3 Network attacks and firewalls – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
ARP poisoning	地址解析投毒			
on-path attack	中间人攻击			
denial of service (DoS)	拒绝服务			
firewall	防火墙			
access control list (ACL)	访问控制列表			
Network segmentation	网络分段			
subnets	子网			
screened subnet	屏蔽子网			

Recall

- You know a network connects devices so they share data.
- You have heard of a firewall blocking unwanted traffic.
- You understand that a flood of traffic can crash a website.

New ideas

Read these first. Each idea has a short worked example. Then do the Practice below.

1 Network attacks

In **ARP poisoning** 地址解析投毒 the attacker sends fake messages so traffic flows to them - an **on-path attack** 中间人攻击. A **denial of service (DoS)** 拒绝服务 floods a target so real users cannot connect.

Worked example. A log shows one IP with two different MAC addresses - the sign of ARP poisoning.

2 Firewalls and ACLs

A **firewall** 防火墙 allows or denies traffic using an ordered **access control list (ACL)** 访问控制列表. Rules are checked top-down and the **first match wins**.

Worked example. A DENY rule above an ALLOW rule for the same traffic blocks it, even though the ALLOW is lower down.

3 Segmentation

Network segmentation 网络分段 splits a network into isolated **subnets** 子网 so a breach is contained. A **screened subnet** 屏蔽子网 (DMZ) holds public servers away from private systems.

Worked example. If a web server in the DMZ is hacked, the attacker is trapped there by the second firewall.

Watch out: Firewall rule order is everything. Swapping two rules can turn “allowed” into “denied” for the same packet.

Practice

2.1 A log shows one IP with two MAC addresses. Name the likely attack. [1]

2.2 Explain what happens in an on-path (man-in-the-middle) attack. [2]

2.3 In a firewall ACL, which rule is applied to a matching packet? [1]

2.4 Explain the main security benefit of network segmentation. [2]

2.5 State what a screened subnet (DMZ) holds and where it sits. [2]