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Chapter 1 HWPing Configuration

1.1 Introduction to HWPing

HWPing is a network diagnostic tool used to test the performance of protocols (only ICMP by far) operating on network. It is an enhanced alternative to the **ping** command.

HWPing test group is a set of HWPing test parameters. A test group contains several test parameters and is uniquely identified by an administrator name plus a test tag.

You can perform an HWPing test after creating a test group and configuring the test parameters.

Being different from the **ping** command, HWPing does not display the round trip time (RTT) and timeout status of each packet on the console terminal in real time. You need to execute the **display hwping** command to view the statistic results of your HWPing test operation. HWPing allows administrators to set the parameters of HWPing test groups and start HWPing test operations.

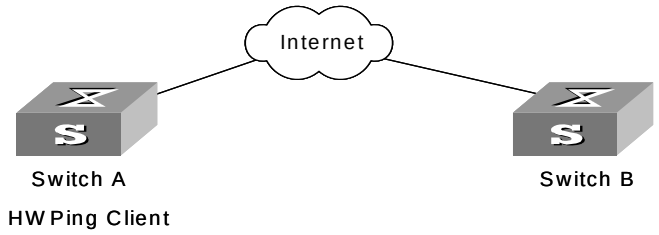

Figure 1-1 Illustration for HWPing

1.2 HWPing Configuration

1.2.1 Introduction to HWPing Configuration

The configuration tasks for HWPing include:

- Enabling HWPing Client
- Creating test group
- Configuring test parameters

The test parameters that you can configure include:

- Destination IP address

It is equivalent to the destination IP address in the **ping** command.

Test typeCurrently, HWPing supports only one test type: ICMP.

- Number of test packets sent in a test

If this parameter is set to a number greater than one, the system sends the second test packet once it receives a response to the first one, or when the test timer times out if it receives no response after sending the first one, and so forth until the last test packet is sent out. This parameter is equivalent to the **–n** parameter in the **ping** command.

Automatic test intervalThis parameter is used to allow the system to automatically perform the same test at regular intervals.

- Test timeout time

Test timeout time is the time the system waits for an ECHO-RESPONSE packet after it sends out an ECHO-REQUEST packet. If no ECHO-RESPONSE packet is received within this time, this test is considered a failure. This parameter is similar to the **-t** parameter in the **ping** command, but has a different unit (the **-t** parameter in the **ping** command is in ms, while the timeout time in the **HWPing** command is in seconds).

1.2.2 Configuring HWPing

Table 1-1 Configure HWPing

Operation		Command	Description
Enter system view		**system-view**	—
Enable HWPing Client		**hwping-agent enable**	Required By default, HWPing Client is disabled.
Create an HWPing test group		**hwping** *administrator-name test-tag*	Required By default, no HWPing test group is configured.
Configure the test parameters	Configure the destination IP address of the test	**destination-ip** *ip-address*	Required By default, no destination IP address is configured.
	Configure the type of the test.	**test-type** *type*	Optional By default, the test type is ICMP.
	Configure the packet sending times in each test.	**count** *times*	Optional By default, the packet sending times in each test is 1.
	Configure the automatic test interval.	**frequency** *interval*	Optional By default, the automatic test interval is zero, which indicating the test will be performed only once.
	Configure the timeout time of the test.	**timeout** *time*	Optional By default, the timeout time is 3 seconds.

Operation	Command	Description
Execute the test	**test-enable**	Required
Display test results	**display hwping** { **history** | **results** } [*administrator-name test-tag*]	Required You can execute the command in any view.

Note:

- The HWPing test does not display test results. You can use the **display hwping** command to view the test results.
- You can use the **display hwping** command to check the test history as well as the latest test results.

1.2.3 Configuration Example

I. Network Requirement

Perform an HWPing ICMP test between two switches. Like a ping test, this test uses ICMP to test the RTTs of data packets between the source and the destination.

