

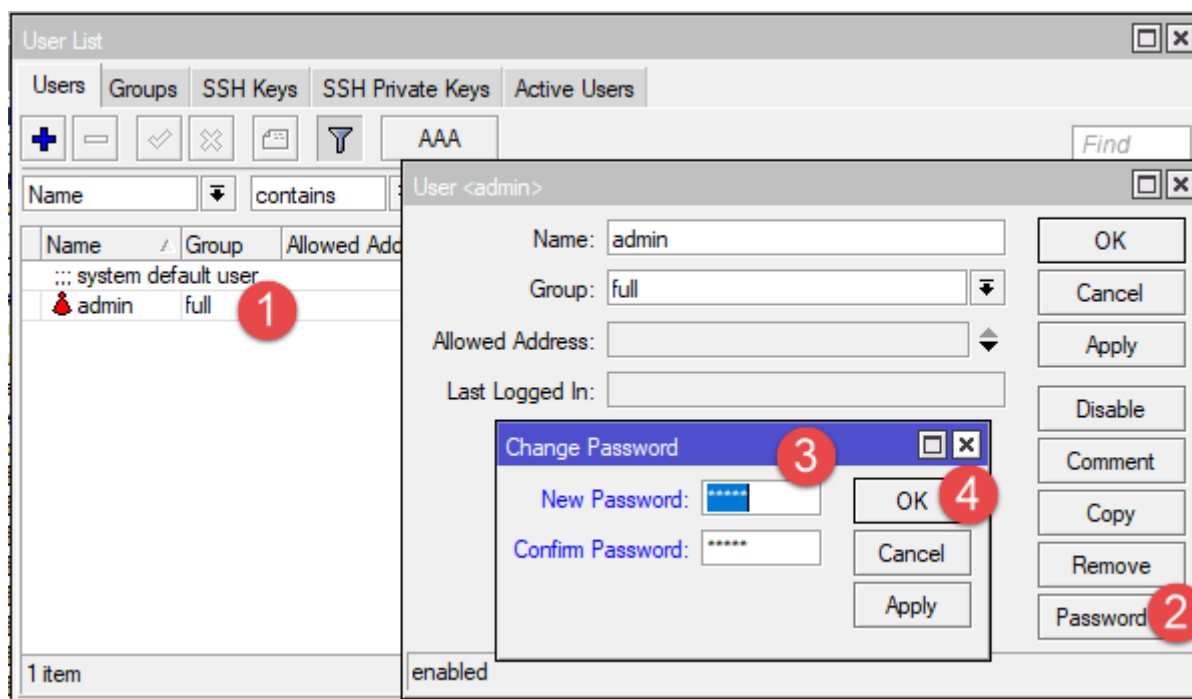


Homework Chapter 4+5

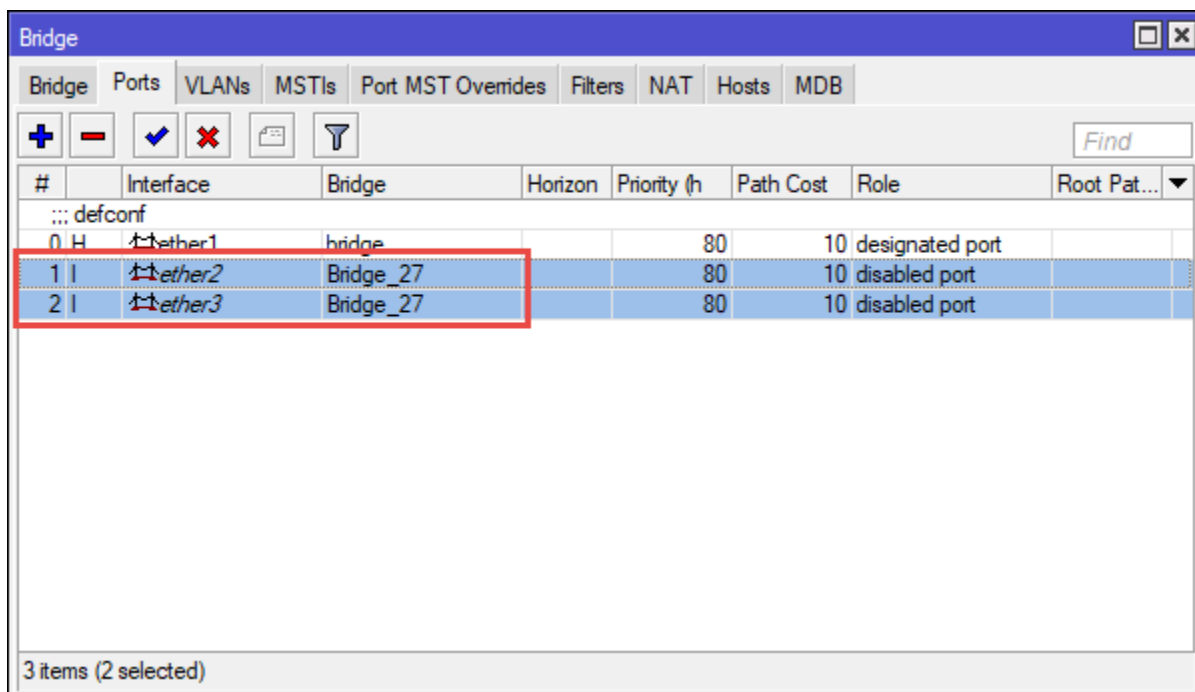
I. Connect to MKTHW

a. Login to your MikroTik router and change Password Administrator

- Click on **“system”** and look for **“Users”** and then double click on **“admin”** user.



