Networking-Based Attacks

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- Denial of Service (DoS)
- Interception
- Poisoning
- Attacks on Access Rights

Denial of Service (DoS)

- A DoS attack is a deliberate attempt to prevent authorized users from accessing a system by overwhelming that system with requests.
- Most DoS attacks today are actually distributed denial of service (DDoS) attacks: instead of using one computer, a DDoS may use hundreds or thousands of zombie computers in a botnet to flood a device with requests.

• Tn công DoS là mt n lc có ch ý nhm ngn chn ngi dùng c y quyn truy cp truy cp vào mt h thng bng cách áp o h thng ó bng các yêu cu.
• Hu ht các cuc tn công DoS ngày nay thc cht là t chi dch v phân tán (DDoS): thay vì s dng mt máy tính, DDoS có th s dng hàng trm hoc hàng nghìn máy tính zombie trong mt mng botnet tn công thit b có yêu cu.

Types of DoS attacks

- Ping flood
- Smurf attack
- SYN flood

Ping flood

- Multiple computers rapidly send a large number of ICMP echo requests, overwhelming a server (as well as the network) to the extent that it cannot respond quickly enough and will drop legitimate connections to other clients and refuse any new connections.

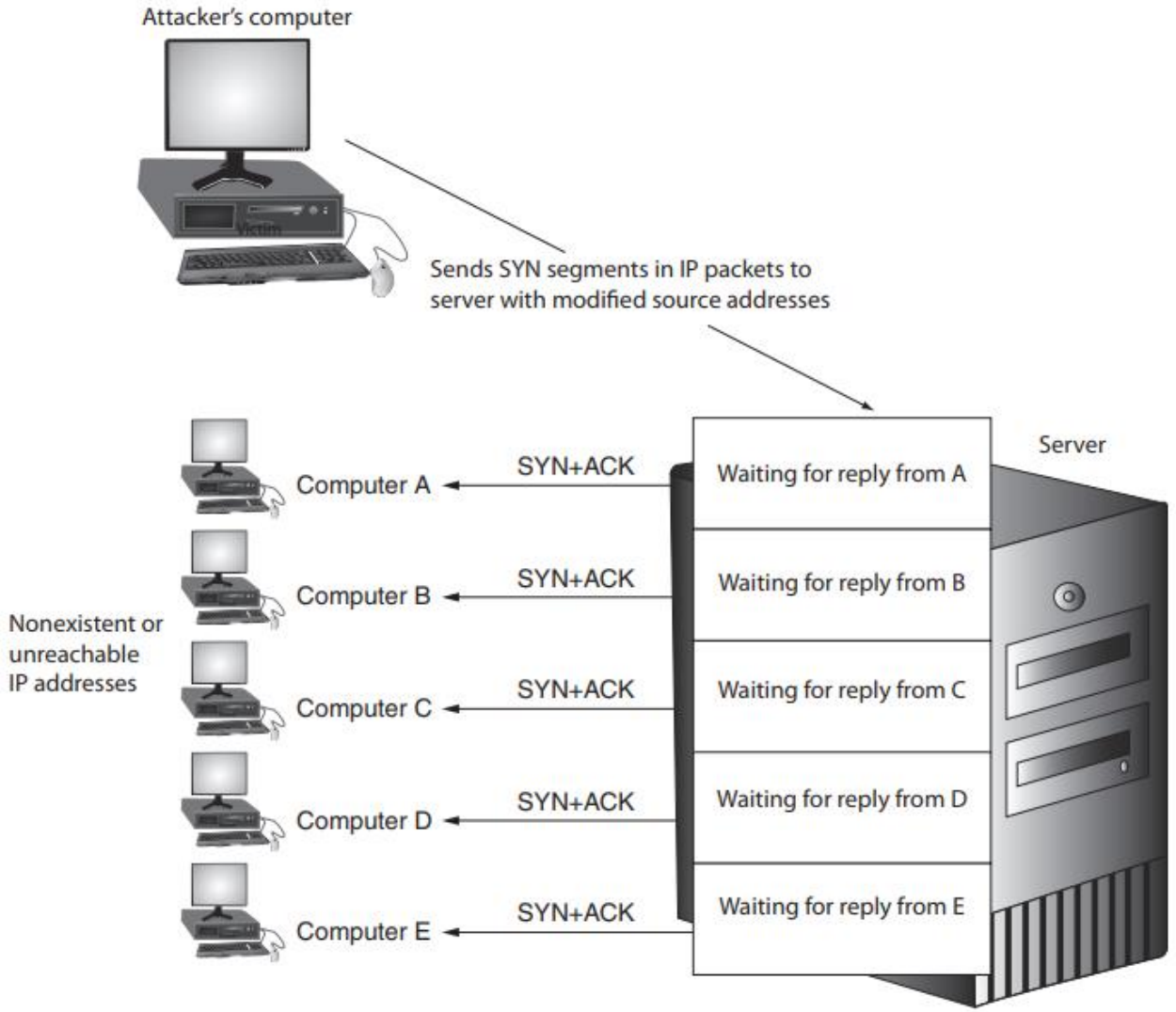
Nhiu máy tính nhanh chóng gi mt lng ln ting vang ICMP yêu cu, áp o máy ch (cng nh mng) ti n mc nó không th áp ng nhanh và s loi b các kt ni vi các máy khách khác và t chi mi kt ni mi.

