Chapter 46: VRRP

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Chapter 46 VRRP

46.1 VRRP Overview

On a TCP/IP network, routes must be configured between two devices without a physical connection to ensure their communication. Currently, routes can be specified through dynamic learning by means of a routing protocol (such as RIP and OSPF) or static configuration. It is impractical to run a dynamic routing protocol on every terminal. Most client operating systems do not support the dynamic routing and they are still under the restraint of management overhead, convergence degree, and security even if they can be configured with a routing protocol. Usually, static routes are configured for IP terminals by specifying one or more default gateways.

Static routing simplifies network management and reduces the communication overhead of terminals. However, if a GPON functioning as a default gateway is damaged, the communication in which the GPON is used as the next-hop host will inevitably be interrupted. A terminal will not be GPONed to a new gateway even if there are multiple default gateways until it is restarted. Virtual Router Redundancy Protocol (VRRP) can rectify the defect of static routing.

VRRP introduces two pairs of concepts: VRRP GPON and virtual GPON, master GPON and backup GPON. A VRRP GPON is a real GPON where VRRP runs, while a virtual GPON is a logical GPON created by VRRP. A group of VRRP GPONes form a virtual GPON, which is also called a backup group. The virtual GPON is represented as a logical GPON with a unique IP address and MAC address. GPONes in a VRRP group are classified into master GPONes and backup GPONes. A VRRP group has only one master GPON and one or more backup GPONes. VRRP selects a master GPON from the GPON group. The master GPON responds to ARP requests and forwards IP packets, and the other GPONes are standby as a backup. If the master GPON is faulty due to some reason, a backup GPON will become the master one within several seconds. Such a switch over is completed very quickly without requiring you to change the IP address or MAC address, and therefore it is transparent to terminal users.

46.2 Configure VRRP

46.2.1 VRRP Configuration List

Configuration Task	Description	Detailed Configuration
Enable VRRP	Required	46.2.2
Configure VRRP Parameters	Optional	46.2.3
Displays and Maintain VRRP Configurations	Optional	46.2.4

46.2.2 Enable VRRP

The ip vrrp vrid vip command is used to assign a virtual GPON (or a backup group) an IP address on the local network segment. The no form of this command is used to remove the virtual IP address of a backup group from the virtual IP address list.

Operation	Command	Remarks
Enter the global configuration mode	**system-view**	
Enter the VLAN-interface or Supervlan-interface configuration mode	**interface** { **vlan-interface** | **supervlan-interface** } *vlan-id*	
Configures VRRP virtual IP address	**ip vrrp** *vrid vip*	
Deletes VRRP virtual IP address	**undo ip vrrp** *vrid* [*vip*]	

Description:

The backup group number ranges from 1 to 255. A virtual address can be an unassigned IP address on the network segment where the backup group resides or the IP address of an interface belonging to the backup group. A maximum of 255 backup groups can be configured. The IP address of the GPON itself can be configured. In this case, the GPON is known as an IP address owner. When the first IP address is assigned to a backup group, VRRP creates the backup group. Other virtual IP addresses configured for the backup group will only be added to the virtual IP address list of the backup group. A backup group can be configured with eight IP addresses at most. A backup group will be deleted together with the last virtual IP address. That is, this backup group does not exist on the interface and all configurations of the backup group will no longer take effect.

46.2.3 Configure VRRP Parameters

The master GPON in a backup group will not be replaced unless it is faulty even if another GPON is configured with a higher priority later. However, if the preemption mechanism is applied, a GPON will become the master GPON if its priority is higher than that of the master GPON and the original master GPON will become a backup GPON accordingly. When preemption is enabled, you can set the delay of preemption. Then a backup GPON becomes master after the delay. A backup GPON will become the master GPON if it does not receive a packet from the original master GPON. However, if a network has unstable performance, a backup GPON may not receive a packet due to network congestion but the master GPON is still working properly. In this situation, the backup GPON will receive a packet from the master GPON after waiting a short time. As a result, frequent switch overs can be avoided. The delay ranges from 0 to 255 seconds.

The master GPON sends VRRP packets within the VRRP backup group at an interval specified by adver_interval to indicate that it is working properly.

If the backup GPON does not receive a VRRP packet from the master GPON within a period of time specified by master_down_interval, it regards that the master GPON is faulty and changes its state to Master.

You can modify the value of adver_interval by running a timer setting command. The value of master_down_interval is three times that of adver_interval. An abnormal switch over may occur in the event of extremely large traffic or variance in timer settings between GPONes. To solve this

problem, you can set adver_interval to a greater value or modify the preemption delay. The value of adver_interval is in the unit of second.

Operation	Command	Remarks
Enter the global configuration mode	**system-view**	
Enter the VLAN-interface or	**interface** { **vlan-interface** |	
Supervlan-interface configuration mode	**supervlan-interface** } *vlan-id*	
Configures VRRP priority	**vrrp priority** *vridpriority*	The priority ranges from 0 to 255. A larger value indicates a higher priority.
Restores the VRRP priority r to the default value.	**undo vrrp priority** *vrid*	By default,it is 100
Configures VRRP preempt mode	**vrrp preempt** *vrid*	
Restores the preempt mode to the default value.	**undo vrrp preempt** *vrid*	By default, preempt is disabled
Configures VRRP preempt delay time	**vrrp preempt** *vrid* [**delay** *delay*]	
Restores the delay time to the default value.	**undo vrrp preempt** *vrid*	By default, it is 0 second
Configures VRRP advertise interval time	**vrrp timer** *vrid adver-interval*	
Restores the advertise interval to the default value.	**undo vrrp timer** *vrid*	By default, it is 1 second

Configures VRRP track function	**vrrp** *vrid* **track** *track-entry* [**reduced** *priority*]	By default, it is disabled
Deletes VRRP track function	**undo vrrp** *vrid* **track** *vrid* { **all** | *track-entry* }	

Note: The priority of the IP address owner cannot be changed and is always 255.

Parameter description:

vrid: virtual group ID, in the range of 1 to 255; **vlan-id**: ID of the VLAN to which a VLAN interface belongs;

supervlan-id: ID of the super VLAN to which a superVLAN interface belongs;

pri-value: priority to be reduced if the interface under monitoring is down.

46.2.4 Displays and Maintain VRRP Configurations

Operation	Command	Remarks
Runs the command in any mode.	**display vrrp** [**vlan-interface** | **supervlan-interface** *vlan-id* [*vrid*]	