b. Bridge interface ether2-3 “ Name: Bridge_XX” (XX= your id)





c. Assign IP address to Birdge Interface

Address	Network	Interface
::: LAN-Client		
192.168.27.1/	192.168.27.0	Bridge_027
::: defconf		
192.168.88.1/	192.168.88.0	bridge

2 items (1 selected)

d. Connect your router to MKTHW by wireless (password: 12345678)

Radio Name	MAC Address	Interface	Uptime	AP	W	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
Teacher-Router	6E:3B:6B:B6:F7:0B	wlan1	00:10:09	yes	no	0.030	-45/-51	144.4Mbps...	144.4Mbps...

1 item (1 selected)



- e. Enable DHCP client on interface WAN + create default route automatically

DHCP Client <wlan1>

DHCP Advanced Status

Interface: wlan1

☒ Use Peer DNS

☒ Use Peer NTP

Add Default Route: yes

OK Cancel Apply Disable Comment Copy Remove Release Renew

enabled Status: bound

DHCP Client <wlan1>

DHCP Advanced Status

IP Address: 192.168.77.192/24

Gateway: 192.168.77.1

DHCP Server: 192.168.77.1

Expires After: 11:43:37

Primary DNS: 8.8.8.8

Secondary DNS:

Primary NTP: 192.168.107.1

Secondary NTP: 192.168.107.2

CAPS Managers:

OK Cancel Apply Disable Comment Copy Remove Release Renew

enabled Status: bound



i. Test ping to 8.8.8.8

```
Terminal
..          Move up one level
/command    Use command at the base level
[admin@MikroTik] > ping 8.8.8.8
  SEQ HOST                SIZE TTL TIME  STATUS
    0 192.168.77.1          84  64 lms  net prohibite
    1 192.168.77.1          84  64 lms  net prohibite
    2 192.168.77.1          84  64 lms  net prohibite
sent=3 received=0 packet-loss=100%

[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
```

- ii. Trace route to Passerellesnumeriques.org and write down the path that access from your compute to passerellesnumeriques.org
- The PC through the my route -> TR-LAB -> PNC router
 - PNC router forward to PNC web server
- iii. Test speed from your router to MKTHW

```
Terminal
[admin@MikroTik] > /tool bandwidth-test address=192.168.77.1
      status: can not connect
      duration: 0s
      rx-current: 0bps
rx-10-second-average: 0bps
rx-total-average: 0bps
lost-packets: 0
random-data: no
direction: receive
rx-size: 1500

[admin@MikroTik] > /tool ping-speed address=192.168.77.1
current: 180.6Mbps
average: 33.0Mbps
-- [Q quit|D dump|C-z pause]
```



II. Create Virtual AP

- Create new security profile allow only AES encryption with strong phrase

The screenshot shows the 'Security Profile <chheangmey>' window. The 'General' tab is selected. The 'Name' field is 'chheangmey'. The 'Mode' is 'dynamic keys'. Under 'Authentication Types', 'WPA2 PSK' is checked. Under 'Unicast Ciphers', 'aes ccm' is checked. Under 'Group Ciphers', 'aes ccm' is checked. The 'WPA2 Pre-Shared Key' field contains a masked password. The 'Management Protection' is set to 'allowed'. The 'Group Key Update' is '00:05:00'. The 'Management Protection Key' is empty. Buttons on the right include OK, Cancel, Apply, Comment, Copy, and Remove.

- Create virtual AP by use SSID: PNC_Your-firstname and use your new security profile.

The screenshot shows the 'Interface <AP>' window. The 'General' tab is selected. The 'Mode' is 'ap bridge'. The 'SSID' is 'PNC_chheangmey'. The 'Master Interface' is 'wlan1'. The 'Area' is empty. The 'Security Profile' is 'chheangmey'. The 'WPS Mode' is 'disabled'. The 'Max Station Count' is '2007'. The 'WMM Support' is 'disabled'. The 'VLAN Mode' is 'no tag'. The 'VLAN ID' is '1'. Buttons on the right include OK, Cancel, Apply, Disable, Comment, Copy, Remove, Simple Mode, and Torch.



