Reliability Configuration Commands

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Chapter 1 **Port Backup Command**

1.1.1 backup always

This command is used to configure whether the backup interface dials promptly when the protocol on the main port is down.

Syntas

backup always

no backup always

Parameter

Default

This function is not started.

command mode

Interface configuration status

Explanation:

This command is applicable only when the backup port is the dialing port. Under general condition, when the main port protocol is down, the router will be noted that message can be sent from the backup port. But it will not dial automatically and send message until the upper layer sends the data through this backup port. If the command is configured, the backup port will dial immediately and keeps a connective state all the time when the main port is down.

Example

The example below is configuring port backup delay on serial port s1/0

Router_config_s1/0#backup int a0/0
Router_config_s1/0#backup always

1.1.2   backup interface

This command is used to select the backup interface and start the backup function. The command "no" is used to cancel the backup function.

Syntas

backup interface *slot/port*

no backup interface

Parameter

Parameter	Description
slot/port	The type and port number of backup interface. The backup interface can be physical interface and logic interface of the dialer.

Default

Command mode

Interface configuration mode

Explanation

The backup interface should be chosen by this command. When the main port works normally, the backup port is usually under backup state and is not under normal function. An interface can only choose another interface as its backup interface. Repeating the execution of the above commands, the port designated by the last command will be effective. The backup interface can only be used as a backup port of some interface and cannot be used as a backup port of multiple interfaces simultaneously. At the same time, the backup interface cannot be used as the main port for setting backup interface for the purpose of avoiding the setup of backup interface for each other or the formation of the circular chain of backup interface. When the command "shutdown" is executed on the main port of from the port automatically, the backup function of the port will be forbidden.

Example

The following example how to set interface s1/1 to the standby interface of interface s1/0.

Router_config_s1/0#backup interface int s1/0

The command below is used for canceling the function.

Router_config_s1/0#no backup interface

1.1.3   backup delay

This command is used to configure the delay for the activation or deactivation of the backup interface. The "no" form of this command is used to resume the default value.

Syntas

backup delay {**enable-delay** | **never** } {**disable-delay** | **never** }

no backup delay

Parameter

Parameter	Description
Enable-delay	When the main interface is down, the backup interface is activated after the enable-delay seconds.
Disable-delay	When the main port is up, the backup interface is deactivated after disable-delay seconds.
Never	Preventing activation or deactivation.

Default

The delay of activation and deactivation is 0 seconds.

Command mode

Interface configuration status

Explanation

The backup interface shall be configured before configuring delay, namely starting the backup function first. Inactivation and deactivation delay always never do. So the backup function bears no practical significance.

Example

The example below configures port backup delay on the serial port s1/0

Router_config_s1/0#backup int s1/1
Router_config_s1/0#backup delay 5 5

1.1.4   backup load

Configuring the balancing backup function of backup interface flow. The command "no" is used for setting the parameter as default value.

Syntas

backup load {**enable-threshold** | **never** } {**disable-threshold** | **never**}

no backup load

Parameter

Parameter	Description
enable-threshold	The backup interface will be activated when the ratio of the speed of the data sent or received by the main port occupying the bandwidth of the interface exceeds the value of the enable-threshold.
disable-threshold	The backup interface will be deactivated when the proportion of the load occupying the bandwidth is less than the value of disable-threshold.
Never	Preventing activation or deactivation.

Default

The parameter value is never, namely the balancing function of flow is not started.

Command mode

Interface configuration status

Explanation

The backup interface shall be configured first before configuring backup flow balance, namely the backup function shall be started first. The threshold value of setting activation backup interface shall not be smaller than that of deactivation backup interface.

Example

The example below configures flow balance on the serial port s1/0

Router_config_s1/0#backup int s1/1
Router_config_s1/0#backup load 70 30

1.1.5   Debug backup

Syntas

deubug backup

no debug backup

Parameter

>none

Default

>none

Command mode

>supervisor mode

Explanation

>The debug information switch of port backup is used for observing the time received in the interface of port backup function and transition information. The command "no" is used for closing Debug information.

