frame is 6000 ms.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Maximum wait time for a response to a sent S frame, in the range of 10 to 10000 ms.

### Examples

# Set the maximum wait time for a response to a sent S frame.

```
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation s-frame timeout 1000
```

## negotiation silence

Use **negotiation silence** to set the silence time for Modem negotiation.

Use **undo negotiation silence** to restore the default.

### Syntax

**negotiation silence** *value*

**undo negotiation silence**

### Default

The silence time is 0.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Silence time, in the range of 0 to 3000 ms.

### Examples

```
# Set the silence time to 100 ms.
<Sysname>system-view
[Sysname] interface fcm 4/0
[Sysname -Fcm4/0] negotiation silence 100
```

## negotiation txpower

Use **negotiation txpower** to enable transmit power adaptation and set the incremental value added to the transmit power based on the receive power.

Use **undo negotiation txpower** to disable transmit power adaptation.

### Syntax

**negotiation txpower** { **handshake** | **always** } *value*

**undo negotiation txpower**

### Default

Transmit power adaptation is disabled.

### Views

FCM interface view, negotiation parameter group view

### Parameters

**handshake**: Enables transmit power adaptation during V.22 handshake.

**always**: Enables transmit power adaptation during the whole process.

*value*: Incremental value added to the transmit power based on the receive power, in the range of 0 to 24 DBs.

### Examples

```
# Enable transmit power adaptation during V.22 handshake and set the incremental value to 0 DBs.
<Sysname >system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] negotiation txpower handshake 0
```

## negotiation u-frame retry

Use **negotiation u-frame retry** to set the number of retries for sending a U frame.

Use **undo negotiation u-frame retry** to restore the default.

### Syntax

**negotiation u-frame retry** *value*

**undo negotiation u-frame retry**

### Default

The number of retries for sending a U frame is 15.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Number of retries for sending a U frame, in the range of 1 to 1000.

### Examples

```
# Set the number of retries for sending a U frame to 20.
```

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

```
[Sysname] interface fcm 4/0
```

```
[Sysname-Fcm4/0] negotiation u-frame retry 20
```

## negotiation u-frame timeout

Use **negotiation u-frame timeout** to set the maximum wait time for a response to a sent U frame.

Use **undo negotiation u-frame timeout** to restore the default.

### Syntax

**negotiation u-frame timeout** *value*

**undo negotiation u-frame timeout**

### Default

The maximum wait time for a response to a sent U frame is 900 ms on an FCM interface.

### Views

FCM interface view, negotiation parameter group view

### Parameters

*value*: Maximum wait time for a response to a sent U frame, in the range of 10 to 10000 ms.

### Examples

```
# Set the maximum wait time for a response to a sent U frame to 1000 ms.
```

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

```
[Sysname] interface fcm 4/0
```

```
[Sysname-Fcm4/0] negotiation u-frame timeout 1000
```

## negotiation unscramble-binary1

Use **negotiation unscramble-binary1** to set the length of time for sending unscramble binary 1.

Use **undo negotiation unscramble-binary1** to restore the default.

### Syntax

**negotiation unscramble-binary1** *value*

## **undo negotiation unscramble-binary1**

### **Default**

The length of time for sending unscramble binary 1 is 400 ms on an FCM interface.

### **Views**

FCM interface view, negotiation parameter group view

### **Parameters**

*value*: Length of time for sending unscramble binary 1, in the range of 300 to 1500 ms.

### **Examples**

# Set the length of time for sending unscramble binary 1 to 900 ms.

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

```
[Sysname] interface fcm 4/0
```

```
[Sysname-Fcm4/0]negotiation unscramble-binary1 900
```

## negotiation V22bis

Use **negotiation v22bis** to enable V.22 BIS modem negotiation protocol.

Use **undo negotiation v22bis** to restore the default.

### **Syntax**

**negotiation v22bis**

**undo negotiation v22bis**

### **Default**

The V.22 modem negotiation protocol is enabled. The V.22 BIS modem negotiation protocol is disabled.

### **Views**

Negotiation parameter group view

### **Usage guidelines**

Only FIC-1E1POS for MSR 50 routers supports this command.

The V.22 BIS modem negotiation protocol supports a transmission rate of 2400 bps. The V.22 modem negotiation protocol supports a transmission rate of 1200 bps.

When the V.22 BIS modem negotiation protocol is enabled on the POS access device, the device automatically sets the time length for sending unscramble binary 1 to 8000 ms. The device restores the time length for sending unscramble binary 1 to its default value (400 ms) if you execute the **undo negotiation v22bis** command.

### **Examples**

# Enable the V.22 BIS modem negotiation protocol for negotiation parameter group 1.

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

```
[Sysname] elpos-adaptor
```

```
[Sysname-elpos-adaptor] parameter-group 1
```

```
[Sysname-elpos-adaptor-group1] negotiation V22bis
```

### **Related commands**

**negotiation unscramble-binary1**

## parameter auto-select

Use **parameter auto-select** to save, read, or delete automatically selected parameter groups.

### Syntax

```
parameter auto-select { save | load | remove calling-number }
```

### Views

e1pos-adaptor view

### Default command level

2: System level

### Parameters

**save**: Saves the automatically selected parameter groups to a file named **e1pos\_para.rec**.

**load**: Reads the parameter groups from the file into the router memory.

**remove *calling-number***: Removes the previous selection for a calling number to reselect a parameter group for the next call.

### Examples

```
# Save automatically selected parameter groups.
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] parameter auto-select save
```

## parameter auto-select enable

```
parameter auto-select enable
```

### Syntax

Use **parameter auto-select enable** to enable automatic selection of negotiation parameter groups.

Use **undo parameter auto-select enable** to restore the default.

### Default

Automatic selection of negotiation parameter groups is enabled.

### Views

e1pos-adaptor view

### Default command level

2: System level

### Examples

```
# Enable automatic selection of negotiation parameter groups.
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] parameter auto-select enable
```

## parameter enable

Use **parameter enable** to enable negotiation parameter selection as per calling number.

Use **undo parameter enable** to disable negotiation parameter selection as per calling number.

## Syntax

```
parameter enable
undo parameter enable
```

## Default

Negotiation parameter selection as per calling number is enabled.

## Views

e1pos-adaptor view

## Default command level

2: System level

## Examples

```
# Enable negotiation parameter selection as per calling number.
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] parameter enable
```

# parameter-group

Use **parameter-group** to create a negotiation parameter group and enter its view.

Use **undo parameter-group** to delete a negotiation parameter group.

## Syntax

```
parameter-group group-number
undo parameter-group { group-number | all }
```

## Default

No negotiation parameter group is configured.

## Views

e1pos-adaptor view

## Default command level

2: System level

## Parameters

*group-number*. Specifies a group number, in the range of 1 to 128 for manual configuration and 129 to 144 for automatic selection.

## Usage guidelines

In negotiation parameter group view, you can configure negotiation parameters by using the **negotiation** and **threshold** commands.

## Examples

```
# Create a negotiation parameter group and enter its view.
<Sysname> system-view
[Sysname] elpos-adaptor
[Sysname-elpos-adaptor] parameter-group 1
```

## posa app

Use **posa app** to create a POS application and enter its view.

Use **undo posa app** to remove the POS application.

### Syntax

```
posa app app-id type { flow | tcp }
```

```
undo posa app app-id
```

### Default

No POS application is created.

### Views

System view

### Default command level

2: System level

### Parameters

*app-id*: Specifies a POS application ID in the range of 1 to 1024.

**type**: Configures the connection mode for the POS application:

- **flow**—Indicates flow mode
- **tcp**—Indicates TCP mode

### Usage guidelines

To change the connection mode of a POS application, first remove the POS application and then re-create it with the new mode.

### Examples

```
# Create POS application 1 in flow mode.
```

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

```
[Sysname] posa app 1 type flow
```

```
# Create POS application 2 in TCP mode.
```

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

```
[Sysname] posa app 2 type tcp
```

## posa auto-stop-service enable

Use **posa auto-stop-service enable** to enable the linkage between the uplink application state and the downlink port state.

Use **undo posa auto-stop-service enable** to restore to the default.

### Syntax

```
posa auto-stop-service enable
```

```
undo posa auto-stop-service enable
```

### Default

The linkage between the uplink application state and the downlink port state is disabled.

### Views

System view

## Default command level

2: System level

## Usage guidelines

If this function is enabled, the router does the following when no POS applications are available on the FEP:

- Sets the E1 line connected to the E1POS card to the busy state.
- Shuts down the downlink TCP port.