- c. Assign IP address to new virtual interface 191.168.xx.1/24 (XX is your ID)

Address <191.168.27.1/24>

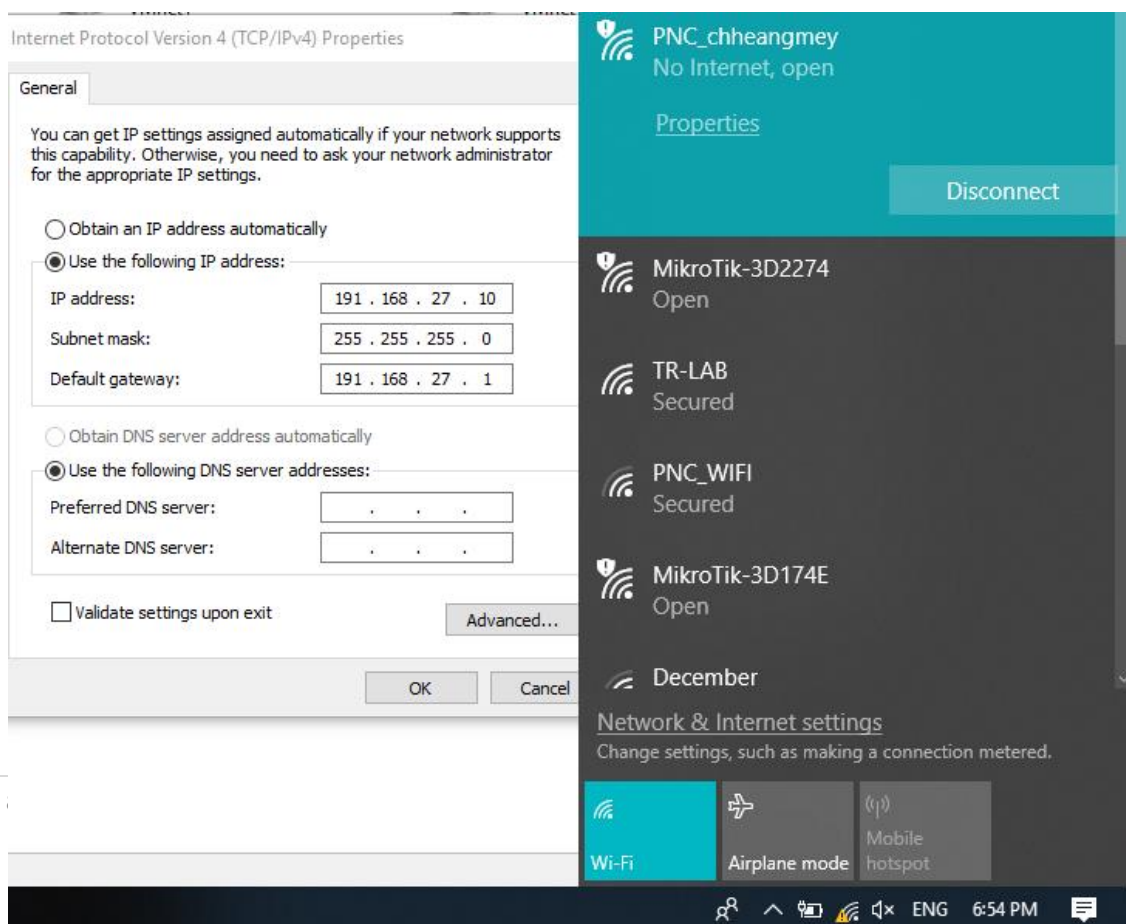
Address: 191.168.27.1/24

Network: 191.168.27.0

Interface: AP_chheangmey

enabled

- d. Test connect from client to your wireless router and assign IP address static to your computer and ping gateway for testing.





```
C:\Windows\system32\cmd.exe
C:\Users\chheangmey.hor>
C:\Users\chheangmey.hor>
C:\Users\chheangmey.hor>ping 191.168.27.1

Pinging 191.168.27.1 with 32 bytes of data:
Reply from 191.168.27.1: bytes=32 time=1ms TTL=64
Reply from 191.168.27.1: bytes=32 time=5ms TTL=64
Reply from 191.168.27.1: bytes=32 time<1ms TTL=64
Reply from 191.168.27.1: bytes=32 time=1ms TTL=64

Ping statistics for 191.168.27.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 5ms, Average = 1ms

C:\Users\chheangmey.hor>
```

III. Create DHCP Server

- a. Create DHCP server name “ DHCP-LANClient” and provide to interface that connect to client site.

The screenshot shows the 'DHCP Server <DHCP-LANClient>' configuration window. The following fields are highlighted with red boxes:

- Name:** DHCP-LANClient
- Interface:** AP_chheangmey
- Address Pool:** Pool-LANClient

Other visible fields include:

- Relay:** (empty)
- Lease Time:** 11:10:00
- Bootp Lease Time:** forever
- DHCP Option Set:** (empty)
- Src. Address:** (empty)
- Delay Threshold:** (empty)

Buttons on the right include: OK, Cancel, Apply, Disable, Copy, and Remove.



b. Use DNS PNC, and DNS google

The screenshot shows the DHCP Server configuration interface. The 'DHCP Setup' dialog box is open, displaying the 'Select DNS servers' section. The 'DNS Servers' field contains the IP addresses '192.168.107.1' and '8.8.8.8', which are highlighted with a red rectangle. The 'Back', 'Next', and 'Cancel' buttons are visible at the bottom of the dialog box.

