

Virtual Network System Analysis

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ABSTRACT:

Designing, implementing and debugging parts over corrective measures over the networking measures in the field of the networking, in the parts such as the internet router such as the router that manages the real life network traffic. To design the virtual traffic over the network a person has to establish over the raw network traffic and then virtualized that network over various means to generate status. Virtual Network System (VNS) is very effective design over the learning phase of the students. Every student can easily create a router or packets forwarding in our same space and experience own networking topologies.

Keywords: VNS, TCP, Packet Design, Internet Infrastructure, IP, Protocol, ARP

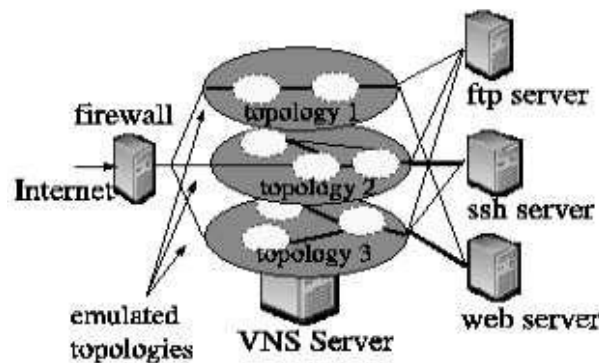


Figure 1: A simple VNS system with three topologies and their server application.

1. BACKEND OF VNS

Simulations are required to do the real time work performance over the internet
The VNS is designed in such a way that hundreds of students can access remotely

2. THE VIRTUAL NETWORK SYSTEM:

The core of VNS server is written in C++ language that can simulate more than one virtual topologies. Each virtual topology can connect with the real time real internet. It can also connect to physical hard drives also over the hundreds of users at a time. This is not limited to a virtual sever domain provides hundreds of multiple users accessing to their pc at a time, and still functioning smoothly over applications. The VNS client server provides connections from VNS clients to the host clients which are user space program that will operate as host on the virtual topologies.

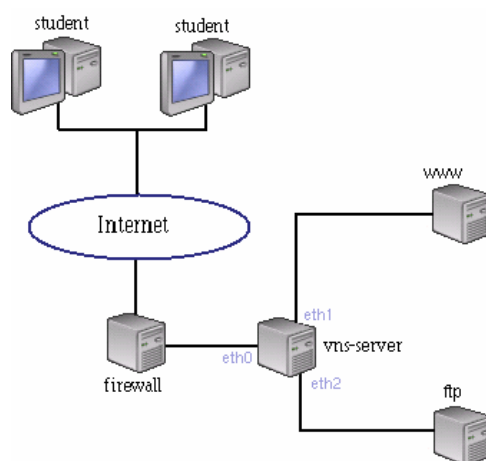


Figure 2: Physical layout of VNS

Client on request can request that the server forward them traffic as seen by a particular host on a given topology. Then the client can request a new traffic, provides new changes to the running capabilities of an actual host on the network or proving the client full access to the

All the interface working over the router are connected to the firewall and over them they are interacted over the internet and same over the web server as explained in figure 3.

In effect the VNS server inserts the client into the topology, even though the VNS client is physically located somewhere else over the internet. The VNS archives this by receiving all packets destined for the both platforms A and B and passing them via a separate socket to the VNS client. The VNS client receives each packet as router has received it, if any, to take. For example, the VNS client when gets an http request packet on interface, it will send the packet back to the VNS server with instruction for the VNS sever to forward the packet out interface B to web server.

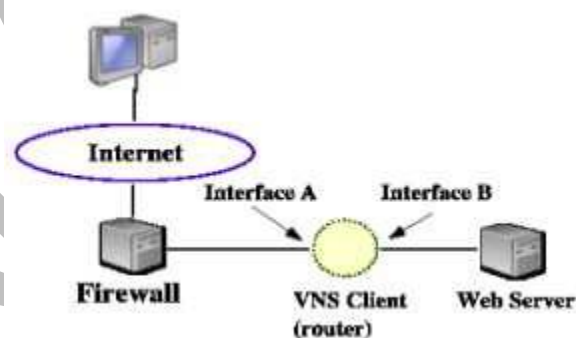


Figure 3: View of virtual topology as seen by web browser.

Keeping the security considerations that a student should access a lower level of the internet network interface, a firewall is set between their access and the outside network. The firewall will validate only a desired TCP and UDP packets without duplicated source address or putting the filters.

Gateway based rate limiting makes it hard to implements clients initiated DOS style interface patterns.

3. PRESENTING VIRTUAL ENVIRONMENT

VNS is a very friendly environment that commence with low level network access, and aids students very efficiently in developing network statics. Acquiring the real time characteristics of the virtual network and the TCP.