## Examples

```
# Enable the linkage between the uplink application state and the downlink port state.
```

```
<Sysname> system-view  
[Sysname] posa auto-stop-service enable
```

# posa bind app

Use **posa bind app** to bind a POS application to a serial interface or AUX interface.

Use **undo posa bind app** to remove the binding.

## Syntax

```
posa bind app app-id
```

```
undo posa bind app
```

## Default

No POS application is bound to an interface.

## Views

Asynchronous interface view, synchronous/asynchronous interface view, AUX interface view

## Default command level

2: System level

## Parameters

*app-id*: Specifies a POS application by its ID in the range of 1 to 1024.

## Usage guidelines

Before binding a POS application to an interface, create the POS application operating in flow mode in system view.

You can use this command on an interface only when the corresponding line of the interface is not occupied by any other services.

You can use this command on a synchronous/asynchronous serial interface only when the interface operates in asynchronous mode.

You can bind only one POS application to an interface. Use the **undo posa bind app** command to remove the existing POS application before binding another application to the interface.

Bind different applications to different interfaces.

You cannot bind a POS terminal and a POS application to the same interface.

## Examples

```
# Create POS application 2 in flow mode.
```

```
<Sysname> system-view  
[Sysname] posa app 2 type flow
```

```
[Sysname-posa-app2] quit
# Bind interface Async 1/0 to POS application 2.
<Sysname> system-view
[Sysname] interface async1/0
[Sysname-Async1/0] posa bind app 2
```

## posa bind terminal

Use **posa bind terminal** to bind a POS terminal to an interface.

Use **undo posa bind terminal** to remove the binding.

### Syntax

**posa bind terminal** *terminal-id* [ **app** *app-id* ]

**undo posa bind terminal**

### Default

No POS terminal is bound to an interface.

### Views

Asynchronous interface view, synchronous/asynchronous interface view, AM interface view, FCM interface view, AUX interface view

### Default command level

2: System level

### Parameters

*terminal-id*: Specifies a POS terminal ID in the range of 1 to 255.

*app-id*: Specifies a POS application ID in the range of 1 to 1024. This parameter is used to identify the POS application to be associated with the POS terminal in transparent mode.

### Usage guidelines

You can use this command on an interface only when the corresponding line of the interface is not occupied by any other services.

You can use this command on a synchronous/asynchronous serial interface only when the interface operates in asynchronous mode.

The POS terminal bound to an FCM interface must operate in FCM access mode.

The POS terminal bound to an asynchronous interface must operate in flow mode.

You can bind only one POS terminal to an interface.

You cannot bind the same POS terminal to multiple interfaces.

You cannot bind a POS terminal and a POS application to the same interface.

The POS terminal bound to an interface cannot be switched between nontransparent mode and transparent mode.

To bind a POS terminal in transparent mode to an interface, you must create a TCP-based POS application to be associated with the POS terminal first.

In transparent mode, you can associate only one POS application with a POS terminal, but you can associate multiple POS terminals with one POS application.

### Examples

```
# Bind Async 1/0 to POS terminal 1.
[Sysname] interface async 1/0
```

```
[Sysname-Async1/0] posa bind terminal 1
```

## Related commands

**posa app**

# posa bind terminal first-terminal-id

Use **posa bind terminal first-terminal-id** to bulk-configure POS access interfaces.

Use **undo posa bind terminal** to remove the bindings between FCM interfaces and POS terminals on the current interface.

## Syntax

**posa bind terminal first-terminal-id** *first-terminal-id*

**undo posa bind terminal**

## Default

The current interface is not a POS access interface.

## Views

E1POS interface view

## Default command level

2: System level

## Parameters

*first-terminal-id*: Specifies the start terminal ID in the range of 1 to 255. This argument is used to specify the start terminal ID of the POS terminals to be bound to FCM interfaces created on the E1POS interface.

## Usage guidelines

Use this command to bind FCM interfaces on the current interface to a group of POS terminals.

The POS terminals configured in bulk do not support transparent mode.

If any of the POS terminals to be bound are not in dial-up access mode or have been bound to other interfaces, the bulk configuration fails.

If there are not enough terminal IDs, the bulk configuration fails. For example, if you specify 251 as the start terminal ID, and the current interface has more than five FCM interfaces, the bulk configuration will fail because the maximum terminal ID is 255.

## Examples

```
# Create interface FCM 2/0:15.
```

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

```
[Sysname] controller e1 2/0
```

```
[Sysname-E1 2/0] pri-set
```

```
[Sysname-E1 2/0] interface fcm 2/0:15
```

```
[Sysname-Fcm2/0:15]
```

```
# Bulk-configure FCM interfaces on the current interface as the access interfaces of POS terminals starting from POS terminal 1.
```

```
[Sysname-Fcm2/0:15] pos bind terminal first-terminal-id 1
```

# posa connection-threshold

Use **posconnection-threshold** to specify the concurrent connections threshold.

Use **undo posa connection-threshold** to restore to the default.

### Syntax

**posa connection-threshold** { **tcp** | **fcm** } *threshold-value*

**undo posa connection-threshold** { **tcp** | **fcm** }

### Default

No concurrent connections threshold is specified.

### Views

System view

### Default command level

2: System level

### Parameters

**tcp**: Specifies TCP connections.

**fcm**: Specifies FCM connections.

*threshold-value*: Specifies the concurrent connections threshold.

- For TCP connections, the value range is 1 to 4096. The default value is 4096.
- For FCM connections, the value range is 1 to 255. The default value is 255.

### Usage guidelines

After the FCM or TCP connections threshold is specified, the router generates traps when the following are met:

- The number of concurrent FCM or TCP connections exceeds the threshold.
- POS trap is enabled globally and is enabled for FCM or TCP connections threshold exceeding.

The router generates traps when FCM or TCP connections exceed the concurrent connections threshold. When concurrent FCM or TCP connections threshold exceeding events occur consecutively, the router generates traps only for the first FCM or TCP connections threshold exceeding event.

### Examples

```
# Specify the concurrent connections threshold for TCP connections as 200.
```

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

```
[Sysname] posa connection-threshold tcp 200
```

## posa fcm

Use **posa fcm** to set FCM parameters for modem negotiation.

Use **undo posa fcm** to restore the default.

### Syntax

**posa fcm** { **answer-time** *time1* | **trade-time** *time2* | **idle-time** *time3* }\*

**undo posa fcm** { **answer-time** | **trade-time** | **idle-time** }

### Views

System view

### Default command level

2: System level

## Parameters

**answer-time** *time1*: Specifies the answering time, in the range of 500 to 2000 milliseconds. The default answering time is 2000 milliseconds.

**trade-time** *time2*: Specifies the maximum transaction time in the range of 30,000 to 12,000,000 milliseconds. The default transaction time is 12,000,000 milliseconds.

**idle-time** *time3*: Specifies the maximum idle time in the range of 1 to 12000 seconds. The default idle time is 180 seconds.

## Usage guidelines

In POS access implementations, the modem on the router usually serves as the called party, and the built-in modem in the POS terminal serves as the calling party. In a basic modem communication, the POS terminal originates a call to the called party, which answers and sends an answer tone to the POS terminal after detecting the calling signal. After the POS terminal receives the answer tone, both parties begin modem negotiation (V.22). For a system with poor network quality, a short answer tone may cause a modem negotiation failure. If the interface goes up and down, without data being transmitted or received, you need to enlarge the value of **answer-time**.

To improve the utilization of the POS access interface, and to avoid a POS terminal occupying for a long time, manage individual transaction times by configuring parameters **trade-time** and **idle time**. If the maximum transaction time or the maximum idle time is exceeded, the router actively disconnects the corresponding POS terminal to release the resource.

Generally, the default values of FCM parameters can satisfy the application demands. In specific occasions, you may want to customize these parameters.

## Examples

```
# Change answer-time to 800 milliseconds, trade-time to 20 minutes (that is, 1,200,000 milliseconds), and idle-time to 6 seconds.
```

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

```
[Sysname] posa fcm answer-time 800 trade-time 1200000 idle-time 6
```

## posa server enable

Use **posa server enable** to enable the POS access server.

Use **undo posa server enable** to restore the default.

## Syntax

**posa server enable**

**undo posa server enable**

## Default

The POS access server is disabled.

## Views

System view

## Default command level

2: System level

## Usage guidelines

To implement POS access, first enable the POS access server.