c. Pool name "Pool-LANClient" provide range from .100 to 254

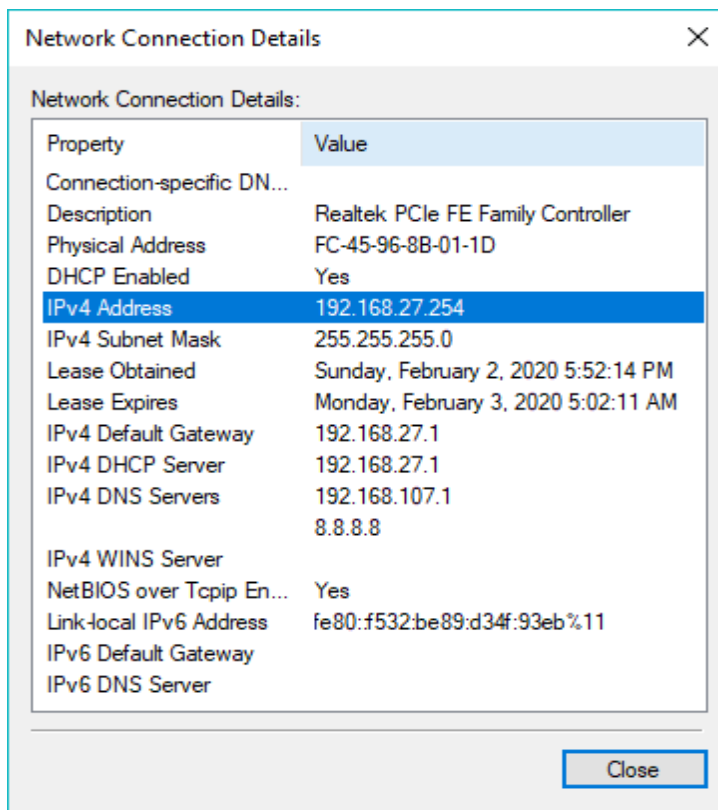
The screenshot shows the IP Pool configuration interface. The 'Pools' tab is selected, and the 'Pool-LANClient' pool is highlighted with a red rectangle. The table below shows the configuration for the selected pool.

Name	Addresses	Next Pool
Pool-LANClient	191.168.27.100-191.168.27.254	none
default-dhcp	192.168.88.10-192.168.88.254	none

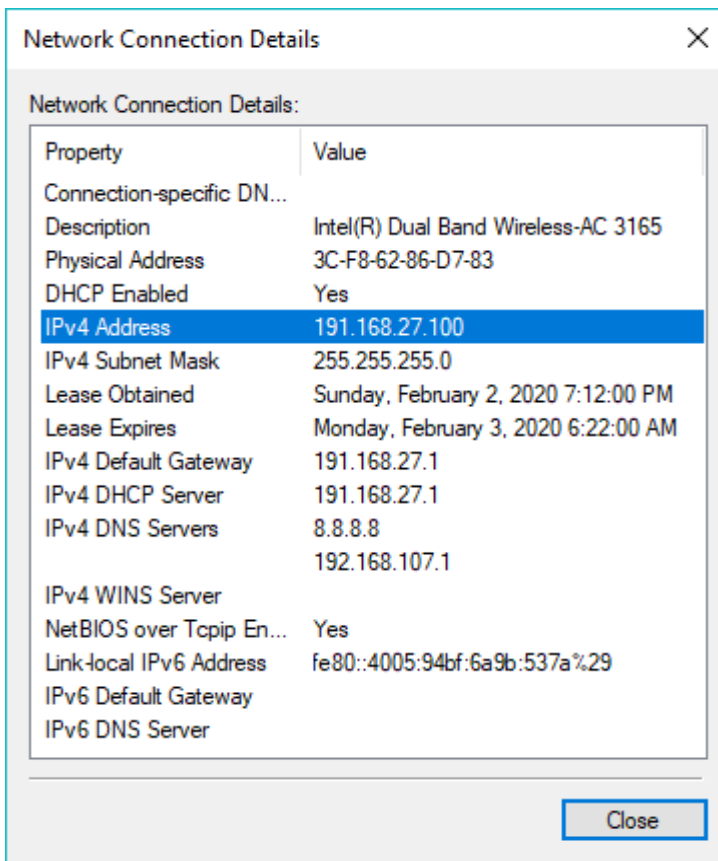
2 items (1 selected)

