HP 830 Series PoE+ Unified Wired-WLAN Switch, HP 870 Unified Wired-WLAN Appliance, and HP 10500/7500 20G Unified Wired-WLAN Module

High Availability Command Reference

Contents

VRRP configuration commands

Support for VRRP commands depends on the device model. For more information, see *About the HP 830 Series PoE+ Unified Wired-WLAN Switch, HP 870 Unified Wired-WLAN Appliance, and HP 10500/7500 20G Unified Wired-WLAN Module Command References*.

The interfaces that VRRP involves can be only VLAN interfaces.

The term "router" in this document refers to both routers and routing-capable HP wireless products.

display vrrp

Use **display vrrp** to display the state information of VRRP groups.

Syntax

display vrrp [**verbose**] [**interface** *interface-type interface-number* [**vrid** *virtual-router-id*]] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

Views

Any view

Default command level

1: Monitor level

Parameters

verbose: Displays detailed state information of VRRP groups.

interface *interface-type interface-number*: Displays VRRP group state information of the specified interface. *interface-type interface-number* specifies an interface by its type and number.

vrid *virtual-router-id*: Displays state information of the specified VRRP group. The *virtual-router-id* argument specifies a VRRP group by its group number 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.

Usage guidelines

If you do not specify **verbose**, only the brief state information of VRRP group is displayed.

If you specify both an interface and a VRRP group, only the state information of the specified VRRP group on the interface is displayed. If you only specify an interface, the state information of all the VRRP groups on the interface is displayed. If you specify neither, the state information of all the VRRP groups on the router is displayed.

Examples

When VRRP operates in standard mode, display brief information about all VRRP groups on the device.

```
<Sysname> display vrrp
 IPv4 Standby Information:
     Run Mode       : Standard
     Run Method     : Virtual MAC
 Total number of virtual routers : 1
 Interface          VRID  State        Run     Adver    Auth     Virtual
                                       Pri     Timer    Type     IP
 -------------------------------------------------------------------
 Vlan2              1     Master       140     1        Simple   1.1.1.1
```

Table 1 Command output (standard mode)

Field	Description
Run Mode	Current VRRP working mode: • **Standard**—Standard mode. • **Load Balance**—Load balancing mode.
Run Method	Current VRRP running mode: • **Real MAC**—Real MAC mode, which means the virtual IP address of the VRRP group is mapped to the real MAC address of the interface. • **Virtual MAC**—Virtual MAC mode, which means the virtual IP address of the VRRP group is mapped to the virtual MAC address.
Total number of virtual routers	Number of VRRP groups.
Interface	Interface to which the VRRP group belongs.
VRID	ID of the VRRP group.
Run Pri	Running priority of the router, or in other words, the current priority of the router. With VRRP tracking configured, the priority of the router changes when the state of the monitored interface or track entry changes.
Adver. Timer	VRRP advertisement interval, in seconds.
Auth Type	Authentication type: • **None**—No authentication. • **Simple**—Simple authentication. • **MD5**—MD5 authentication.
Virtual IP	Virtual IP address of the VRRP group.

When VRRP operates in standard mode, display detailed information about all VRRP groups on the device.
```
<Sysname> display vrrp verbose
 IPv4 Standby Information:
     Run Mode       : Standard
     Run Method     : Virtual MAC
 Total number of virtual routers : 1
   Interface Vlan-interface2
     VRID         : 1              Adver Timer  : 1
     Admin Status : Up             State        : Master
     Config Pri   : 150            Running Pri  : 140
     Preempt Mode : Yes            Delay Time   : 5
     Auth Type    : Simple         Key          : ******
```

```
    Virtual IP      : 1.1.1.1
    Virtual MAC     : 0000-5e00-0101
    Master IP       : 1.1.1.2
  VRRP Track Information:
    Track Interface: Vlan3           State : Down          Pri Reduced : 10
    Track Object   : 1               State : Positive      Pri Reduced : 50
```

Table 2 Command output (standard mode)

Field	Description
Run Mode	Current VRRP working mode: • **Standard**—Standard mode. • **Load Balance**—Load balancing mode.
Run Method	Current VRRP running mode: • **Real MAC**—Real MAC mode, which means the virtual IP address of the VRRP group is mapped to the real MAC address of the interface. • **Virtual MAC**—Virtual MAC mode, which means the virtual IP address of the VRRP group is mapped to the virtual MAC address.
Total number of virtual routers	Number of VRRP groups.
Interface	Interface to which the VRRP group belongs.
VRID	ID of the VRRP group.
Adver. Timer	VRRP advertisement interval, in seconds.
Admin Status	Administrative state: • UP. • DOWN.
State	Status of the router in the VRRP group: • Master. • Backup. • Initialize.
Config Pri	Configured priority of the router, or in other words, the priority value specified by using the **vrrp vrid priority** command.
Running Pri	Running priority of the router, or in other words, the current priority of the router. With VRRP tracking configured, when the state of the monitored interface or track entry changes, the priority of the router changes.
Preempt Mode	Preemptive mode: • **Yes**—The router in the VRRP group operates in preemptive mode. • **No**—The router in the VRRP group operates in non-preemptive mode.
Delay Time	Preemption delay, in seconds.
Become Master	Time to wait before the router becomes the master, in milliseconds. Only routers in backup mode have this information.
Auth Type	Authentication type: • **None**—No authentication. • **Simple**—Simple authentication. • **MD5**—MD5 authentication.
Key	Authentication key.

Field	Description
Virtual IP	Virtual IP address of the VRRP group.
Virtual MAC	Virtual MAC address that corresponds to the virtual IP address of the VRRP group. It is displayed only when the router is in master state.
Master IP	Primary IP address of the interface where the router in master state resides.
VRRP Track Information	Information about the tracked interface or object. It is displayed only when the **vrrp vrid track** or **vrrp vrid track interface** command is executed.
Track Interface	Interface to be tracked. It is displayed only when the **vrrp vrid track interface** command is executed.
Track Object	Track entry to be tracked. It is displayed only when the **vrrp vrid track** command is executed.
State	State of the tracked interface or track entry. State of a tracked interface: • Up. • Down. • Removed. State of a track entry: • Invalid. • Negative. • Positive. • Not existing.
Pri Reduced	Priority value that is reduced when the monitored interface is down or removed, or when the status of the monitored track entry turns to **negative**. It is displayed only when the **vrrp vrid track interface** command or the **vrrp vrid track** command is executed.
Switchover	Switchover mode. When the status of the monitored track entry turns to **negative**, the backup immediately switches to the master.

