



Simulasi mikrotik dalam persiapan uji kompetensi siswa teknik komputer dan jaringan menggunakan virtual box

SMK Informatika Pesat Kota Bogor

Biodata pemateri

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 - a. Staff pengajar dan pendidik di SMK Informatika Pesat Kota Bogor**
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Mengapa mikrotik

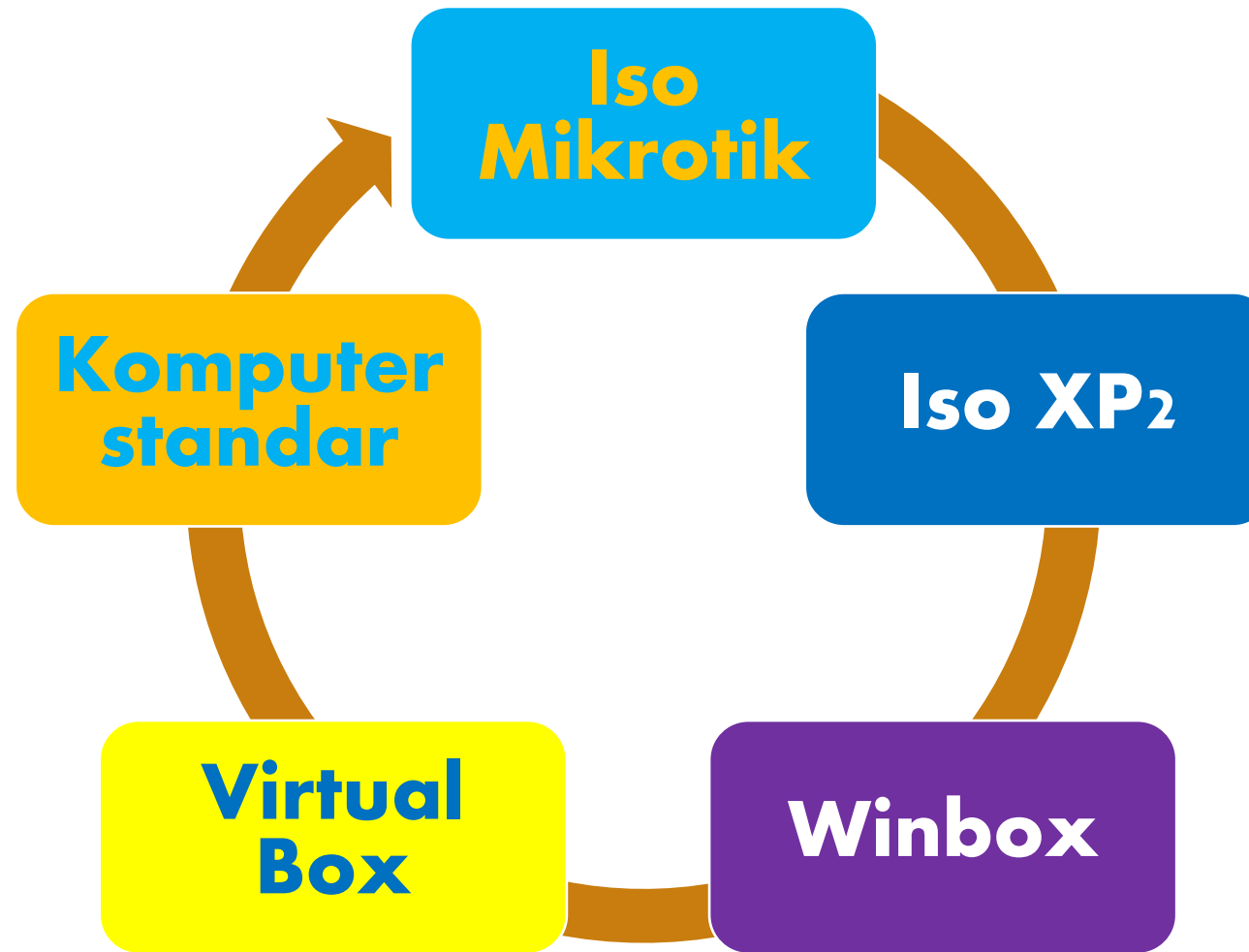
Secara umum mudah dimengerti dan mudah di implementasikan

```
graph TD; A[Secara umum mudah dimengerti dan mudah di implementasikan] --> B[Secara umum industri menengah kebawah menggunakan mikrotik sehingga membuka peluang bagi alumni smk teknik komputer dan jaringan mengambil peran sebagai teknisi]; B --> C[Perangkat murah tapi tidak murahan :D];
```

Secara umum industri menengah kebawah menggunakan mikrotik sehingga membuka peluang bagi alumni smk teknik komputer dan jaringan mengambil peran sebagai teknisi

Perangkat murah tapi tidak murahan :D

Tools konfigurasi



Topologi simulasi pembelajaran



➤ **Koneksi internet didapat dari share internet dari koneksi komputer/leptop**

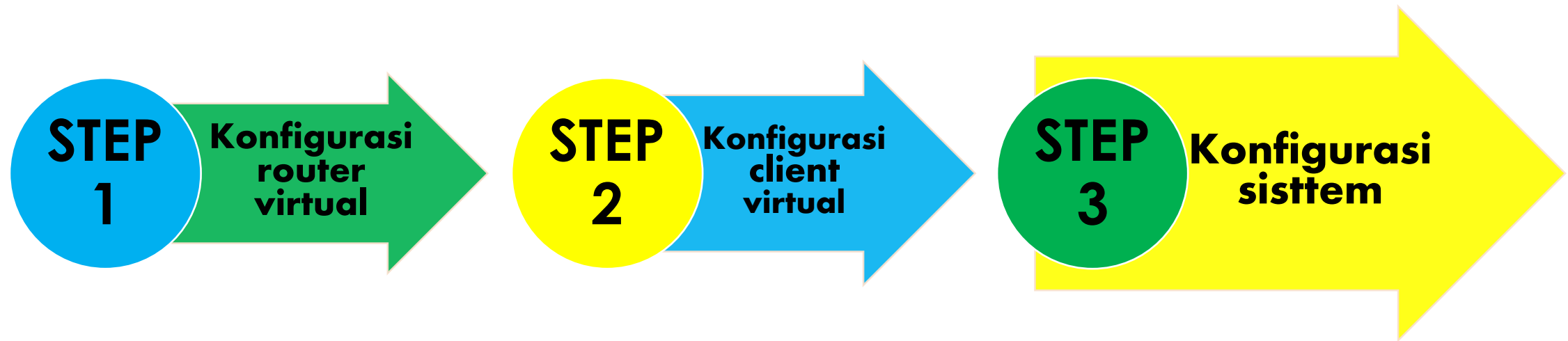
- **NAT (Network Address translation)**
- **DHCP Server**
- **Proxy**
- **Block Website**
- **QOS (Quality Of Service)**
- **Dll...**