## Examples

```
# Enable the POS access server.
```

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

```
[Sysname] posa server enable
```

## posa statistics caller-id

Use **posa statistics caller-id** to add a caller number statistical item. The router counts the packets exchanged between the POS terminal and the FEP for the caller number.

Use **undo posa statistics caller-ip** to remove a caller number.

### Syntax

```
posa statistics caller-id caller-number
```

```
undo posa statistics caller-id caller-number
```

### Views

System view

### Default command level

2: System level

### Parameters

*caller-number*. Specifies a caller number, a string of 1 to 64 characters.

### Usage guidelines

This feature only applies to POS terminals not using TCP.

### Examples

```
# Add a statistical item for caller number 01012345678 to count the packets between the POS terminal and the FEP.
```

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

```
[Sysname] posa statistics caller-id 01012345678
```

## posa statistics caller-ip

Use **posa statistics caller-ip** to create a source IP group. The source IP group specifies a source IP segment.

Use **undo posa statistics caller-ip** to remove the specified source IP group.

### Syntax

```
posa statistics caller-ip group-id ip-address ip-mask
```

```
undo posa statistics caller-ip group-id
```

### Views

System view

### Default command level

2: System level

### Parameters

*group-id*: Specifies an ID for the source IP group, in the range of 1 to 64.

*ip-address*: Specifies a source IP address or source IP segment in dotted decimal format.

*ip-mask*: Specifies a mask in dotted decimal format.

### Usage guidelines

The router counts POS terminal packets sourced from the specified IP segment.

This feature only applies to POS terminals using TCP.

Source IP groups can overlap each other or be the same, but their group numbers must be different.

## Examples

```
# Create source IP group 1 so that the router will count the packets that are sourced from the IP
segment 10.0.1.0/24.
<Sysname> system-view
[Sysname] posa statistics caller-ip 1 10.0.1.0 255.255.255.0
```

## posa tcp trade-limit

Use **posa tcp trade-limit** to specify the maximum number of concurrent trades for each TCP connection.

Use **undo posa tcp trade-limit** to restore to the default.

### Syntax

```
posa tcp trade-limit threshold-value
```

```
undo posa tcp trade-limit
```

### Default

The maximum number of concurrent trades for each TCP connection is 0, which indicates that no maximum number limit is set.

### Views

System view

### Default command level

2: System level

### Parameters

*threshold-value*: Specifies maximum number of concurrent trades for each TCP connection, in the range of 0 to 32768.

### Usage guidelines

The router discards the trade packets received from a TCP connection of a POS terminal when the number of the trades on that TCP connection exceeds the specified limit.

## Examples

```
# Specify the number of concurrent trades for each TCP connection as 1024.
<Sysname> system-view
[Sysname] posa tcp trade-limit 1024
```

## posa tcp trade-timeout

Use **posa tcp trade-timeout** to specify the timeout time for each TCP-based trade.

Use **undo posa tcp trade-timeout** to restore to the default.

### Syntax

```
posa tcp trade-timeout threshold-value
```

```
undo posa tcp trade-timeout
```

## Default

The timeout time for each TCP-based trade is 240.

## Views

System view

## Default command level

2: System level

## Parameters

*threshold-value*: Specifies the timeout time for each TCP-based trade, in the range of 0 to 240 seconds. A value of 0 indicates that no timeout time is specified for a trade.

## Usage guidelines

A trade times out if the router receives trade data from a POS terminal but it does not receive a reply from a POS application during the timeout time. The router discards the reply packet that is received after the timeout time.

## Examples

```
# Specify the timeout time for each trade as 120 seconds.
<Sysname> system-view
[Sysname] posa tcp trade-timeout 120
```

# posa terminal description

Use **posa terminal *terminal-id* description** to set a description for a POS terminal.

Use **undo posa terminal *terminal-id* description** to delete the POS terminal description.

## Syntax

```
posa terminal terminal-id description text
undo posa terminal terminal-id description
```

## Default

No description is set for a POS terminal, and on the management information base (MIB) platform, a POS terminal is displayed as a string of "terminal + ID", such as "terminal1."

## Views

System view

## Default command level

2: System level

## Parameters

*terminal-id*: Specifies a terminal by ID in the range of 1 to 255.

*text*: Specifies a description, a case-sensitive string of 1 to 32 characters.

## Usage guidelines

You can set a description before creating the POS terminal. The description is deleted after you delete the POS terminal.

## Examples

```
# Set the description of POS terminal 1 as "shopping1."
<Sysname> system-view
[Sysname] posa terminal 1 description shopping1
```

## posa terminal type

Use **posa terminal** to create a POS terminal in TCP access mode.

Use **undo posa terminal** to delete the specified POS terminal.

### Syntax

```
posa terminal terminal-id type tcp listen-port port idle-time time  
undo posa terminal terminal-id
```

### Default

No POS terminal in TCP access mode is created.

### Views

System view

### Default command level

2: System level

### Parameters

*terminal-id*: Specifies a POS terminal ID in the range of 1 to 255.

**type tcp**: Specifies TCP mode.

**listen-port** *port*: Specifies a listening port number in the range of 1 to 65535.

*time*: Specifies the TCP connection idle timeout in the range of 0 to 1440 minutes.

### Usage guidelines

Listening ports specified for TCP access terminals must not conflict.

When the idle timer for a TCP connection times out, the downstream interface automatically removes the TCP connection.

### Examples

```
# Create POS terminal 1 in TCP mode, and specify 3000 as its listening port number.
```

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

```
[Sysname] posa terminal 1 type tcp listen-port 3000
```

## posa tpdu-replace

Use **posa tpdu-replace** to replace TPDU destination addresses with the specified destination address.

Use **undo posa tpdu-replace** to restore the default.

### Syntax

```
posa tpdu-replace match terminal { terminal-id | any } destination { des-code | any } to des-code  
undo posa tpdu-replace match terminal { terminal-id | any } [ destination { des-code | any } ]
```

### Default

No TPDU destination address is replaced.

### Views

system view

### Parameters

*terminal-id*: Specifies the ID of a POS terminal template.

**terminal any:** Specifies any POS terminal template.

**destination *des-cod*:** Specifies the destination address in a TPDU.

**destination any:** Specifies any TPDU destination address.

**to *des-code*:** Specifies the destination address that replaces the TPDU destination address.

## Usage guidelines

Terminal templates specified by IDs have priority over unspecified terminal templates.

The specified TPDU destination address has priority over any unspecified TPDU destination address.

The POS access device uses the original TPDU destination address to reply the POS terminal.

You can configure 16 replace policies at most for each POS terminal.

## Examples

```
# Replace the destination address of TPDU destined for 0002 from terminal 1 with 0003.
```

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

```
[Sysname] posa tpdu-replace match terminal 1 destination 0002 to 0003
```

```
# Replace the destination addresses of all received TPDU with 0003.
```

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

```
[Sysname] posa tpdu-replace match terminal any destination any to 0003
```

## posa trap

Use **posa trap** to enable a POS trap.

Use **undo posa trap** to disable a POS trap.

## Syntax

```
posa trap { app-state-change | fcm-link-failure | fcm-physical-failure | server-state-change | terminal-hangup | fcm-connection-exceed | tcp-connection-exceed | tcp-trade-exceed }
```

```
undo posa trap { app-state-change | fcm-link-failure | fcm-physical-failure | server-state-change | terminal-hangup | fcm-connection-exceed | tcp-connection-exceed | tcp-trade-exceed }
```

## Default

All POS traps are enabled.

## Views

System view

## Default command level

2: System level

## Parameters

**app-state-change:** Enables trap for POS application state changes.

**fcm-link-failure:** Enables trap for FCM link layer negotiation failures.

**fcm-physical-failure:** Enables trap for FCM physical layer negotiation failure.

**server-state-change:** Enables trap for POS access service state changes.

**terminal-hangup:** Enables trap for POS terminal automatic hang-ups.

**fcm-connection-exceed:** Enables trap for FCM connections threshold exceeding.

**tcp-connection-exceed:** Enables trap for TCP connections threshold exceeding.

**tcp-trade-exceed:** Enables trap for TCP-based trades limit exceeding.

## Usage guidelines

This command takes effect only when the trap function for POS access is enabled globally.

## Examples

```
# Disable trap for FCM physical layer negotiation failures.  
<Sysname> system-view  
[Sysname] undo posa trap fcm-physical-failure
```

## Related commands

**snmp-agent trap enable posa**

# reset fcm

Use **reset fcm** to clear statistics for FCM interfaces.