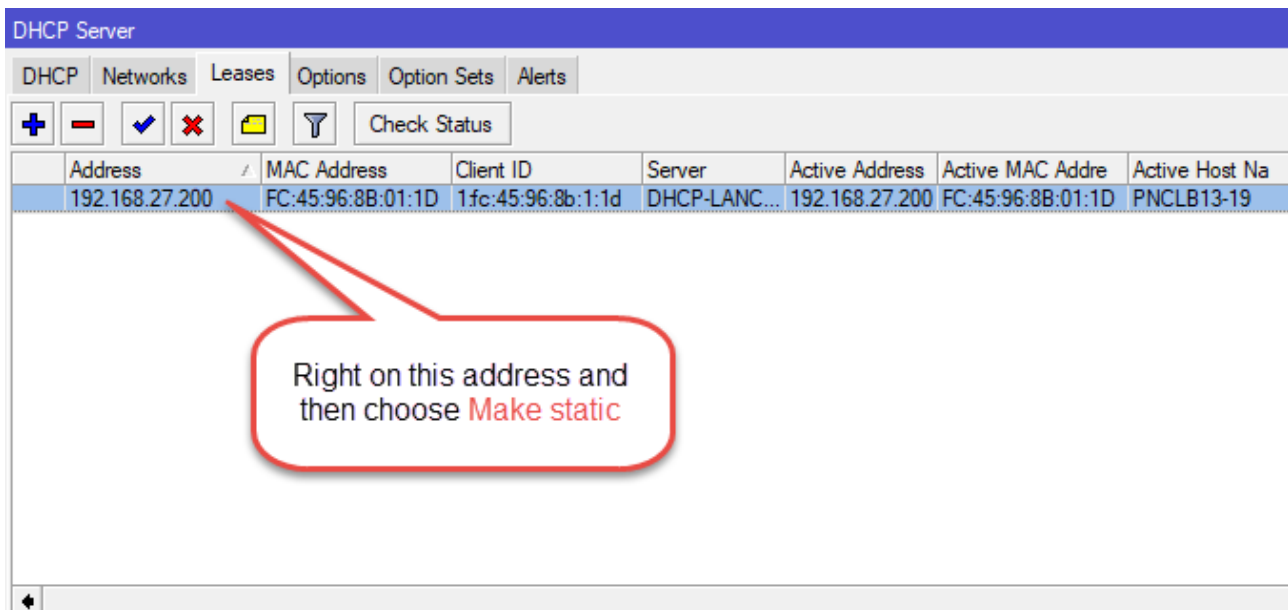


d. Test on client to get IP address from DHCP server



e. Set your computer client to get IP address .200 every time it request





- f. Test ping to google.com or 8.8.8.8. Does you reach the google website?
If yes / no, why it reach or not reach?

```
C:\Windows\system32\cmd.exe

C:\Users\chheangmey.hor>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

C:\Users\chheangmey.hor>ping google.com

Pinging google.com [216.58.220.206] with 32 bytes of data:
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.
Reply from 192.168.77.1: Destination net unreachable.

Ping statistics for 216.58.220.206:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

C:\Users\chheangmey.hor>
```

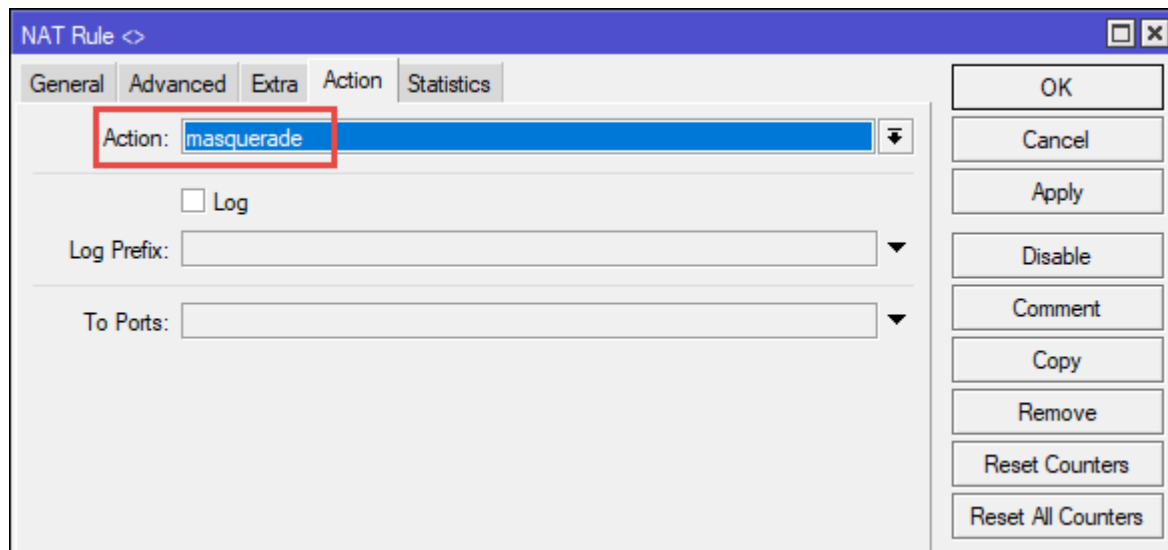
- Client can't access to internet because the router configure NAT yet