When VRRP operates in load balance mode, display brief information about all VRRP groups on the device.

```
<Sysname> display vrrp
IPv4 Standby Information:
     Run Mode      : Load Balance
     Run Method    : Virtual MAC
 Total number of virtual routers : 1
 Interface          VRID   State     Run   Address             Active
                                      Pri
 ----------------------------------------------------------------------
 Vlan2              1      Master    140   1.1.1.1             Local
 -----              VF 1   Active    255   000f-e2ff-0011      Local
```

Table 3 Command output (load balancing mode)

Field	Description
Run Mode	Current VRRP working mode: • **Standard**—Standard mode. • **Load Balance**—Load balancing mode.
Run Method	Current VRRP running mode: • **Real MAC**—Real MAC mode, which means the virtual IP address of the VRRP group is mapped to the real MAC address of the interface. • **Virtual MAC**—Virtual MAC mode, which means the virtual IP address of the VRRP group is mapped to the virtual MAC address.
Total number of virtual routers	Number of VRRP groups.
Interface	Interface to which the VRRP group belongs.
VRID	ID of the VRRP group or ID of the virtual forwarder (VF).
State	• If the VRID is *number*, this field indicates the status of the router in the VRRP group, including Master, Backup, and Initialize. • If the VRID is *VF number*, this field indicates the status of the VF in the VRRP group, including Active, Listening, and Initialize.
Run Pri	• If the VRID is *number*, this field indicates the running priority of the router, or in other words, the current priority of the router. With VRRP tracking configured, the priority of the router changes if the state of the monitored interface or track entry changes. • If the VRID is *VF number*, this field indicates the running priority of the VF. With VF tracking configured, the priority of the VF changes if the state of the monitored track entry changes.
Address	• If the VRID is *number*, this field indicates the virtual IP address of the VRRP group. • If the VRID is *VF number*, this field indicates the virtual MAC address of the VF.
Active	• If the VRID is *number*, this field indicates the IP address of the interface of the master. If the current router is the master, it is displayed as local. • If the VRID is *VF number*, this field indicates the IP address of the interface of the active virtual forwarder (AVF). If the current VF is the AVF, it is displayed as local.

\# When VRRP operates in load balancing mode, display detailed information about all VRRP groups on the device.

```
<Sysname> display vrrp verbose
 IPv4 Standby Information:
     Run Mode        : Load Balance
     Run Method      : Virtual MAC
 Total number of virtual routers : 1
   Interface Vlan-interface2
     VRID           : 1              Adver Timer  : 1
     Admin Status   : Up             State        : Master
     Config Pri     : 120            Running Pri  : 110
     Preempt Mode   : Yes            Delay Time   : 5
     Auth Type      : None
```

```
    Virtual IP     : 10.1.1.1
    Member IP List : 10.1.1.2 (Local, Master)
                     10.1.1.3 (Backup)
  VRRP Track Information:
    Track Interface: Vlan3          State : Down          Pri Reduced : 10
    Track Object   : 1              State : Positive       Pri Reduced : 50
  Forwarder Information: 2 Forwarders 1 Active
    Config Weight  : 255
    Running Weight : 255
   Forwarder 01
    State          : Active
    Virtual MAC    : 000f-e2ff-0011 (Owner)
    Owner ID       : 0000-5e01-1101
    Priority       : 255
    Active         : local
   Forwarder 02
    State          : Listening
    Virtual MAC    : 000f-e2ff-0012 (Learnt)
    Owner ID       : 0000-5e01-1103
    Priority       : 127
    Active         : 10.1.1.3
  Forwarder Weight Track Information:
    Track Object   : 1              State : Positive     Weight Reduced : 250
  Forwarder Switchover Track Information:
    Track Object   : 2              State : Positive
      Member IP    : 10.1.1.3
```

Table 4 Command output (load balancing mode)

Field	Description
Run Mode	Current VRRP working mode: • **Standard**—Standard mode. • **Load Balance**—Load balancing mode.
Run Method	Current VRRP running mode: • **Real MAC**—Real MAC mode, which means the virtual IP address of the VRRP group is mapped to the real MAC address of the interface. • **Virtual MAC**—Virtual MAC mode, which means the virtual IP address of the VRRP group is mapped to the virtual MAC address.
Total number of virtual routers	Number of VRRP groups.
Interface	Interface to which the VRRP group belongs.
VRID	ID of the VRRP group.
Adver Timer	VRRP advertisement interval, in seconds.
Admin Status	Administrative state: • UP. • DOWN.

Field	Description
State	Status of the router in the VRRP group: • Master. • Backup. • Initialize.
Config Pri	Configured priority of the router, that is, the priority value specified by using the **vrrp vrid priority** command.
Running Pri	Running priority of the router, that is, the current priority of the router. With VRRP tracking configured, the priority of the router changes if the state of the monitored interface or track entry changes.
Preempt Mode	Preemptive mode: • **Yes**—The router in the VRRP group operates in preemptive mode. • **No**—The router in the VRRP group operates in non-preemptive mode.
Delay Time	Preemption delay, in seconds.
Become Master	Time to wait before the router becomes the master, in milliseconds. Only routers in backup mode have this information.
Auth Type	Authentication type: • **None**—No authentication. • **Simple**—Simple authentication. • **MD5**—MD5 authentication.
Key	Authentication key.
Virtual IP	Virtual IP address of the VRRP group.
Member IP List	List of IP addresses of members in the VRRP group. This address list is displayed only when the VRRP group operates in load balancing mode. • **Local**—IP address of the local device. • **Master**—IP address of the master. • **Backup**—IP address of the backup.
VRRP Track Information	Information of the tracked interface or track entry.
Track Interface	Interface to be tracked. It is displayed only when the **vrrp vrid track interface** command is executed.
Track Object	Object to be tracked. It is displayed only when the **vrrp vrid track** command is executed.
State	State of the tracked interface or track entry. State of a tracked interface: • Up. • Down. • Removed. State of a track entry: • Invalid. • Negative. • Positive. • Not existing.

