

Reliability Configuration



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Chapter 1 VRRP Configuration

1.1 Overview

The Virtual Router Redundancy Protocol (VRRP) ensures the successful single-node service in the default static routing condition. VRRP avoids the defects of the statically designated gateway. A group of switches can work together as a virtual switch through VRRP. The virtual switch has a virtual IP address and a virtual MAC address for the outside. VRRP chooses one switch from the switch group as the master switch, responsible for forwarding packet. When the master switch has problems, the standby switch will promptly take over the tasks of the master switch without changing the default gateway address. The whole takeover process is transparent to the terminal system. This mechanism can provide fast and effective resolution when trouble occurs.

1.2 VRRP Configuration Tasks

- Enabling/ Disabling VRRP at the port
- Configuring VRRP authentication mode
- Configuring VRRP priority preemption
- Configuring VRRP priority
- Configuring VRRP clock value
- Monitoring and maintaining VRRP

1.3 VRRP Configuration Tasks

1.3.1 Enabling/ Disabling VRRP at the Port

Run the following commands in port configuration mode:

Run...	To...
vrrp <i>vrid</i> associate <i>virtual-address</i>	Enable VRRP at the port.
no vrrp <i>vrid</i>	Resume VRRP to the default state.

The virtual switch is enabled after the virtual address of VRRP is configured. The virtual address and the primary IP address of the port must be in the same network segment. Otherwise, the virtual switch remains in the **Init** state. There is no need to configure the mask for the virtual address because the virtual switch takes the primary mask of the port as its mask. When the virtual address and the primary IP address of the port are the same, the system automatically sets the priority to 255 for the virtual switch.

The VRRP function is disabled by default.

1.3.2 Configuring VRRP Authentication Mode

Run the following commands in port configuration mode:

Run...	To...
vrrp <i>vrid</i> authentication { no-authen simple-text <i>string</i> } (word)	Configure VRRP authentication mode.
no vrrp <i>vrid</i> authentication	Resume the VRRP authentication mode to the default state.

In simple-text authentication mode, the authentication character string is in the message as clear code and is forwarded out. The receiver checks the authentication character string in the message to see whether it matches the locally configured authentication character string. The authentication character string has eight characters at most.

In default state, the authentication mode of VRRP is **no-authen**.

1.3.3 Configuring VRRP Priority Preemption

Run the following commands in port configuration mode:

Run...	To...
vrrp <i>vrid</i> preempt { on off delay }	Configure VRRP priority preemption.
no vrrp <i>vrid</i> preempt	Resume the default VRRP priority preemption mode.

The priority preemption is effective only to the backup switch. After the backup switch receives the **announce** message from the master switch, it will examine the priority of the master switch. If the priority level of the master switch is lower than the locally configured priority level and the backup switch is configured with priority preemption, the backup switch will leap from the **backup** state to the **master** state and send the **announce** message to the outside. Otherwise, the backup switch remains in the **backup** state.

The default mode is priority preemption.

1.3.4 Configuring VRRP Priority

Run the following commands in port configuration mode:

Run...	To...
vrrp <i>vrid</i> priority <i>value</i> (1~254)	Configure the VRRP priority.
no <i>vrid</i> priority	Resume the VRRP priority to the default value.

When the virtual address and the port address are same, VRRP will automatically increase its priority value to 255. After the virtual address or the port address changes, the priority value automatically resumes to the original value.

The default value is 100.

1.3.5 Configuring VRRP Clock Value

Run the following commands in port configuration mode:

Run...	To...
vrrp vrid timer advertisement value	Configure the VRRP clock value.
no vrrp vrid timer advertisement	Resume the VRRP clock value to the default value.

The clock value determines the shortest time that the virtual switch needs to survive from troubles. When the master switch breaks down, the backup switch will function as the master switch after the interval **3*advertisement + skew_time**. If the value of the **advertisement** clock is big, it is not good for system recovery. The default value is recommended.

The default value is 1 second.

1.3.6 Monitoring and maintaining VRRP

Run the following commands in port configuration mode:

Run...	To...
show vrrp vrid [interface vlan_intf]	Display the VRRP information.
[no] vrrp { packet event }	Enable or disable the debugging on-off for VRRP packets and events.

Display VRRP information:

```
switch#show vrrp 1
VLAN1 (192.168.20.118, 255.255.255.0 00e0.0f42.0000)
-----
group id: 1
state: Master
virtual mac address: 0000.5e00.0101
priority: 100
preempt: on
authentication: no-authen
advertisement interval: 1
associate IP address: 192.168.20.110
advertisement timer expiry: 1
```

1.3.7 VRRP Configuration Example

The network topology is shown in Figure 1-1:

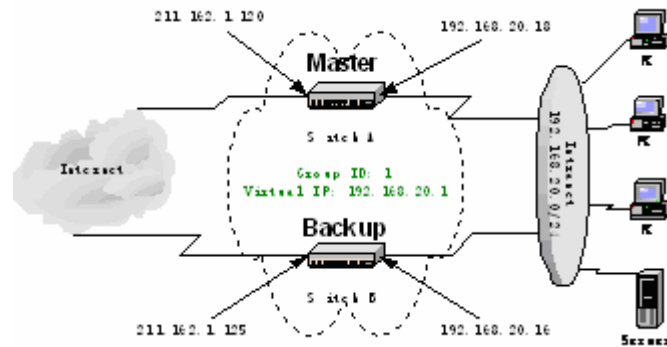


Figure 1-1 Network topology

1. Configuring switch A

- (1) Configure the address for the interface of the private network.
Switch_config_v1# ip address 192.168.20.18 255.255.255.0
- (2) Configure the address for the interface of the public network.
Switch_config_v2# ip address 211.162.1.120 255.255.255.0
- (3) Configure virtual switch group 1 on the interface of the private network. The virtual address is 192.168.20.1. The priority value is 120.
Switch_config_v1# vrrp 1 associate 192.168.20.1
Switch_config_v1# vrrp 1 priority 120
- (4) Display information about the virtual switch.
Switch_config# show vrrp
VLAN1 (192.168.20.18,255.255.255.0 00e0.0f42.0000)

group id: 1
state: Master
virtual mac address: 0000.5e00.0101
priority: 120
preempt: on
authentication: no-authen
advertisement interval: 1
associate IP address: 192.168.20.1
advertisement timer expiry: 1

2. Configuring switch B

- Configure the address for the interface of the private network.
Switch_config_v1# ip address 192.168.20.16 255.255.255.0
- (5) Configure the address for the interface of the public network.
Switch_config_v2# ip address 211.162.1.125 255.255.255.0

Configure virtual switch group 1 on the interface of the private network. The virtual address is 192.168.20.1. The priority value is the default value.

```
Switch_config_v1#vrrp 1 associate 192.168.20.1
```

Display information about the virtual switch:

```
Switch_config#show vrrp
```

```
VLAN1 (192.168.20.16,255.255.255.0 00e0.0f42.0000)
```

```
-----  
group id: 1
```

```
state: Backup
```

```
virtual mac address: 0000.5e00.0101
```

```
priority: 100
```

```
preempt: on
```

```
authentication: no-authen
```

```
advertisement interval: 1
```

```
associate IP address: 192.168.20.1
```

```
advertisement timer expiry: 1
```

3. Configuring PC and server of the private network

Configure the default gateway for each PC and server in the private network to 192.168.20.1.