

Review on Firewall & Firewall Appliance for Security

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Abstract—Development of technology made all services and information available over internet. But there is high threat of attack on system or frauds of information while accessing internet, so security is necessary.

A firewall is network security system that monitors and controls the inward and outward network traffic based on predetermined security policy. It typically establishes a barrier between a trusted secure internal network and external network which is neither trusted nor secure such as the Internet.

Therefore we explicate the review on firewall, firewall appliance, benefits and applications of firewall appliance for network security.

Firewall is classified as host-based and network firewall. Host-based firewall provide a layer of software on host to control network traffic in and out of that single host machine

Whereas network firewalls filter traffic between two or more networks. It is classified as software and hardware-based firewall computer appliance. Software appliance runs on common function hardware. Hardware-based firewall computer appliance is special hardware designed with all functionality of firewall for security.

Firewall appliance may also provide added functionality by acting as a DHCP or VPN server to the internal network which it guards. Also as per requirement of user new security can be implemented in firewall appliance.

Keywords—*Firewall, Firewall Appliance, Network Security and Internet Security*

I. INTRODUCTION

Internet is defined as system of interconnected world-wide computer networks that use Internet protocol suite (TCP/IP) to connect devices globally [1]. Today's generation are relying on the internet to do a lot of different tasks. Thus it has unquestionably become a huge part of daily lives.

Also internet is very important when it comes to communication [2]. It symbolize non secure channel for exchanging information leading to a high risk of intrusion or deception or attack [3]. Hence internet security is vital.

It is a branch of computer security particularly associated to the Internet involving browser and network security. It is also applied to other applications or operating systems on a whole [3]. Its aim is to set up rules and actions against attacks over the Internet. Different ways have been used to protect the transfer of information. Thus one of remedy for internet security is firewall appliance. Firewall appliance is as different as any firewall product [4].

This paper is organized as follows. Section II, consist of firewall and its types. Section III, explain firewall appliance. Section IV, enlighten benefits of firewall appliance. Section V, elucidate application of firewall appliance. Section VI, presents conclusion.

II. FIREWALL AND IT'S TYPES

A firewall controls right-of-entry between networks. It screen network traffic and block traffic that is dangerous. It

imposes limitation on inward and extrovert network packets to and from private networks. Only authorized packets are allowed to pass through it. It creates checkpoints between an inside private network and the outside public Internet, also known as choke points. It can create choke points based on IP source and TCP port number [3].

Firewall can also limit network exposure by hiding the internal network system and information from the public Internet. Firewall includes network address translation (NAT) functionality to hide the original address of protected hosts.

Types of firewall are as follows:

- A. *Packet filter*: Packet filter firewall processes network traffic on a packet-by-packet basis. It is static filter which control access to a network by examining the inward and extrovert packets. It either allows or discards or halt packet based on the IP addresses and ports of the packet [5].
- B. *Stateful packet inspection*: Stateful packet inspection (SPI) is known as dynamic packet filtering. It is a network firewall that tracks the operating state and characteristics of network connections traversing it. It is then configured to differentiate genuine packets for different types of connections. Only packets identical to known active connection are allowed to get ahead of the firewall [6].

C. *Application-level firewall*: Application level firewall inspects all packets travelling in and out of application. It blocks improper content packets [5].

Substantial investment is necessary depending on the type of firewall required. Software firewall is less costly and easy to deploy, but need terminal resources. Whereas hardware firewall is purchased and installed for each network node. Also it is expensive depending on the firewall purchased. Technician is needed to install, configure and maintain the firewall. Thus now-a-days firewall network appliance is employed.

III. FIREWALL APPLIANCE

Firewall appliance suggests border based network security. They can be application gateways, packet filters or circuit level gateways similar to customary firewalls.

A firewall appliance is a hardware device that is connected between the Internet and computer to provide firewall protection for a network. It includes a self-contained package with all the essential hardware and software that plug in between the two networks being isolated [2].

A firewall appliance is a device that has the dedicated functions of a firewall. They typically have multiple network interfaces. Mostly their size and appearance is similar to video cassette recorder (VCR) and can be easily placed on stand or holder.

They also have key features such as stateful inspection firewall, virtual private network (VPN), intrusion prevention system, anti-virus and anti-spyware, anti-spam, web filtering, bandwidth management, application visibility and control and so on.

Internally they contain a CPU memory and secondary storage devices like a hard drive. The multiple interfaces are setup to separate the outside network for the inside. They are also typically configured remotely [4].

IV. BENEFITS OF FIREWALL APPLIANCE

Firewall appliance is full-featured product with lower cost. Minimal maintenance and upkeep is required. It is all-in-one solution.

There is no additional expense on hardware, operating system and licensing costs. Specially designed to be a firewall and firewall only.

Firewall appliance can be easily installed since it consist of plug and play, network ready, installation can be done by any one, operating system and application software is pre-loaded and configured.

It is simple to use because it has OS-independent interface, uncomplicated configuration wizards.

It has more capability as it is designed to work on the hardware it comes with and compatible with most software platforms.

Maintenance cost of firewall appliance is less as it updates itself automatically without user interference. Ownership cost is also less as it has everything built-in in single unit and no per user license.

Workstation connected to firewall appliance does not have to pay license fee for anti-spyware, anti-virus and anti-spam services [7]. Also it has great and speedy performance.

V. APPLICATION OF FIREWALL APPLIANCE

Firewall appliance is most advantageous to small to mid-sized business and educational facilities that have dedicated internet connections.

It can be deployed in large organizations to isolate divisions that are distantly situated or are internal and require additional security. In multi-tiered security solutions it might fit well.

Following is list of firewall appliance products:

- PIX Firewall by Cisco Systems [8].
- Cisco Asa Firepower by Cisco Systems [8].
- Firebox II by WatchGuard Technologies [9].
- WatchGuard by WatchGuard Technologies [9].
- Check-point by CheckPoint Software Technologies Ltd [10].
- Endian Firewall by Endian company [11].
- SonicWALL/DMZ by Sonic Systems [13].
- Cyberoam by Cyberoam-a-Sophos Company [14].
- Phoenix Firewall by Progressive Systems [17].
- Interceptor by Technologic, Inc [18].

VI. CONCLUSION

As it is advanced technology era internet is needed and accessed enormously since the majority of the services in form of applications are available over internet. Also all information is available on one-click. But internet is not a secure medium so security is needed.

Firewall protect inside secure private network from outside insecure public network of internet. But it needs investment on software, hardware and technician.

Thus firewall appliance is in use. It is full-featured with less cost. It has many benefits such as protection from all kind of risk and unauthorized access, less maintenance and ownership cost and so on.

Also it has various applications. Firewall appliance products are available in market.

Nobody can afford to continue without security provided by firewall appliance which is at affordable cost to everybody.

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