MikroTik Basic Implementation in Enterprise Network

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About Me

Trainings

- Cisco Certified Network Associate (Routing & Switching)
- Cisco Certified Network Associate (Data Center)
- Cisco Certified Network Associate (Wireless)
- Cisco Certified Network Professional (Routing & Switching)
- Microsoft Certified System Administrator
- APTECH Certified Computer Professional (ACCP)
- Red Hat Certified System Administrator (RHCA)
- MTCNA (MikroTik Certified Network Associate)→ In Process

Position

- Manager Network & IT Support

Company

- Haier Pakistan(Pvt)Ltd

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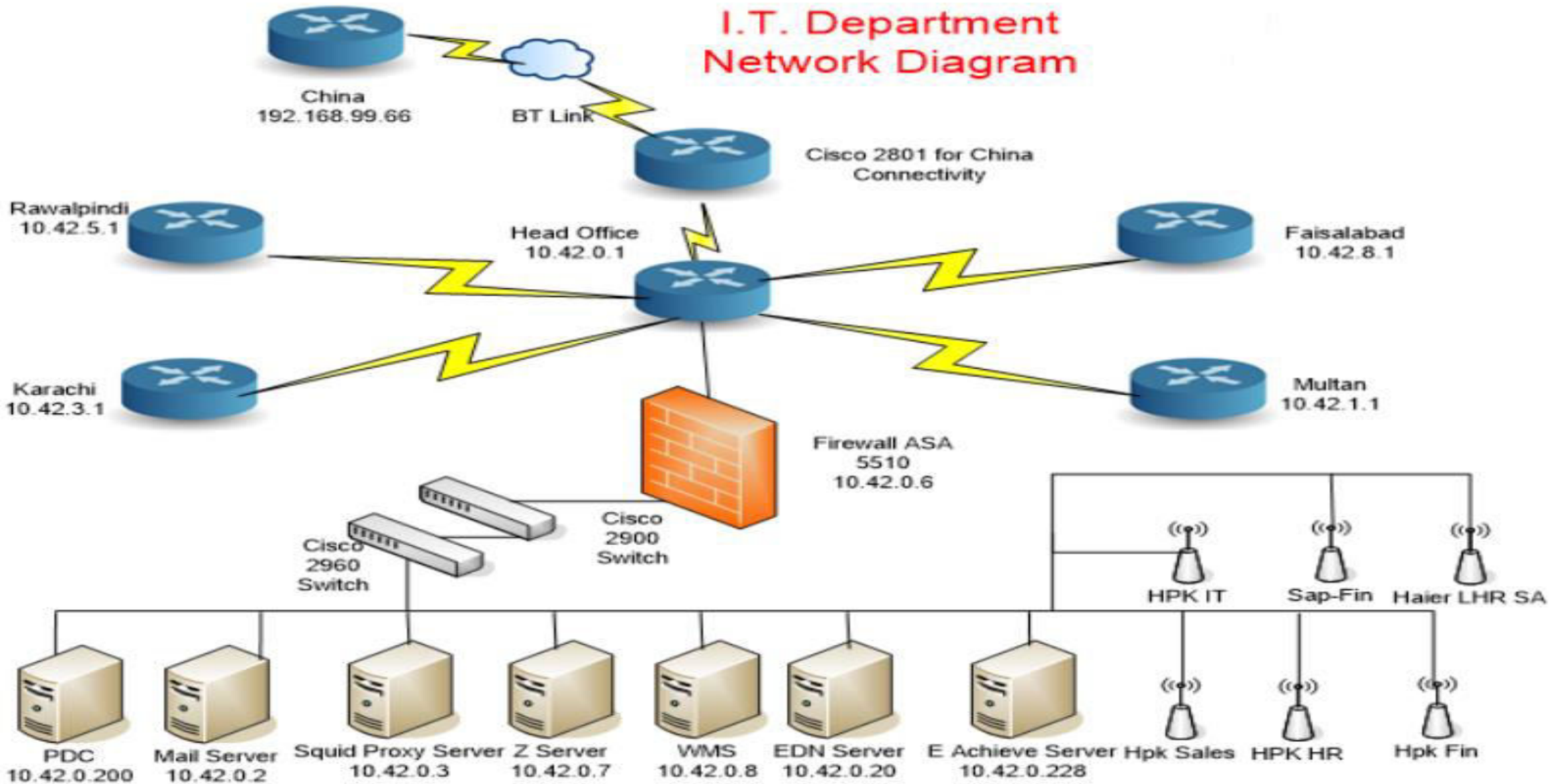
Road Map

- Why MikroTik router board Implementation required in Haier Network
- DHCP Server Functionality & Mac Address Filtering
- WAN Failover Functionality
- Virtual Private Network Implementation
- Remote Access VPN Implementation
- Demilitarized Network Zone Set up & Destination Network Address Translation

Haier Network Before MikroTik



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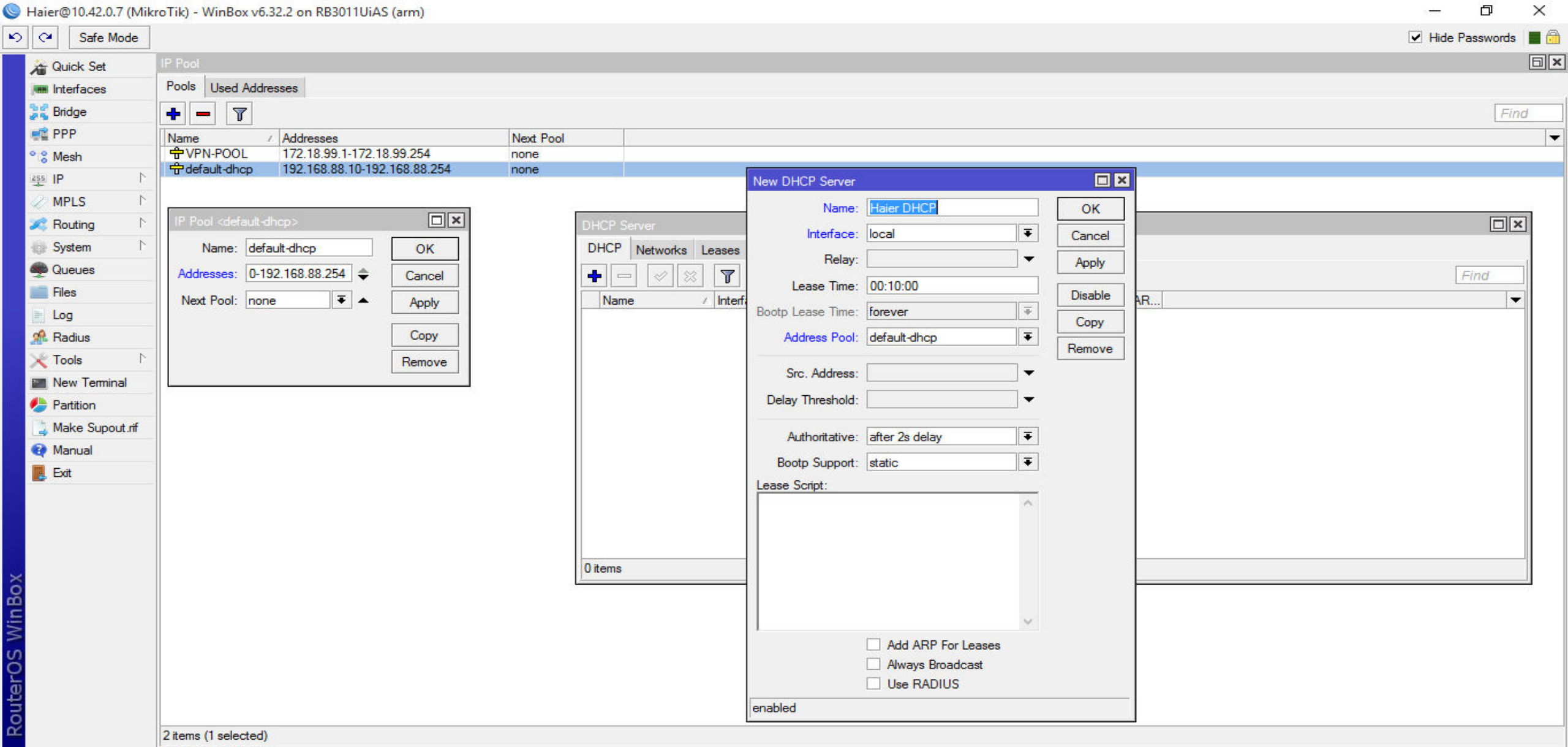
Why MikroTik router board Implementation in Haier Network