Field	Description
Pri Reduced	Priority value that is reduced when the monitored interface is down or removed, or when the status of the monitored track entry turns to **negative**. It is displayed only when the **vrrp vrid track interface** command or the **vrrp vrid track** command is executed.
Switchover	Switchover mode. When the status of the monitored track entry turns to **negative**, the backup immediately switches to the master.
Forwarder Information: 2 Forwarders 1 Active	VF Information: The number of VFs of the router is 2, and the number of AVFs is 1.
Config Weight	Configured weight of the VF, the value is 255.
Running Weight	Running weight of the VF, or in other words, the current weight of the VF. When VF tracking is configured, if the state of the monitored track entry changes, the weight of the VF changes.
Forwarder 01	Information about VF 01.
State	State of a VF: • Active. • Listening. • Initialize.
Virtual MAC	Virtual MAC address of the VF.
Owner ID	Real MAC address of the interface of the VF owner.
Priority	VF priority.
Active	IP address of the interface of the AVF. If the current VF is the AVF, it is displayed as local.
Forwarder Weight Track Configuration	Weight track configuration of the VF. It is displayed only when the **vrrp vrid weight track** command is executed.
Track Object	Weight track entry. It is displayed only when the **vrrp vrid weight track** command is executed.
State	A track entry has the following states: • Invalid. • Negative. • Positive. • Not existing.
Weight Reduced	Weight value that is reduced when the status of the monitored track entry turns to **negative**. It is displayed only when the **vrrp vrid weight track** command is executed.
Forwarder Switchover Track Information	VF switchover information. The information is displayed only after the **vrrp vrid track forwarder-switchover** command is executed.
Track Object	Track entry monitored by the VF switchover feature. The information is displayed only after the **vrrp vrid track forwarder-switchover** command is executed.

Field	Description
State	A track entry has the following states: • Invalid. • Negative. • Positive. • Not existing.
Member IP	IP address of the member device. If the status of the monitored track entry turns to **negative** and the local device has an LVF whose corresponding AVF is on the specified member device, the LVF immediately becomes active.

display vrrp statistics

Use **display vrrp statistics** to display statistics about VRRP groups.

Syntax

display vrrp statistics [**interface** *interface-type interface-number* [**vrid** *virtual-router-id*]] [**|** { **begin** | **exclude** | **include** } *regular-expression*]

Views

Any view

Default command level

1: Monitor level

Parameters

interface *interface-type interface-number*: Displays VRRP group statistics of the specified interface. The *interface-type interface-number* argument specifies an interface by its type and number.

vrid *virtual-router-id*: Displays statistics of the specified VRRP group. The *virtual-router-id* argument specifies a VRRP group by its group number 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.

Usage guidelines

If you specify both an interface and a VRRP group, only the statistics about the specified VRRP group on the interface are displayed. If you only specify an interface, the statistics about all the VRRP groups on the interface are displayed. If you specify neither, the statistics about all the VRRP groups on the router are displayed.

To clear the VRRP group statistics, use the **reset vrrp statistics** command.

Examples

When VRRP operates in standard mode, display the statistics about all VRRP groups.

```
<Sysname> display vrrp statistics
 Interface               : Vlan-interface2
 VRID                    : 1
 CheckSum Errors         : 0              Version Errors              : 0
 Invalid Type Pkts Rcvd  : 0              Advertisement Interval Errors : 0
 IP TTL Errors           : 0              Auth Failures               : 0
 Invalid Auth Type       : 0              Auth Type Mismatch          : 0
 Packet Length Errors    : 0              Address List Errors         : 0
 Become Master           : 1              Priority Zero Pkts Rcvd     : 0
 Adver Rcvd              : 0              Priority Zero Pkts Sent     : 0
 Adver Sent              : 807
 Global statistics
 CheckSum Errors         : 0
 Version Errors          : 0
 VRID Errors             : 0
```

When VRRP operates in load balancing mode, display the statistics about all VRRP groups.

```
<Sysname> display vrrp statistics
 Interface               : Vlan-interface2
 VRID                    : 1
 CheckSum Errors         : 0              Version Errors              : 0
 Invalid Type Pkts Rcvd  : 0              Advertisement Interval Errors : 0
 IP TTL Errors           : 0              Auth Failures               : 0
 Invalid Auth Type       : 0              Auth Type Mismatch          : 0
 Packet Length Errors    : 0              Address List Errors         : 0
 Become Master           : 2              Redirect Timer Expires      : 0
 Become AVF              : 1              Time-out Timer Expires      : 0
 Adver Rcvd              : 0              Request Rcvd                : 0
 Adver Sent              : 1460           Request Sent                : 1
 Reply Rcvd              : 0              Release Rcvd                : 0
 Reply Sent              : 0              Release Sent                : 0
 Priority Zero Pkts Rcvd : 0              VF Priority Zero Pkts Rcvd  : 0
 Priority Zero Pkts Sent : 1              VF Priority Zero Pkts Sent  : 0
 Status Option Errors    : 0
 Global statistics
 CheckSum Errors         : 0
 Version Errors          : 0
 VRID Errors             : 0
```

Table 5 Command output (standard mode)

Field	Description
Interface	Interface to which the VRRP group belongs.
VRID	Serial number of the VRRP group.
CheckSum Errors	Number of packets with checksum errors.
Version Errors	Number of packets with version errors.
Invalid Type Pkts Rcvd	Number of packets with incorrect packet type.
Advertisement Interval Errors	Number of packets with advertisement interval errors.

Field	Description
IP TTL Errors	Number of packets with TTL errors.
Auth Failures	Number of packets with authentication failures.
Invalid Auth Type	Number of packets with authentication failures due to invalid authentication types.
Auth Type Mismatch	Number of packets with authentication failures due to mismatching authentication types.
Packet Length Errors	Number of packets with VRRP packet length errors.
Address List Errors	Number of packets with virtual IP address list errors.
Become Master	Number of times that the router worked as the master.
Priority Zero Pkts Rcvd	Number of received advertisements with the priority of 0.
Advertise Rcvd	Number of received advertisements.
Priority Zero Pkts Sent	Number of sent advertisements with the priority of 0.
Advertise Sent	Number of advertisements sent.
Global statistics	Global statistics about all VRRP groups.
CheckSum Errors	Total number of packets with checksum errors.
Version Errors	Total number of packets with version errors.
VRID Errors	Total number of packets with VRID errors.