Smurf attack

- An attacker broadcasts a ping request to all computers on the network but changes the address from which the request came to the victim’s computer.
- Each of the computers then sends a response to the victim’s computer so that it is quickly overwhelmed and then crashes or becomes unavailable to legitimate users.

K tn công phát tán yêu cu ping ti tt c các máy tính trên mng nhng thay i a ch mà t ó yêu cu n máy tính ca nn nhân.
• Sau ó, mi máy tính s gi phn hi ti a ch ca nn nhân. khin máy tính nhanh chóng b quá ti và sau ó b treo hoc tr nên không có sn cho ngi dùng hp pháp.

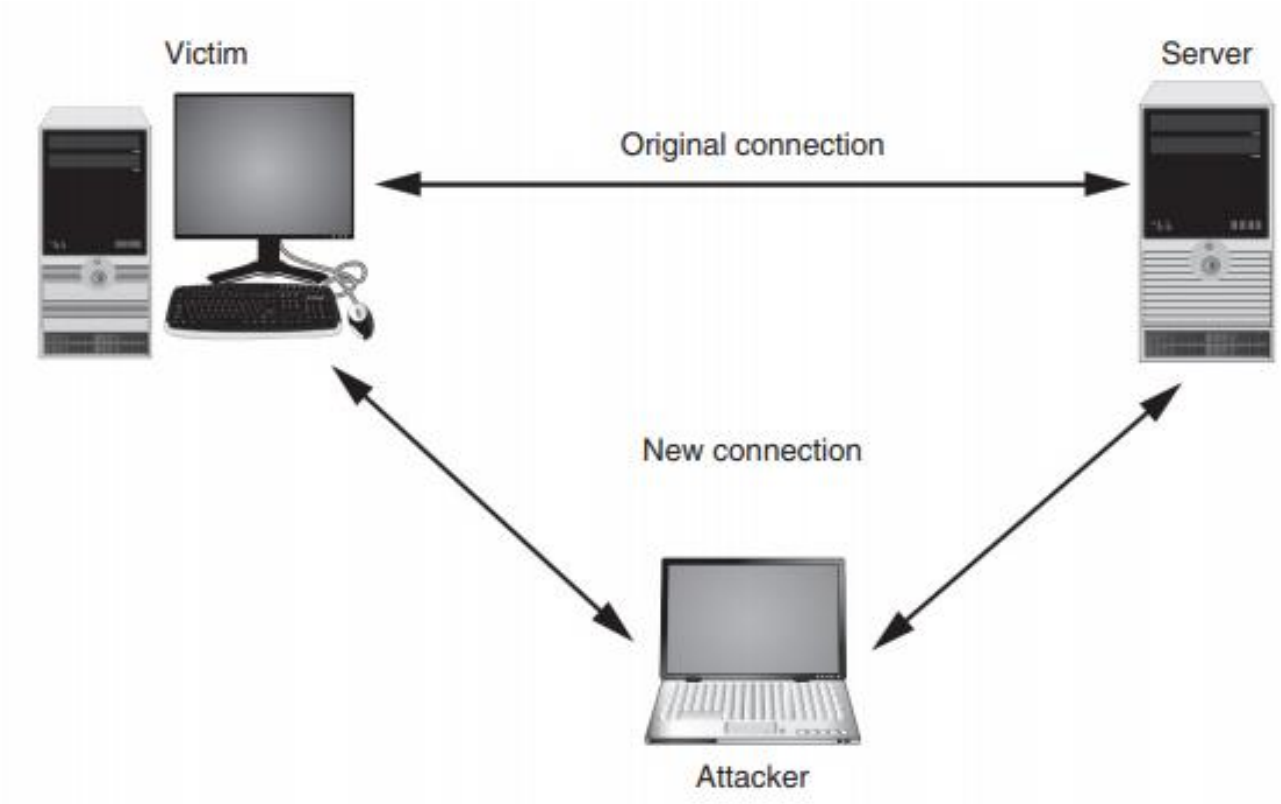
SYN Flood attack



Interception

- Man-in-the-Middle attack
- Replay attack

Cuc tn công lp li tng t nh cuc tn công trung gian th ng.