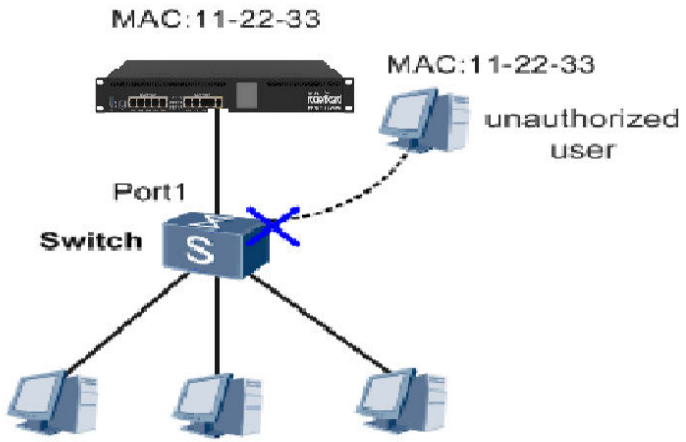
- Easy to configure and manage
- Very low cost rather than any other hardware like Cisco, Fortigate
- Intelligently handled Firewall & Failover
- Easy remote monitoring
- Very User Friendly GUI
- Support of Giga bit Ethernet Ports (i.e. GL 750 Hex)
- Site-to-Site VPN functionality in failover to support leased lines as backup
- Easy to manage configuration backup and restoration process

DHCP Server Configuration



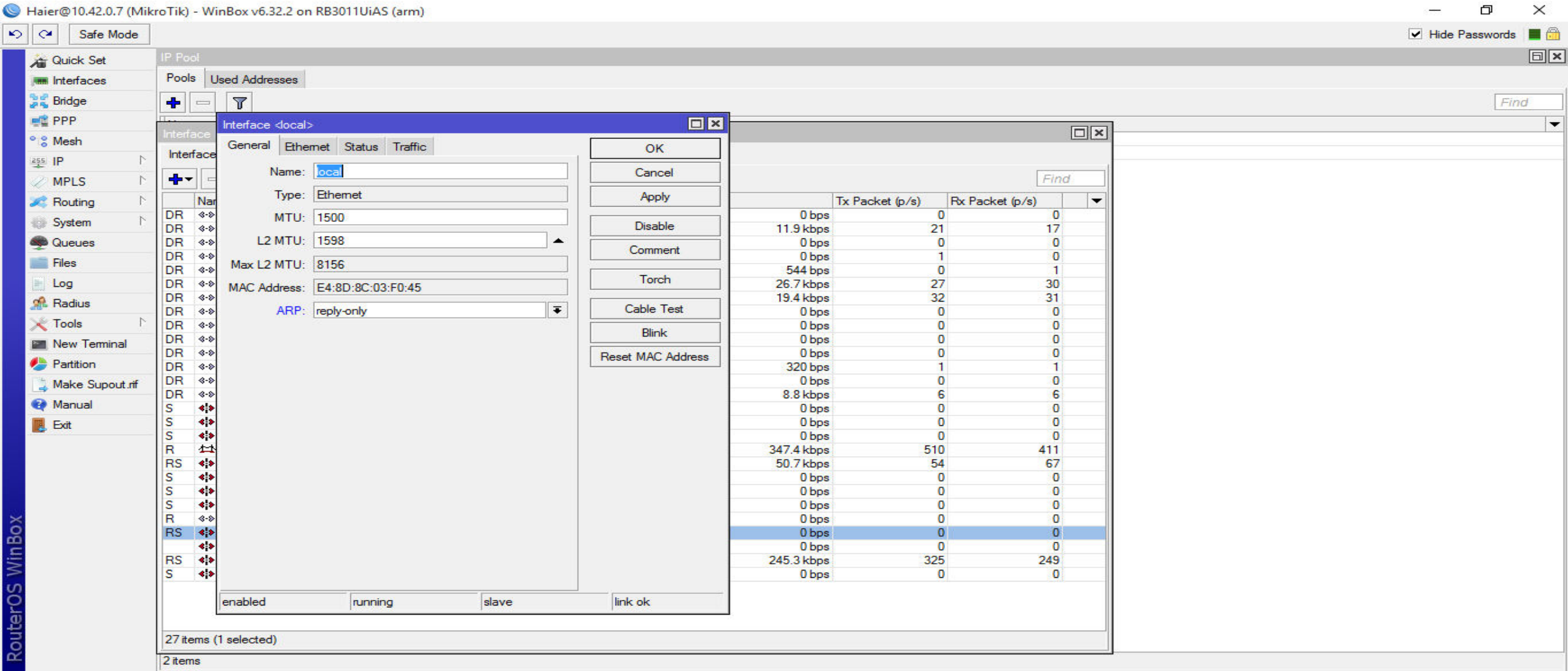
Mac Address Filteration

- Normally, a router allows any device to connect as long as it knows the appropriate passphrase
- With **MAC address filtering**
  - A router will first compare a device's **MAC address** against an approved list of **MAC addresses**
  - Then only allow a device onto the Local network if its **MAC address** has been specifically approved