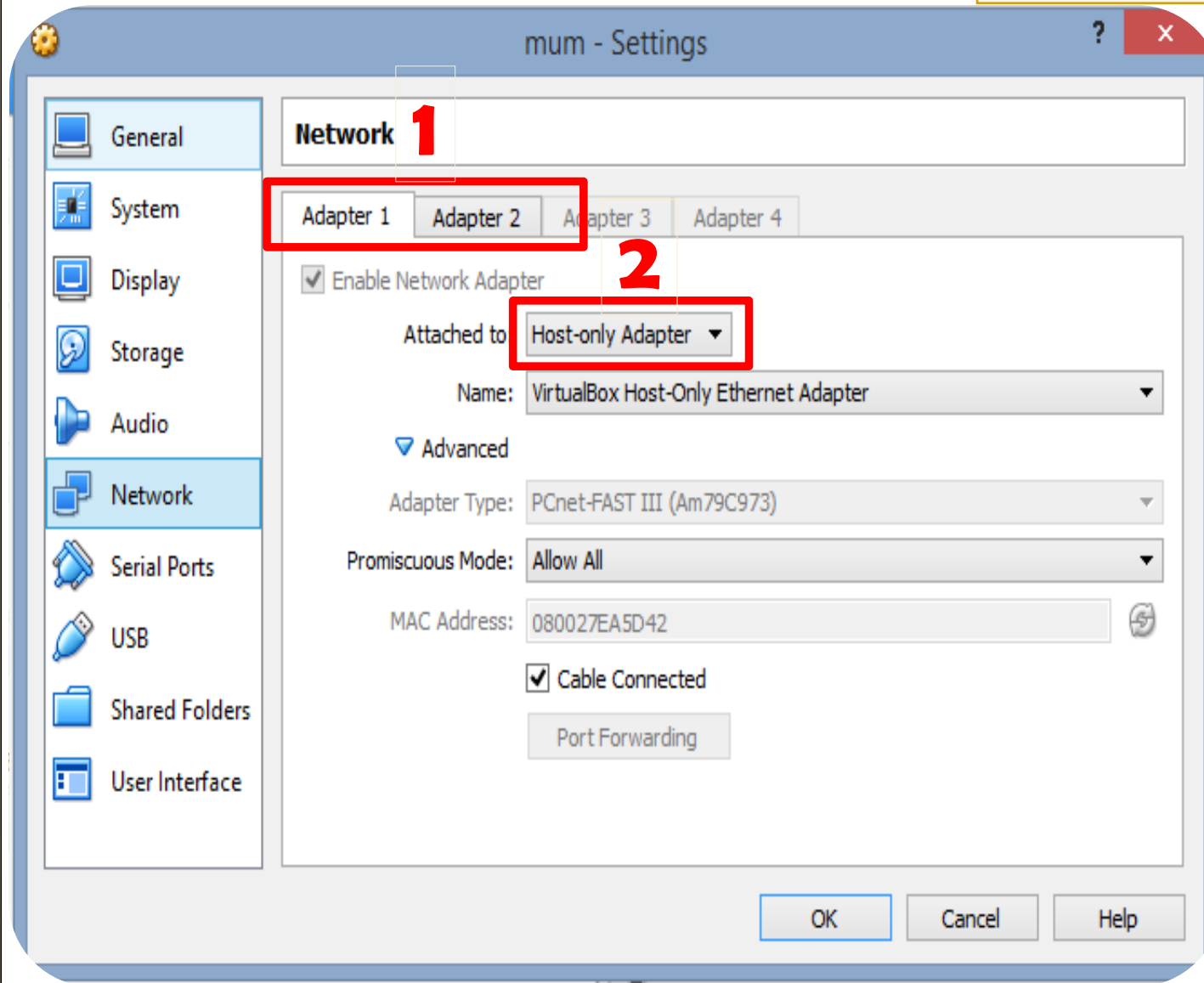
**Client
Windows XP₂**



Proses pengerjaan



Step 1 : mesin router virtual

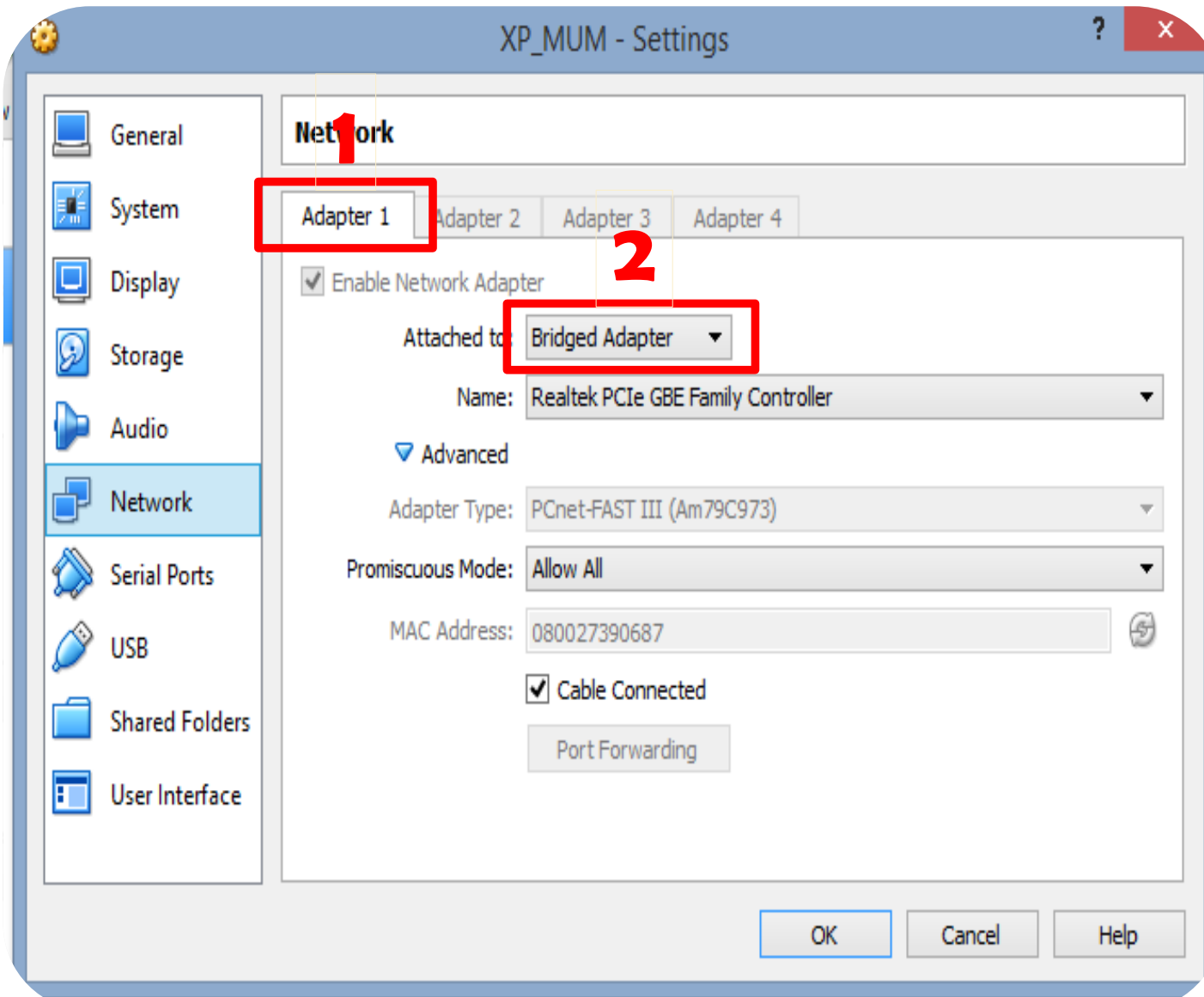


➤ Network adapter 1: Host Only Adapter network ini berfungsi untuk share koneksi internet ke mesin router virtual