## Syntax

```
reset fcm statistics [ interface interface-type interface-number ]
```

## Views

User view

## Default command level

1: Monitor level

## Parameters

**interface** *interface-type interface-number*: Specifies an interface. FCM interfaces and E1POS interfaces are supported. If no interface is specified, the command clears statistics for all FCM interfaces.

## Examples

```
# Clear statistics for all FCM interfaces.  
<Sysname> reset fcm statistics
```

## Related commands

**display fcm**

# reset posa

Use **reset posa** to clear statistics for a POS application or terminal.

## Syntax

```
reset posa statistics [ app [ app-id ] ] [ terminal [ terminal-id ] ]
```

## Views

User view

## Default command level

1: Monitor level

## Parameters

*app-id*: Specifies a POS application by its ID in the range of 1 to 1024.

*terminal-id*: Specifies a POS terminal by its ID in the range of 1 to 255.

## Usage guidelines

This command clears the statistics that are displayed with the **display posa statistics app** and **display posa statistics terminal** commands. The statistics counters wrap around to 0.

## Examples

```
# Clear all statistics.  
<Sysname> reset posa statistics
```

## Related commands

- **display posa statistics app**
- **display posa statistics terminal**

# reset posa connection

Use **reset posa connection** to clear TCP connections for a POS application.

## Syntax

```
reset posa connection terminal tcp [ source-ip | destination-ip | destination-port ]
```

## Views

User view

## Default command level

1: Monitor level

## Parameters

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

*destination-ip*: Specifies a destination IP address.

*destination-port*: Specifies a destination port in the range of 1 to 65535.

## Usage guidelines

If no IP address or destination port is specified, the command clears TCP connections for all POS applications.

## Examples

```
# Clear TCP connections for all POS terminals.  
<Sysname> reset posa connection terminal tcp
```

# snmp-agent trap enable posa

Use **snmp-agent trap enable posa** to enable the trap function for POS terminal access.

Use **undo snmp-agent trap enable posa** to disable the trap function.

## Syntax

```
snmp-agent trap enable posa
```

```
undo snmp-agent trap enable posa
```

## Default

The trap function for POS terminal access is enabled.

## Views

System view

## Default command level

2: System level

## Usage guidelines

The router can generate traps only after you enable trap for POS terminal access.

## Examples

```
# Enable the trap function for POS terminal access.
<Sysname> system-view
[Sysname] snmp-agent trap enable posa
```

## Related commands

**posa trap**

# source-ip

Use **source-ip** to specify a source address for TCP connections.

Use **undo source-ip** to remove the configuration.

## Syntax

```
source-ip ip-address
undo source-ip
```

## Default

No source address is specified.

## Views

POS application view

## Default command level

2: System level

## Parameters

*ip-address*: IP address.

## Usage guidelines

You can specify a Class A, B, or C address, but not a Class D address.

The **source-ip** command takes effect for new TCP connections.

## Examples

```
# Create POS application 1 in TCP mode.
<Sysname> system-view
[Sysname] posa app 1 type tcp

# Specify the source address for POS application 1 as 1.1.1.1.
[Sysname-posa-appl] source-ip 1.1.1.1
```

# source-port

Use **source-port** to specify a source port number for TCP connections. The router must use the specified source port number to establish a TCP connection with the FEP.

Use **undo source-port** to remove the configuration.

## Syntax

**source-port** *port-number*

**undo source-port**

## Default

No source port number is specified for TCP connections and the POS application uses an available port number randomly assigned by the system to establish a TCP connection with the FEP.

## Views

POS application view

## Default command level

2: System level

## Parameters

*port-number*. Specifies a source port number, in the range of 4000 to 4999.

## Usage guidelines

A POS application in temporary connection mode does not support this command.

When using this command, you must specify a port number that is not assigned to any other POS applications.

The **source-port** command takes effect for new TCP connections.

## Examples

```
# Configure TCP-based POS application 1.
<Sysname> system-view
[Sysname] posa app 1 type tcp
# Specify the source port number for POS application 1 as 4001.
[Sysname-posit-app1] source-port 4001
```

# tcp keepalive

Use **tcp keepalive** to configure TCP keepalive parameters for a POS application. The router sends keepalive packets to the FEP to maintain the connection.

Use **undo tcp keepalive** to restore the default.

## Syntax

**tcp keepalive interval** *time* **count** *counts*

**undo tcp keepalive**

## Default

Keepalive packets are sent every 2 seconds, and the router tears down the TCP connection to the POS application if no reply is received during three sending intervals.

## Views

POS application view

## Default command level

2: System level

## Parameters

**interval** *time*: Specifies the keepalive interval in the range of 1 to 7200 seconds. The default is 2 seconds.

**count** *counts*: Specifies the keepalive number in the range of 2 to 100. The default is 3. The timeout time is the keepalive interval multiplied by the keepalive number. If no reply is received before the timeout timer expires, the router tears down the TCP connection.

## Examples

```
# Configure TCP-based POS application 1.
```

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

```
[Sysname] posa app 1 type tcp
```

```
# Configure the keepalive interval as 100 seconds and the keepalive number as 4 for POS application 1.
```

```
[Sysname-posit] tcp keepalive interval 100 count 4
```

## tcp linking-time

Use **tcp linking-time** to configure the maximum TCP linking time for a POS application, which is the maximum time that the POS application can stay in TCP linking state.

Use **undo tcp linking-time** to restore the default.

### Syntax

```
tcp linking-time time
```

```
undo tcp linking-time
```

### Default

The maximum TCP linking time is 20 seconds.

### Views

POS application view

### Default command level

2: System level

### Parameters

*time*: Specifies the maximum TCP linking time in the range of 1 to 20 in seconds.

## Examples

```
# Configure the maximum TCP linking time for POS application 1 as 10 seconds.
```

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

```
[Sysname] posa app 1 type tcp
```

```
[Sysname-posit] tcp linking-time 10
```

## terminal-ip append

Use **terminal-ip append** to enable sending of caller IP addresses.

Use **undo terminal-ip append** to disable sending of caller IP addresses.

### Syntax

```
terminal-ip append
```

```
undo terminal-ip append
```

### Default

Sending of caller IP addresses is disabled.

## Views

POS application view

## Default command level

2: System level

## Usage guidelines

This function is supported only when the POS terminals access the router in TCP mode.

When enabling this function, make sure the FEP supports the caller IP address display function.

To enable sending of caller IP addresses in cascade mode, execute this command on the router directly connected to the FEP.

## Examples

```
# Create POS application 1 in TCP mode.
<Sysname> system-view
[Sysname] posa app 1 type tcp

# Enable sending of caller IP addresses.
[Sysname-posit1] terminal-ip append
```

# threshold answer-tone

Use **threshold answer-tone** to set the answer tone power gain.

Use **undo threshold answer-tone** to restore the default.

## Syntax

```
threshold answer-tone value
undo threshold answer-tone
```

## Default

The answer tone power gain is -20 dBm on the E1POS module and -9 dBm on the FCM module.

## Views

FCM interface view

## Parameters

*value*: Specifies the answer tone power gain, in the range of 1 to 42 -dBm.

## Examples

```
# Specifies the answer tone power gain for FCM 4/0 as -12 dBm.
<Sysname> system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] threshold answer-tone 12
```

# threshold rlsdoff

Use **threshold rlsdoff** to set the set the minimum strength value of incoming signals that can be received.

Use **undo threshold rlsdoff** to restore the default.

## Syntax

```
threshold rlsdoff value
```

## **undo threshold rlsdoff**

### **Default**

The minimum strength value of incoming signals that can be received is –48 dBm..

### **Views**

FCM interface view

### **Parameters**

*value*: Specifies the minimum strength value of incoming signals that can be received, in the range of 0 to 75 –dBm.

### **Examples**

# Specifies the minimum strength value of incoming signals that can be received for FCM 4/0 as –50 dBm.

```
<Sysname> system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] threshold rlsdoff 50
```

## threshold rlsdon

Use **threshold rlsdon** to set the maximum strength value of incoming signals that can be received.

Use **undo threshold rlsdon** to restore the default.

### **Syntax**

**threshold rlsdon** *value*

**undo threshold rlsdon**

### **Default**

The maximum strength value of incoming signals that can be received is –43 dBm.

### **Views**

FCM interface view

### **Parameters**

*value*: Specifies the maximum strength value of incoming signals that can be received, in the range of 0 to 75 –dBm.