Example

>The example below opens debug information and shows the information related to port backup function.

outer#debug backup
Router#conf
Router_config#int s1/0
Router_config_s1/0#backup int d1
Router_config_s1/0#2001-11-28 11:13:30 BACKUP Serial1/0 secondary interface
Seri al0/1 unconfigured
2001-11-28 11:13:30 BACKUP Serial0/0 changed state to initializing 2001-
11-28 11:13:30 BACKUP Serial0/0 second interface Dialer1 configured
2001-11-28 11:13:30 BACKUP Serial0/0 changed state to NORMAL 2001-
11-28 11:13:30 BACKUP Serial0/0 second interface move to standby

1.1.6 show backup

Syntas

>**show backup**

Parameter

>none

Default

Command mode

supervisor mode

Explanation

Showing all the interfaces of the configured port backup function and relevant status information.

Example

```
Router_config_s1/1#show ba
Primary Interface      Secondary Interface   Status
Serial1/0              Dialer1               NORMAL
Serial1/1              Dialer2               BACKUPMODE
```

Chapter 2 **HSRP Command**

2.1   HSRP Command

2.1.1   debug standby event

Use "debug standby" command to show hsrp runtime infomation .Use "no debug standby" to stop showing the information.

Syntas

debug standby [**interface** *interface-name group-id*] **event**

no debug standby [**interface** *interface-name group-id*] **event**

Parameter

None

Command mode

manage model

Explanation

output all hsrp group runtime event information configured in the interface. if you want to appoint one hsrp group, the corresponding interface name and group id must be supplied .

Example

debug standby output information show below :

Router# debug standby event
2000-1-13 00:00:09 HSRP EVT : e0/0 group 0 delete virtual ip 192.168.20.1
2000-1-13 00:00:09 HSRP EVT : e0/0 group 0 add virtual ip 192.168.20.5

2.1.2   debug standby packets

Syntas

debug standby [**interface** *interface-name*] [*group-id*] **packets**

no debug standby [**interface** *interface-name*] [*group-id*] **packets**

Parameter

None

Command mode

EXEC mode

Explanation

Show HSRP interactive packet information, such as sending HSRP packet, receiving HSRP response etc… . If you want to appoint one hsrp group, the corresponding interface name and group id must be supplied .

Example

Router# debug standby packets

2000-1-13 00:08:57 HSRP PKT SEND : e0/0 HELLO out 192.168.20.237 Active pri 100 ip 192.168.20.201

2000-1-13 00:09:00 HSRP PKT SEND : e0/0 HELLO out 192.168.20.237 Active pri 100 ip 192.168.20.201

field	Description
2001-1-13 00:08:57	processing hsrp packet time
HSRP PKT	HSRP Packet
SEND/RECV	Send/Recv HSRP Packet
e0/0	interface name recv/send packet
HELLO/COUP/RESIGN	packet type
192.168.20.237	ip packet source address
Active/Standby/Speak	hsrp protocol status
pri 100	hsrp group priority
ip 192.168.20.201	hsrp gourp virtual ip address

2.1.3   debug standby errors

Syntas

debug standby [**interface** *interface-name*] [*group-id*] **errors**

no debug standby [**interface** *interface-name*] [*group-id*] **errors**

Parameter

None

Command mode

manage model

Explanation

This command is used to show the HSRP interactive error information. If you want to appoint one HSRP group, the corresponding interface name and group id must be supplied .

2.1.4 debug standby terses

Syntas

debug standby [**interface** *interface-name*] [*group-id*] **terses**

no debug standby [**interface** *interface-name*] [*group-id*] **terses**

Parameter

Command mode

manage model

Explanation

This command is used to display the HSRP interactive terse information. If you want to appoint one HSRP group, the corresponding interface name and group id must be supplied .

2.1.5 show standby

Use "show standby" command to show HSRP group status infomation .

Syntas

show standby [**interface** *interface-name*]

Parameter

Parameter	Description
interface-name	interface name to show hsrp gourp information.

Default

show all hsrp group information in every interface

Command mode

manage/config/interface config model

Explanation

Show HSRP group information. If you want to appoint one HSRP group, the corresponding interface name and group id must be supplied .