➤ Network adapter 2: Bridge adapter, network ini berfungsi sebagai penghubung dengan client dan harus memiliki tipe yang sama dengan network adapter mesin virtual client

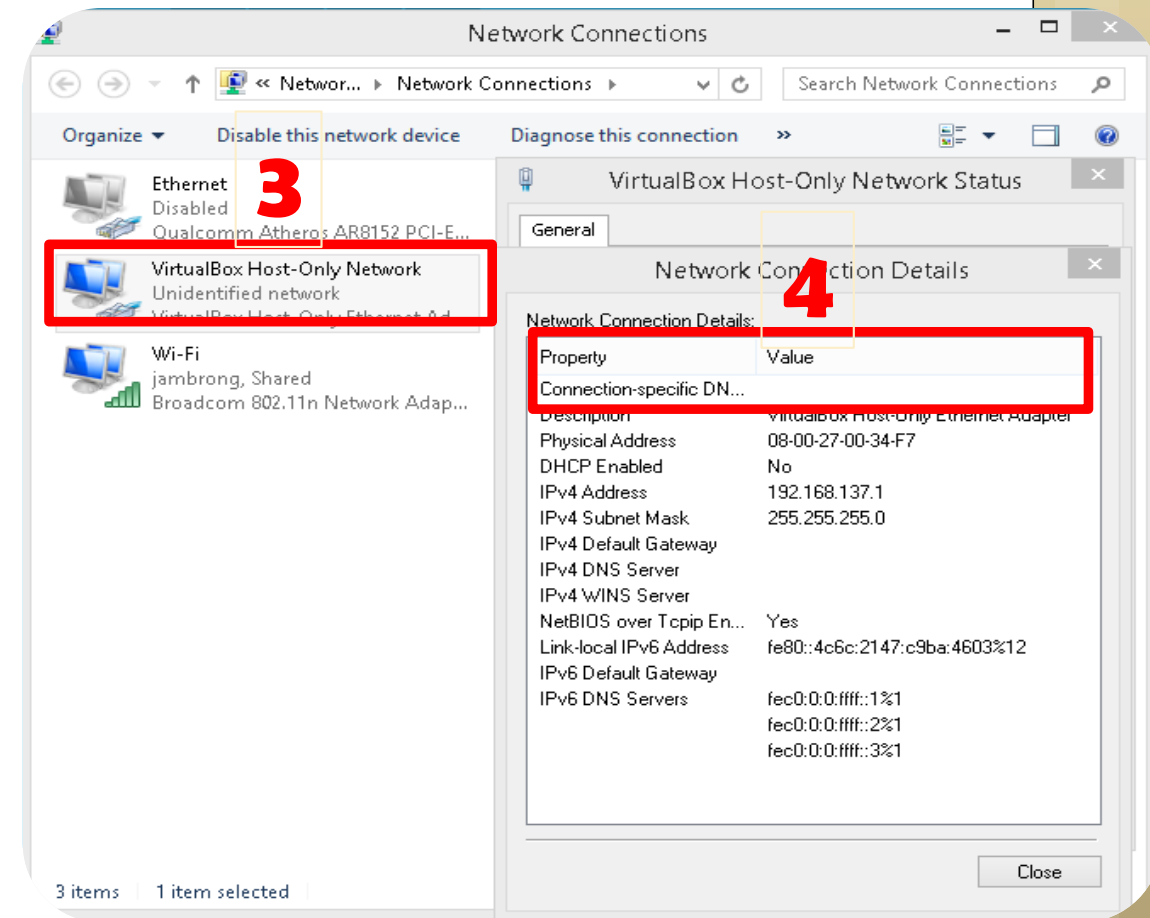
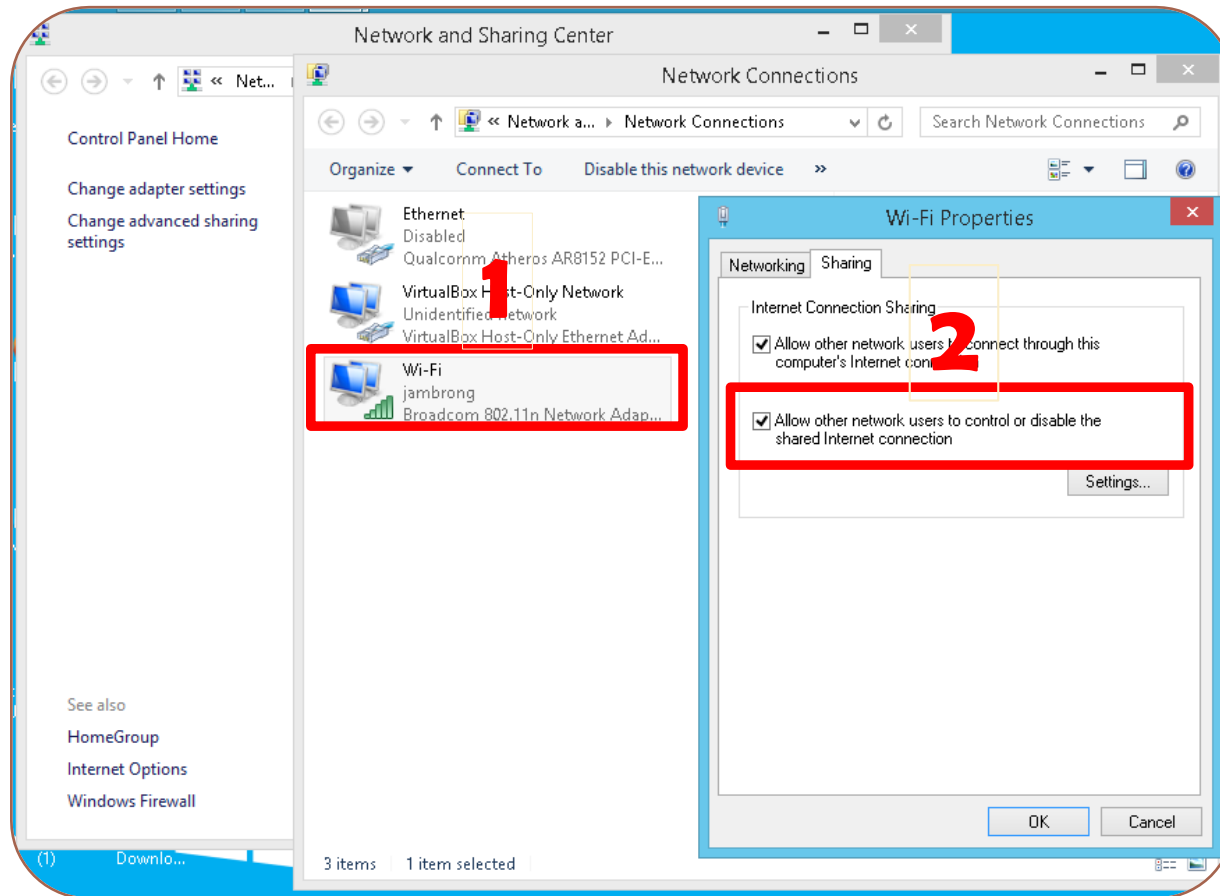
Step 2 : mesin pc client

