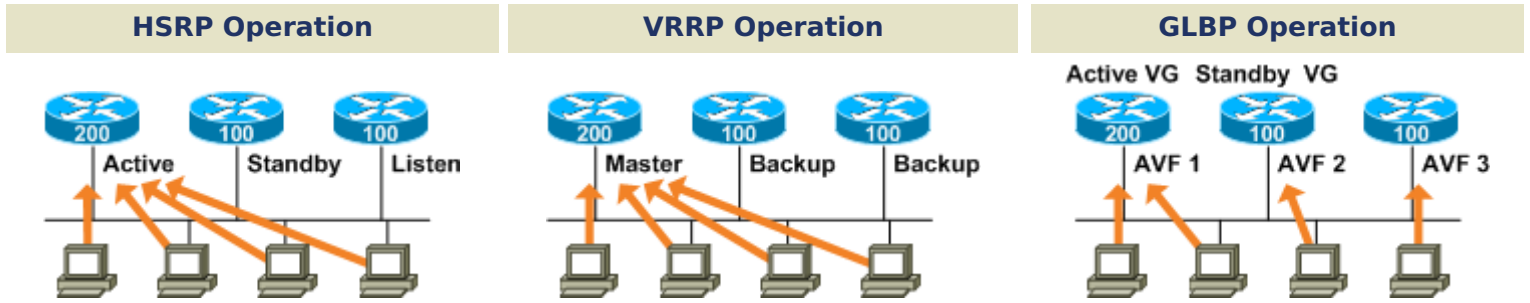


First Hop Redundancy Protocols	Protocols Comparison		
Hot Standby Router Protocol Provides default gateway redundancy using one active and one standby router; standardized but licensed by Cisco	HSRP	VRRP	GLBP
Virtual Router Redundancy Protocol An open-standard alternative to Cisco's HSRP, providing the same functionality	Standard	RFC 2281	RFC 3768
Gateway Load Balancing Protocol Supports arbitrary load balancing in addition to redundancy across gateways; Cisco proprietary	Load Balancing	No	No
	IPv6 Support	Yes	No
	Transport	UDP 1985	IP 112
	Default Priority	100	100
	Default Hello	3s	1s
	Multicast Group	224.0.0.2	224.0.0.18
			224.0.0.102



HSRP Configuration

```
interface FastEthernet0/0
ip address 10.0.1.2 255.255.255.0
standby version {1 | 2}
standby 1 ip 10.0.1.1
standby 1 timers <hello> <dead>
standby 1 priority <priority>
standby 1 preempt
standby 1 authentication md5 key-string <password>
standby 1 track <interface> <value>
standby 1 track <object> decrement <value>
```

VRRP Configuration

```
interface FastEthernet0/0
ip address 10.0.1.2 255.255.255.0
vrrp 1 ip 10.0.1.1
vrrp 1 timers {advertise <hello> | learn}
vrrp 1 priority <priority>
vrrp 1 preempt
vrrp 1 authentication md5 key-string <password>
vrrp 1 track <object> decrement <value>
```

GLBP Configuration

```
interface FastEthernet0/0
ip address 10.0.1.2 255.255.255.0
glbp 1 ip 10.0.1.1
glbp 1 timers <hello> <dead>
glbp 1 timers redirect <redirect> <time-out>
glbp 1 priority <priority>
glbp 1 preempt
glbp 1 forwarder preempt
glbp 1 authentication md5 key-string <password>
glbp 1 load-balancing <method>
glbp 1 weighting <weight> lower <lower> upper <upper>
glbp 1 weighting track <object> decrement <value>
```

HSRP/GLBP Interface States

- Speak** · Gateway election in progress
- Active** · Active router/VG
- Standby** · Backup router/VG
- Listen** · Not the active router/VG

VRRP Interface States

- Master** · Acting as the virtual router
- Backup** · All non-master routers

GLBP Roles

- Active Virtual Gateway (AVG)** · Answers for the virtual router and assigns virtual MAC addresses to group members
- Active Virtual Forwarder (AVF)** · All routers which forward traffic for the group (may include the AVG)

GLBP Load Balancing

- Round-Robin** (default) · The AVG answers host ARP requests for the virtual router with the next router in the cycle
- Host-Dependent** · Round-robin cycling while maintaining a consistent AVF for each host
- Weighted** · GLBP weight determines the proportionate share of hosts handled by each AVF

Troubleshooting

```
show standby [brief]      show vrrp [brief]
show glbp [brief]        show track [brief]
```