MAC Address Filtering

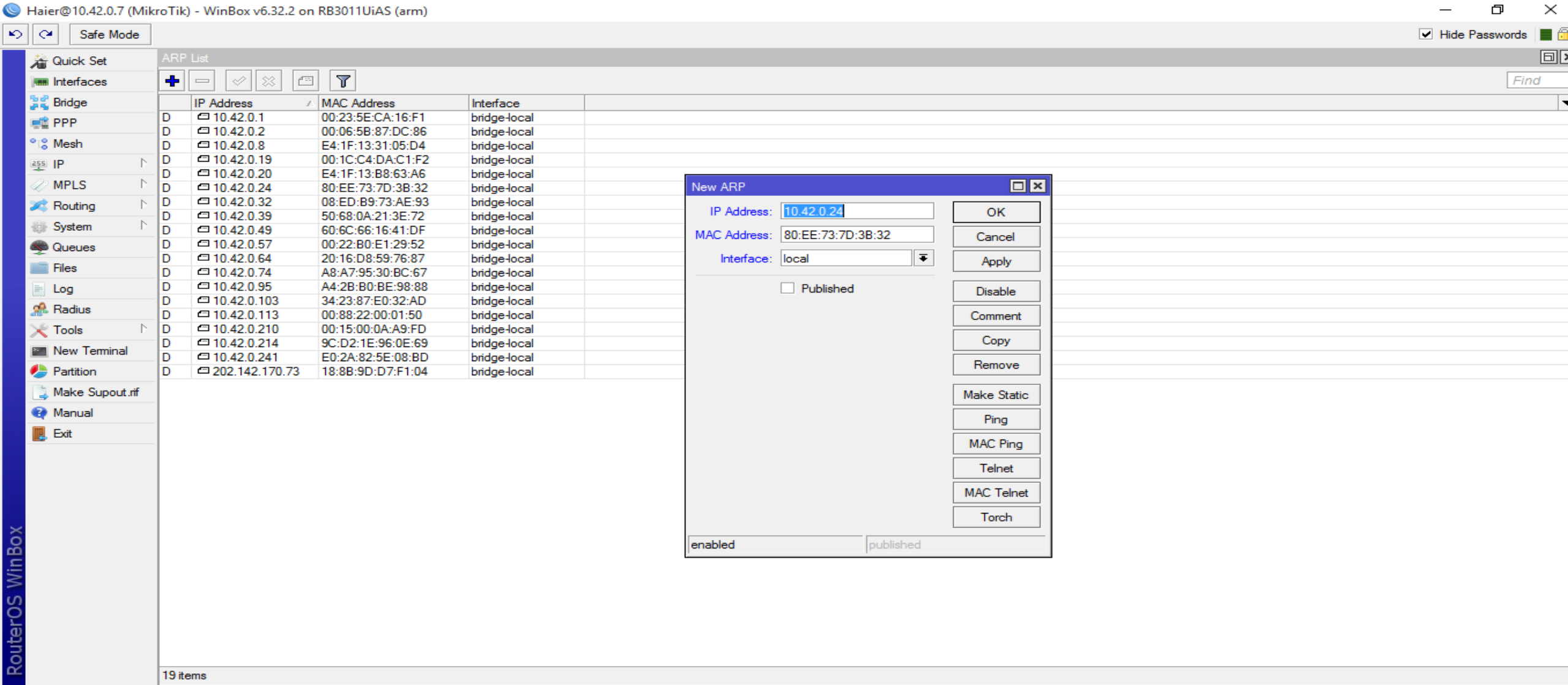
Open your local interface→ ARP→ reply-only