Table 6 Command output (load balancing mode)

Field	Description
Interface	Interface to which the VRRP group belongs.
VRID	Serial number of the VRRP group.
CheckSum Errors	Number of packets with checksum errors.
Version Errors	Number of packets with version errors.
Invalid Type Pkts Rcvd	Number of packets with incorrect packet type.
Advertisement Interval Errors	Number of packets with advertisement interval errors.
IP TTL Errors	Number of packets with TTL errors.
Auth Failures	Number of packets with authentication failures.
Invalid Auth Type	Number of packets with authentication failures due to invalid authentication types.
Auth Type Mismatch	Number of packets with authentication failures due to mismatching authentication types.
Packet Length Errors	Number of packets with VRRP packet length errors.
Address List Errors	Number of packets with virtual IP address list errors.
Become Master	Number of times that the router worked as the master.
Redirect Timer Expires	Number of times that the redirect timer expires.
Become AVF	Number of times that the VF worked as the AVF.

Field	Description
Time-out Timer Expires	Number of times that the timeout timer expires.
Advertise Rcvd	Number of received advertisements.
Request Rcvd	Number of received requests.
Advertise Sent	Number of advertisements sent.
Request Sent	Number of requests sent.
Reply Rcvd	Number of received replies.
Release Rcvd	Number of received releases.
Reply Sent	Number of replies sent.
Release Sent	Number of releases sent.
Priority Zero Pkts Rcvd	Number of received advertisements with the priority of 0.
VF Priority Zero Pkts Rcvd	Number of received advertisements with the VF priority of 0.
Priority Zero Pkts Sent	Number of sent advertisements with the priority of 0.
VF Priority Zero Pkts Sent	Number of sent advertisements with the VF priority of 0.
Status Option Errors	Number of times that the status option errors.
Global statistics	Global statistics about all VRRP groups.
CheckSum Errors	Total number of packets with checksum errors.
Version Errors	Total number of packets with version errors.
VRID Errors	Total number of packets with VRID errors.

Related commands

reset vrrp statistics

reset vrrp statistics

Use **reset vrrp statistics** to clear VRRP group statistics.

Syntax

reset vrrp statistics [**interface** *interface-type interface-number* [**vrid** *virtual-router-id*]]

Views

User view

Default command level

1: Monitor level

Parameters

interface *interface-type interface-number*: Clears VRRP group statistics of a specified interface. *interface-type interface-number* specifies an interface by its type and number.

vrid *virtual-router-id*: Clears VRRP statistics of the specified VRRP group. The *virtual-router-id* argument specifies a VRRP group by its group number in the range of 1 to 255.

Usage guidelines

If you specify both an interface and a VRRP group, the statistics about the specified VRRP group on the specified interface are cleared. If you specify only the interface, the statistics about all the VRRP groups on the interface are cleared. If you specify neither, the statistics about all the VRRP groups on the router are cleared.

Examples

Clear the statistics about all the VRRP groups on the router.

```
<Sysname> reset vrrp statistics
```

Related commands

display vrrp statistics

vrrp method

Use **vrrp method** to specify the type of the MAC addresses mapped to the virtual IP addresses of the VRRP groups.

Use **undo vrrp method** to restore the default.

Syntax

vrrp method { **real-mac** | **virtual-mac** }

undo vrrp method

Default

The virtual MAC addresses are mapped to the virtual IP addresses of the VRRP groups.

Views

System view

Default command level

2: System level

Parameters

real-mac: Maps the real MAC address of the interface to the virtual IP address of the VRRP group.

virtual-mac: Maps the virtual MAC address to the virtual IP address of the VRRP group.

Usage guidelines

Specify the type of the MAC addresses mapped to the virtual IP address before creating a VRRP group. Otherwise, you cannot change the type of the MAC address by using this command.

When VRRP operates in load balancing mode, a virtual IP address is always mapped to a virtual MAC address regardless of which type of the MAC addresses to be mapped to the virtual IP address is specified.

Examples

Map the virtual IP address of a VRRP group to the real MAC address of the interface.

```
<Sysname> system-view
[Sysname] vrrp method real-mac
```

Related commands

display vrrp

vrrp mode

Use **vrrp mode** to configure the VRRP working mode.

Use **undo vrrp mode** to restore the default.

vrrp mode load-balance

undo vrrp mode

VRRP operates in standard mode.

System view

2: System level

load-balance: Specifies the load balancing mode.

- When you configure the working mode of VRRP by using this command, both IPv4-based and IPv6-based VRRP groups operate in the specified mode.
- When VRRP operates in load balancing mode, the virtual IP address cannot be the same as the IP address of any interface in the VRRP group, and the virtual IP address should be mapped to the virtual MAC address. Otherwise, VRRP cannot operate in load balancing mode.
- When a VRRP group is created, you can still change the VRRP working mode. When you change the VRRP working mode, all VRRP groups on the router operate in the specified mode.

Configure VRRP to operate in load balancing mode.

```
<Sysname> system-view
[Sysname] vrrp mode load-balance
```

- **display vrrp**
- **display vrrp ipv6**

vrrp un-check ttl

Use **vrrp un-check ttl** to disable TTL check on VRRP packets.

Use **undo vrrp un-check ttl** to enable TTL check on VRRP packets.

vrrp un-check ttl

undo vrrp un-check ttl

TTL check on VRRP packets is enabled.

Interface view

2: System level

The master of a VRRP group periodically sends VRRP advertisements to indicate its existence. The VRRP advertisements are multicast onto the local network segment and not forwarded by a backup router, and therefore the packet TTL value will not be changed. When the master of a VRRP group advertises VRRP packets, it sets the packet TTL to 255. After you configure to check the VRRP packet TTL, when the backups of the VRRP group receive VRRP packets, they check the packet TTL and drop the VRRP packets whose TTL is smaller than 255 to prevent attacks from other network segments.