- Network adapter 1: Bridged adapter berfungsi sebagai penghubung dengan network router dan harus disamakan tipe networknya dengan network 2 mesin router

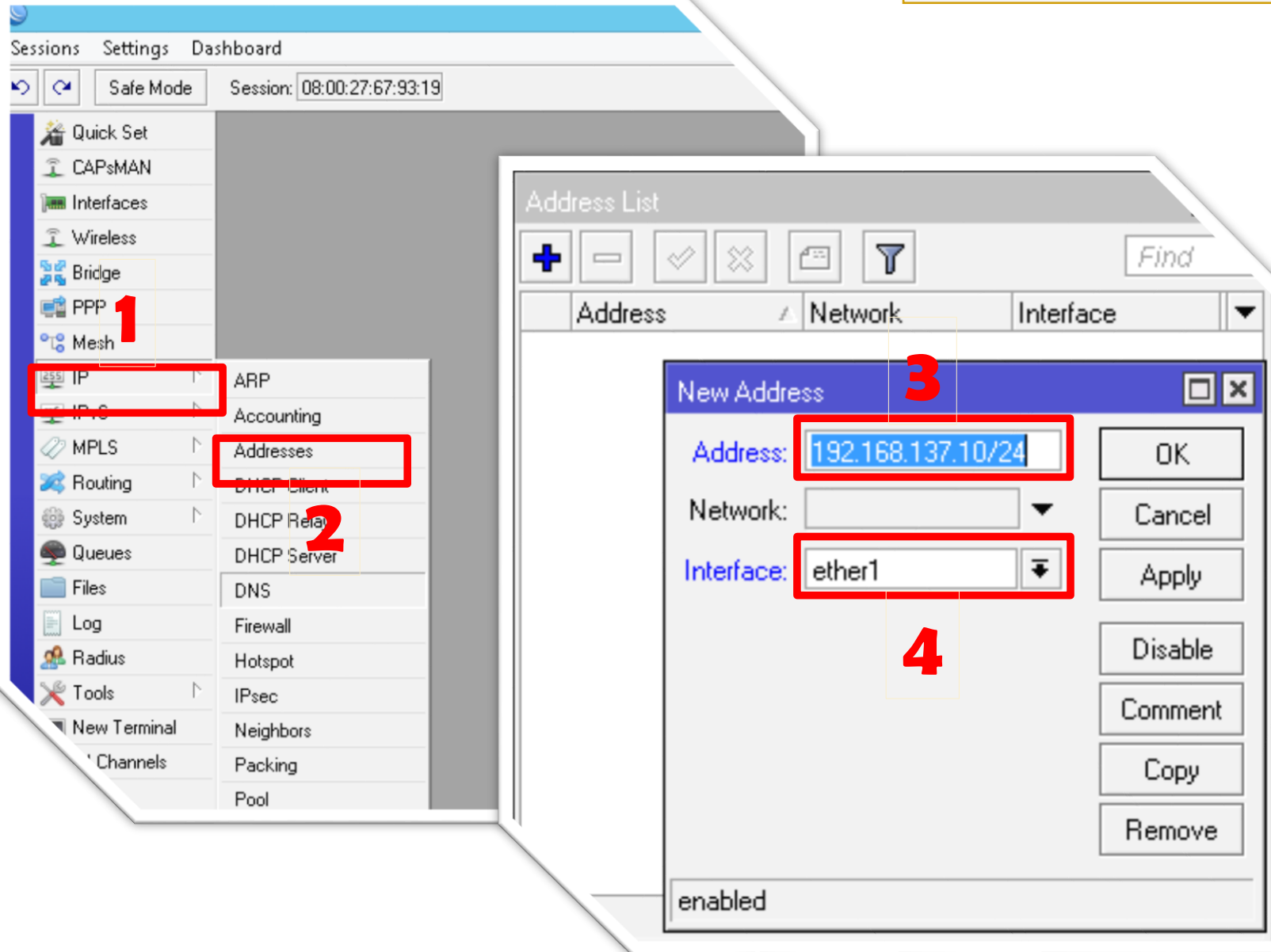


Step 3 : Konfigurasi sistem

Share internet ke mesin router virtual



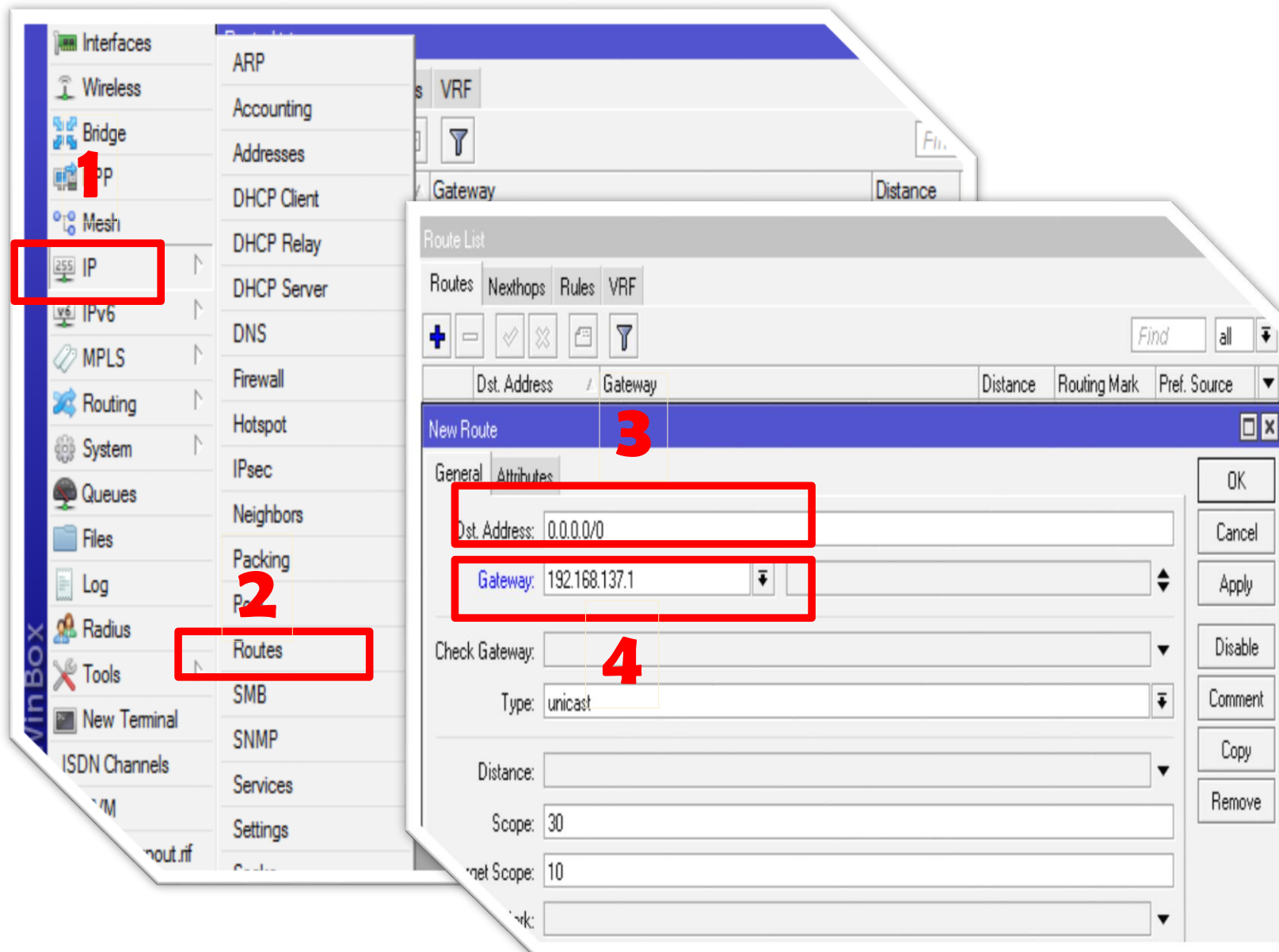
Step 3 : ip address router



➤ Nomor 3 : IP yang digunakan harus satu kelas dengan ip hasil share pada network virtual sebelumnya.

