

Research on Switching Mechanism of Computer Virtual Network Routing

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Abstract: Router is the core of network connection. Routers can effectively improve the quality of network connections, which can provide better network services for users. With the development of cloud computing technology, the application of virtual network is becoming more and more popular, which makes the switching mechanism of virtual network routing get more and more attention. However, as far as the current development situation is concerned, the routing switching technology in China is far behind the network technology, which can't provide a good user experience. In this paper, the characteristics of computer routing, application status and development planning are analyzed. This paper hopes to promote the recognition of computer virtual routing.

1. Introduction

In traditional networks, it is not easy to centralize the management and configuration of switching devices, which requires manual configuration. There are not many applications for the management of virtual network, so a special virtual network management system is needed. Traditional network device control and data plane coupling, which is difficult to achieve the global network topology display to achieve monitoring functions. Different devices need different APIs to develop network applications, which is not conducive to the innovation of network applications. Routing technology is one of the core contents of computer network and network interconnection technology, which requires students to understand its principle and master its practical application. By designing routing synthesis experiment and realizing communication between different network nodes, students can better grasp network layer routing technology from both theoretical and practical aspects. Traditional networks mostly provide external services in the form of North-South network traffic services. With the development of computer cloud computing, more attention is paid to providing East-West network traffic services, which can achieve better data support and application support services. With the development of computer technology, virtual network functions are all related to the routing functions of computers. In the virtual network environment, with the help of routing technology, we can connect with the local networks in real time, which realizes the transmission of data information and the selection of browsing path. Routing technology plays an important role in the development of network technology. With the popularity of virtual network applications, routing switching mechanism has become an important research topic.

2. Introduction to computer routing switching

2.1 Computer router technology

In computer networks, routing technology is a key technology. Routing technology can link networks around the world, which realizes real-time analysis and processing of data information. Computer routing switching technology mainly includes routing technology and mainstream router protocol technology. First, routing technology. Routing is the key in the process of network communication. It can connect devices of multiple networks or segments. Then, through routing, we can transfer data information from the source segment to the destination. Routers also check for various transmission anomalies. If the data is obviously wrong, it will return the information to the source address and destroy the data package, which will facilitate the follow-up work. Second, the mainstream router protocol technology. Mainstream router protocol technology mainly includes

password authentication and advanced password authentication router technology, which requires users to login through password before they can access the network. In order to prevent user data information from being intruded by hackers, we can use advanced password authentication, which effectively guarantees the user's login security. In data analysis and use, the importance of security also puts forward higher requirements for the smooth index of routers.

2.2 Routing algorithms

Routing algorithms are divided into dynamic routing algorithm and link state algorithm. The core of routing algorithm is vector algorithm, which determines the best path after studying and judging the route. Between adjacent routers, we can exchange routing table periodically, which uses a router as an index to exchange data information in the table. Link state algorithm is called shortest path first algorithm. By protecting and maintaining the complex network state database, we can update the related database with the shortest path priority algorithm.

2.3 Routing protocol

With the popularization of virtual network applications, the requirement of network bandwidth for the dynamic changes of routers will continue to increase. However, the routing protocol divides the Internet into several small units, namely Autonomous System (AS). In AS system, each autonomous system has relevant numbers and appropriate routing strategies, which can effectively improve the convenience of network use.

3. Computer virtual network switching mechanism

3.1 Cloud network topology

Traditional network design is to provide north-south network traffic services through the form of hierarchical aggregation, which pays attention to the external service of nodes in the network. However, in the cloud network structure, we pay more attention to providing services for East-West network traffic, which will meet the data analysis needs of data center customers and support the application of micro-service architecture. In cloud computing environment, computing nodes have been virtualized, which provides a more convenient network model for virtualized computing nodes. In order to meet the need of virtual computing nodes migrating and scheduling at any time, there are many protocols for virtualized network access in the industry, among which VXLAN is the most widely used network virtualization protocol. VXLAN constructs a virtual two-tier broadcast domain through multicast. Through the automatic construction of unicast virtual channel combined with ARP, a virtual network environment conforming to almost all the characteristics of current Ethernet is built. In cloud environment, when multiple virtual networks generate communication requirements, a virtual routing channel will be constructed between virtual networks, and a typical virtual network communication topology as shown in Figure 1 will be generated.