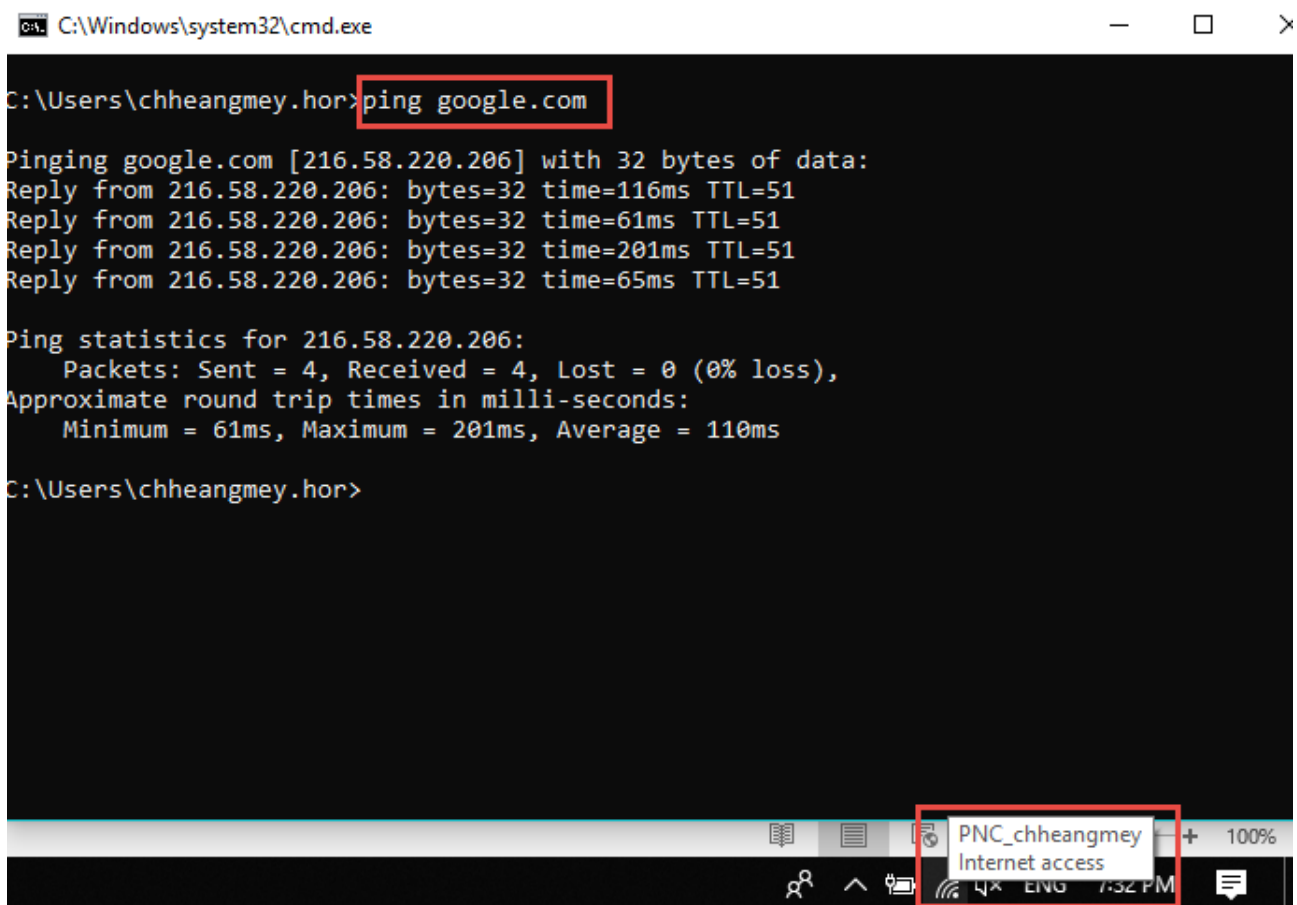
- g. Repeat the same step to create other DHCP server for Bridge Interface
 - i. You can assign any name, address,... By yourself

IV. Allow LAN Client access Internet

- a. Create NAT rule to allow LAN client both by Wireless + Bridge Interface



b. Test access to internet on computer client by wireless connection





c. Test access to internet on computer client by bridge Interface

The screenshot shows a Windows command prompt window with the command `ping google.com` entered. The output shows successful ping results from 74.125.200.102. To the right, the 'Network Connection Details' window is open, showing the IPv4 Address as 192.168.27.253 and the IPv4 Default Gateway as 192.168.27.1. Both are highlighted with red boxes. The taskbar at the bottom shows the system clock as 7:50 PM and the language as ENG.

```
C:\Users\chheangmey.hor>ping google.com

Pinging google.com [74.125.200.102] with 32 bytes of data:
Reply from 74.125.200.102: bytes=32 time=316ms TTL=36
Reply from 74.125.200.102: bytes=32 time=318ms TTL=36
Reply from 74.125.200.102: bytes=32 time=82ms TTL=36
Reply from 74.125.200.102: bytes=32 time=785ms TTL=36

Ping statistics for 74.125.200.102:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 82ms, Maximum = 785ms, Average = 375ms

C:\Users\chheangmey.hor>
```

Property	Value
Connection-specific DN...	chheangmey.lan
Description	Realtek PCIe FE Family Controller
Physical Address	FC-45-96-8B-01-1D
DHCP Enabled	Yes
IPv4 Address	192.168.27.253
IPv4 Subnet Mask	255.255.255.0
Lease Obtained	Monday, February 3, 2020 7:47:38 PM
Lease Expires	Monday, February 3, 2020 9:57:36 PM
IPv4 Default Gateway	192.168.27.1
IPv4 DHCP Server	192.168.27.1
IPv4 DNS Servers	8.8.8.8 192.168.107.1
IPv4 WINS Server	
NetBIOS over Tcpip En...	Yes
Link-local IPv6 Address	fe80:f532:be89:d34f:93eb%11
IPv6 Default Gateway	
IPv6 DNS Server	

V. Setup and configure HotSpot

a. Create user use yourname with default profile.

