The Design of Router on the New Internet Construction Based on the Linux

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ABSTRACT

Rapid growth of Internet and development of new network applications open the opportunity to novel corporate and family networking. Furthermore, the idea of connecting the above networks arouses great interest of network companies and network researchers. The major concerns for connecting these networks are security and private. Accordingly, the Virtual Personal Network (VPN)[1] was developed. The implementations of VPN router were built on the top of a costly hardware platform, which is unaffordable for regular household users and small businesses. In this study, we build the VPN on the top of the Linux Router Project (LRP)[2], a more economical software oriented design. Both IPSec[3] and CIPE[18] of VPN are implemented. Comparisons of two implementations are made through evaluating real network packet and using the network traffic-analyzing tool. It shows these implementations have accomplished a safe point-to-point communication and bi-tunnel communications through VPN tunneling. A preliminary investigation on the capability and efficiency of the above implementations, and the performance where integrated with firewalls are provided. In all, the implementations provide us the advantages of flexibility, economy, and easy maintenance by little sacrifice of transmission speeds.

Keywords :   ;   ;   ;   ;

Table of Contents

REFERENCES

[1] Venkateswaran,R.," Virtual private networks," IEEE Potentials,Volume 20,Issue 1,11-15,Feb/Mar,2001.

[2] Linux Router Project. http://www.linuxrouter.org/ [3] S. Kent and R. Atkinson," Security Architecture for the Internet Protocol," IETF RFC 2401, November.1998.

[4] S. Kent and R. Atkinson," IP Authentication Header," IETF RFC 2402, November,1998.

[5] S. Kent and R. Atkinson," IP Encapsulating Security Payload (ESP)," IETF RFC 2406, November,1998.

[6] K. Egevang and P. Francis," The IP Network Address Translator (NAT)," IETF RFC 1631, May,1994.

[7] P. Srisuresh and M. Holdrege," IP Network Address Translator (NAT) Terminology and Considerations," IETF RFC 2663, August,1999.

[8] D. Harkins, D. Carrel," The Internet Key Exchange(IKE)," IETF RFC 2409, November,1998.

[9] Zhao Aqun and Yuan Yuan and Ji Yi and Gu Guanqun," Research on tunneling techniques in virtual private networks," Communication Technology Proceedings, 2000. WCC - ICCT 2000. International Conference on , Volume 1 , 691 —697,2000.

[10] Keromytis,A.D.and Ioannidis,j.and Smith,J.M, " Implementing Ipsec," Global Telecommunications Conference, 1997. GLOBECOM ''97., IEEE , Volume: 3 ,1948—1952,1997.

[11] Perlman,R.andKaufman,C.," Key exchange in IPSec: analysis of IKE," Internet Computing, IEEE , Volume 4,Issue 6,50—56,2000.

[12] Hui Huang and Jian Ma, " IPv6 - future approval networking," Communication Technology Proceedings, 2000. WCC - ICCT 2000. International Conference on ,Volume 2,1734-1739,2000.

[13] Pena,C.J.C., " Performance evaluation of software virtual private networks (VPN)," Local Computer Networks, 2000. LCN 2000.

Proceedings. 25th Annual IEEE Conference on , 522 — 523, 2000.

[14] IABG. http://www.ipv6.iabg.de [15] ethereal http://www.ethereal.com/ [16] ntop http://www.ntop.org/ntop.html [17] floppytw http://www.zelow.no/floppyfw/ [18] CIPE http://sites.inka.de/~bigred/devel/cipe.html [19] CIPE-Win32 http://cipe-win32.sourceforge.net/