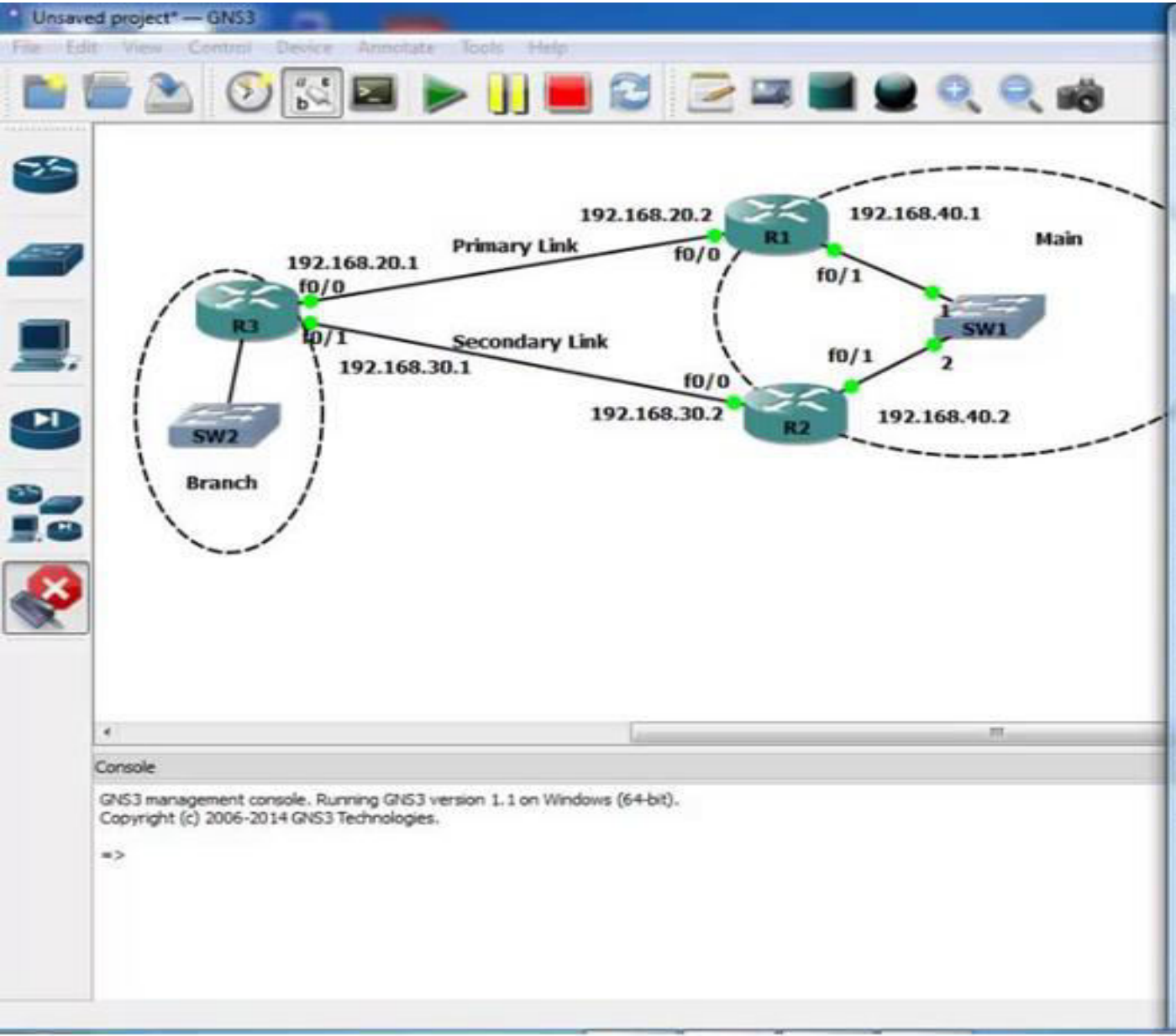
Mac Addresses in ARP List

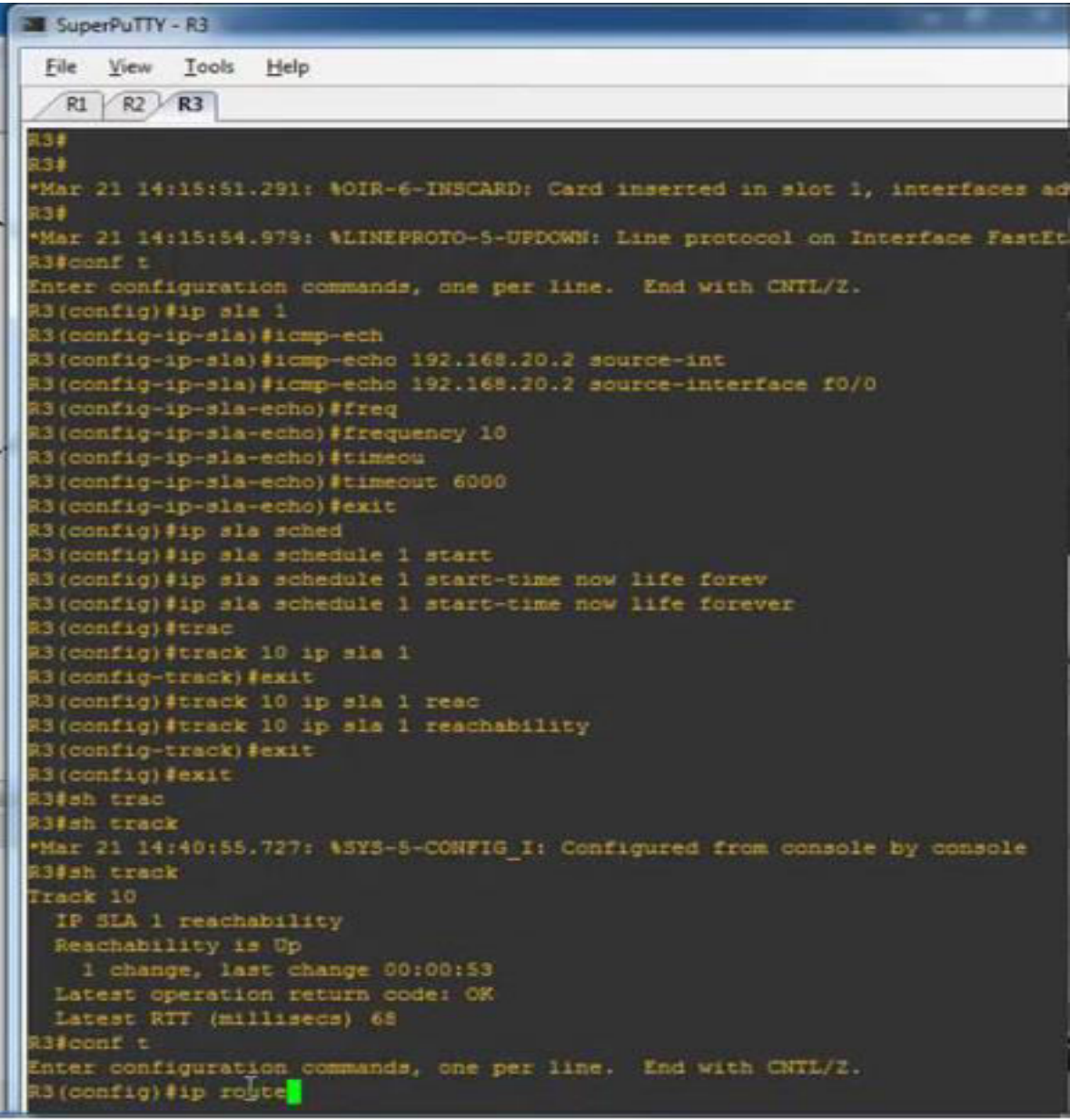
In IP→ARP

Put your users/Lan Ip address here and User's Mac Address with interface local

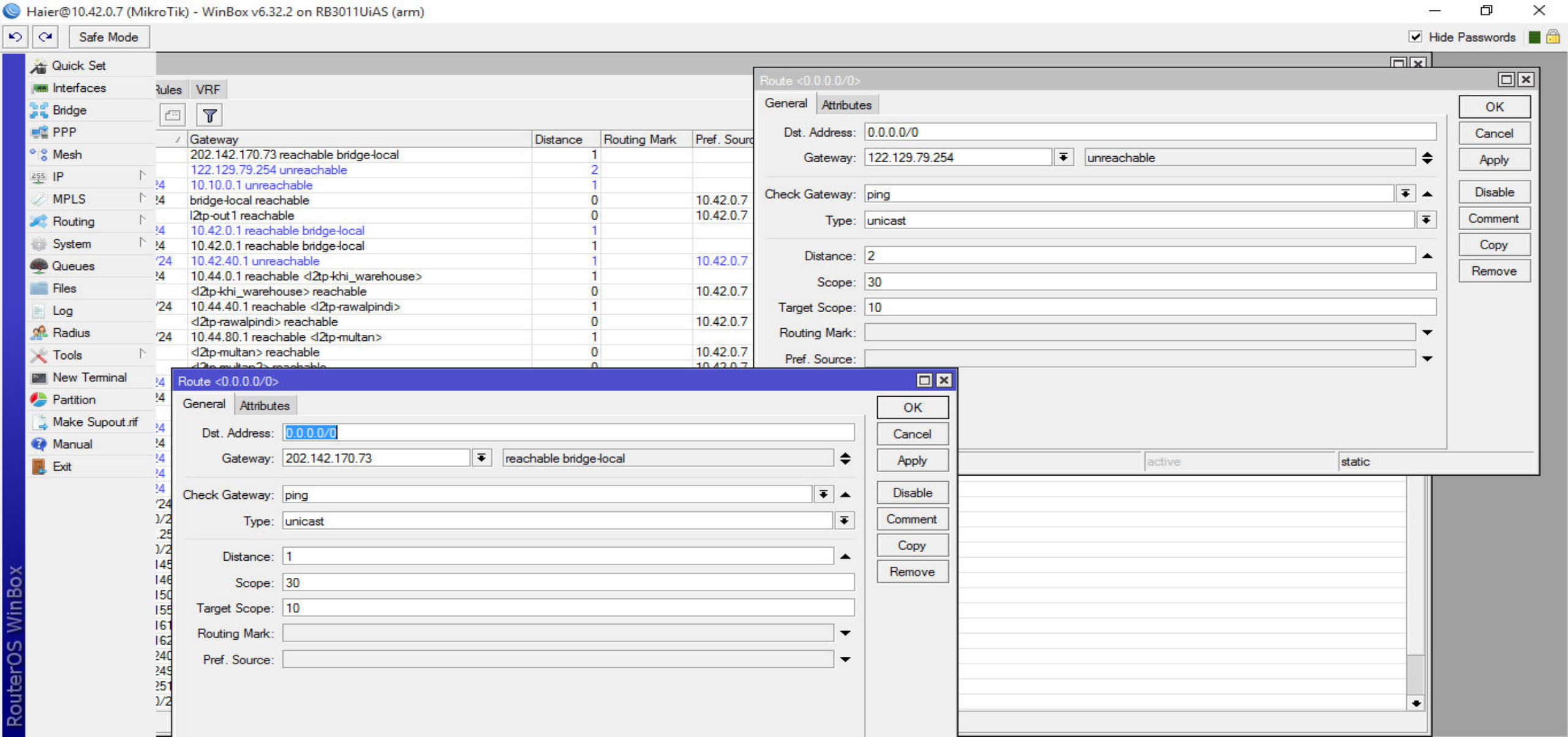


Difference with Cisco IP SLA Failover Monitoring





WAN Failover Functionality with few clicks as compared to Cisco



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Virtual Private Network

- Virtual Private Network is a type of private network that uses public networks, such as Internet, instead of leased lines to communicate

- Two connections – one is made to the Internet and the second is made to the VPN
- Datagrams – contains data, destination and source information
- Firewalls – VPNs allow authorized users to pass through the firewalls
- Protocols – protocols create the VPN tunnels

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Protocols Used in VPN

- PPTP -- Point-to-Point Tunneling Protocol
- L2TP -- Layer 2 Tunneling Protocol
- IPsec -- Internet Protocol Security