II. Configuration procedure

Enable HWPing Client.

```
[Quidway] hwping-agent enable
```

Create an HWPing test group administrator icmp.

```
[Quidway] hwping administrator icmp
```

Configure the test parameters.

```
[Quidway-hwping-administrator-icmp] test-type icmp
[Quidway-hwping-administrator-icmp] destination-ip 10.10.10.10
[Quidway-hwping-administrator-icmp] count 10
[Quidway-hwping-administrator-icmp] timeout 3
```

Enable the test operation.

```
[Quidway-hwping-administrator-icmp] test-enable
```

Display the test results.

```
[Quidway-hwping-administrator-icmp] display hwping results administrator icmp
```

```
[Quidway-hwping-administrator-icmp] display hwping history administrator
icmp
```

Chapter 2 HWPing Configuration Commands

2.1 HWPing Configuration Commands

2.1.1 count

Syntax

count *times*

undo count

View

HWPing test group view

Parameter

times: Packet sending times. It is in the range 1 to 15 and defaults to 1.

Description

Use the **count** command to configure the packet sending times in each test.

Use the **undo count** command to restore the default times.

If the *times* argument set in this command is greater than one, the system sends the second test packet once it receives a response to the first one, or when the test timer times out if it receives no response after sending the first one, and so forth until the last test packet is sent out.

Related command: **frequency**.

Example

Set the packet sending times in each of the test to 10.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] count 10
```

2.1.2 debugging

Syntax

debugging hwping { **all** | **error** | **event** }

undo debugging hwping { **all** | **error** | **event** }

View

User view

Parameter

all: Enables/disables all types of HWPing test debugging.

error: Enables/disables the debugging for HWPing test errors.

event: Enables/disables the debugging for HWPing test events.

Description

Use the **debugging hwping** command to enable one specific or all types of HWPing test debugging.

Use the **undo debugging hwping** command to disable one specific or all types of HWPing test debugging.

By default, all types of HWPing test debugging are disabled.

Example

Enable the debugging of HWPing test events.

```
<Quidway> debugging hwping event
<Quidway> terminal debugging
```

2.1.3 destination-ip

Syntax

destination-ip *ip-address*

undo destination-ip

View

HWPing test group view

Parameter

ip-address: Destination IP address of the test.

Description

Use the **destination-ip** command to configure the destination IP address of the test.

Use the **undo destination-ip** command to delete the configured destination IP address.

By default, no destination IP address is configured for the test.

Example

Set the destination IP address of the test in the test group administrator icmp to 10.10.10.10.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] destination-ip 10.10.10.10
```

2.1.4 display hwping

Syntax

display hwping { **results** | **history** } [*administrator-name test-tag*]

View

Any view

Parameter

results: Displays the latest test results.

history: Displays the test history.

administrator-name: Name of the administrator who created the test.

test-tag: Test tag.

Description

Use the **display hwping** command to display the test results.

If a test group is specified by using the *administrator-name* and *test- tag* arguments, the system displays the test results of the specified test group. Otherwise the system displays the test results of all the test groups.

Related command: **test-enable**.

Example

Display the latest test results of the test group administrator icmp.

```
<Quidway> display hwping results administrator icmp
  HWPing entry(admin administrator, tag icmp) test result:
      Destination ip address:10.10.10.10
      Send operation times: 10             Receive response times: 10
      Min/Max/Average Round Trip Time: 1/2/1
      Square-Sum of Round Trip Time: 13
      Last complete test time: 2004-11-25 16:28:55.0
    Extend result:
      SD Maximal delay: 0                  DS Maximal delay: 0
```

```
Packet lost in test: 0%
Disconnect operation number:0        Operation timeout number:0
System busy operation number:0       Connection fail number:0
Operation sequence errors:0           Drop operation number:0
Other operation errors:0
```

Table 2-1 Description on the fields of the **display hwping results** command

Field	Description
Destination ip address	Destination IP address
Send operation times	Packet sending times
Receive response times	Successful packet sending times
Min/Max/Average Round Trip Time	Min/max/average round trip time (RTT)
Square-Sum of Round Trip Time	Quadratic sum of RTTs
Last complete test time	Time of the last successful send operation in the test
SD Maximal delay	Max delay from the source to the destination
DS Maximal delay	Max delay from the destination to the source
Packet lost in test	Rate of the lost packets in the test
Disconnect operation number	Number of the disconnect operations forcibly performed by the opposite party
Operation timeout number	Number of the send operations getting no response within the timeout time in the test
System busy operation number	Number of the failed send operations due to system busy in the test
Connection fail number	Number of the failed attempts to establish a connection with the opposite party.
Operation sequence errors	Number of the out-of-sequence packets received
Drop operation number	Number of the failed system resource assignment operations
Other operation errors	Number of other errors