Example

Router# show   standby interface e0/0
    Ethernet0/0 - Group 0
        HSRP State is Active
        Virtual IP address : 192.168.20.201/24 (config)
        Virtual Mac address : 0000.0102.0306
        Active Router IP : 192.168.20.237
        Standby Router IP : unknown
        Preempt is not set
        Current Priority is 100
        Config Priority is 100
        HSRP timer : hello 3 s(default) hold 10s (default)
        HSRP current timer : hello 3 active 3 standby 0
        Authentication string is aaaaaaaa

Domain	Description
Ethernet0/0	interface name
Group 0	HSRP Group id
HSRP State is Acvite	HSRP Group status is Active
Virtual IP address : 192.168.20.201/24 (config)	HSRP Group virtual ip is 192.168.20.201(configure by command)
Virtual Mac address : 0000.0102.0306	virtual mac address is 0000.0102.0306
Active Router IP : 192.168.20.237	Active Router ip address is 192.168.20.237
Standby Router IP : unknown	Standby Router ip address is unknown
Preempt is not set	not config preempt
Current Priority is 100	current priority level is 100

Config Priority is 100	configured priority level is 100
HSRP timer : hello 3 s(default) hold 10s (default)	hello timer is 3s(default), hold timer is 10s(default)
Authentication string is bdcom	authentication string is bdcom

2.1.6   show standby brief

Syntas

show standby brief

Parameter

Command mode

supevisor mode/global configuration mode/interface configuration mode

Explanation

It is used to show hsrp group brief information.

Example

Router# show   standby brief
Interface Grp Prio Pree State   Active addr   Standby addr Virtual addr
      e0/0   0 100 N   Active 192.168.20.237 unknown   192.168.20.201

domain	Description
Interface	interface name
Grp	HSRP Group id
Prio	priority
Pree	preempt
State	current hsrp group status
Active addr	current hsrp group active router address
Standby addr	current hsrp group standby router address
Virtual addr	current hsrp group virtual ip address

2.1.7   standby authentication

Use "standby authentication" command to configure hsrp group authentication string .
Use "no standby authentication" to configure default authentication string .

Syntas

standby [*group-number*] **authentication** *string*

no standby [*group-number*] **authentication**

Parameter

Parameter	Description
Group-number	（Optional）hsrp group id
String	authentication string . default string is "bdcom"

Default

group-number: 0

string: **bdcom**

Command mode

interface configure mode

Explanation

Authentication string in all hsrp packet transfered is unencrypted.The same authentication string must be configured in one hsrp group of every router and access server to interact.HSRP group virtual ip address and timer can not be learned from other router if authentication unmatched .But authentication string unmatched can not deny one router to be replaced by another router .

Example

hsrp group 1 of interface ethernet0/0 is configured authentication string "word" :

interface ethernet 0/0 standby

1 authentication word

2.1.8   standby ip

This command is used to enable the hsrp protocol process .You can run **no standby ip** to disable the hsrp protocol process.

Syntas

standby [*group-number*] **ip** [*ip-address* [**secondary**]]

no standby [*group-number*] **ip** [*ip-address*]

Parameter

Parameter	Description
group-number	*(Optional)hsrp group id to enable*
ip-address	*(Optional)hsrp group virtual ip*
secondary	*(Optional)hsrp group virtual secondary ip*

Default

group-number: 0

hsrp protocl is disabled.

Command mode

interface configure mode

Explanation

This command is used to enable the HSRP protocol process. If the IP address is supplied, the ip address act as the virtual ip address of the hsrp group. If not supplied, the hsrp group should learn the virtual ip address from the active router. The virtual IP address must be configured in one hsrp router at least of a hsrp group.

If the hsrp process is enabled, the proxy ARP process shouled be change unless proxy ARP is disabled.If hsrp group status is active, the proxy ARP request should be replied by hsrp group virtual mac-address . Otherwise ,proxy ARP is disabled.

Example

The following example shows how to configure hsrp group 1 in ehternet 0/0. The hsrp group's virtual ip should be learned from the active router.

interface ethernet
0/0 standby 1 ip
the three virtual ip address used the same virtual mac address in arp table.
ip address 1.1.1.1. 255.255.255.0
ip address 1.2.2.2. 255.255.255.0 secondary ip
address 1.3.3.3. 255.255.255.0 secondary ip
address 1.4.4.4. 255.255.255.0 secondary
standby ip 1.1.1.254
standby ip 1.2.2.254 secondary
standby ip 1.3.3.254 secondary

2.1.9 standby mac-address

This command is used to configure the virtual MAC address of the hsrp group. You can run **no standby ip** to resume the default virtual MAC address.