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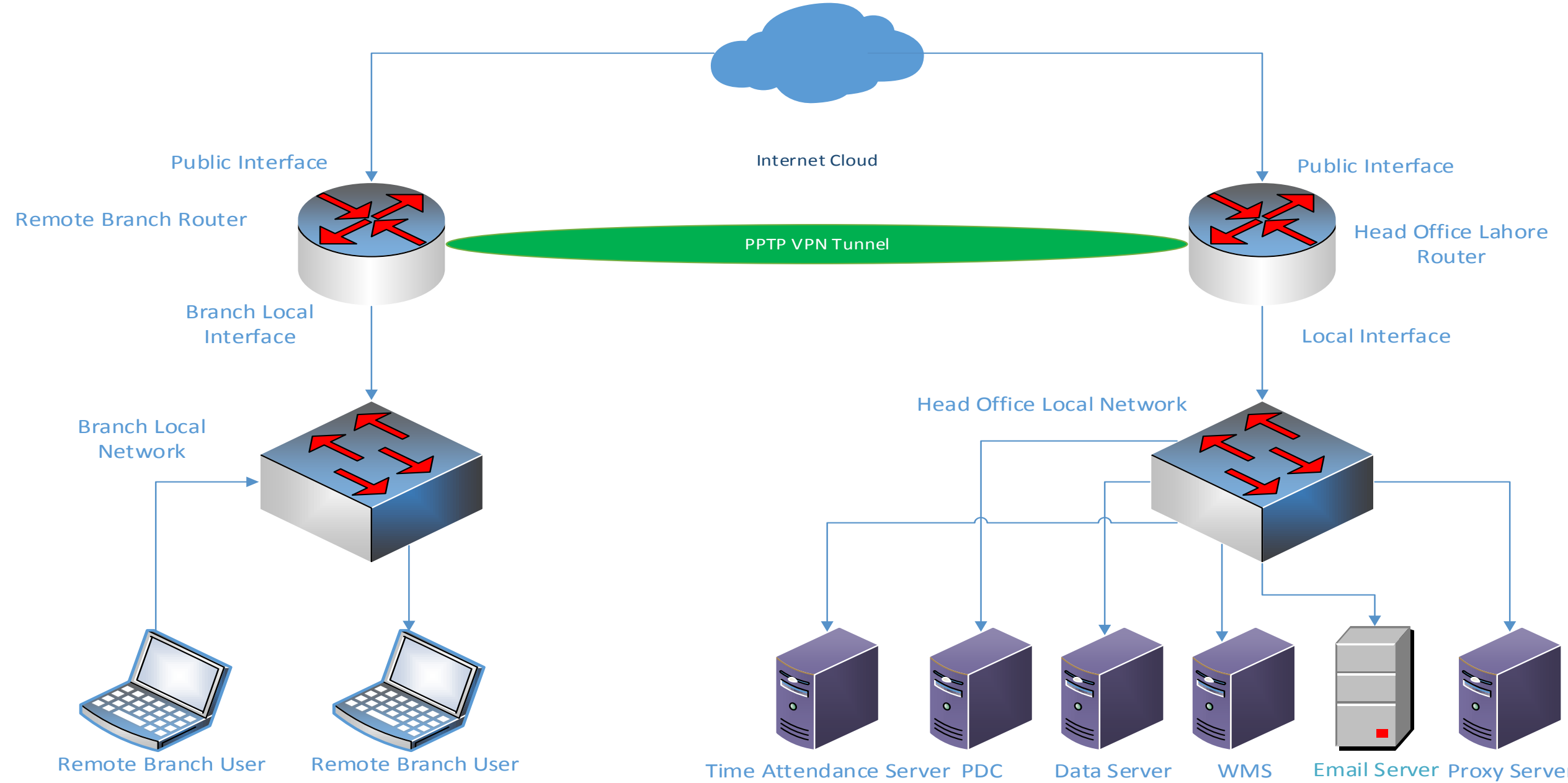
Virtual Private Network Types

- **Site-Site VPN**
  - Router-router VPN
  - Required for two geographic locations.
  - Works over Internet
  - Connect two different LANs
- **Remote Access VPN**
  - Works over internet
  - Connects remote users from anywhere with Office Intranet
  - Dialup set up required to connect

Site-Site VPN Diagram



Site-Site VPN Configuration for Head Office routerboard

```
/ interface l2tp-server server
set enabled=yes max-mtu=1460 max-mru=1460 \
authentication=pap,chap,mschap1,mschap2 default-profile=default-encryption
```

```
/ ppp secret
add name="user1" service=l2tp caller-id="" password="P@ssw0rd" \
profile=default-encryption local-address=192.168.3.254 \
remote-address=10.0.1.254 routes="" limit-bytes-in=0 limit-bytes-out=0 \
comment="" disabled=no
```

```
/ ip route
add dst-address=10.0.1.0/24 gateway=10.0.1.254 scope=255 target-scope=10 \
comment="" disabled=no
```

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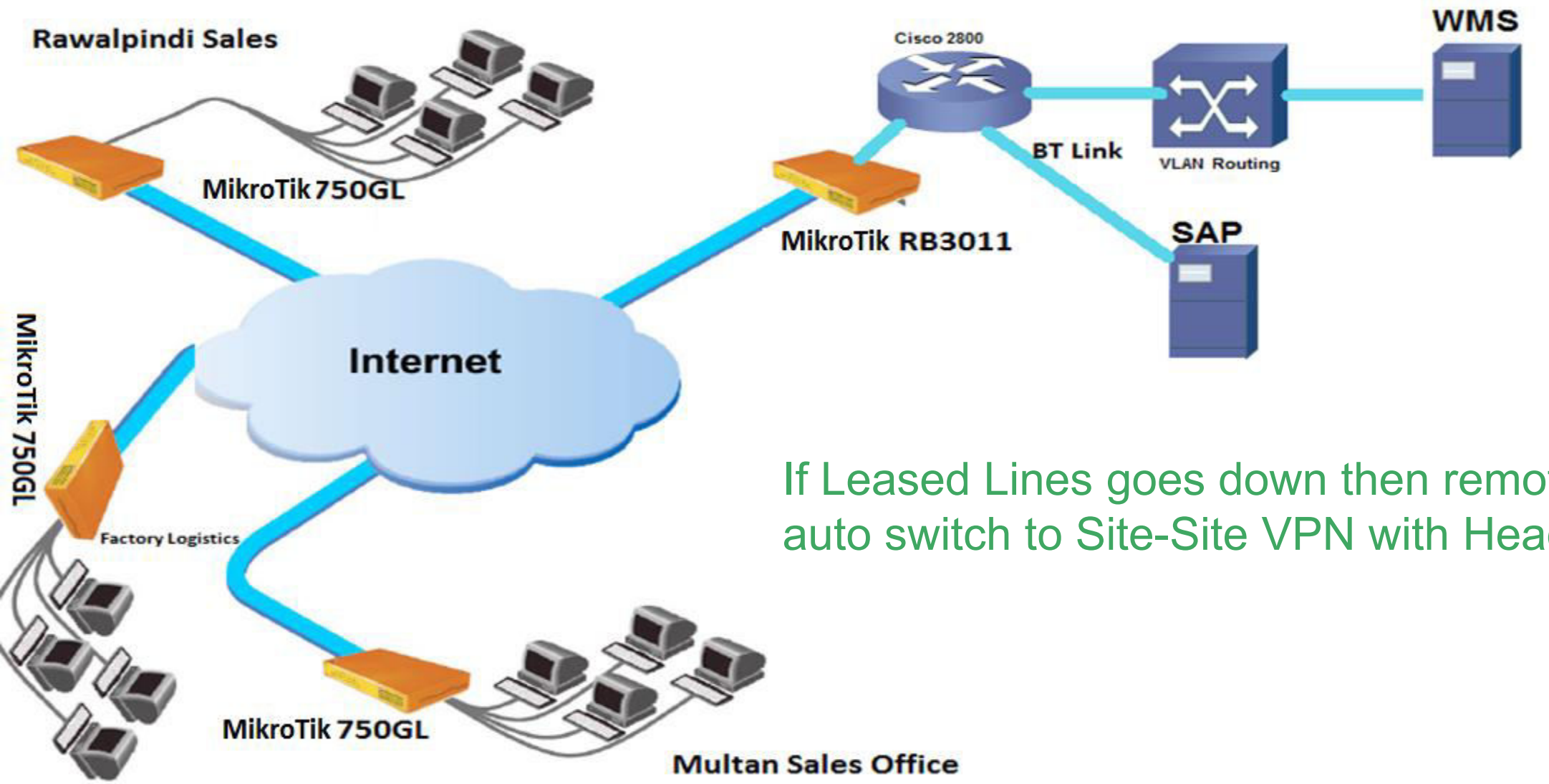
Site-Site VPN Remote branch configuration

```
/interface l2tp-client
add add-default-route=no allow=pap,chap,mschap1,mschap2 comment="" \
connect-to=80.80.80.110 disabled=no max-mru=1460 max-mtu=1460 \
mrru=disabled name="l2tp-out1" password="P@ssw0rd" \
profile=default-encryption user="user1"
```