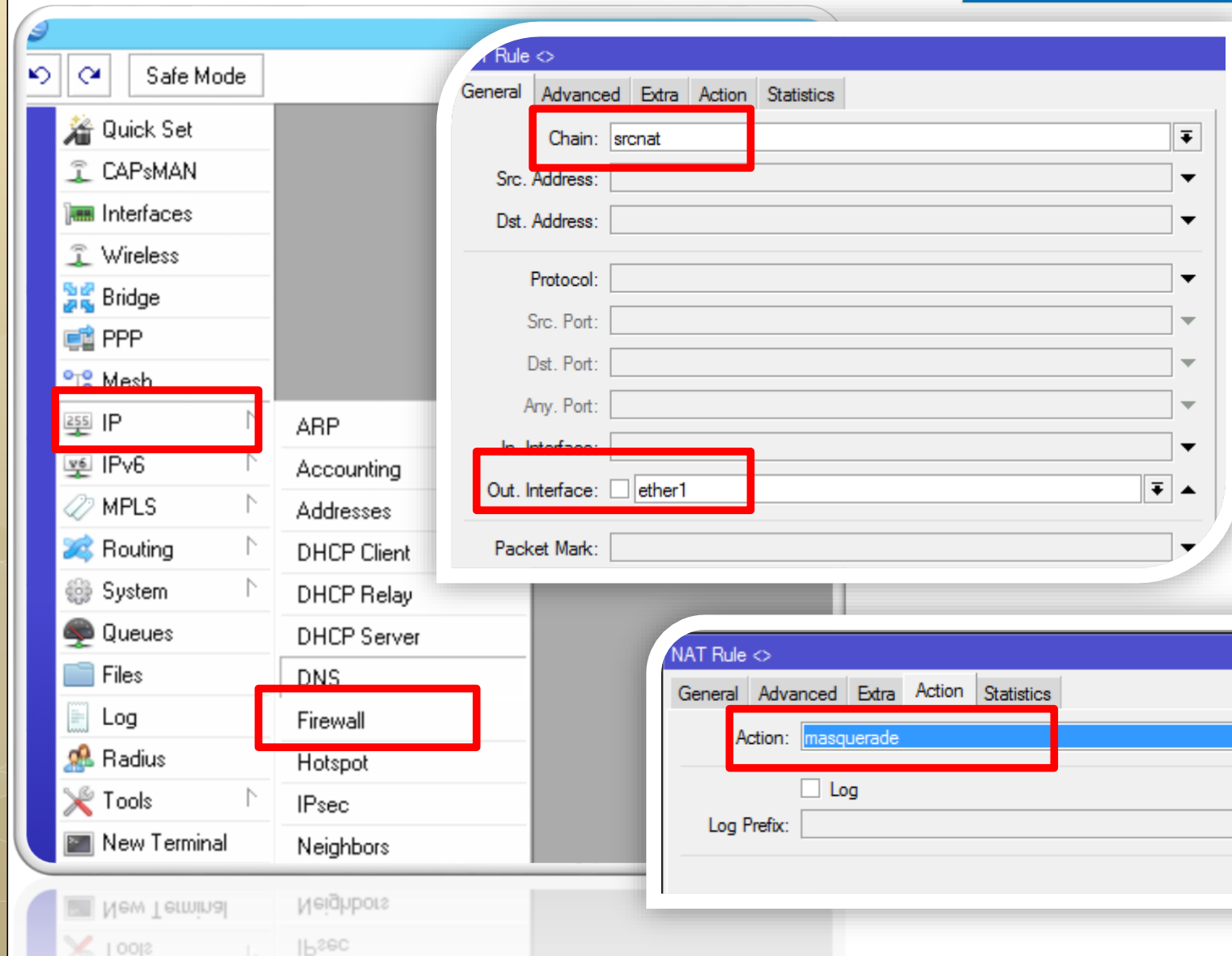
➤ Nomor 4 : interface yang kita gunakan harus interface yang terhubung ke network virtual yakni ether1

Step 3 : ip gateway



- **Nomor 3 : ip ini berfungsi untuk menampung ip tujuan apapun akan bisa dituju.**
- **Nomor 4 : Ip Gateway yang digunakan adalah ip pertama hasil sharing pada mesin virtual**

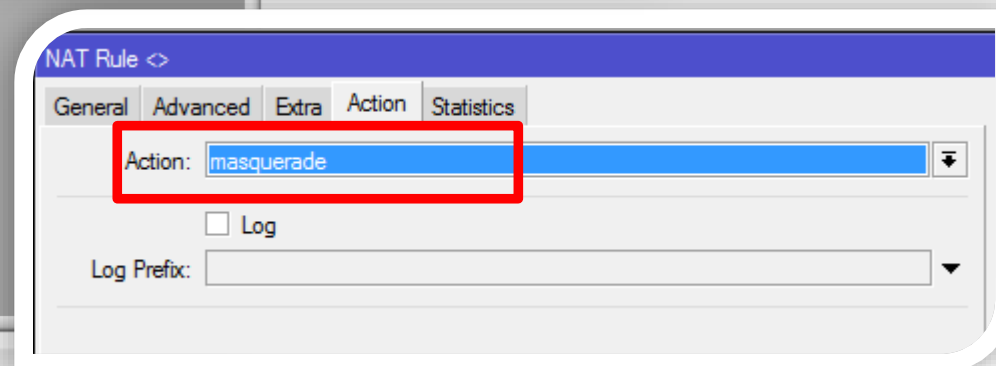
Step 3 : NAT (network address translation)



➤ Chain = srcnat.