Syntas

standby [*group-number*] **mac-address** *mac-address*

no standby [*group-number*] **mac-address**

Parameter

Parameter	Description
group-number	（Optional）hsrp group id
mac-address	the virtual mac address to configure

Default

group-number: 0

mac-address: 0x00 00 0c 07 ac group-number

Command mode

interface configure mode

Explanation

The default virtual MAC address of the HSRP group is "0x00 00 0c 07 ac group-numer".

Example

The following example shows how to set the virtual MAC address of HSRP group1 to 0x00 00 01 02 03 04.

interface ethernet 0
standby 1 authentication 00:00:01:02:03:04

2.1.10   standby priority, standby preempt

This command is used to configure the priority level of the hsrp group. You can run **no standby priority** to configure default standby priority level.

You can run **standby preempt** to configure the preempt and delay timer of hsrp group.

Syntas

standby [*group-number*] **priority** *priority*

standby [*group-number*] **preempt** [**delay** *delay*]

no standby [*group-number*] **priority**

no standby [*group-number*] **preempt**

Parameter

Parameter	Description
group-number	(Optional)HSRP group id
Priority *priority*	(Optional)priority level(1-255), default value is 100
Preempt	(Optional)If router is configued preempt,it should coup the active router while the priority level is larger than it.Otherwise ,the local router act as active until no other router is active .
delay *delay*	(Optional) Delay Parameter appoint the delay timer which local router replace the active router .Scope is from 0 to 3600 seconds .Default value is 0〔no delay〕.

Default

group-number: 0

priority: 100

delay: 0 seconds(no delay) .

Command mode

Interface configure mode

Explanation

This command is used to configure the priority value for selecting the active and standby routers. If the preempt is configured, the router with bigger priority value is active. If the priority is equal, the router with the higher ip address is active.

Warning: If the standby track is configured and the track interface is invalid,the group priority can be changed dynamic.

While the router reboot, the route table is not a whole .If the preempt is configured ,the router maybe act as an active without the full route service.This problem can be resolved by configure a delay timer.

Example

The router's priority level is 120(larger than default value) and delay 300 seconds(5 minutes) before acting as a active router :

interface ethernet 0 standby

ip 172.19.108.254

standby priority 120 preempt delay 300

2.1.11   standby timers

This command is used to configure the timer of the hsrp group.

Syntas

standby [*group-number*] **timers** *hellotime holdtime*

no standby [*group-number*] **timers**

Parameter

Parameter	Description
group-number	*(Optional)group id*
Hellotime	hello timer (1-255) seconds
Holdtime	*hold timer (1-255) seconds*

Default

group-number: 0

hellotime: 3 seconds

holdtime: 10 seconds

Command mode

interface configure mode

Explanation

This command is used to configure the hsrp hello packet, sending interval and standing interval used to judge the active/standby router invalid.

If the hello/hold timer is not configured, hsrp group can be learned from active router and access server .Generally, the hold timer is larger of equal 3 times hellotime.

Example

A hsrp group 1 is configured in interface e0/0. The hello timer (hello packet sending interval) is 5 seconds ,the hold timer is 15 seconds :

interface ethernet
0/0 standby 1 ip
standby 1 timers 5 15

2.1.12   standby track

Use "standby track" command to enable hsrp group priority level track other interface status change .Use "no standby track" to disable the track.

Syntas

standby [*group-number*] **track interface** *interface-name* [*interface-priority*]

no standby [*group-number*] **track *interface*** *interface-name* [*interface-priority*]

Parameter

Parameter	Description
group-number	(Optional)group id
interface-name	track interface name
Interface-priority	delta value of tracking interface

Default

group-number: 0

interface-priority: 10

Command mode

interface configure model

Explanation

The command contact hsrp group priority with interface status .

If the track interface is failed, the hsrp group priority decrease a delta value (defaul 10).If the interface is not tracked, the priority value do not change .

Optional Parameter interface-priority appoint the delta value while the tracking interface is failed or up.If the tracking interface changed from failed to up , the delta value is add to priority ,Otherwise decrease.