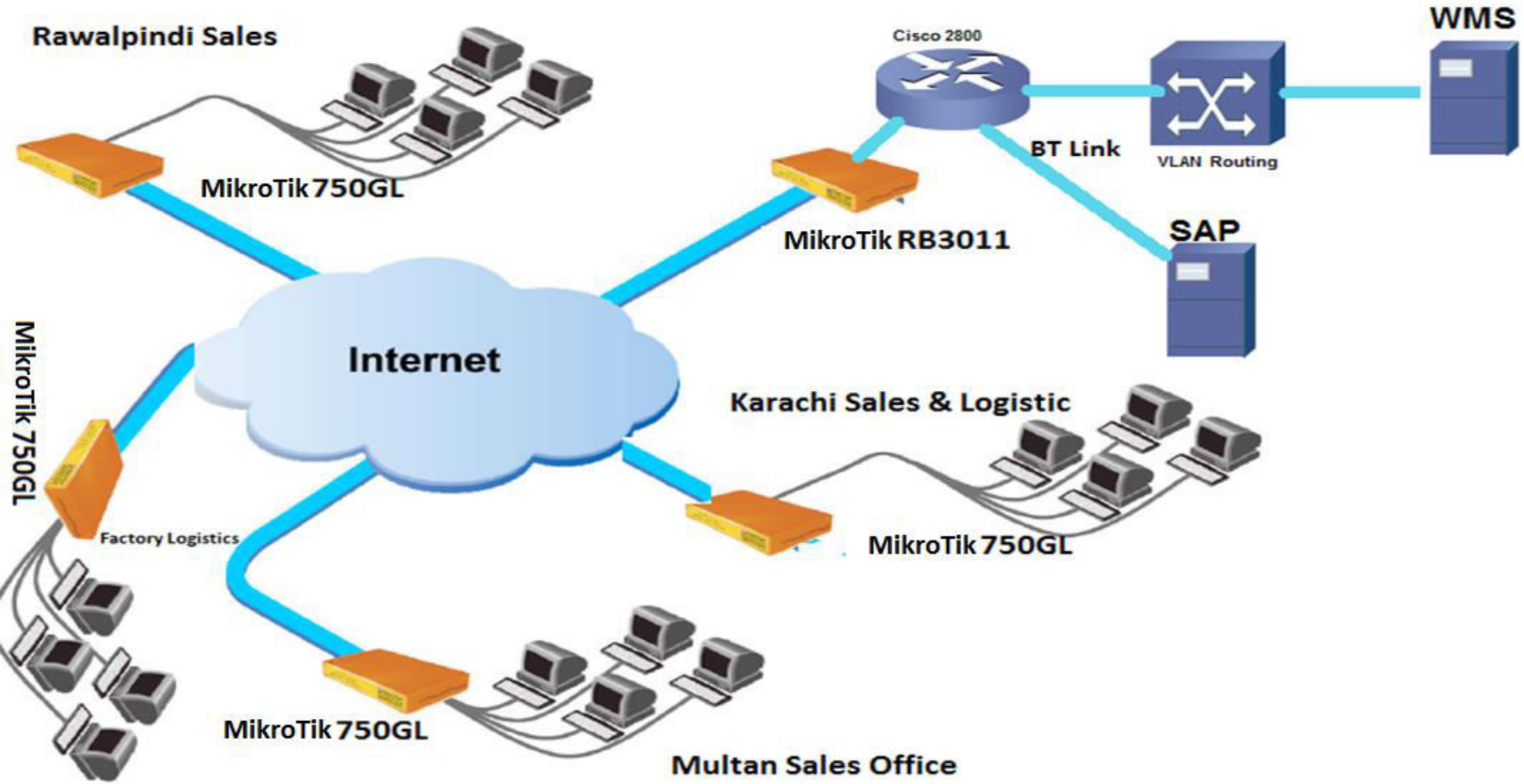
```
/ip route
add comment="" disabled=no distance=1 dst-address=192.168.2.0/23 \
gateway=192.168.3.254 scope=255 target-scope=10
```

Site-Site VPN at Public Network

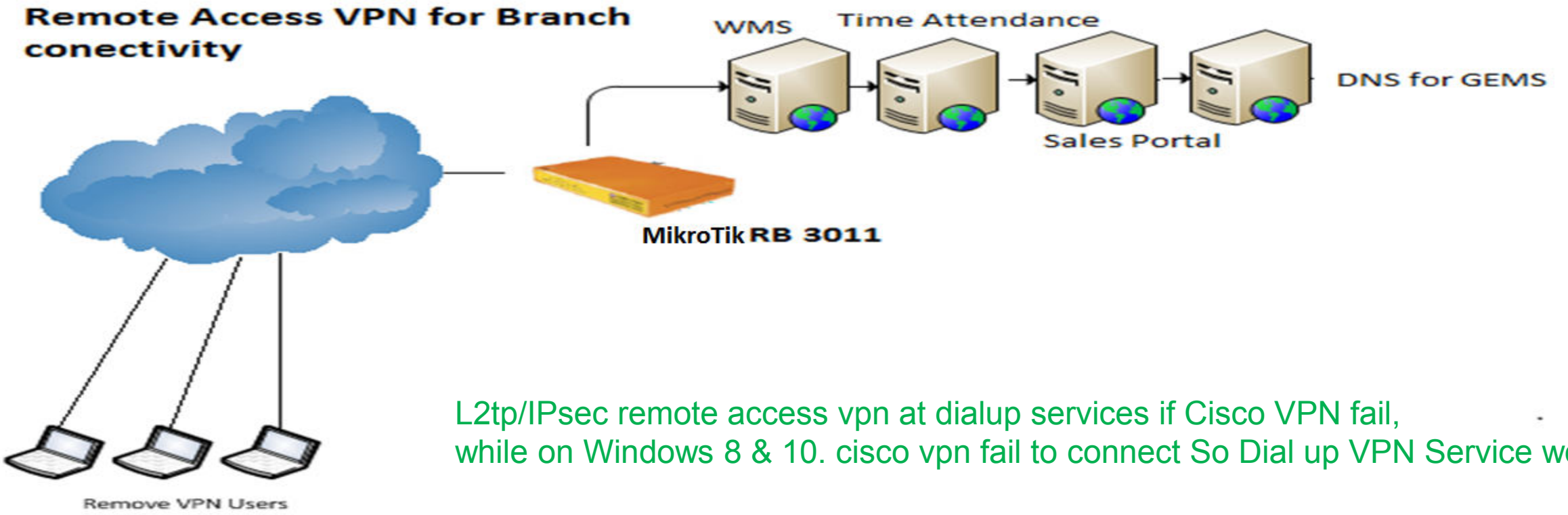


If Leased Lines goes down then remote sites auto switch to Site-Site VPN with Head Office

MikroTik Implemented Network Map



Network Diagram of Remote Access VPN at L2tp/IPsec



L2tp/IPsec remote access vpn at dialup services if Cisco VPN fail,
while on Windows 8 & 10. cisco vpn fail to connect So Dial up VPN Service works well