### **Examples**

# Specifies the maximum strength value of incoming signals that can be received for FCM 4/0 as –45 dBm.

```
<Sysname> system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] threshold rlsdon 45
```

## threshold txpower

Use **threshold txpower** to set the transmit power gain.

Use **undo threshold txpower** to restore the default.

### **Syntax**

**threshold txpower** *value*

## **undo threshold txpower**

### **Default**

The transmit power gain is –18 dBm on the E1POS module and –10 dBm on the FCM module.

### **Views**

FCM interface view

### **Parameters**

*value*: Specifies the transmit power gain, in the range of 1 to 42 –dBm.

### **Examples**

# Specifies the modem negotiation transmission power threshold for FCM 4/0 as –11 dBm.

```
<Sysname> system-view
[Sysname] interface fcm 4/0
[Sysname-Fcm4/0] threshold txpower 11
```

## timer quiet

Use **timer quiet** to set the quiet timer for a POS application.

Use **undo timer quiet** to restore the default.

### **Syntax**

```
timer quiet time
undo timer quiet
```

### **Default**

The quiet time is 600 seconds.

### **Views**

POS application view

### **Parameters**

*time*: Specifies the quiet time in the range of 10 to 600 minutes.

### **Usage guidelines**

When a POS terminal launches a transaction, the router tries to establish a TCP connection with the primary or backup FEP. If the FEP is unreachable, the router places the FEP to blocked state and starts the quiet timer. Before the timer expires, the router does not send packets to the FEP. After the timer times out, the router places the FEP to non-blocked state and can interact with the FEP.

This command is applicable only to a TCP-based POS application.

The quiet timer is valid only when a backup application is configured for the POS application.

You can set the quiet timer for both the primary and backup FEPs.

### **Examples**

# Set the quiet timer for POS application 1 to 500 minutes.

```
<Sysname> system-view
[Sysname] posa app 1 type tcp
[Sysname-posa-appl] timer quiet 500
```

### **Related commands**

**backup app**

# tpdu-change

Use **tpdu-change** to configure the TPDU address change policy. The router uses the policy to change either the TPDU source or destination addresses of packets before sending them to FEPs.

Use **undo tpdu-change** to remove the configuration.

## Syntax

```
tpdu-change { destination | source }
```

```
undo tpdu-change
```

## Default

The router changes the TPDU source address.

## Views

POS application view

## Default command level

2: System level

## Parameters

**destination**: Changes the TPDU destination addresses of packets.

**source**: Changes the TPDU source addresses of packets.

## Usage guidelines

The TPDU address change policy can either change the originator or destination TPDU address, but not both. The later configuration overwrites the previous one.

FEPs require the change of either the originator or destination address in the TPDU field. Determine the TPDU address change policy according to the requirements of FEPs.

## Examples

# Configure the router to change the TPDU destination address of packets sent to the FEP that corresponds to POS application 1.

```
<Sysname> system-view  
[Sysname] posa app 1 type tcp  
[Sysname-posit-1] tpdu-change destination
```

# IP terminal access configuration commands

## authentication-mode

Use **authentication-mode** to set IP terminal access authentication for a service.

### Syntax

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

### Default

No IP terminal access authentication is configured for a service.

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

**none**: No authentication.

**password**: Password authentication.

**scheme**: AAA scheme authentication.

### Usage guidelines

The setting can be configured while the service is running but does not take effect until the next login.

### Examples

```
# Set the password authentication mode for the cunkuan service.
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] authentication-mode password

# Set the AAA scheme authentication mode for the cunkuan service.
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] authentication-mode scheme
```

### Related commands

**set authentication password**

## bind vpn-instance

Use **bind vpn-instance** to bind a VPN instance to a terminal.

Use **undo bind vpn-instance** to remove the binding.

### Syntax

```
bind vpn-instance vpn-name
```

```
undo bind vpn-instance
```

## Default

No VPN is bound to a terminal by default.

## Views

Terminal view

## Default command level

2: System level

## Parameters

*vpn-name*: Specifies an MPLS L3VPN by its name, a case sensitive string of 1 to 31 characters.

## Usage guidelines

Use this command to bind a VPN instance to a terminal so the terminal can access servers in the VPN.

## Examples

```
# Bind Terminal 1 to VPN 1.
<Sysname> system-view
[Sysname] ipsta terminal 1
[Sysname-terminal-1] bind vpn-instance vpn1
```

# display ipsta

Use **display ipsta** to display IP terminal access information.

## Syntax

```
display ipsta { status | statistics } { service [ service-name ] | terminal [ tyid [ service service-name ] ] } [ | { begin | exclude | include } regular-expression ]
```

## Views

Any view

## Default command level

0: Visit level.

## Parameters

**status**: Displays IP terminal access status information.

**statistics**: Displays IP terminal access statistics.

**service** [ *service-name* ]: Displays IP terminal access information about the service. The service name is a string of 1 to 15 case-insensitive characters, and can include spaces.

**terminal** [ *tyid* [ **service** *service-name* ] ]: Displays IP terminal access information about the terminal. The *tyid* is the number of the terminal, in the range of 0 to 255. The option **terminal** *tyid* **service** *service-name* displays IP terminal access information about the specified service on the specified terminal.

[ ]: Filters command output by specifying a regular expression. For more information about regular expressions, see *Fundamentals Configuration Guide*.

**begin**: Displays the first line that matches the specified regular expression and all lines that follow.

**exclude**: Displays all lines that do not match the specified regular expression.

**include**: Displays all lines that match the specified regular expression.

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

## Examples

# Displays IP terminal access status information about the cunkuan service.

```
<Sysname> display ipta status service cunkuan
Service name: cunkuan
  listen port: 2049
  First server IP: 192.168.0.24    Port: 9011    Status: ACTIVE
  Second server IP: 192.168.0.25  Port: 9011    status: INACTIVE
  Third server IP: 0.0.0.0        Port: 0       status: INACTIVE
  Idle-timeout disconnect: 300 second(s)
Idle-timeout lock: 100 second(s)
  Encrypt algorithm: aes
  Source ip: 6.6.6.6
  Authentication mode: Scheme
  TTY-ID IP:Port                Server IP:Port                Status
  41     192.168.0.168:6058      192.168.0.24:9011            WaitingPwd
  42     192.168.0.12:8524       192.168.0.24:9011            WaitingUserName
  43     192.168.0.46:8462       192.168.0.24:9011            Normal
  56     192.168.0.58:7452       192.168.0.24:9011            MatchingHotKey
```

**Table 14 Command output**

Field	Description
Source ip	Source IP address bound to the service.
TTY-ID	Number of a terminal.
Status	Status of the connection to a terminal: <ul style="list-style-type: none"> <li>• <b>WaitingUserName</b>—Waiting for the username from the terminal.</li> <li>• <b>WaitingPwd</b>—Waiting for the password from the terminal.</li> <li>• <b>WaitingAuthReply</b>—Waiting for the authentication reply from the terminal.</li> <li>• <b>Normal</b>—Connection to the terminal established.</li> <li>• <b>MatchingHotKey</b>—Matching hotkeys from the terminal.</li> </ul>

# Display IP terminal access information about Terminal 41.

```
<Sysname> display ipta status terminal 41
Terminal ID = 41
  IP = 192.168.0.168    MAC = 1-1-1
  Telnet negotiation = enable
  transform enter = crlf
  Service name  LsnPort  IP:Port                Status                Authentication
  cunkuan      2049      192.168.0.24:9011      WaitingUserName      SCHEME
  duigong      4096      192.168.0.32:9012      Normal                PASSWORD
  waihui       5000      192.168.0.56           MatchingHotKey        NONE
```

**Table 15 Command output**

Field	Description
transform enter	Both CR and CRLF are transformed to CRLF.

# Display IP terminal access statistics about the cunkuan service.

```
<Sysname> display ipta statistics service cunkuan
```

```

Service name : cunkuan
Total:
  From Terminal:    0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Terminal:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  From Server:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Server:       0(Bytes)    0(Packets)    (Last Time)00:00:00
TTY-ID = 41 IP = 192.168.0.168
  From Terminal:    0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Terminal:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  From Server:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Server:       0(Bytes)    0(Packets)    (Last Time)00:00:00
TTY-ID = 43 IP = 192.168.0.167
  From Terminal:    0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Terminal:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  From Server:     0(Bytes)    0(Packets)    (Last Time)00:00:00
  To Server:       0(Bytes)    0(Packets)    (Last Time)00:00:00

```

## encryption algorithm

Use **encryption algorithm** to enable data encryption using the specified encryption algorithm.