Because devices from different vendors might implement VRRP in a different way, when the device is interoperating with devices of other vendors, VRRP packet TTL check might result in dropping packets that should not be dropped. In this situation, use the **vrrp un-check ttl** command to disable TTL check on VRRP packets.

Disable TTL check on VRRP packets.
```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp un-check ttl
```

vrrp vrid authentication-mode

Use **vrrp vrid authentication-mode** to configure authentication mode and authentication key for a VRRP group to send and receive VRRP packets.

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

vrrp vrid *virtual-router-id* **authentication-mode** { **md5** | **simple** } [**cipher**] *key*

undo vrrp vrid *virtual-router-id* **authentication-mode**

Authentication is disabled.

Interface view

2: System level

virtual-router-id: Specifies a VRRP group by its number in the range of 1 to 255.

md5: Specifies the MD5 authentication mode.

simple: Specifies the simple authentication mode.

cipher: Sets a ciphertext authentication key.

key: Sets the authentication key. This argument is case sensitive.

- When **md5** authentication applies, it must be a plaintext string of 1 to 8 characters or a ciphertext string of 24 characters if the **cipher** keyword is not specified, or a ciphertext string of 1 to 41 characters if the **cipher** keyword is specified.
- When **simple** authentication applies, it must be a plaintext string of 1 to 8 characters if the **cipher** keyword is not specified, or a ciphertext string of 1 to 41 characters if the **cipher** keyword is specified.

Usage guidelines

For secrecy, all keys, including keys configured in plain text, are saved in cipher text.

Before executing the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

You might configure different authentication modes and authentication keys for the VRRP groups on an interface. However, the members of the same VRRP group must use the same authentication mode and authentication key.

Examples

Set the authentication mode to **simple** and authentication key to **Sysname** for VRRP group 1 on VLAN-interface 2 to send and receive VRRP packets.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 authentication-mode simple Sysname
```

Related commands

display vrrp

vrrp vrid preempt-mode

Use **vrrp vrid preempt-mode** to enable preemption on the router and configure its preemption delay in a specific VRRP group.

Use **undo vrrp vrid preempt-mode** to disable preemption on the router in a specific VRRP group. As a result, the router operates in non-preemptive mode.

Use **undo vrrp vrid preempt-mode timer delay** to restore the default preemption delay.

Syntax

vrrp vrid *virtual-router-id* **preempt-mode** [**timer delay** *delay-value*]

undo vrrp vrid *virtual-router-id* **preempt-mode** [**timer delay**]

Default

The router operates in preemptive mode and the preemption delay is 0 seconds.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: Virtual router ID or VRRP group number in the range of 1 to 255.

timer delay *delay-value*: Sets preemption delay. The *delay-value* argument is in the range of 0 to 1800 seconds, and the default is 0 seconds.

Usage guidelines

To avoid frequent member state changes in a VRRP group and make the backups have enough time to collect information (such as routing information), each backup waits for a period of time (the preemption delay time) after it receives an advertisement with the priority lower than the local priority, and then sends VRRP advertisements to start a new master election in the VRRP group and becomes the master.

Before executing the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

Examples

Enable preemption on the AC in VRRP group 1 and set the preemption delay to 5 seconds.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 preempt-mode timer delay 5
```

Related commands

display vrrp

vrrp vrid priority

Use **vrrp vrid priority** to configure the priority of the router in the specified VRRP group.

Use **undo vrrp vrid priority** to restore the default.

Syntax

vrrp vrid *virtual-router-id* **priority** *priority-value*

undo vrrp vrid *virtual-router-id* **priority**

Default

The priority of a router in a VRRP group is 100.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: VRRP group number in the range of 1 to 255.

priority-value: Priority value of the router in the specified VRRP group, in the range of 1 to 254. A higher number indicates a higher priority.

Usage guidelines

Before you execute the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

The role that a router plays in a VRRP group depends on its priority. A higher priority means that the router is more likely to become the master. Priority 0 is reserved for special use and 255 is for the IP address owner.

If the router is the IP address owner, its priority is always 255. Therefore, it remains as the master so long as it is functioning correctly.

Examples

\# Set the priority of VRRP group 1 on VLAN-interface 2 to 150.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 priority 150
```

Related commands

display vrrp

vrrp vrid timer advertise

Use **vrrp vrid timer advertise** to configure the Adver_Timer of the specified VRRP group.

Use **undo vrrp vrid timer advertise** to restore the default.

Syntax

vrrp vrid *virtual-router-id* **timer advertise** *adver-interval*

undo vrrp vrid *virtual-router-id* **timer advertise**

Default

The Adver_Timer is 1 second.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: VRRP group number in the range of 1 to 255.

adver-interval: Interval at which the master in the specified VRRP group sends VRRP advertisements, in the range of 1 to 255 seconds.

Usage guidelines

The Adver_Timer controls the interval at which the master sends VRRP packets.

Before executing the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

Routers in the same VRRP group must use the same Adver_Timer setting.

Examples

\# Set the master in VRRP group 1 to send VRRP advertisements at intervals of 5 seconds.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
```

```
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 timer advertise 5
```

Related commands

display vrrp

vrrp vrid track

Use **vrrp vrid track** to associate a VRRP group with a track entry and control master switchover or AVF switchover in the VRRP group in response to changes (such as uplink state changes) detected by the track entry.

Use **undo vrrp vrid track** to remove the association between a VRRP group and a track entry. If no track entry is specified, the association between the VRRP group and any track entry is removed.

Syntax

vrrp vrid *virtual-router-id* **track** *track-entry-number* [**forwarder-switchover member-ip** *ip-address* | **reduced** *priority-reduced* | **switchover**]

undo vrrp vrid *virtual-router-id* **track** [*track-entry-number*]

Default

A VRRP group is not associated with any track entry.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: Specifies a VRRP group number in the range of 1 to 255.

track *track-entry-number*: Specifies a track entry. The *track-entry-number* argument is in the range of 1 to 1024.

forwarder-switchover member-ip *ip-address*: Enables the LVF on the router to take over the role of the AVF at the specified IP address immediately after the specified track entry changes to the negative state. You can use the **display vrrp verbose** command to view the IP addresses of VFs.

reduced *priority-reduced*: Reduces the priority of the router in the VRRP group by a specific value when the state of the specified track entry changes to the negative state. The *priority-reduced* argument is in the range of 1 to 255.

switchover: Enables the router in backup state to take over as the master immediately after the specified track entry changes to the negative state.

