

Homework #0 Solution

Contact TAs: vegetable@csie.ntu.edu.tw

Network Administration Preliminary

True / False

In each of the following question, please specify if the statement is **true** or **false**. Please briefly explain why it is true false.

1. False. In common cases, same IP can exist in different subnet.
2. True. Because MAC address is designed to be unique for every end device (Though this may not be true in some cases. e.g. the MAC of some AP can be customized)
3. True. The difference of these two kinds of packets is in physical layer.
4. True. The difference should be the value of source IP, destination IP, or port number.
5. False. TCP : Transport layer (layer 4); IP : Network layer (layer 3)
6. False. The most significant different between them is that switch will maintain a MAC address table, and be able to perform transmission on every port respectively.
7. False. The main difference between a router and a switch is whether it is able to do routing (send packets according to the layer 3 header).
8. True. That's the definition
9. False. DHCP server only handles the assignment of IPs.
10. False. Only traffic to the destination outside the LAN will pass the gateway.
11. False. An NAT server can only holds as more entries as it max available port (65535 in general)
12. True. But the DNS lookup maybe very slow.

Multiple Choice Question

In each of the following question, please choose the most appropriate answer.

1. Which of the following systems is NOT in the Network Layer?
Ans: Given away

- (a) DHCP: Application layer / Network layer
- (b) DNS: Application layer
- (c) VPN: Network layer
- (d) SSH tunnel: Application layer

2. Which valid IP is in the same subnet with 192.168.0.1/23?
Ans: (c)

- (a) 193.168.0.1 : Not in the same subnet
- (b) 192.167.0.1 : Not in the same subnet
- (c) 192.168.1.1 : Answer
- (d) 192.168.0.0 : Not valid (represent the whole subnet)

3. What's the first packet sent by an end device in the default Windows/ Linux setting when connected to the Ethernet?

Ans: (a) DHCP

4. Which functionality is not commonly seen on a wireless router

Ans: (b) VPN

5. Which mode is not commonly seen on a wireless router

Ans: (d) Link : Most APs are not able to perform directional transmission

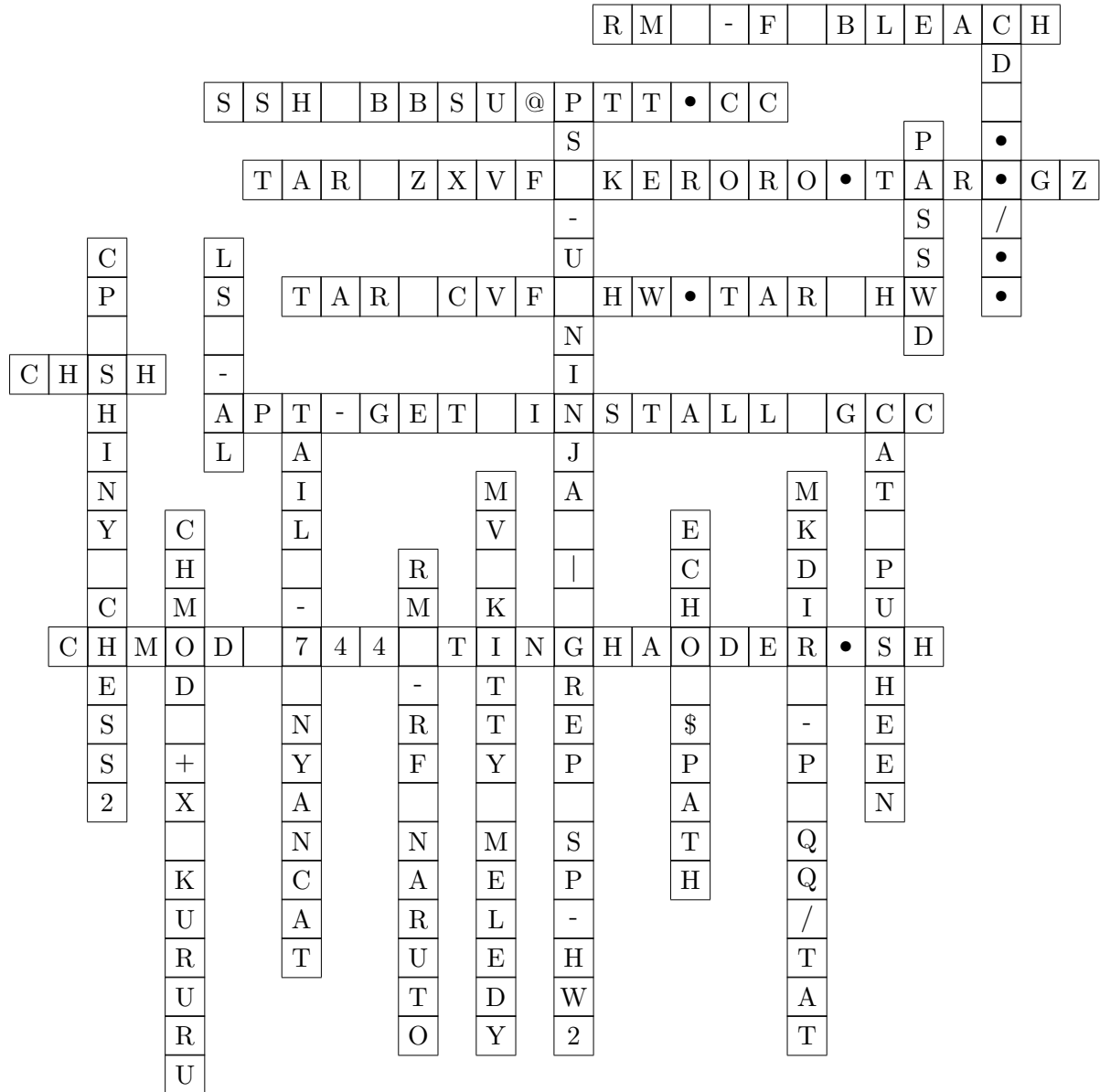
6. Which of the following term is not a kind of attack through network

Ans: (b) Broadcast Storm is often cause by constructing a loop, rarely used when performing attack.

answer C is also correct because the common attacks include only DHCP snooping / IP spoofing. We made a typo here and apologize for the mistake.

System Administration Preliminary

1. Word Puzzle



- (1) `rm -f bleach`
- (2) `cd ../../`
- (3) `ssh bbsu@ptt.cc`
- (4) `ps -u ninja | grep sp-hw2`
- (5) `passwd`
- (6) `tar zxvf keroro.tar.gz`
- (7) `cp shiny chess2`
- (8) `ls -al`
- (9) `tar cvf hw.tar hw`

- (10) chsh
- (11) apt-get install gcc
- (12) tail -7 nyan-cat
- (13) cat pusheen
- (14) mv kitty melody
- (15) mkdir -p QQ/TAT
- (16) chmod +X kururu
- (17) echo \$PATH
- (18) rm -rf naruto
- (19) chmod 744 tinghaoder.sh

2. Word Frequency

Sample Answer:

```
#!/bin/bash
# Read from standard input, and output a list of the n (default: 10) most
# frequently occurring words and their frequency counts, in order of descending
# counts, on standard output
#
# Usage ./mywordcount [n] < input
#
# this script is modification version of the script in Classic Shell Scripting
# (1st edition) p103

tr -cs '[:alnum:]' '\n*' |
  tr '[:upper:]' '[:lower:]' |
  sort |
  uniq -c |
  sort -k1,1nr -k2 |
  sed \${1:-10}q
```