Example

Two tracking interface (e0/0 and s0/0) is configured in hsrp group 0 in interface e1/1 .If e0/0 or s0/0 is failed , the hsrp group priority should be decreased 10(default value)

interface ethernet 1/1
ip address 198.92.72.37 255.255.255.240
no ip redirects
standby track ethernet 0/0

standby track serial 0/0

standby preempt standby

ip 198.92.72.46

Chapter 3 **VRRP Configuration Commands**

3.1   VRRP Configuration Commands

The VRRP protocol (RFC2338) is supported, and the extended track and preempt delay functions are added.

3.1.1   vrrp associate

To configure basic IP and secondary IP of the VRRP group, and activate VRRP, run **vrrp associate**. To cancel the configured IP and stop VRRP group, run **no vrrp associate**.

[**no**] **vrrp associate** *group-number ip-address netmask* [**secondary**]

no vrrp associate

Parameter

Parameter	Description
group-number	Added VRRP group numberIts default value is 0.
ip-address	Added IP address
netmask	Network address mask
secondary	Means that the currently-configured IP is a secondary IP.

Default

There is no default value.

Command mode

Interface configuration mode

Explanation

The added virtual IP address of VRRP can be the basic IP address of VRRP or the VRRP secondary IP address. This IP address (basic IP or secondary IP) cannot belong to the network segment where any other interface's IP lies, or cannot belong to the network segment where any interface module's IP or global application module's IP lies. Except that basic VRRP IP can be same to the basic IP of the interface where basic vrrp IP lies, the configured VRRP IP cannot be same to the IP of any current interface. However, the IP of the current interface and the configured VRRP IP can be in the same network segment.

You can run **no vrrp [group-number] associate** to cancel all VRRP IP addresses of the current interface group.

When an IP address of a VRRP group is same to the basic IP address of the current interface, VRRP enters the owner state, which is a special master state. The owner state has the following attributes: the precedence of the group is automatically changed to 255; this group must be in master state; the configured track gets ineffective in this case.

Example

The following example shows how to configure basic IP address and secondary IP address on interface ethernet1/0:

interface ethernet1/0

vrrp 3 associate 100.1.1.1

vrrp 3 associate 100.1.1.2 secondary

3.1.2 vrrp description

To configure the description of the interface, run **vrrp *group-number* description WORD**. To cancel the description of the interface, run no **no vrrp description WORD**.

vrrp *group-number* **description WORD**

no vrrp description WORD

Parameter

Parameter	Description
group-number	Group number, whose default value is 0
WORD	Configures the description character string of the group.

Default

There is no default value.

Command mode

Interface configuration mode

Explanation

This command is just to configure a description for an interface and has no effect on other functions of the interface.

Example

vrrp 3 description Shanghai_dial

3.1.3   vrrp priority

To configure the priority of a group, run **vrrp [*group-number*] priority *<1-254>***. To cancel the configured priority of the group and resume its default value, run **no vrrp [*group-number*] priority**.

vrrp [group-number**] priority** *<1-254>*

no vrrp [group-number**] priority**

Parameter

Parameter	Description
group-number	Group number, whose default value is 0
<1-254>	A value between 1 and 254

Default

The default value is 100.

Command mode

Interface configuration mode

Explanation

When the priority of a group is configured in the owner state, the priority can be configured but cannot be used currently for the current priority is 255. When the group is in owner state, its priority automatically changes to 255.

Example

vrrp 3 priority 180

3.1.4   vrrp preempt

To configure the preemption mode of a group, run **vrrp *group-number* preempt**. The preemption delay can also be configured.

[**no**]   **vrrp** *group-number* **preempt**

[**no**] **vrrp** *group-number* **preempt delay** *<1-255>*

Parameter

Parameter	Description
group-number	Group number, whose default value is 0

<1-255>	Configured preemption delay, whose unit is second

Default

It is the preemption mode by default.

Command mode

Interface configuration mode

Explanation

When this group receives an advertise packet with a lower priority in preemption mode, this group would not update the master down timer and the preemption will occur later. If the preemption mode is not configured, the master down timer will carry on update even if this group's priority is higher than the packet's.