Usage guidelines

When the associated track entry changes to the negative state, the priority of the router in the VRRP group decreases by a specified value, or the router immediately takes over as the master if it is a backup router, or the LVF on the router immediately takes over the role of the AVF at the specified IP address, depending on your configuration.

If **forwarder-switchover member-ip** *ip-address*, **reduced** *priority-reduced*, and **switchover** are not specified, the priority of the router in the VRRP group decreases by 10 when the track entry changes to **negative**.

When the track entry changes from negative to positive or invalid, the router automatically restores its priority.

You must create the VRRP group and assign a virtual IP address to it before you can associate it with any track entry.

The **vrrp vrid track** command cannot take effect on an IP address owner. If you have configured the command on an IP address owner, the configuration takes effect after the router changes to be a non-IP address owner.

You can create a track entry with the **track** command before or after you associate it with a VRRP group. For more information about configuring track entries, see *High Availability Configuration Guide*.

Examples

Associate VRRP group 1 on VLAN-interface 2 with track entry 1, and decrease the priority of the device in the VRRP group by 50 when the state of track entry 1 changes to negative.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 track 1 reduced 50
```

Associate VRRP group 1 on VLAN-interface 2 with track entry 2, and enable the LVF to take over the role of the AVF at the IP address of 10.1.1.3 immediately after the specified track entry changes to the negative state.

```
[Sysname-Vlan-interface2] vrrp vrid 1 track 2 forwarder-switchover member-ip 10.1.1.3
```

Related commands

- **display vrrp**
- **vrrp vrid track interface**

vrrp vrid track interface

Use **vrrp vrid track interface** to configure to track the specified interface.

Use **undo vrrp vrid track interface** to disable tracking the specified interface.

Syntax

vrrp vrid *virtual-router-id* **track interface** *interface-type interface-number* [**reduced** *priority-reduced*]

undo vrrp vrid *virtual-router-id* **track** [**interface** *interface-type interface-number*]

Default

No interface is tracked.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: VRRP group number in the range of 1 to 255.

interface *interface-type interface-number*: Specifies an interface to be tracked by its type and number.

reduced *priority-reduced*: Value by which the priority decrements. The *priority-reduced* argument is in the range of 1 to 255, and the default is 10.

Usage guidelines

When the uplink interface of a router in a VRRP group fails, usually the VRRP group cannot be aware of the uplink interface failure. If the router is the master of the VRRP group, hosts on the LAN are not able to access external networks because of the uplink failure. This problem can be solved through tracking a specified uplink interface. After you configure to monitor the uplink interface, when the uplink interface is down or removed, the priority of the master is automatically decreased by a specified value, allowing a higher priority router in the VRRP group to become the master.

Before executing the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

If no interface is specified, the **undo vrrp vrid track interface** command removes the association between the VRRP group and any interface.

If you configure an interface to be tracked on a router that is the IP address owner in a VRRP group, the configuration does not take effect. If the router is not the IP address owner in the VRRP group later, the configuration takes effect.

When the status of the tracked interface turns from down or removed to up, the corresponding router automatically restores its priority.

Examples

On VLAN-interface 2, set the interface to be tracked as VLAN-interface 1, making the priority of VRRP group 1 on VLAN-interface 2 decrement by 50 when VLAN-interface 1 is down or removed.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 track interface vlan-interface 1 reduced 50
```

Related commands

- **display vrrp**
- **vrrp vrid track**

vrrp vrid virtual-ip

Use **vrrp vrid virtual-ip** to create a VRRP group and configure a virtual IP address for it or add another virtual IP address for an existing VRRP group.

Use **undo vrrp vrid virtual-ip** to remove an existing VRRP group or the virtual IP address of the VRRP group.

Syntax

vrrp vrid *virtual-router-id* **virtual-ip** *virtual-address*

undo vrrp vrid *virtual-router-id* [**virtual-ip** *virtual-address*]

Default

No VRRP group is created.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: VRRP group number in the range of 1 to 255.

virtual-address: Virtual IP address.

Usage guidelines

The system removes a VRRP group after you delete all the virtual IP addresses in it.

The virtual IP address of a VRRP group cannot be 0.0.0.0, 255.255.255.255, loopback address, non A/B/C address and other illegal IP addresses such as 0.0.0.1.

A VRRP group operates properly only when the configured virtual IP address and the interface IP address belong to the same segment and are legal host addresses. If they are not in the same network segment, or the configured IP address is the network address or network broadcast address of the network segment to which the interface IP address belongs, though you can perform the configuration successfully, the state of the VRRP group is always **Initialize**, which means VRRP does not take effect .

Examples

\# Create VRRP group 1 and set its virtual IP address to 10.10.10.10.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.10.10.10
```

\# Add virtual IP address 10.10.10.11 to VRRP group 1.

```
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.10.10.11
```

Related commands

display vrrp

vrrp vrid weight track

Use **vrrp vrid weight track** to specify the track entry to be monitored by VFs when VRRP operates in load balancing mode. If the status of the monitored track entry changes to **negative**, the weights of all VFs in the VRRP group to which the current router belongs decrease by a specified value.

Use **undo vrrp vrid weight track** to remove the specified track entry.

Syntax

vrrp vrid *virtual-router-id* **weight track** *track-entry-number* [**reduced** *weight-reduced*]

undo vrrp vrid *virtual-router-id* **weight track** [*track-entry-number*]

Default

No track entry is specified to be monitored.

Views

Interface view

Default command level

2: System level

Parameters

virtual-router-id: VRRP group number in the range of 1 to 255.

track *track-entry-number*: Specifies a track entry to be monitored by its number in the range of 1 to 1024.

reduced *weight-reduced*: Specifies the value by which the weight decreases, in the range of 1 to 255. The default setting is 30.

Usage guidelines

The command is effective only when VRRP operates in load balancing mode.

Before executing the command, create a VRRP group on an interface and configure the virtual IP address of the VRRP group.

When the status of the monitored track entry turns from negative to positive or invalid, the corresponding VFs automatically restore their weights.

If the track entry specified in this command does not exist, you can use the **vrrp vrid weight track** command to specify a track entry, and then create the track entry using the **track** command.

The weight of a VF is 255 and the lower limit of failure is 10. When the weight of a VF owner is no less than the lower limit of failure, the priority of the VF owner is always 255. To enable other VFs to take over the role of the VF owner as the AVF when the uplink interface fails, you must set a value larger than 245 for the **reduced** *weight-reduced* option.

For more information about track entries, see *High Availability Configuration Guide*.

Examples

Configure to monitor track entry 1, making the weights of VFs belonging to VRRP group 1 on VLAN-interface 2 decrease by 50 when track entry 1 turns to negative.