The screenshot shows the 'Hotspot User <chheangmey>' configuration window. The 'General' tab is selected. The 'Name' field is set to 'chheangmey' and the 'Profile' dropdown is set to 'default'. Both fields are highlighted with red boxes. The 'Server' dropdown is set to 'all'. The 'Password' field is masked with asterisks. The 'Address' and 'MAC Address' fields are empty. The 'Routes' and 'Email' fields are also empty. The 'enabled' checkbox at the bottom is checked. On the right side, there are buttons for 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Copy', 'Remove', 'Reset Counters', and 'Reset All Counters'.

Hotspot User <chheangmey>

General Limits Statistics

Server: all

Name: chheangmey

Password: *****

Address:

MAC Address:

Profile: default

Routes:

Email:

enabled

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters



b. Test access to Internet. You can't access to Internet right

```
C:\Windows\system32\cmd.exe

C:\Users\chheangmey.hor>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 191.168.27.1: Destination net unreachable.
Reply from 191.168.27.1: Destination net unreachable.
Reply from 191.168.27.1: Destination net unreachable.
Reply from 191.168.27.1: Destination net unreachable.

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

C:\Users\chheangmey.hor>
```

c. Login using your name and password. Test access to Internet

Please log on to use the internet hotspot service

login

chheangmey

password

••••••••

OK

HOTSPOT GATEWAY
powered by MikroTik

Powered by MikroTik RouterOS



d. Create user Profiles:

1. Name: LANC20
2. Chose Pool-LANClient
3. Set session Timeout 20 minutes (time for user can access Internet or network) You can test 5 minutes is fast to know result.
4. Allow 10 users can use the same username at the same time
5. Set 1MB upload and 1MB download (For other option keep default.)

New Hotspot User Profile

General Queue Advertise Scripts

Name: LANC20

Address Pool: Pool-LANClient

Session Timeout: 00:20:00

Idle Timeout: none

Keepalive Timeout: 00:02:00

Status Autorefresh: 00:01:00

Shared Users: 10

Rate Limit (rx/tx): 1024k/1024k

☒ Add MAC Cookie

MAC Cookie Timeout: 3d 00:00:00

OK Cancel Apply Copy Remove

6. Create 2 users:

- 1) PNC20 and add to Profile LANC20

Hotspot User <PNC20>

General Limits Statistics

Server: all

Name: PNC20

Password: *****

Address:

MAC Address:

Profile: LANC20

Routes:

Email:

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters

enabled



2) PNCN and add to Default Profile

New Hotspot User

General Limits Statistics

Server: all

Name: PNCN

Password: *****

Address:

MAC Address:

Profile: default

Routes:

Email:

enabled

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters

3) Testing

Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden Walled Garden IP List Cookies

Server	User	Domain	Address	Uptime	Idle Time	Session Time ...	Rx Rate	Tx Rate
Hotspot	PNCN		191.168.27.251	00:00:46	00:00:00		19.0 kb	80.3 kb
Hotspot	PNC20		191.168.27.252	00:02:19	00:00:01	00:17:41	10.0 kb	17.6 kb

2 items (1 selected)



7. Add client to IP Bindings

1) Filter Mac Address your computer to bypass without authentication

The screenshot shows the 'Hotspot' application window with the 'IP Bindings' tab selected. A table lists existing bindings. A context menu is open over the first row, showing options like 'Show Categories', 'Detail Mode', 'Inline Comments', 'Show Columns', 'Find', 'Find Next', and 'Make Binding'.

	MAC Address	Address	To Address	Server	Idle Time	Rx Rate	Tx Rate
	3C:F8:62:86:D7:83	191.168.27.200	191.168.27.200	Hotspot_chh...	00:00:05	0 bps	0 bps
A	42:6E:B1:B1:8F:F6	191.168.27.198	191.168.27.197	Hotspot_chh...			

2 items (1 selected)

The screenshot shows the 'New Hotspot IP Binding' dialog box. The 'MAC Address' field is highlighted with a red box and contains '3C:F8:62:86:D7:83'. The 'Address' field is also highlighted with a red box and contains '191.168.27.200'. Other fields include 'To Address' (191.168.27.200), 'Server' (Hotspot_chhenagmey), and 'Type' (regular). Buttons for 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Copy', and 'Remove' are visible on the right.

enabled



- 2) Borrow your friend computer to connect and block his/her mac not allow to access to internet

Hotspot

Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden Walled Garden IP List Cookies ...