Display the test history of the test group administrator icmp.

```
<Quidway> display hwping history administrator icmp
  HWPing entry(admin administrator, tag icmp) history record:
    Index     Response    Status      LastRC      Time
        1            1         1           0    2004-11-25 16:28:55.0
```

```
  2          1          1          0    2004-11-25 16:28:55.0
  3          1          1          0    2004-11-25 16:28:55.0
  4          1          1          0    2004-11-25 16:28:55.0
  5          1          1          0    2004-11-25 16:28:55.0
  6          2          1          0    2004-11-25 16:28:55.0
  7          1          1          0    2004-11-25 16:28:55.0
  8          1          1          0    2004-11-25 16:28:55.0
  9          1          1          0    2004-11-25 16:28:55.9
 10          1          1          0    2004-11-25 16:28:55.9
```

Table 2-2 Description on the fields of the **display hwping history** command

Field	Description
Response	Round trip time in ms or timeout time. It is 0 if the test fails.
Status	Result value of the send operation, including: 1: responseReceived 2: unknown 3: internalError 4: requestTimedOut 5: unknownDestinationAddress 6: noRouteToTarget 7: interfaceInactiveToTarget 8: arpFailure 9: maxConcurrentLimitReached 10: unableToResolveDnsName 11: invalidHostAddress
LastRC	Last response code received (this code is based on the specific implementation). When the ICMP Echo function is enabled, if an ICMP response containing ICMP_ECHOREPLY(0) is received, it indicates the detection succeeds.
Time	Test time

2.1.5 frequency

Syntax

frequency *interval*

undo frequency

View

HWPing test group view

Parameter

interval: Automatic test interval. It is in the range 0 to 65535 (in seconds) and defaults to 0 meaning no automatic test will be performed.

Description

Use the **frequency** command to configure the automatic test interval.

Use the **undo frequency** command to disable automatic test.

If the argument *interval* is greater than 0, the system will automatically perform the same test at intervals specified by this argument.

Related command: **count**.

Example

Set the automatic test interval to 10 seconds.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] frequency 10
```

2.1.6 hwping

Syntax

hwping *administrator-name test-tag*

undo hwping *administrator-name test-tag*

View

System view

Parameter

administrator-name: Name of the administrator creating the HWPing test group, a character string of 1 to 32 characters.

test-tag: Test tag, a character string of 1 to 32 characters.

Description

Use the **hwping** command to create an HWPing test group and enter the HWPing test group view.

Use the **undo hwping** command to delete the test group.

Example

Create an HWPing test group administrator icmp (where administrator is the administrator name and icmp is the test tag).

```
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp]
```

2.1.7 hwping-agent enable

Syntax

hwping-agent enable

undo hwping-agent enable

View

System view

Parameter

None

Description

Use the **hwping-agent enable** command to enable HWPing client.

Use the **undo hwping-agent enable** command to disable HWPing client.

You can perform a test only after the HWPing client function is enabled.

Example

Enable HWPing client.

```
[Quidway] hwping-agent enable
```

2.1.8 test-type

Syntax

test-type *type*

View

HWPing test group view

Parameter

type: Test type.

Description

Use the **test-type** command to configure the type of the test.

Currently the system only supports ICMP test.

Example

Set the test type to ICMP.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] test-type icmp
```

2.1.9 test-enable

Syntax

test-enable

undo test-enable

View

HWPing test group view

Parameter

None

Description

Use the **test-enable** command to execute the current HWPing test.

Use the **undo test-enable** command to stop the HWPing test.

Note:

After you execute the **test-enable** command, the system does not display the test results automatically. You can view the test results by executing the **display hwping** command.

Related command: **display hwping**.

Example

Execute the HWPing test defined by the test group administrator icmp.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] test-enable
```

2.1.10 timeout

Syntax

timeout *time*

undo timeout

View

HWPing test group view

Parameter

time: Timeout time. It is in the range 1 to 60 and defaults to 3 (in seconds).

Description

Use the **timeout** command to configure the timeout time of the test.

Use the **undo timeout** command to restore the default timeout time.

Example

Set the timeout time of the test group administrator icmp to 10 seconds.

```
<Quidway> system-view
System View: return to User View with Ctrl+Z.
[Quidway] hwping administrator icmp
[Quidway-hwping-administrator-icmp] timeout 10
```