```
<Sysname> system-view
[Sysname] interface vlan-interface 2
[Sysname-Vlan-interface2] vrrp vrid 1 virtual-ip 10.1.1.1
[Sysname-Vlan-interface2] vrrp vrid 1 weight track 1 reduced 50
```

Related commands

display vrrp

Stateful failover configuration commands

dhbk enable

Use **dhbk enable** to enable stateful failover in a specified mode.

Use **undo dhbk enable** to restore the default.

Syntax

dhbk enable backup-type { **dissymmetric-path** | **symmetric-path** }

undo dhbk enable

Default

Stateful failover is disabled.

Views

System view

Default command level

2: System level

Parameters

dissymmetric-path: Enables asymmetric-path mode stateful failover.

symmetric-path: Enables symmetric-path mode stateful failover.

Examples

Enable symmetric-path mode stateful failover.

```
<Sysname> system-view
[Sysname] dhbk enable backup-type symmetric-path
```

dhbk vlan

Use **dhbk vlan** to specify a VLAN as a backup VLAN.

Use **undo dhbk vlan** to restore the default.

Syntax

dhbk vlan *vlan-id*

undo dhbk vlan

Default

No backup VLAN is configured on the device.

Views

System view

Default command level

2: System level

Parameters

vlan-id: ID of the backup VLAN, in the range of 1 to 4094.

Examples

\# Specify VLAN 100 as a backup VLAN.

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

display dhbk status

Use **display dhbk status** to display the stateful failover status information.

Syntax

display dhbk 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 the stateful failover status information.

```
<Sysname> display dhbk status
 Stateful failover: Enable
 Backup type: Symmetric path
 Current state: Independent
 VLAN ID: 11
```

Table 7 Command output (with backup VLAN supported)

Field	Description
Stateful failover	Service backup status of stateful failover: enabled or disabled.
Backup Type	Backup type, symmetric path or asymmetric path. This information is output only after stateful failover is enabled.
Current state	Current hot backup state: independent, silent or synchronized.
VLAN ID	ID of the backup VLAN.

Track configuration commands

display track

Use **display track** to display track entry information.

Syntax

display track { *track-entry-number* | **all** } [**|** { **begin** | **exclude** | **include** } *regular-expression*]

Views

Any view

Default command level

1: Monitor level

Parameters

track-entry-number: Displays information about the specified track entry. The track entry number is in the range of 1 to 1024.

all: Displays information about all the track entries.

|: 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 track entries.

```
<Sysname> display track all
Track ID: 1
  Status: Positive (notify 13 seconds later)
  Duration: 0 days 0 hours 0 minutes 7 seconds
  Notification delay: Positive 20, Negative 30 (in seconds)
  Reference object:
    NQA entry: admin test
    Reaction: 10
Track ID: 3
  Status: Negative
  Duration: 0 days 0 hours 0 minutes 32 seconds
  Notification delay: Positive 20, Negative 30 (in seconds)
  Reference object:
    Track interface  :
    Interface status : Inserted
    Interface        : Vlan-interface3
```

```
Protocol        : IPv4
```

Table 8 Command output

Field	Description
Track ID	ID of a track entry.
Status	Status of a track entry: • **Positive**—The tracked object functions correctly. • **Invalid**—The tracked object is invalid. • **Negative**—The tracked object is abnormal.
notify 13 seconds later	The Track module notifies the application modules of the track entry state change 13 seconds later. The information is not displayed after the Track module notifies the application modules.
Duration	Time period during which the track entry stays in the state.
Notification delay: Positive 20, Negative 30 (in seconds)	• The Track module notifies the application modules that the status of the track entry changes to Positive after a delay time of 20 seconds. • The Track module notifies the application modules that the status of the track entry changes to Negative after a delay time of 30 seconds.
Reference object	Tracked object associated with the track entry.
NQA entry	NQA test group associated with the track entry.
Reaction	Reaction entry associated with the track entry.
Track interface	Information of the interface associated with the track entry.
Interface status	Interface status: • Inserted. • Removed.
Interface	Interface to be monitored.
Protocol	Physical status or Layer 3 protocol status of the monitored interface: • **None**—Physical status of the monitored interface. • **IPv4**—IPv4 protocol status of the monitored Layer 3 interface. • **IPv6**—IPv6 protocol status of the monitored Layer 3 interface.

track interface

Use **track interface** to create a track entry, associate it with the physical status of a specific interface, and specify the delay time for the Track module to notify the application modules when the status of the track entry changes.

Use **undo track** to remove the track entry.

Syntax

track *track-entry-number* **interface** *interface-type interface-number* [**delay** { **negative** *negative-time* | **positive** *positive-time* } *]

undo track *track-entry-number*

Default

No track entry exists.

Views

System view

Default command level

2: System level

Parameters

track-entry-number: Specifies the track entry ID in the range of 1 to 1024.

interface-type interface-number: Specifies an interface by its type and number.

delay: Specifies that the Track module notifies the application modules of the track entry status change after a specific delay time. If this keyword is not provided, the Track module notifies the application modules immediately when the track entry status changes.

negative *negative-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Negative. The *negative-time* argument represents the delay time, in seconds, in the range of 1 to 300.

positive *positive-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Positive. The *positive-time* argument represents the delay time, in seconds, in the range of 1 to 300.

Usage guidelines

After you create a track entry, the delay time is the only setting you can change. To change the delay time, use the **track interface delay** command. To change other settings, you must first delete the entire track entry, and then create a new track entry.

When you create a track entry and associate it with the physical status of a specific interface, the status of the track entry is Positive if the physical status of the interface is up. The status of the track entry is Negative if the physical status of the interface is down. To display the physical status of an interface, use the **display ip interface brief** command.

Examples

Create track entry 1, and associate it with the physical status of interface VLAN-interface 1.