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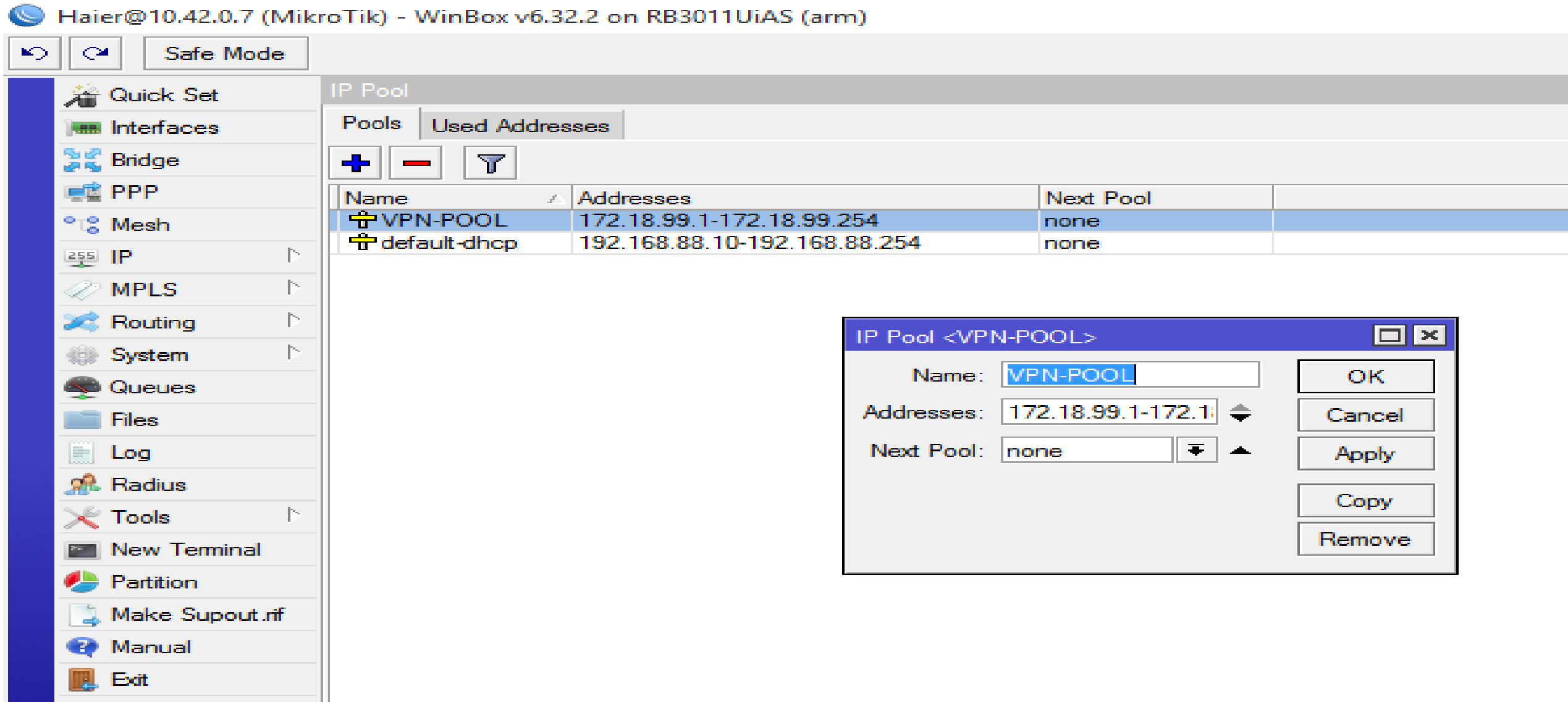
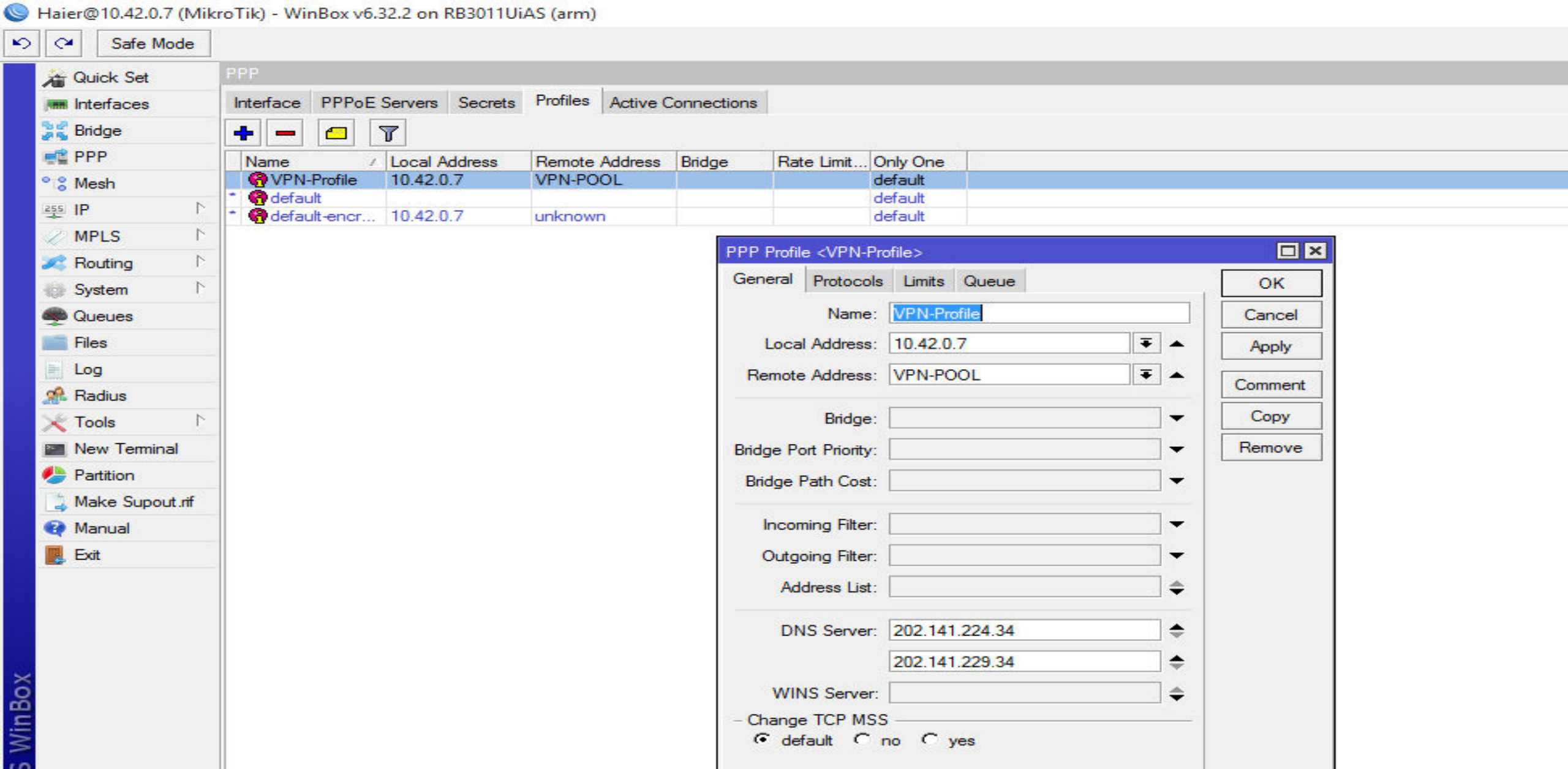
7 Steps to configure VPN with L2TP/IPsec