➤ Out-interface = ether1 ini kita gunakan karena kita menggunakan interface ini untuk koneksi internet.

➤ Action = masquerade



Hasil koneksi internet

admin@08:00:27:EA:5D:42 (MikroTik) - WinBox v6.22 on x86 (x86)

Safe Mode ☒ Hide Passwords

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Mesh
- IP
- IPv6
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius

Terminal

```
MMM      MMM  III  KKK  KKK  RRR  RRR  OOOOOO  TTT  III  KKK  KKK

MikroTik RouterOS 6.22 (c) 1999-2014      http://www.mikrotik.com/

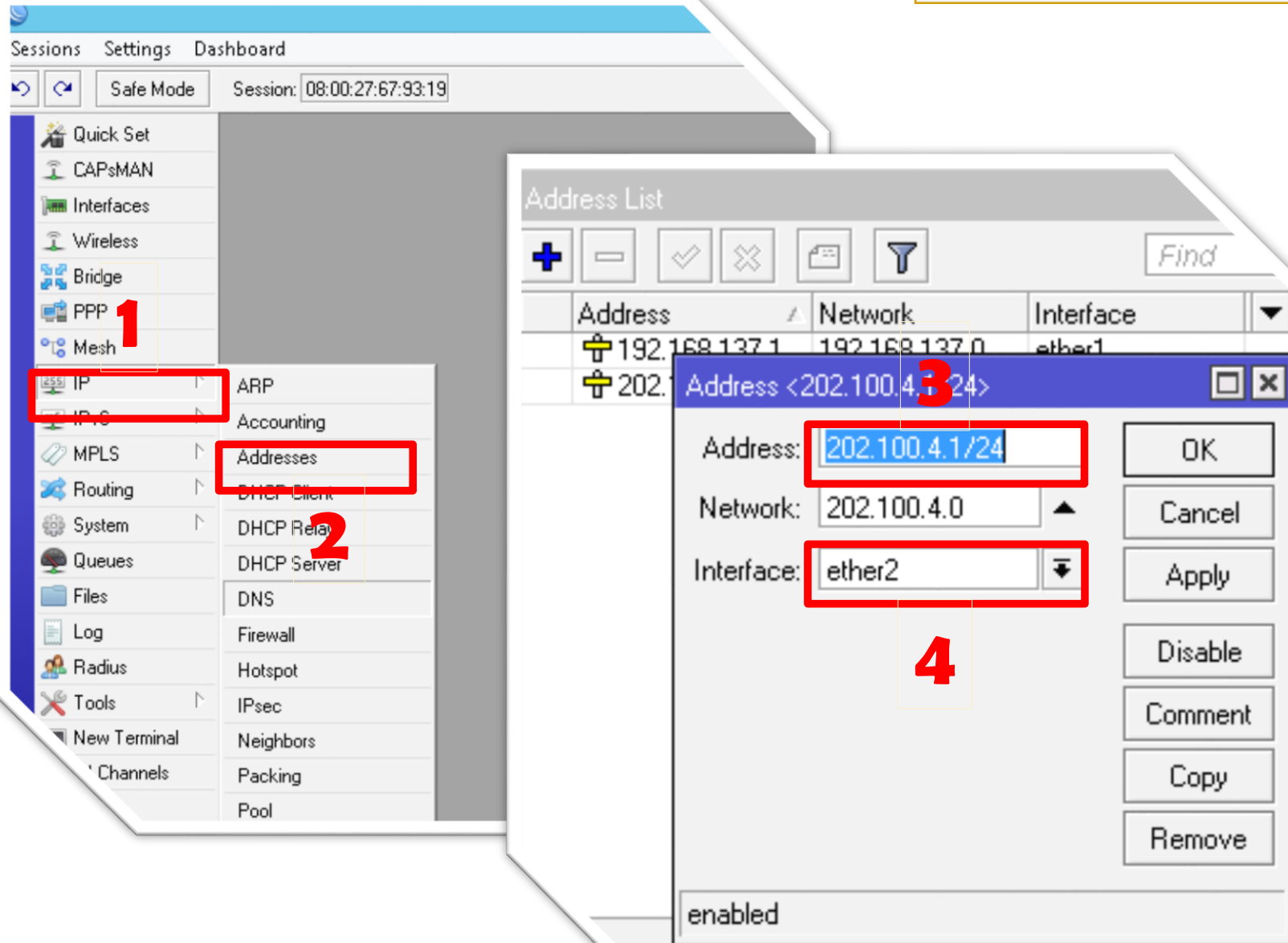
ROUTER HAS NO SOFTWARE KEY
-----
You have 4h14m to configure the router to be remotely accessible,
and to enter the key by pasting it in a Telnet window or in Winbox.
Turn off the device to stop the timer.
See www.mikrotik.com/key for more details.

Current installation "software ID": PER4-G6RW
Please press "Enter" to continue!

[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] > ping google.com
```

HOST	SIZE	TTL	TIME	STATUS
114.120.192.251	56	58	302ms	
114.120.192.251	56	58	505ms	

IP PC Client



- **Nomor 3 : IP Gateway yang akan digunakan untuk pc client**
- **Nomor 4 : interface yang digunakan ether2 yang tipenya disamakan dengan network pc client**