3.1 BUILDING INTERNET ROUTER WITH THE HELP OF VNS

A standard introductory networking course to teach the implementation of internet router. The assignment is structured around a simple topology consisting is of a router with three interface s connected to two application server running standard internet services. Using the client library as a base, the students develop fully function routers. The routers must support all the basic requirements.

- ARP query/response
- ARP cache without timeout
- IP header checksum calculations
- TTL decrement on forward packets
- Generate ICMP TTL
- Response to ICMP
- ICMP for TCP/UDP packets

A fully established router will be able to route traffic from anywhere on the internet to the connected internet servers and will respond correctly to ping and trace route. Over the deployment of the interface one student can easily test and simulate the actual conditions of the network over which all the packets are being transmitted and received. For further requirements students can easily add an advance setting to the network, this functionality are as IP filtering, NAT, web server.

3.2 IMPLEMENTATAION OF VNS

Virtual networking system is used to develop the introductory networking courses to develop a TCP transport layer called steam control transmission protocol. While STCP can inter-operate with any standard TCP implementation it consists of a subnet of TCP function control. In computer networking, the Stream Control Transmission Protocol (SCTP) is a transport-layer protocol (protocol number, serving in a similar role to the popular protocols Transmission Control Protocol (TCP) and User Datagram Protocol (UDP). It provides some of the same service features of both: it is message-oriented like UDP and ensures reliable, in-sequence transport of messages with congestion control like TCP.

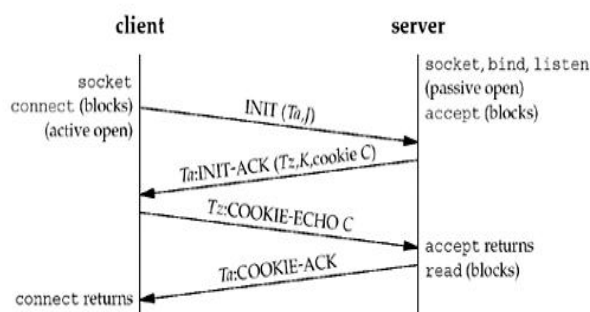


Figure 4: Steam Control Transmission protocol

There are a number of advantages using a IP based TCP compatible transport layers where the main issue is that students get experience with the inter-operating commodities of TCP stacks.

4. STRUCTURAL VNS

VNS is served as the introductory courses for the students to develop ideas over the structural formation over the compete networks. At the end of the term a student is able to set-up a fully configured network over the internet. This should be a part of the every class; they are able to transmit their own FTP packets over the network and client application.

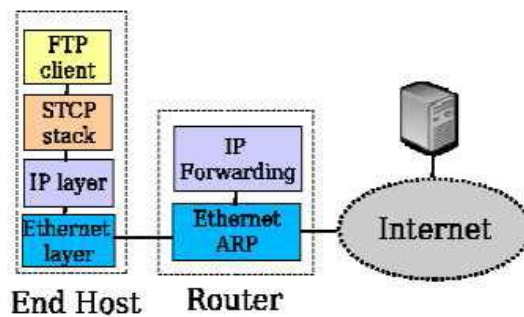


Figure 5: Manually Created Structural VNS

The feedback from students is that it greatly helped in understanding and they are now able to work over the commercial areas also.

And there are numerous requests from the students for working over the VNS, in order they could carry out their experiments and ideas to implement over the various applications.

5. CONCLUSION AND FUTURE

VNS gives students a real time to process their experience over internet. Implementation of VNS is robust and could support hundreds of users at a time and to those also who are serving in the remote area. It will be also helpful to the students in configuring their own network over different topologies.

6. ACKNOWLEDGMENT

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7. REFERENCES

1. The Free Encyclopaedia <https://www.wikipedia.org/>
2. <https://www.tcpcdump.org>
3. ACM Digital Library dl.acm.org/
4. Creating a virtual network <https://technet.microsoft.com/en-us/library>
5. Martin Casado Department of Computer Science Stanford University Stanford, CA 943059030
www.yuba.stanford.edu/~nickm/papers
6. Nick McKeown Department of Electrical Engineering Stanford University Stanford, CA 943059030
www.yuba.stanford.edu/~nickm/papers
7. <http://www.igi-global.com/chapter/third-generation-mobile-communications-technology/76776>
8. http://www.theregister.co.uk/Alert/2011/04/01/dnssec_com_goes_live/
9. <http://www.pubfacts.com/search/RapidArc>
10. http://www.pubfacts.com/author/Manoj_Kumar_Sharma
11. <http://www.pdfshares.net/pdf/student-ko-choda.html>
12. <http://www.pdfshares.net/pdf/edgenuity-student-answers.html>
13. <http://www.freetechems.com/computer-networking/network/transmission-sequence-number.html>
14. <http://www.edulix.com/unisearch/user.php?uid=67066>
15. <http://jamaica-gleaner.com/gleaner/20040703/news/news6.html> <http://bml.ym.edu.tw/ibs/english/introduction.htm>