

ANALYSIS OF GOALS AND TASKS OF FHRP IN MODERN NETWORKS

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The object of study is to analyze the goals, tasks and performance of FHRP in modern networks.

The goal of the work is to study the impact of FHRP on modern networks.

Research methods- Analysis of standards and technologies.

Hops in networks occurs when a packet is passed from one network segment to the next [1]. If that first hop ever goes down, that particular network will become incapable to communicate to the outside world and only local communication across the switched domain will be possible.

The main goal is to improve throughput. It requires multiple routes or paths to divide the traffic or load distributed equally between the paths. [1] Load balancing is implemented to improve the redundancy and throughput.

To implement load balancing different routing protocols are used which equally distribute the traffic and utilizes the available bandwidth. In some cases, the term load balance can be used interchangeably with the load sharing

The first hop redundancy protocols include three protocols Hot Standby Router Protocol (HSRP), Virtual Router Redundancy Protocol (VRRP) and Gateway Load Balancing Protocol (GLBP). Each protocol has its own purpose and has its own advantages and disadvantages.

FHRP was developed to also reduce traffic loss. These protocols help particular organization to successfully send the traffic from source to destination without loss of many packets. In case of the failure of one system, there is a standby system which automatically activates itself and continues sending the traffic. The HSRP protocol and GLBP protocol are Cisco propriety whereas the VRRP protocol is the Institute of Electrical and Electronics Engineers (IEEE) standard. [2]

Operation

HSRP is a Cisco propriety protocol that enables the network engineer to add more than one redundant device to achieve network reliability. The different routers in the HSRP group will communicate to select a single active router gateway that handles all the network traffic. When configuring a router to be an active router, the standby router at this point is also selected. Both the standby and the active router will communicate through sending a Hello messages and will detect if the active router fails. [2] When the failure occurs one of the

standby router take the duties of the active router with minimum delay and at the same time another standby router is selected.

VRRP is an open standard that can be used where the equipment of various companies exists. Its operation is nearly the same as that of HSRP but differs in a couple of ways. In VRRP, like with HSRP, a group of routers are configured in which the network engineer selects one master router and the other a backup router [2].

The physical IP address of the master router is used by the clients as a default gateway. The backup members of the VRRP group will communicate with the master gateway through hello messages and take over the duties of the master router when the master router goes down or some error occurs.

The IP address used always belongs to the master router which is referred to as the IP address owner. When the master router recovers from error it will again take its responsibilities back and will forward the network traffic itself.

To achieve load sharing between the routers along with redundancy, Cisco has a new protocol called the GLBP. It is a Cisco proprietary that improves the efficiency of the FHRP by allowing automatic load balancing. [2]

The current study specifically aims to answer following research questions: Which protocol is suitable according to a particular environment? How to effectively configure the protocols. How long would it take to changeover to the backup router?

Conclusion

FHRP is a cisco proprietary protocol which is the earliest First Hop Redundancy Protocol (FHRP). that provides backup to a network and it facilitates a successful transmission from source to destination. Also provide a load balancing facility.

Major Drawback of FHRP includes, it is a Cisco propriety hence it works on only Cisco devices. There is a high packet loss which is more compared to the other technologies. Also to enable the preemption it is to be configured manually every time. [2]

References

1. Performance Evaluation of First HOP Redundancy Protocols (HSRP, VRRP & GLBP) ; Zia Ur Rahman.
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