IP dhcp untuk client

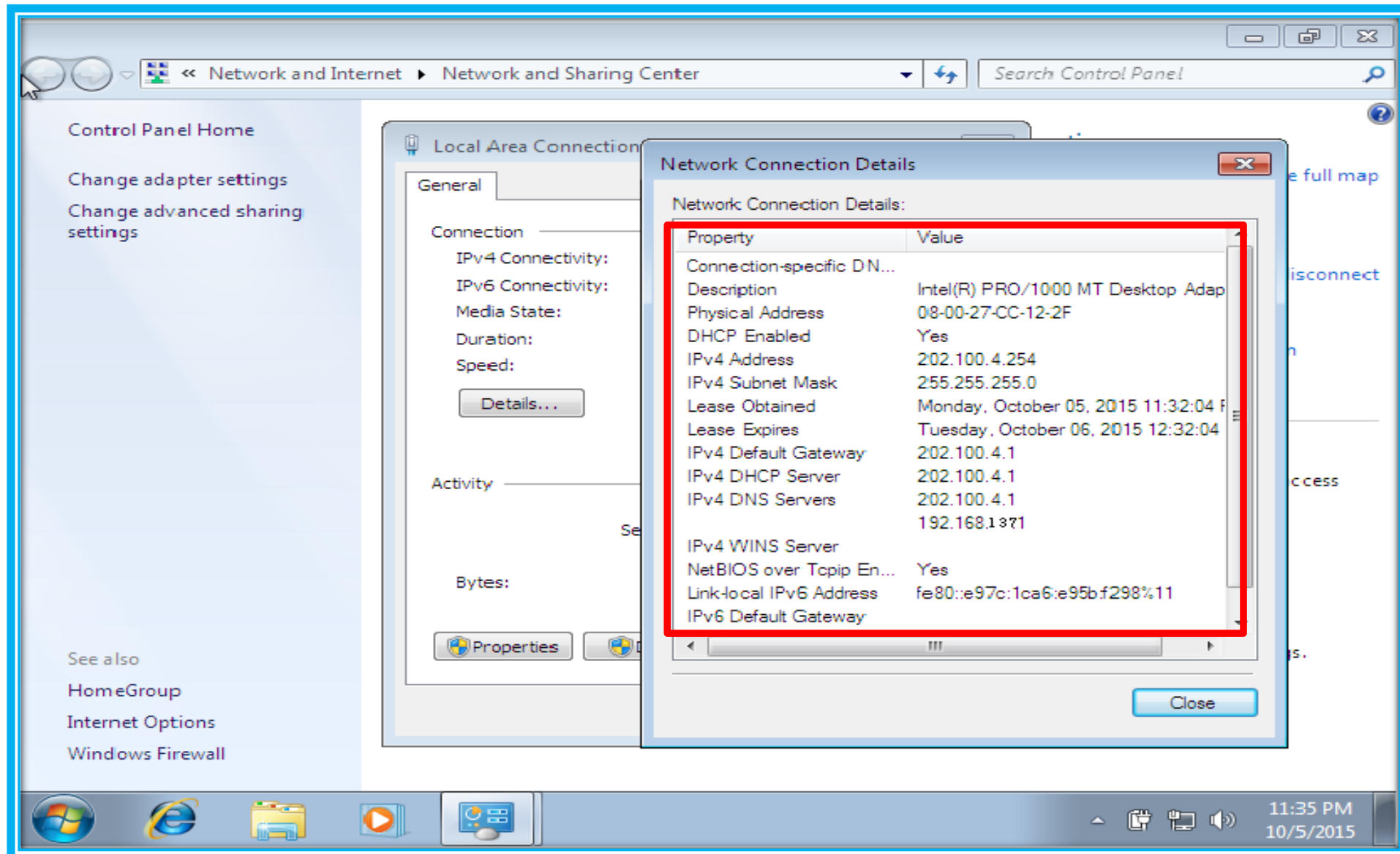
➤ Konfigurasi ini berfungsi untuk memberikan ip dhcp dari route virtual ke pc client virtual

The image illustrates the configuration of a DHCP server in Mikrotik WinBox. The main interface shows the 'IP' and 'DHCP Relay' sections highlighted in the left sidebar. The configuration process is shown in four overlapping windows:

- DHCP Server Window:** The '+' button is highlighted, indicating the creation of a new DHCP server.
- DHCP Setup Window:** The 'Select interface to run DHCP server on' dropdown is set to 'ether2'.
- DHCP Setup Window:** The 'Select network for DHCP addresses' dropdown is set to '202.100.4.0/24'.
- DHCP Server Window:** The final configuration table is shown, listing the DHCP server configuration.

Name	Interface	Relay	Lease Time	Address Pool	Add AR
dhcp1	ether2		3d 00:00:00	dhcp_pool1	no

IP hasil dhcp

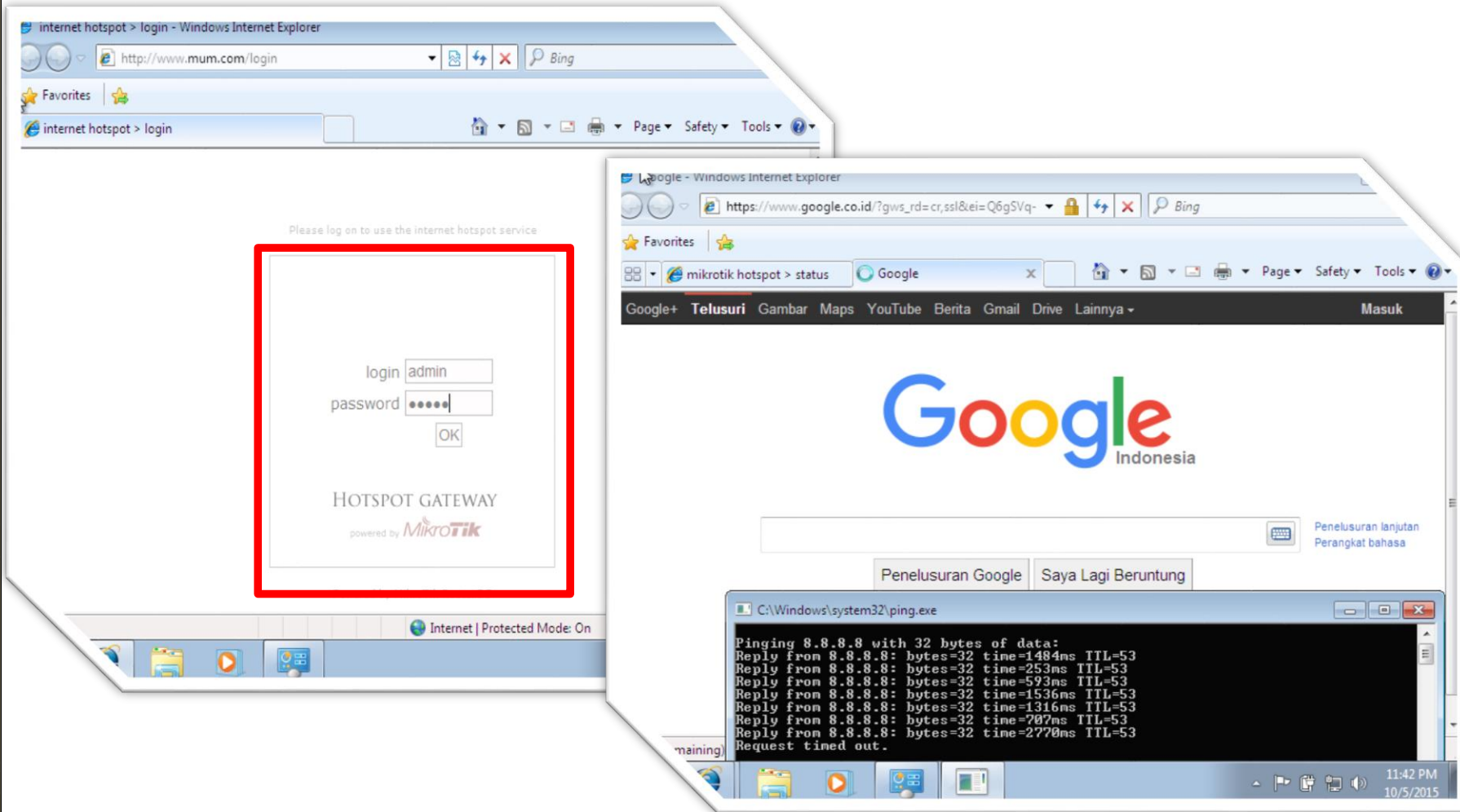


Captive portal

The image shows the Mikrotik WinBox interface with the following configuration steps highlighted:

- Left Menu:** The **Hotspot** option is selected under the **IP** category.
- Hotspot Window:** The **+** icon is clicked to add a new hotspot profile.
- Hotspot Setup:** The **HotSpot Interface** is set to **ether2**.
- Set HotSpot address for interface:** The **Local Address of Network** is set to **202.100.4.1/24**, and the **Maskquerade Network** checkbox is checked.
- Create local HotSpot user:** The **Name of Local HotSpot User** is **admin** and the **Password for the User** is **admin**.