• K tn công to mt bn sao ca ng truyn trc khi gi nó n ngi nhn. Sau ó, k tn công có th gi tin nhn gc ti máy ch và máy ch có th phn hi. Bây gi mt mi quan h áng tin cy ã c thit lp gia k tn công và máy ch.
• K tn công có th bt u thay i ni dung ca nh b bt
tin nhn và mã. Nu cui cùng anh y thc hin sa i chính xác, máy ch s phn hi, cho k tn công bit anh ta ã thành công



Interception

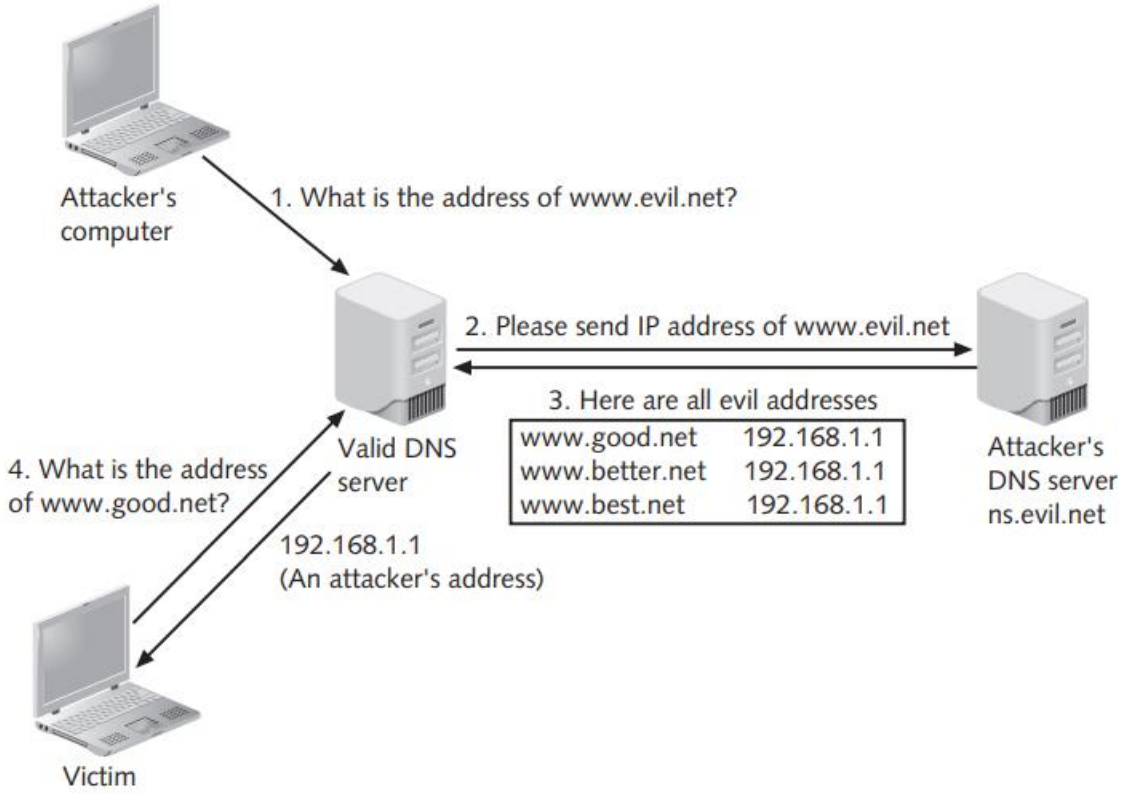
- A replay attack is similar to a passive man-in-the-middle attack.
- Attackers make a copy of the transmission before sending it to the recipient. Later, the attacker can send the original message to the server, and the server may respond. Now a trusted relationship has been established between the attacker and the server.
- The attacker can begin to change the content of the captured message and code. If he eventually makes the correct modification, the server will respond, letting the attacker know he has been successful.

