Institute of Public Administration
Communication and Network Security
Group 1
Homework (5) Solution

Question (1)
What is the benefits of using a firewall?

Solution:
The main use of firewalls in network to examine incoming and outgoing packets and determine whether to allow them to pass through or to block them. A packet that is blocked will be removed from the network.

Question (2)
Describe a packet filter firewall.

Solution:
Packet filtering is the basic firewall technology. It inspects ingress packets coming to an internal network from outside and inspects egress packets going outside from an internal network.

Question (3)
Discuss the objectives of circuit-gateways firewalls.

Solution:
Circuit gateways, also referred to as circuit-level gateways, are typically operated at the transportation layer.
They evaluate the information of the IP addresses and the port numbers contained in TCP (or UDP) headers and use it to determine whether to allow or to disallow an internal host and an external host to establish a connection.

Question (4)
Describe an Application Gateways Firewalls.

Solution:
Application gateways also referred to as application-level gateways (ALG) or proxy servers are software packages installed on a designated computer.

An ALG acts like a proxy for internal hosts, processing service requests from external clients. An ALG performs deep inspections on each IP packet (ingress or egress).

In particular, an ALG inspects application program formats contained in the packet (e.g., MIME format and SQL format) and examines whether its payload is permitted.

Question (5)
List the four requirements to validate an operating system on particular computer to be certified trusted.

Solution:
- Its system design contains no defects.
- Its system software contains no loopholes.
- Its system is configured properly.
- Its system management is appropriate.

Question (6)
Mention a several common of firewall configurations.

Solution:
- Single-homed bastion host system (SHBH).
- Dual-homed bastion host system (DHBH).
- Screened subnets.

Question (7)
Describe the concept of Dynamic NAT.

Solution:
Dynamic NAT is a widely used network technology. It assigns a small number of reachable IP addresses dynamically to a large number of private networks.

Question (8)

How to configure a firewall on Microsoft windows and Linux and UNIX operating systems?

Solution:

Microsoft Windows operating systems are shipped with a built-in firewall. To set it up, open Windows Firewall under the Control Panel and click the firewall on.

For Linux and UNIX operating systems, the user may build a firewall using built-in programs.

For example, Linux users may use the iptables program to build a personal stateless packet filter, while FreeBSD UNIX users may use the pf program to build an organizational firewall with a DMZ.