```
<Sysname> system-view
[Sysname] track 1 interface vlan-interface 1
```

Related commands

- **display track**
- **display ip interface brief** (*Layer 3 Command Reference*)

track interface protocol

Use **track interface protocol** to create a track entry, associate it with the protocol status of a specific interface, and specify the delay time for the Track module to notify the application modules when the status of the track entry changes.

Use **undo track** to remove the track entry.

Syntax

track *track-entry-number* **interface** *interface-type* *interface-number* **protocol** { **ipv4** | **ipv6** } [**delay** { **negative** *negative-time* | **positive** *positive-time* } *]

undo track *track-entry-number*

Default

No track entry exists.

Views

System view

Default command level

2: System level

Parameters

track-entry-number: Specifies the track entry ID in the range of 1 to 1024.

interface-type *interface-number*: Specifies an interface by its type and number.

ipv4: Monitors the IPv4 protocol status. When the IPv4 protocol status of an interface is up, the status of the track object is Positive. When the IPv4 protocol status of an interface is down, the status of the track object is Negative. To display the IPv4 protocol status of an interface, use the **display ip interface brief** command.

ipv6: Monitors the IPv6 protocol status. When the IPv6 protocol status of an interface is up, the status of the track object is Positive. When the IPv6 protocol status of an interface is down, the status of the track object is Negative. To display the IPv6 protocol status of an interface, use the **display ipv6 interface** command.

delay: Specifies that the Track module notifies the application modules of the track entry status change after a specific delay time. If this keyword is not provided, the Track module notifies the application modules immediately when the track entry status changes.

negative *negative-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Negative. The *negative-time* argument represents the delay time, in seconds, in the range of 1 to 300.

positive *positive-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Positive. The *positive-time* argument represents the delay time, in seconds, in the range of 1 to 300.

Usage guidelines

After you create a track entry, the delay time is the only setting you can change. To change the delay time, use the **track interface protocol delay** command. To change other settings, you must first delete the entire track entry, and then create a new track entry.

Examples

Create track entry 1, and associate it with the IPv4 protocol status of VLAN-interface 2.
```
<Sysname> system-view
[Sysname] track 1 interface vlan-interface 2 protocol ipv4
```

Related commands

- **display track**
- **display ip interface brief** (*Layer 3 Command Reference*)

- **display ipv6 interface** (*Layer 3 Command Reference*)

track nqa

Use **track nqa** to create a track entry, associate it with the specified reaction entry of the NQA test group, and specify the delay time for the Track module to notify the application modules when the status of the track entry changes.

Use **undo track** to remove the track entry.

Syntax

track *track-entry-number* **nqa entry** *admin-name operation-tag* **reaction** *item-number* [**delay** { **negative** *negative-time* | **positive** *positive-time* } *]

undo track *track-entry-number*

Default

No track entry exists.

Views

System view

Default command level

2: System level

Parameters

track-entry-number: Specifies the track entry ID in the range of 1 to 1024.

entry *admin-name operation-tag*: Specifies the NQA test group to be associated with the track entry. The *admin-name* argument is the name of the NQA test group administrator who creates the NQA operation, and is a case-insensitive string of 1 to 32 characters. The *operation-tag* argument is the NQA operation tag, a case-insensitive string of 1 to 32 characters.

reaction *item-number*: Specifies the reaction entry to be associated with the track entry. The *item-number* argument is the reaction entry ID in the range of 1 to 10.

delay: Specifies that the Track module notifies the application modules of the track entry status change after a specific delay time. If this keyword is not provided, the Track module notifies the application modules immediately when the track entry status changes.

negative *negative-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Negative. The *negative-time* argument represents the delay time, in seconds, in the range of 1 to 300.

positive *positive-time*: Specifies the delay time for the Track module to notify the application modules that the status of the track entry changes to Positive. The *positive-time* argument represents the delay time, in seconds, in the range of 1 to 300.

Usage guidelines

After you create a track entry, the delay time is the only setting you can change. To change the delay time, use the **track nqa delay** command. To change other settings, you must first delete the entire track entry, and then create a new track entry.

Examples

Create track entry 1, and associate it with reaction entry 3 of the NQA test group **admin-test**.

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

```
[Sysname] track 1 nqa entry admin test reaction 3
```
Related commands

- **display track**
- **nqa**
- **reaction** (*Network Management and Monitoring Command Reference*)

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

http://www.hp.com/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/go/wwalerts

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

http://www.hp.com/support/manuals

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms.*

Websites

- HP.com http://www.hp.com
- HP Networking http://www.hp.com/go/networking
- HP manuals http://www.hp.com/support/manuals
- HP download drivers and software http://www.hp.com/support/downloads
- HP software depot http://www.software.hp.com
- HP Education http://www.hp.com/learn

Conventions

This section describes the conventions used in this documentation set.

Command conventions

Convention	Description
Boldface	**Bold** text represents commands and keywords that you enter literally as shown.
Italic	*Italic* text represents arguments that you replace with actual values.
[ ]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x | y | ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x | y | ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x | y | ... } *	Asterisk-marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
[x | y | ...] *	Asterisk-marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in bold text. For example, the **New User** window appears; click **OK**.
>	Multi-level menus are separated by angle brackets. For example, **File** > **Create** > **Folder**.

Symbols

Convention	Description
⚠ WARNING	An alert that calls attention to important information that if not understood or followed can result in personal injury.
△ CAUTION	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
① IMPORTANT	An alert that calls attention to essential information.
NOTE	An alert that contains additional or supplementary information.
☼ TIP	An alert that provides helpful information.

Network topology icons

	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the switching engine on a unified wired-WLAN switch.
	Represents an access point.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

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