Poisoning

- ARP Poisoning: An attacker can modify the MAC address in the ARP cache so that the corresponding IP address points to a different computer

Device	IP and MAC address	ARP cache before attack	ARP cache after attack
Attacker	192.146.118.200- AA-BB-CC-DD-02	192.146.118.3=>00-AA-BB-CC-DD-03 192.146.118.4=>00-AA-BB-CC-DD-04	192.146.118.3=>00-AA-BB-CC-DD-03 192.146.118.4=>00-AA-BB-CC-DD-04
Victim 1	192.146.118.300- AA-BB-CC-DD-03	192.146.118.2=>00-AA-BB-CC-DD-02 192.146.118.4=>00-AA-BB-CC-DD-04	192.146.118.2=>00-AA-BB-CC-DD-02 192.146.118.4=>00-AA-BB-CC-DD-02
Victim 2	192.146.118.400- AA-BB-CC-DD-04	192.146.118.2=>00-AA-BB-CC-DD-02 192.146.118.3=>00-AA-BB-CC-DD-03	192.146.118.2=>00-AA-BB-CC-DD-02 192.146.118.3=>00-AA-BB-CC-DD-02

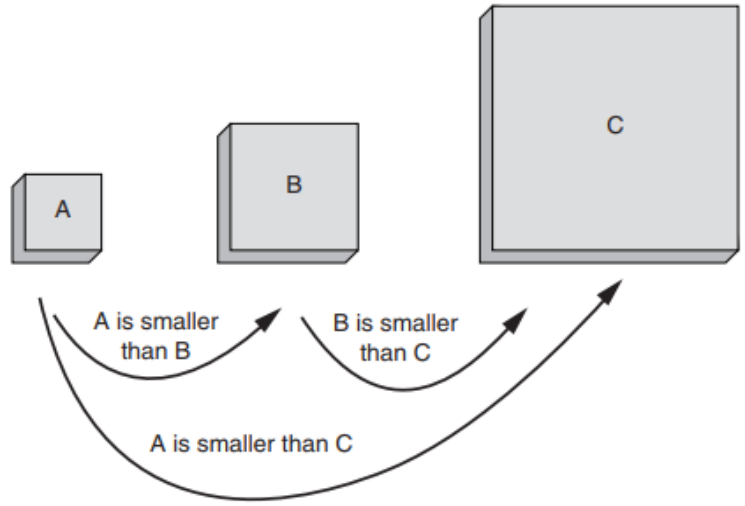
- DNS Poisoning is a process of substituting a DNS address so that the computer is automatically redirected to another device



Attacks on Access Rights

- Privilege Escalation: is exploiting a vulnerability in software to gain access to resources that the user normally would be restricted from accessing.
- Transitive Access: System A can access System B, and because System B can access System C, then System A can access System C.

Nâng cao c quyn: ang khai thác l hng trong phn mm t c quyn truy cp vào các tài nguyên mà ngi dùng thng b hn ch truy cp.
• Truy cp bc cu: H thng A có th truy cp H thng B và vì H thng B có th truy cp H thng C, sau ó H thng A có th truy cp H thng C.



Summary

- Networks are a high priority target for attackers. This is because exploiting a single vulnerability may expose hundreds or thousands of devices to an attacker.
- A denial of service (DoS) attack is a deliberate attempt to prevent a system from performing its normal functions in order to prevent authorized users from access to the system.

Mng là mc tiêu u tiên cao ca nhng k tn công. iu này là do khai thác mt l hng duy nht có th làm l ra hàng trm hoc hàng nghìn thit b cho k tn công.
• Tn công t chi dch v (DoS) là mt n lc có ch ý nhm ngn chn mt h thng thc hin các chc nng bình thng ca nó nhm ngn nga ngi dùng c y quyn truy cp vào h thng

Summary

- A man-in-the-middle attack attempts to intercept legitimate communication and forge a fictitious response to the sender.
- A replay attack is similar to a man-in-the-middle attack. Instead of sending the transmission immediately, a replay attack makes a copy of the transmission before sending it to the recipient. This copy is then used at a later time.

Summary

- Two types of attacks inject “poison” into a normal network process to facilitate an attack: ARP poisoning and DNS poisoning.
- Privilege escalation involves exploiting a vulnerability in software to gain access to resources that the user normally would be restricted from obtaining.
- Transitive access involves using a trust relationship between three elements to gain access rights.