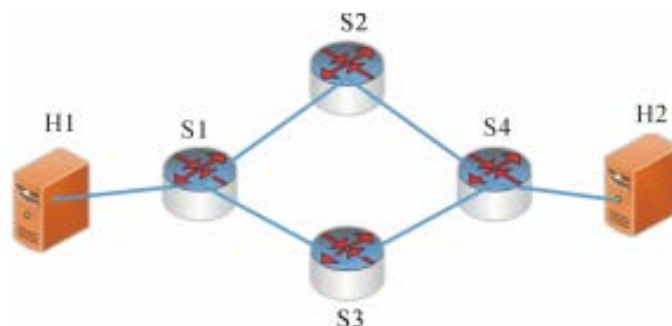


Figure 1: Network topology test chart

3.2 Route selection under traditional protocol

Based on the routing switching technology in virtual networks, OSPF and the routing nodes in

various virtual networks are interconnected. After theoretical simulation, the vertex set of the shortest path can be obtained. In the weighted digraph of $G=(V, E)$, the vertex set V in the graph is divided into two groups. One group is represented by set S . At the beginning, there is only one source point of S . Then, it is added to set S in each one, until all vertices are added to the set, the algorithm is completed. In addition to set S , we can also express the set of other undetermined optimal paths in U . By adding the vertices of the second group to S in an incremental order, we need to ensure that the shortest path length from the source point to each vertex of the set is less than or equal to the shortest path length from the source point to any vertex of the set U . By ensuring that each vertex has a corresponding distance to optimize the shortest path, we can improve the effectiveness of routing switching.

3.3 OSPF routing after VXLAN link overhead aggregation

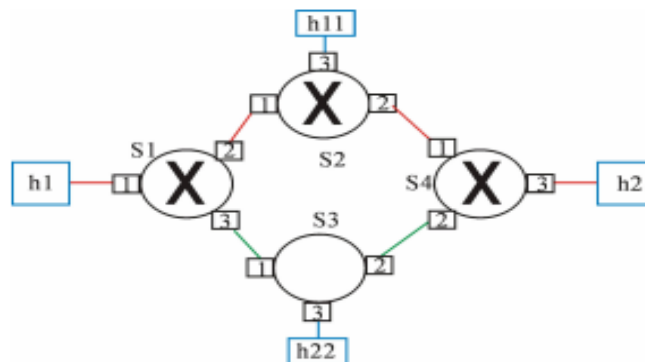


Figure 2: Detailed information obtained after the link

Based on the research of routing and switching mechanism in virtual networks, this paper attempts to introduce the virtual path length of virtual Extensible LAN (VXLAN) into OSPF routing. By determining the relevant cost value, we can obtain the relevant path, which achieves its adaptability under the virtual network. After the analysis of routing data in each process, we can explore its physical network, which can accurately find the optimal path, as shown in Figure 2.

3.4 Dynamic rerouting switching mechanism

Dynamic rerouting switching mechanism includes QM algorithm, input scheduling, output scheduling and engineering performance analysis. The overall structure of the routing and switching system is $N * N$ scale. The data transmission function of virtual network is realized by using the construction technology of switch switching unit with buffer crossover. In the operation of virtual network, we need to use multiple queues to group the relevant output ports, which avoids blocking in the data transmission process. Assuming that the packet arriving at each input port of the switching system is of fixed length, the queue is described to transmit data information at the same rate.

4. The development prospect of computer network routing and switching technology

4.1 Implementing the use of multiple router protocols

Routing switching technology can realize network management of multiple routers. With the continuous development and improvement of cloud computing, it will bring more opportunities for the development of routing switching technology, which will realize the use of a variety of routing protocols. The implementation of static IP network publishing and router static configuration is difficult. On the premise of the continuous maturity of computer technology, routing switching technology will promote the use of a variety of routing protocols.

4.2 Improvement of router switch configuration

Through the router protocol, we can effectively partition and manage the network. With the

continuous maturity and development of router switching technology, data filtering and data transmission speed will be effectively improved. Through the IP protocol of the router, the router can interpret the relevant packets at the IP address specified in the protocol. By writing the information in the new physical address, it can also effectively improve the speed of data processing and transmission when encountering complex network structure, which will continuously promote the improvement of router configuration. The router network switching technology from static configuration to dynamic configuration is realized by IP subnet. With the popularization of virtual network, the requirement of internal will be gradually improved.

5. Conclusions

Computer routing switching technology promotes the development and application of computers, which effectively improves the efficiency of data analysis and transportation. By guaranteeing the quality of data usage, we can enable users to obtain a good sense of satisfaction. With the continuous development and improvement of cloud computing, the application of virtual network will continue to be popular.

References

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