Find

#	MAC Address	Address	To Address	Server
0 B	E8:D0:FC:F2:8B:97	191.168.27.251	191.168.27.251	Hotspot

Hotspot IP Binding <191.168.27.251>

MAC Address: E8:D0:FC:F2:8B:97

Address: 191.168.27.251

To Address: 191.168.27.251

Server: Hotspot

Type: blocked

enabled blocked

8. Allow websites bellow for client can access without authentication in Walled Garden IP List :

- 1) www.passerellesnumeriques.org

Walled Garden IP Entry <passerellesnumeriques.org>

Action: ☒ accept ☐ drop ☐ reject

Server:

Src. Address:

Dst. Address:

Src. Address List:

Dst. Address List:

Protocol: ☐ 6 (tcp)

Dst. Port: ☐ 443

Dst. Host: www.passerellesnumeriques.org

enabled



2) www.timetables.pnc.passerellesnumeriques.org

Walled Garden IP Entry <www.timetables.pnc.passerellesnumeriques.org >

Action: ☒ accept ☐ drop ☐ reject

Server:

Src. Address:

Dst. Address:

Src. Address List:

Dst. Address List:

Protocol: ☐ 6 (tcp)

Dst. Port: ☐ 443

Dst. Host:

Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

enabled

3) www.sms.pnc.passerellesnumeriques.org

Walled Garden IP Entry <www.sms.pnc.passerellesnumeriques.org >

Action: ☒ accept ☐ drop ☐ reject

Server:

Src. Address:

Dst. Address:

Src. Address List:

Dst. Address List:

Protocol: ☐ 6 (tcp)

Dst. Port: ☐ 443

Dst. Host:

Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

enabled



SNA 2020

Feb 3 – 8, 2020						
<div>< > today month week day</div>						
W6	Mon 2/3	Tue 2/4	Wed 2/5	Thu 2/6	Fri 2/7	Sat 2/8
7am						
8am	Cloud Computing and Virtualization B13-Lab SopheakROS SNA 2020	Cloud Computing and Virtualization B13-Lab SopheakROS SNA 2020	Mikro Tik (MTCNA) B13-Lab SopheakROS SNA 2020	R & S (CCNA4) B13-Lab SopheakROS SNA 2020	Mikro Tik (MTCNA) B13-Lab SopheakROS SNA 2020	Workshop on drugs and addictions B32 SNA 2020
9am			Company Visit SNA 2020			
10am	R & S (CCNA4) B13-Lab SopheakROS SNA 2020	R & S (CCNA4) B13-Lab SopheakROS SNA 2020		Mikro Tik (MTCNA) B13-Lab SopheakROS SNA 2020	R & S (CCNA4) B13-Lab SopheakROS SNA 2020	
11am						
12pm						
1pm	Individual Study PNC A-2-A21-Lab (60) SNA 2020	Individual Study PNC A-2-A21-Lab (60) SNA 2020	Students' Meeting B32 SNA 2020	Internship Introduction B32 SNA 2020	Professional Life B23 Lavy	

Hotspot Loing page



Welcome to PNC Hopspot

Make youself home and Enjoy your smooth Internet Connection.

Click to Login



Please enter your username and password to log in

You can get Username And Password from our Receptionist or IT Admin

About Us

Passerelles numériques is a non-profit organization under French law, created in 2005, operating in three Asian countries: Cambodia, the Philippines, and Vietnam. Our mission is to provide education, technical and professional training in the digital sector to young underprivileged people by leveraging their potential and willpower. We endeavor to truly develop their employability which will allow them and their families to escape poverty in a sustainable way, and contribute to the social and economic development of their countries. Our beneficiaries are typically underprivileged or disadvantaged, in extreme situations, according to the criteria PN has defined/specified for each of the countries in which it operates.

Passerelles numériques Cambodia

Passerelles numériques Cambodia was the first project to be launched in 2005, in Phnom Penh. PNC offers two IT training programs in System and Network Administration (SNA) and Programming (WEB), based on a holistic education approach including technical and soft skills, and personal development program.



Our Objectives

Gravida dis placerat lectus ante vel nunc euismod est turpis sodales. Diam tempor dui lacinia eget ornare varius gravida. Gravida dis placerat lectus ante vel nunc euismod est turpis sodales. Diam tempor dui lacinia accumsan vivamus augue cubilia vivamus nisi eu eget ornare varius gravida euismod. Gravida dis lorem ipsum dolor placerat magna tempus feugiat.

Lectus ante vel nunc euismod est turpis sodales. Diam tempor dui lacinia accumsan vivamus augue cubilia vivamus nisi eu eget ornare varius gravida dolore euismod lorem ipsum dolor sit amet consequat. vivamus nisi eu eget ornare varius gravida dolore euismod lorem ipsum dolor sit amet consequat. vivamus nisi eu eget ornare et magna.

Our Values

Trust
Responsibility
Solidarity
Respect
Demanding approach

Key Datas

2016; Creation of the legal entity "PN SEA" (South East Asia) in Singapore With an objective of fundraising & Awareness to Passerelles numériques Action

2015; Passerelles numériques celebrates it's 10 years! Since the beginning, more than 1,500 underprivileged students came through PN's training program and ca now live the life they have chosen.

2013; Creation of Passerelles numériques Hong Kong Limited, a charity, run by a Team of volunteers, which aims to raise Awareness and collect funds to support PN's actions.

Donate US