Use **undo encryption algorithm** to restore the default.

### Syntax

**encryption algorithm { aes | quick }**

**undo encryption algorithm**

### Default

Data encryption is not enabled.

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

**aes**: Specifies the AES 128-bit encryption algorithm.

**quick**: Specifies the quick encryption algorithm, a proprietary algorithm.

### Usage guidelines

This command only affects newly established connections.

This command only applies to TTY terminal access.

The strength of the encryption algorithms specified in this command is not high. H3C recommends that you use SSH terminal access if high strength data encryption is needed.

### Examples

# Specify the AES encryption algorithm for the cunkuan service.

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

```
[Sysname] ipa service cunkuan
```

```
[Sysname-ipa-service-cunkuan] encryption algorithm aes
```

```
Info: The configuration will be valid only when service type is TTY.
```

# filter flow-control character

Use **filter flow-control character** to enable filtering of flow control characters.

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

## Syntax

**filter flow-control character**

**undo filter flow-control character**

## Default

Filtering of flow control characters is disabled.

## Views

Terminal view

## Default command level

2: System level

## Parameters

None.

## Usage guidelines

The **filter flow-control character** command only filters control characters 0x11 and 0x13 carried in data flows sent from terminals to the FEP. The characters deliver the following functions:

- **0x13**—Enables flow control.
- **0x11**—Disables flow control.

An access device forwards flow control character strings received from terminals to the FEP. If the FEP receives a packet that contains flow control characters 0x13 and 0x11, the FEP enables flow control only. As a result, the FEP stops sending data to the corresponding terminal, and the display pauses until you disable flow control by pressing the shortcut key. To prevent the error, configure this command to filter flow control characters out of the data received from terminals.

## Examples

```
# Enable filtering of flow control characters 0x11 and 0x13 carried in received data.
```

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

```
[Sysname] ip terminal 1
```

```
[Sysname-ip-terminal-1] filter flow-control character
```

# ip

Use **ip** to specify the terminal's IP-to-MAC binding.

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

Use **undo mac** to remove the binding.

## Syntax

**ip** *ip-address* [ **mac** *mac-address* ]

**undo** { **ip** | **mac** }

## Default

No IP-to-MAC binding is specified on the terminal.

## Views

Terminal view

## Default command level

2: System level

## Parameters

*ip-address*: Specifies the IP address of the terminal in dotted decimal format.

**mac** *mac-address*: Specifies the MAC address of the terminal in H-H-H format.

## Usage guidelines

To modify the IP address of a binding, use the **ip** *ip-address* command. To modify the MAC address of a binding, use the **ip** *ip-address* **mac** *mac-address* command.

When a binding is specified for a terminal, the terminal must use the IP and MAC addresses to log in successfully.

If terminals connect to the router through intermediate Layer 3 network devices, do not bind MAC addresses for the terminals, because the MAC addresses contained in the packets arriving at the router are not those of the terminals.

## Examples

```
# Bind IP address 1.1.1.2 to MAC address 00e0-fc04-1234 for Terminal 1.
```

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

```
[Sysname] ipta terminal 1
```

```
[Sysname-ipa-terminal-1] ip 1.1.1.2 mac 00e0-fc04-1234
```

## ipta bind

Use **ipta bind** to specify a MAC address or string for authentication with the server.

Use **undo ipta bind** to remove the configuration.

## Syntax

```
ipta bind { mac-address interface interface-type interface-number | string string }
```

```
undo ipta bind
```

## Default

No authentication is performed between the access router and server.

## Views

System view

## Default command level

2: System level

## Parameters

**mac-address** **interface** *interface-type interface-number*: Uses the MAC address of the specified interface for authentication.

**string** *string*: Uses the specified string of 1 to 30 characters for authentication.

## Usage guidelines

During authentication, the router sends the specified MAC address or string to the server, which compares it with the locally configured one. If they match, the router passes the authentication. If not, the server disconnects from the router.

This command only applies to TTY terminal access.

## Examples

# Use the MAC address of Ethernet 1/1 for authentication.

```
<Sysname> system-view
[Sysname] ipa bind mac-address interface ethernet 1/1
Info: The configuration will be valid only when service type is TTY.
```

# Use the string abc for authentication.

```
<Sysname> system-view
[Sysname] ipa bind string abc
Info: The configuration will be valid only when service type is TTY.
```

## ipta bind vpn-instance

Use **ipta bind vpn-instance** to bind terminals to a VPN.

Use **undo ipa bind vpn-instance** to remove the binding.

### Syntax

```
ipta bind vpn-instance vpn-name terminal ttyid-list
undo ipa bind vpn-instance terminal ttyid-list
```

### Default

No terminal-VPN binding is configured.

### Views

System view

### Default command level

2: System level

### Parameters

*vpn-name*: Specifies an MPLS L3VPN by its name, a case sensitive string of 1 to 31 characters.

*ttyid-list*: Specifies up to 10 lists of terminals. A *ttyid* is a terminal number in the range of 0 to 255.

### Usage guidelines

Use this command to bind terminals to a VPN so the terminals can access servers in the VPN.

The configuration made by this command is delivered to the views of the specified terminals. To bind newly added terminals to a VPN, execute this command again.

## Examples

# Bind terminals 1 through 20, 25, and 30 through 50 to VPN 1

```
<Sysname> system-view
[Sysname] ipa bind vpn-instance vpn1 terminal 1 to 20 25 30 to 50
```

## ipta disconnect

Use **ipta disconnect** to manually tear down TCP connections for IP terminal access.

### Syntax

```
ipta disconnect { all | service service-name | terminal ttyid [ service service-name ] }
```

## Views

System view

## Default command level

2: System level

## Parameters

**all**: Disconnects all IP terminal access TCP connections.

**service** *service-name*: Disconnects IP terminal access TCP connections for the specified service. The service name is a string of 1 to 15 case-insensitive characters that can include spaces.

**terminal** *tyid* [ **service** *service-name* ]: Disconnects IP terminal access TCP connections for the specified terminal. A *tyid* is a terminal number in the range of 0 to 255. The option **terminal** *tyid* **service** *service-name* disconnects IP terminal access TCP connections for the specified service on the specified terminal.

## Examples

# Disconnect all IP terminal access TCP connections.

```
<Sysname> system-view  
[Sysname] ipta disconnect all
```

# Disconnect the IP terminal access TCP connections of the cunkuan service.

```
<Sysname> system-view  
[Sysname] ipta disconnect service cunkuan
```

# Disconnect the IP terminal access TCP connections of Terminal 10.

```
<Sysname> system-view  
[Sysname] ipta disconnect terminal 10
```

# Disconnect the IP terminal access TCP connections of the cunkuan service of Terminal 10.

```
<Sysname> system-view  
[Sysname] ipta disconnect terminal 10 service cunkuan
```

# ipta lock-key

Use **ipta lock-key** to specify IP terminal lock hotkeys.

Use **undo ipta lock-key** to remove all IP terminal lock hotkeys

## Syntax

**ipta lock-key** *ascii-code*&<1-3>

**undo ipta lock-key**

## Default

No IP terminal lock hotkeys are set.

## Views

System view

## Default command level

2: System level

## Parameters

*ascii-code*&<1-3>: Specifies the ASCII value of a terminal lock hotkey, in the range of 0 to 255. The &<1-3> means that you can specify up to three terminal lock hotkeys.

## Usage guidelines

The specified IP terminal lock hotkeys cannot be identical to other hotkeys on the router and the server to avoid conflicts. For example, do not use hotkeys 17 and 19, which are flow control hotkeys of Linux.

The specified IP terminal lock hotkeys are not effective for terminals using a service that has been configured with the **none** authentication mode.

## Examples

```
# Configure lock hotkey 27 for all terminals.
<Sysname> system-view
[Sysname] ipta lock-key 27
```

## Related commands

**authentication-mode**

# ipta server enable

Use **ipta server enable** to enable IP terminal access.

Use **undo ipta server enable** to disable IP terminal access.

## Syntax

**ipta server enable**

**undo ipta server enable**

## Views

System view

## Default command level

2: System level

## Usage guidelines

IP terminal access is disabled by default.

## Examples

```
# Enable IP terminal access.
<Sysname> system-view
[Sysname] ipta server enable
```

# ipta service

Use **ipta service** to create an IP terminal access service and enter its view, or to enter IP terminal access service view if the service has been created.

Use **undo ipta service** to remove the specified service and its configurations.