The preemption delay means the minimum time which has to wait before the preemption. When a packet with comparatively lower priority is received by this group, the master down timer will be updated as the delay value if the master down timer is shorter than the configured preempt delay.

The preemption is canceled and the preemption delay is set to 0.

Example

vrrp 3 preempt
vrrp 3 preempt delay 10

3.1.5   vrrp track

To track an interface, run **vrrp *group-number* track interface *interface-number <1-255>***.
When the tracked interface changes, you can justify its priority.

[**no**]   **vrrp** *group-number* **track interface** *interface-number <1-255>*

Parameter

Parameter	Description
group-number	Group number, whose default value is 0
Interface-number	Interface number, such as f0/0
<1-255>	Configured preemption delay, whose unit is second

Default

There is no default value.

Command mode

Interface configuration mode

Explanation

When a group is configured with a track function and the protocol of the tracked interface changes to **down**, the priority of the group decreases to the configured value; if the protocol of the tracked interface changes to **up**, the priority of the group increases to the configured value.

Currently only the state of the link protocol of the interface can be tracked. The following actions will lead the change of the protocol state: the cut-off of the network cable that the interface connects, interface's shutdown and link protocol's disconnection.

When the group is in owner state, the configured track function will automatically get ineffective.

Example

vrrp 3 track interface ethernet2/1 20

no vrrp 3 track interface ethernet2/1

3.1.6   vrrp authentication

To configure the authentication character string of the VRRP group, run **vrrp *group-number* authentication WORD**.

[**no**] **vrrp** *group-number* **authentication WORD**

Parameter

Parameter	Description
group-number	Group number, whose default value is 0
WORD	An eight-byte authentication string

Default

The authentication string is null by default and the authentication is not performed.

Command mode

Interface configuration mode

Explanation

The packet received by a VRRP group is effective only when its authentication string is same to the configured authentication string. Pay attention that multiple masters will exist concurrently if different authentication strings appear in the same group during configuration.

Example

vrrp 3 authentication bdcom

no vrrp 3 authentication

3.1.7   vrrp timers

To configure the value of advertisement timer of the VRRP group, run **vrrp timers**.

[**no**] **vrrp** *group-number* **timers advertise** *<1-255>*

[**no**] **vrrp** *group-number* **timers advertise dsec** *<5-360>*

[**no**] **vrrp** *group-number* **timers learn**

Parameter

Parameter	Description
group-number	Group number, whose default value is 0
<1-255>	Configured time of advertise, whose unit is second
<5-360>	Configured time of advertise, whose unit is 0.1 second
learn	Configures the learning mode of advertise.

Default

The default value of the timer is 1 second.

The learning does not perform by default.

Command mode

Interface configuration mode

Explanation

This command is used to configure the value of the advertise timer in second. The value of master down timer is calculated through the advertise timer, and the value is [3*advertise, 3*advertise+256/(256-priority)].

Only when a group has no configured timer value and the learning ability has been set can the group learn the advertise timer value from the master-transmitted packets.

When using this command, you are recommended to use the same value.

Example

vrrp 3 timers advertise 3

vrrp 3 timers advertise dsec

15 no vrrp 3 timers advertise

vrrp 3 timers learn

3.1.8 show vrrp

To display the current running state of VRRP, run the following command:

show vrrp interface interface-numer [detail]

show vrrp brief

show vrrp detial

Parameter

detail：Displays the details about the running state.

Default

There is no default value.

Command mode

Interface command mode/configuration mode/privileged mode

Explanation

This command is used to display the running state of the currently-configured VRRP.

The **brief** mode is to display only the simple state, and the group in init state will not be displayed.

However, the **detail** mode can display more information about the configured group.

Example

show vrrp interface e2/1 detail

show vrrp brief

3.1.9   debug vrrp

To debug VRRP, run the following commands:

debug vrrp interface interface-number group-number all | packets | errors | events

debug vrrp all | packets | errors | events

no debug vrrp

Parameter

Parameter	Description
interface-number	Interface number
group-number	Number of the group

Default

There is no default value.

Command mode

Privileged mode

Explanation

This command can be used to export the debugging information about the error, packet and event of VRRP. The **all** parameter means that all three events will be exported.

Example

debug vrrp interface e2/1 3
all no debug all