Hasil Captive Portal



➤ Setelah login dengan username dan password yang telah kita buat berikutnya kita dapat melakukan koneksi internet pada pc client

Next configuration

Block Site

**QOS
(Quality
Of Service)**

Block site "web proxy"

Web Proxy Settings

General Status Lookups Inserts Refreshes OK

☒ Enabled

Src. Address: ..

Port: 3218

☐ Anonymous

Parent Proxy: ..

Parent Proxy Port: ..

Cache Administrator: pesat

Max. Cache Size: unlimited

Max Cache Object Size: 2048

☒ Cache On Disk

Max. Client Connections: 600

Max. Server Connections: 600

Max Fresh Time: 3d 00:00:00

☐ Serialize Connections

☒ Always From Cache

Cache Hit DSCP (TOS): 4

Cache Path: web-proxy

running

Web Proxy Access

+ - ✓ ✗ 📁 🏠 ⌂ ⌂ Reset Counters ⌂ Reset All Counters

#	Src. Address	Dst. Address	Dst. Port	Dst. Host	Path
0	202.100.4.0/24			www.youtube...	
1	202.100.4.0/24			www.detik.com	

2 items (1 selected)

Web Proxy Rule 202.100.4.0/24

Src. Address: 202.100.4.0/24

Dst. Address: ..

Dst. Port: ..

Local Port: ..

Dst. Host: www.youtube.com

Path: ..

Method: ..

Action: deny

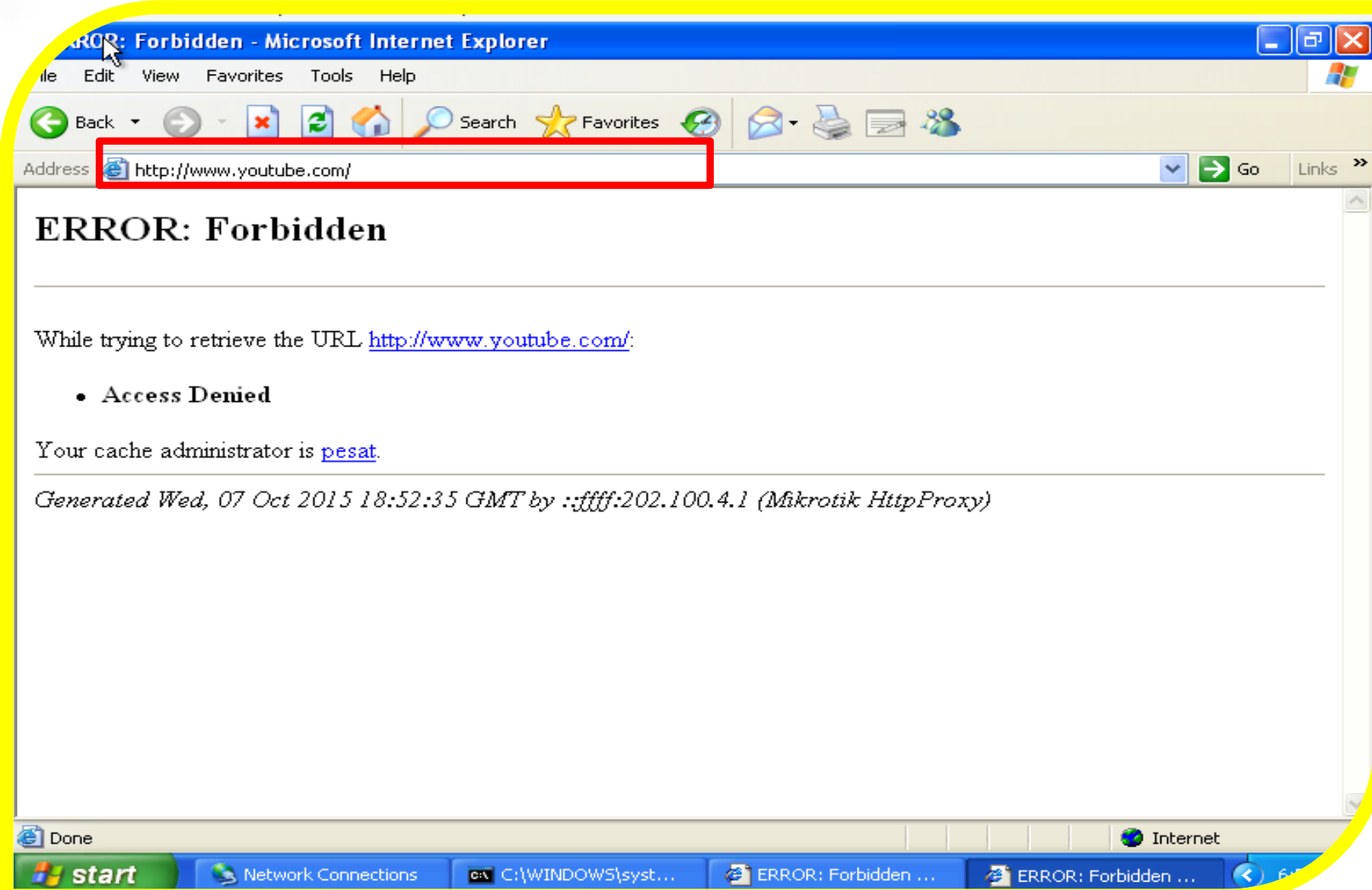
Redirect To: ..

Hits: 0

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

enabled

Hasil Block Site



QOS (queue)

Safe Mode

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Mesh

IP
IPv6
MPLS
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal

ARP
Accounting
Addresses
DHCP Client
DHCP Relay
DHCP Server
DNS
Firewall
Hotspot
IPsec
Neighbors

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

+ - ✓ ✗ [icon] [icon] Reset Counters 00 Reset All Counters Find

Total Max Limit (bi... ▼

New Simple Queue

General Advanced Statistics Traffic Total ...

Name: client

Target: 202.100.4.0/24

Dst: ▼

Max Limit Target Upload Target Download

128k 128k bits/s

Burst Burst Limit unlimited unlimited bits/s

Burst Threshold unlimited unlimited bits/s

Burst Time 0 0 s

Time

enabled

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



FINISH
Thank's