## Syntax

**ipta service** *service-name*

**undo ipta service** *service-name*

## Views

System view

## Default command level

2: System level

## Parameters

*service-name*: Specifies a service name, a string of 1 to 15 case-insensitive characters that can include spaces.

## Examples

```
# Create the service named cunkuan.  
<Sysname> system-view  
[Sysname] ipa service cunkuan  
[Sysname-ipa-service-cunkuan]
```

# ipta terminal

Use **ipta terminal** to create an IP terminal and enter its view, or enter its view if the terminal has been created.

Use **undo ipa terminal** to remove a terminal and its configuration, or all terminals and their configurations.

## Syntax

```
ipta terminal ttyid  
undo ipa terminal { ttyid | all }
```

## Views

System view

## Default command level

2: System level

## Parameters

*ttyid*: Specifies a terminal number, in the range of 0 to 255.

**all**: Specifies all terminals.

## Examples

```
# Create Terminal 1.  
<Sysname> system-view  
[Sysname] ipa terminal 1  
[Sysname-ipa-terminal-1]
```

# ipta terminal-tcp keepalive

Use **ipta terminal-tcp keepalive** to configure TCP keepalive parameters for connections from a router to terminals.

Use **undo ipa terminal-tcp keepalive** to restore the default.

## Syntax

```
ipta terminal-tcp keepalive time counter  
undo ipa terminal-tcp keepalive
```

## Default

A TCP keepalive is sent three times at an interval of 300 seconds.

## Views

System view

## Default command level

2: System level

## Parameters

*time*: Specifies the interval for sending TCP keepalives, in the range of 10 to 7200 seconds.

*counter*: Specifies the number of times TCP keepalives will be sent, in the range of 1 to 100.

## Usage guidelines

The router uses TCP keepalives to detect connections to terminals. The total sending time of TCP keepalives is calculated by the following formula:

Total sending time of TCP keepalives = Interval for sending TCP keepalives × Times for sending TCP keepalives

The keepalive parameters affect only new connections.

## Examples

```
# Configure the router to send TCP keepalives to terminals twice at an interval of 1800 seconds.
```

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

```
[Sysname] ipa terminal-tcp keepalive 1800 2
```

# ipta terminal-tcp recvbuf-size

Use **ipta terminal-tcp recvbuf-size** to configure the TCP receive buffer size for each terminal connection.

Use **undo ipa terminal-tcp recvbuf-size** to restore the default.

## Syntax

```
ipta terminal-tcp recvbuf-size recvsize
```

```
undo ipa terminal-tcp recvbuf-size
```

## Default

The size of the TCP receive buffer for each terminal connection is 2048 bytes.

## Views

System view

## Default command level

2: System level

## Parameters

*recvsize*: Specifies the size of the TCP receive buffer, in the range of 512 to 16384 bytes.

## Examples

```
# Configure the TCP receive buffer size for each terminal connection as 512 bytes.
```

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

```
[Sysname] ipa terminal-tcp recvbuf-size 512
```

## ipta terminal-tcp sendbuf-size

Use **ipta terminal-tcp sendbuf-size** to configure the TCP send buffer size for each terminal connection.

Use **undo ipta terminal-tcp sendbuf-size** to restore the default.

### Syntax

**ipta terminal-tcp sendbuf-size** *sendsize*

**undo ipta terminal-tcp sendbuf-size**

### Default

The size of the TCP send buffer for each terminal connection is 2048 bytes.

### View

System view

### Default command level

2: System level

### Parameters

*sendsize*: Specifies the size of the TCP send buffer, in the range of 512 to 16384 bytes.

### Examples

```
# Configure the TCP send buffer size for each terminal connection as 512 bytes.
```

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

```
[Sysname] ipta terminal-tcp sendbuf-size 512
```

## listen port

Use **listen port** to specify the listening port of an IP terminal access service. The specified port is used by the service to receive connection requests from terminals.

Use **undo listen port** to remove the listening port of the service.

### Syntax

**listen port** *port-number*

**undo listen port**

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

*port-number*: Specifies a listening port, in the range of 1024 to 50000.

### Usage guidelines

No listening port is specified for an IP terminal access service.

The setting only affects new connections.

### Examples

```
# Configure listen port 3000 for the cunkuan service.
```

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

```
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan]listen port 3000
```

## reset ipta statistics

Use **reset ipta statistics** to clear IP terminal access statistics.

### Syntax

```
reset ipta statistics { service [ service-name ] | terminal ttyid [ service service-name ] }
```

### Views

User view

### Default command level

1: Monitor level

### Parameters

**service** [ *service-name* ]: Clears the IP terminal access statistics of the specified service. The service name is a string of 1 to 15 case-insensitive characters and can include spaces.

*ttyid*: Specifies a terminal by its number, in the range of 0 to 255.

**terminal** *ttyid* [ **service** *service-name* ]: Clears IP terminal access statistics for the specified terminal. A *ttyid* is a terminal number in the range of 0 to 255. The option **terminal** *ttyid* **service** *service-name* clears IP terminal access statistics for the specified service on the specified terminal.

### Examples

```
# Clear IP terminal access statistics for Terminal 1.
```

```
<Sysname> reset ipta statistics terminal 1
```

```
# Clear IP terminal access statistics for service cunkuan.
```

```
<Sysname> reset ipta statistics service cunkuan
```

## screen save enable

Use **screen save enable** to enable screen saving for a terminal access service.

Use **undo screen save enable** to disable screen saving for a terminal access service.

### Syntax

```
screen save enable
```

```
undo screen save enable
```

### Default

Screen saving is enabled.

### Views

IP terminal access service view

### Default command level

2: System level

### Examples

```
# Disable screen saving for the IP terminal access service 1.
```

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

```
[Sysname] ipta service service1
```

```
[Sysname-ipta-service-service1] undo screen save enable
```

## screen-size

Use **screen-size** to set the terminal screen display size. The size determines the maximum lines (screen height) and columns (screen width) of characters that can be displayed on the screen.

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

### Syntax

```
screen-size height height-in-characters width width-in-characters  
undo screen-size
```

### Default

The screen can display up to 24 lines and 80 columns of characters.

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

*height-in-characters*: Specifies the screen display height, in the range of 20 to 100 characters.

*width-in-characters*: Specifies the screen display width, which can only be 80 or 132 characters.

### Usage guidelines

You cannot modify the screen display size for IP terminals that have established connections.

### Examples

```
# On IP terminal access service service1, set the screen to display up to 25 lines and 132 columns of characters.
```

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

```
[Sysname] ipta service service1
```

```
[Sysname-ipta-service-service1] screen-size height 25 width 132
```

## server ip

Use **server ip** to specify the IP address, port number and priority of the server providing a service.

Use **undo server priority** to remove the configuration of the server with the specified priority.

### Syntax

```
server ip ip-address port port-number [ priority priority-level ]  
undo server priority priority-level
```

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

**ip ip-address**: Specifies the IP address of the server, in dotted decimal notation.

**port** *port-number*: Specifies the port number of the server, in the range of 1 to 65535.

**priority** *priority-level*: Specifies the priority of the server, in the range of 0 to 2. A smaller value represents a higher priority.

## Usage guidelines

A server can have only one priority configured. You cannot configure multiple servers with the same priority.

## Examples

```
# Configure the server with IP address 1.1.1.2 and port 6000 to have the highest priority for the cunkuan service.
```

```
<Sysname> system-view
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] server ip 1.1.1.2 port 6000 priority 0
```

## service type

Use **service type** to specify a terminal access type.

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

## Syntax

```
service type { etelnet index | ssh | tty }
```

```
undo service type
```

## Default

The terminal access type is **tty**.

## Views

IP terminal access service view

## Default command level

2: System level

## Parameters

**etelnet** *index*: Specifies the ETelnet terminal access type. The *index* argument indicates an ETelnet service index. When multiple ETelnet service connections are established between an FEP and a router, each connection is identified by the IP address of the router and a window ID. The window ID is calculated based on the specified ETelnet service index and sent to the FEP during ETelnet negotiation. Therefore, to make sure that multiple connections can be established between the FEP and the router, you need to specify a unique index for each connection.

**ssh**: Specifies the SSH terminal access type.

**tty**: Specifies the TTY terminal access type.

## Usage guidelines

To modify the terminal access type, you must first disconnect all current service connections.

## Examples

```
# Specify the SSH terminal access type.
```

```
<Sysname> system-view
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] service type ssh
```

```
# Specify the TTY terminal access type.
```

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

```
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] service type tty
```

## set authentication password

Use **set authentication password** to set the authentication password for terminals to log in to a service.

