Homework #7 Solution

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

Network Administration

1. 2.5GHz vs. 5GHz

(1) (15%)

    (a) Less interference:

        i. There are less devices that share 5GHz, such as bluetooth, microwave oven.

        ii. Less overlapped channels in 5G.

    (b) Higher bandwidth → carrying more information

(2) (15%) No, not always. Since the speed may also be affected by distance between AP and client, or the environment (For example, 2.4G has better penetrating ability when encountering obstacles in transmission path.)

2. Wi-Fi encryption

(1) (5%) WPA2

(2) (7%)

    (a) Replaced RC4 with AES (Advanced Encryption Standard)

    (b) Replaced TKIP with CCMP (Counter mode with Cipher block chaining Message authentication code Protocol)

(3) (8%)

    (a) Advantage: Safer (The hacking of WEP already exists.)

    (b) Disadvantage: Performance overhead due to the encryption method

System Administration

1. Server status (15%)

Modify /etc/httpd/conf/httpd.conf

```
<Location /server-status>
    SetHandler server-status
    Require ip <localhost or ip>
</Location>

LoadModule status_module modules/mod_status.so
```

2. A small taste of PHP (15%)

index.php

```php
<?php
function get_client_ip() {
    $ipaddress = '';
    if (getenv('HTTP_CLIENT_IP'))
        $ipaddress = getenv('HTTP_CLIENT_IP');
    else if(getenv('HTTP_X_FORWARDED_FOR'))
        $ipaddress = getenv('HTTP_X_FORWARDED_FOR');
    else if(getenv('HTTP_X_FORWARDED'))
        $ipaddress = getenv('HTTP_X_FORWARDED');
    else if(getenv('HTTP_FORWARDED_FOR'))
        $ipaddress = getenv('HTTP_FORWARDED_FOR');
    else if(getenv('HTTP_FORWARDED'))
        $ipaddress = getenv('HTTP_FORWARDED');
    else if(getenv('REMOTE_ADDR'))
        $ipaddress = getenv('REMOTE_ADDR');
    else
        $ipaddress = 'UNKNOWN';
    return $ipaddress;
}

$str=get_client_ip();
echo $str;
?>
```

Reference: https://stackoverflow.com/questions/3003145/how-to-get-the-client-ip-address-in-php

3. Docker (15%)

Run two containers

```
docker pull mariadb
docker pull wordpress
```

```
docker run --name mariadbtest -e MYSQL_ROOT_PASSWORD=12345 \
-e MYSQL_DATABASE=wordpress -d mariadb
docker run -e WORDPRESS_DB_PASSWORD=12345 -d --name wordpress \
--link mariadbtest:mysql -p 127.0.0.1:8080:80 -v "$PWD/":/var/www/html  wordpress
```

`-p 127.0.0.1:8080:80` means to map the 8080 port to the container's 80 port which is the port of http.