

VRRP: Virtual Router Redundancy Protocol:

- VRRP is an open Standard protocol
- It is a Layer-3 redundancy protocol.
- VRRP provides high availability and fault tolerance for routers on a LAN.
- It gives ~~the~~ multiple routers the ability to work together as a virtual router, sharing Common IP address and ensuring that if one router fails, another can seamlessly take over & minimizing disruptions in the network connectivity.
- VRRP assigns a Single IP address to a group of ~~over~~ routers to increase redundancy and provide virtualization.
- Virtual MAC-Address is reserved 0000.5e00.01xx with xx represents the hexadecimal group number
- Uses protocol number 112.
- After election, only master router will send hello messages.

How VRRP Works:

⇒ Router Choice: A group of routers are configured and prioritized.

* The router with the highest priority number will become the master, while the rest are the backup routers.

* The router choice is entirely based on predefined criteria.

⇒ Virtual Router Identifier:

→ Each group of routers are assigned with a VRID.

⇒ The VRID is used by the router to identify others routers in the same cluster.

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⇒ Virtual IP address:

→ The virtual IP address is the actual IP address entered into the node to identify the router as a gateway.

⇒ Hello Messaging:

- Communication b/w the routers is a Critical Component to ensure VRRP works as intended.
- periodically, the routers send "HELLO" messages to each other to ensure they function properly.
- Specifically, they are multicasts sent to the IP address 224.0.0.18.
- If the back router does not receive the "hello" message from the master router then, the next prioritized backup router takes its place.
- Hello packets are sent every 1 second and sent to multicast address: 224.0.0.18

⇒ Hold down timer: The neighbour will hold the information for 3 seconds

⇒ Preemption:

→ optionally, the original ~~p~~ master router can take over again once it is up in order.

otherwise, the backup router will continue performing the primary/master router's duty.

VRRP Master Router Election process:

→ Highest priority

→ Highest IP address

→ by default priority is 100.