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

### Syntax

```
set authentication password { cipher | simple } password
undo set authentication password
```

### Default

No authentication password is configured.

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

**cipher**: Sets the ciphertext password.

**simple**: Sets the plaintext password.

*password*: Specifies a password, a case-sensitive string. If **simple** is specified, it must be a string of 1 to 16 characters. If **cipher** is specified, it must be a ciphertext string of 1 to 53 characters.

### Usage guidelines

For security purposes, all passwords, including passwords configured in plain text, are saved in cipher text to the configuration file.

You can configure the password no matter whether the service is running or not.

This configuration is effective when **password** is specified for the **authentication-mode** command. If **none** or **scheme** is specified, this configuration is ineffective.

### Examples

```
# Configure the password for terminals to log into the cunkuan service to plaintext password 123.
<Sysname> system-view
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] set authentication password simple 123
```

### Related commands

**authentication-mode**

## source ip

Use **source ip** to bind a source IP address to a service.

Use **undo source ip** to restore the default.

### Syntax

```
source ip ip-address
```

## **undo source ip**

### **Default**

No source IP address is bound to the service. The IP address of the outbound interface is used as the source IP address of TCP connections.

### **Views**

IP terminal access service view

### **Default command level**

2: System level

### **Parameters**

*ip-address*: Specifies the source IP address bound to the service, in dotted decimal notation.

### **Usage guidelines**

Specify the IP address of a loopback or dialer interface as the source IP address of TCP connections, and configure a route to the IP address of FEP.

### **Examples**

```
# Bind a source IP address to the cunkuan service.
<Sysname> system-view
[Sysname] interface loopback 1
[Sysname-LoopBack1] ip address 1.1.1.2 32
[Sysname-LoopBack1] quit
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] source ip 1.1.1.2
```

## tcp keepalive

Use **tcp keepalive** to configure TCP keepalive parameters for connections to the FEP.

Use **undo tcp keepalive** to restore the default.

### **Syntax**

**tcp keepalive** *time counter*

**undo tcp keepalive**

### **Default**

A TCP keepalive is sent to the FEP three times at an interval of 300 seconds.

### **Views**

IP terminal access service view

### **Default command level**

2: System level

### **Parameters**

*time*: Specifies the interval for sending TCP keepalives, in the range of 10 to 7200 seconds.

*counter*: Specifies the number of times TCP keepalives will be sent, in the range of 1 to 100.

### **Usage guidelines**

The router uses TCP keepalives to detect connections to the FEP. The total sending time of TCP keepalives is calculated using following formula:

Total sending time of TCP keepalives = Interval for sending TCP keepalives × Times for sending TCP keepalives

The keepalive setting affects only new connections.

## Examples

# Configure the router to send a TCP keepalive to the FEP twice at an interval of 1800 seconds.

```
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] tcp keepalive 1800 2
```

## tcp recvbuf-size

Use **tcp recvbuf-size** to configure the TCP receive buffer size for each FEP connection.

Use **undo tcp recvbuf-size** to restore the default.

### Syntax

**tcp recvbuf-size** *recvsize*

**undo tcp recvbuf-size**

### Default

The size the TCP receive buffer for each FEP connection is 2048 bytes.

### Views

IP terminal access service view

### Default command level

2: System level

### Parameters

*recvsize*: Size of the TCP receive buffer, in the range of 512 to 16384 bytes.

## Examples

# Configure the TCP receive buffer size for each FEP connection as 512 bytes.

```
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] tcp recvbuf-size 512
```

## tcp sendbuf-size

Use **tcp sendbuf-size** to configure the TCP send buffer size for each FEP connection.

Use **undo tcp sendbuf-size** to restore the default.

### Syntax

**tcp sendbuf-size** *sendsize*

**undo tcp sendbuf-size**

### Default

The size of the TCP send buffer for each FEP connection is 2048 bytes.

### Views

IP terminal access service view

## Default command level

2: System level

## Parameters

*sendsize*: Size of the TCP send buffer, in the range of 512 to 16384 bytes.

## Examples

```
# Configure the TCP send buffer size for each FEP connection as 512 bytes.
<Sysname> system-view
[Sysname] ipta service cunkuan
[Sysname-ipta-service-cunkuan] tcp sendbuf-size 512
```

# telnet negotiation enable

Use **telnet negotiation enable** to enable Telnet parameters negotiation function with a terminal.

Use **undo telnet negotiation enable** to restore the default.

## Syntax

**telnet negotiation enable**

**undo telnet negotiation enable**

## Default

The Telnet parameters negotiation function with the terminal is disabled.

## Views

Terminal view

## Default command level

2: System level

## Examples

```
# Enable Telnet parameters negotiation with terminal 1.
<Sysname> system-view
[Sysname] ipta terminal 1
[Sysname-ipta-terminal-1] telnet negotiation enable
```

# terminal

Use **terminal** to enable terminals to use a service.

Use **undo terminal** to disable terminals from using a service.

## Syntax

**terminal** *ttyid* [ **to** *ttyid* ]

**undo terminal** { *ttyid* [ **to** *ttyid* ] | **all** }

## Views

Service view

## Default command level

2: System level

## Parameters

*ttyid* [ **to** *ttyid* ]: The *ttyid* refers to a terminal number, in the range of 0 to 255. *ttyid* **to** *ttyid* specifies a range of terminal numbers.

**all**: Specifies all terminals.

## Examples

```
# Enable terminal 1 to use the cunkuan service.
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] terminal 1
```

## terminal type

Use **terminal type** to configure the terminal type.

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

### Syntax

```
terminal type { vt100 | vt220 }
undo terminal type
```

### Default

The terminal type is VT100.

### Views

IP terminal access service view

### Default command level

2: System level

## Parameters

**vt100**: Specifies the terminal type as VT100.

**vt220**: Specifies the terminal type as VT220.

## Examples

```
# Configure the terminal type for service1 as VT220.
<Sysname> system-view
[Sysname] ipa service service1
[Sysname-ipa-service-service1] terminal type vt220
```

## timer idle-timeout

Use **timer idle-timeout** to set the link disconnection timer or link lock timer.

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

### Syntax

```
timer idle-timeout seconds { disconnect | lock }
undo timer idle-timeout { disconnect | lock }
```

### Default

The link disconnection timer is 0 seconds and the link lock timer is 600 seconds.

## Views

IP terminal access service view

## Default command level

2: System level

## Parameters

**seconds:** Specifies the timeout time, in the range of 0 to 7200 seconds. If the value is set to 0, the corresponding link lock or link disconnection function is disabled.

**disconnect:** Sets the link disconnection timer.

**lock:** Sets the link lock timer.

## Usage guidelines

If the link lock timer expires and the authentication mode on the router is set to scheme or password, a new authentication interface replaces the service interface on the corresponding terminal. If the link lock timer expires and the authentication mode on the router is set to none, the service interface on the terminal is not changed.

If the link disconnection timer expires, the corresponding link is disconnected.

The link lock and link disconnection timers can be set separately, and they do not affect each other.

The value of the link lock timer should be smaller than the link disconnection timer. Otherwise, a link might be disconnected even if the link lock timer does not expire.

## Examples

```
# Set the link lock timer of the cunkuan service to 60 seconds.
<Sysname> system-view
[Sysname] ipa service cunkuan
[Sysname-ipa-service-cunkuan] timer idle-timeout 60 lock
```

## transform enter

Use **transform enter** to configure the processing approach for CR and CRLF.

Use **undo transform enter** to restore the default.

## Syntax

**transform enter { cr | crlf }**

**undo transform enter**

## Default

The system does not transform CR and CRLF.

## Views

Terminal view

## Default command level

2: System level

## Parameters

**cr:** Interprets both CR (carriage return ASCII code 0d) and CRLF (new-line ASCII code 0d0a or 0d00) as CR (0d).

**crlf:** Interprets both CR and CRLF as CRLF (0d0a).

## Usage guidelines

To enable different terminals to recognize the carriage return and new-line characters of the FEP, the device can transform them into a common form.

This function only applies to data packets received from the FEP.

## Examples

**# Transform both CR and CRLF to CR.**

```
<Sysname> system-view
[Sysname] ipba terminal 1
[Sysname-ipba-terminal-1] transform enter cr
```

**# Transform both CR and CRLF to CRLF.**

```
<Sysname> system-view
[Sysname] ipba terminal 1
[Sysname-ipba-terminal-1] transform enter crlf
```

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