- Create IP Pool/VPN Pool
- Create profile for Remote Access VPN
- Create User credentials for Remote VPN Users
- Tunnel Encryption through IPsec
- IPsec Peers and Proposals
- Firewall settings for Outside access
- Adding Routes for VPN-User Traffic

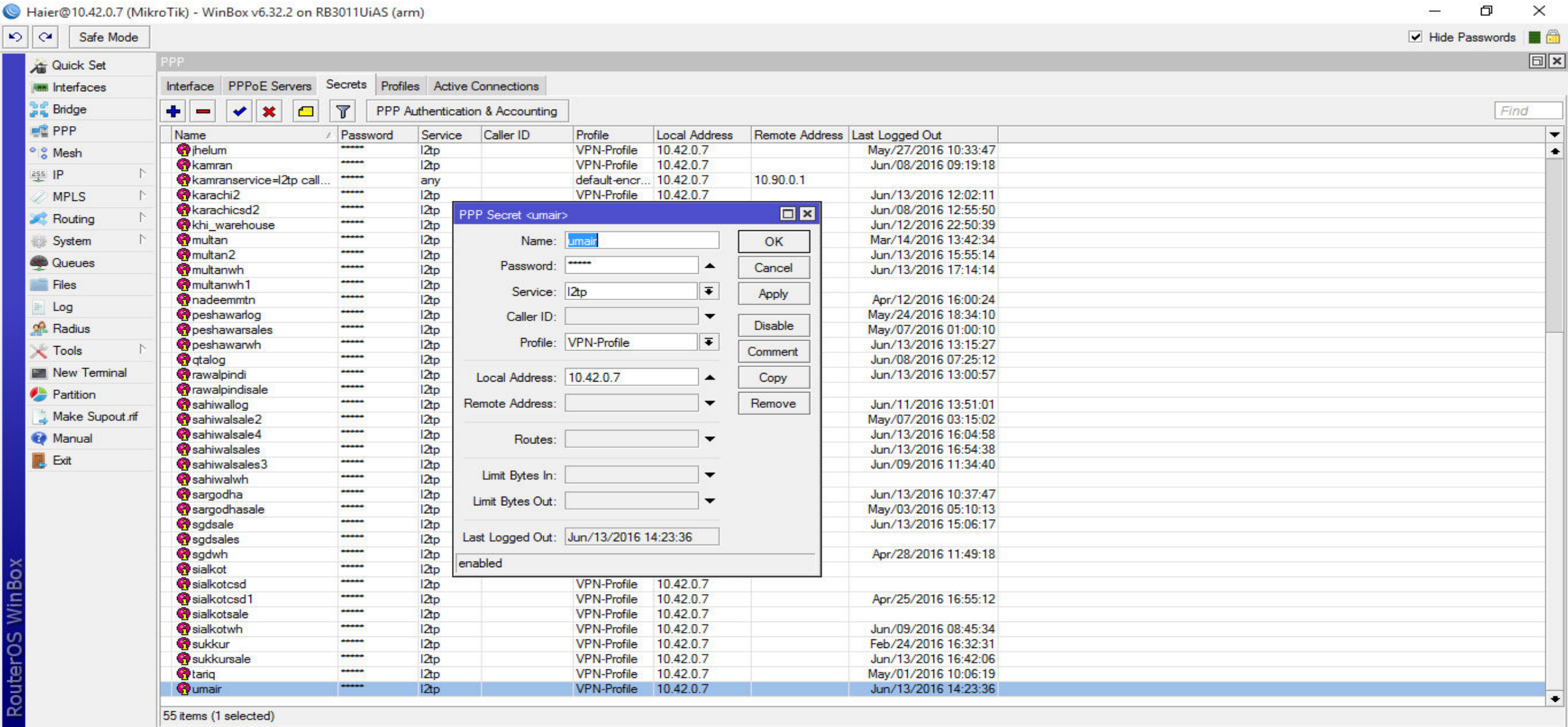
Create IP Pool/VPN Pool



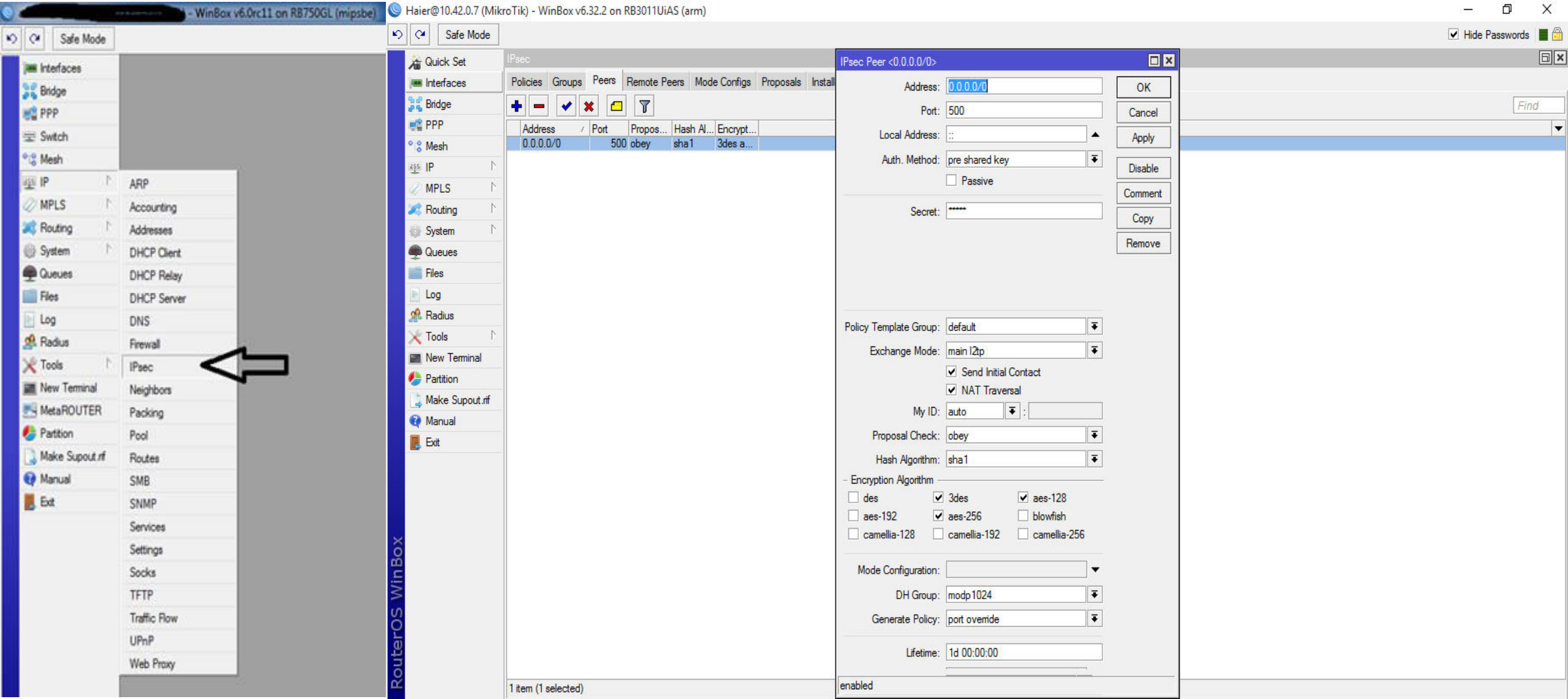
Create profile for Remote Access VPN



Create User credentials for Remote VPN Users



Tunnel Encryption through IPsec



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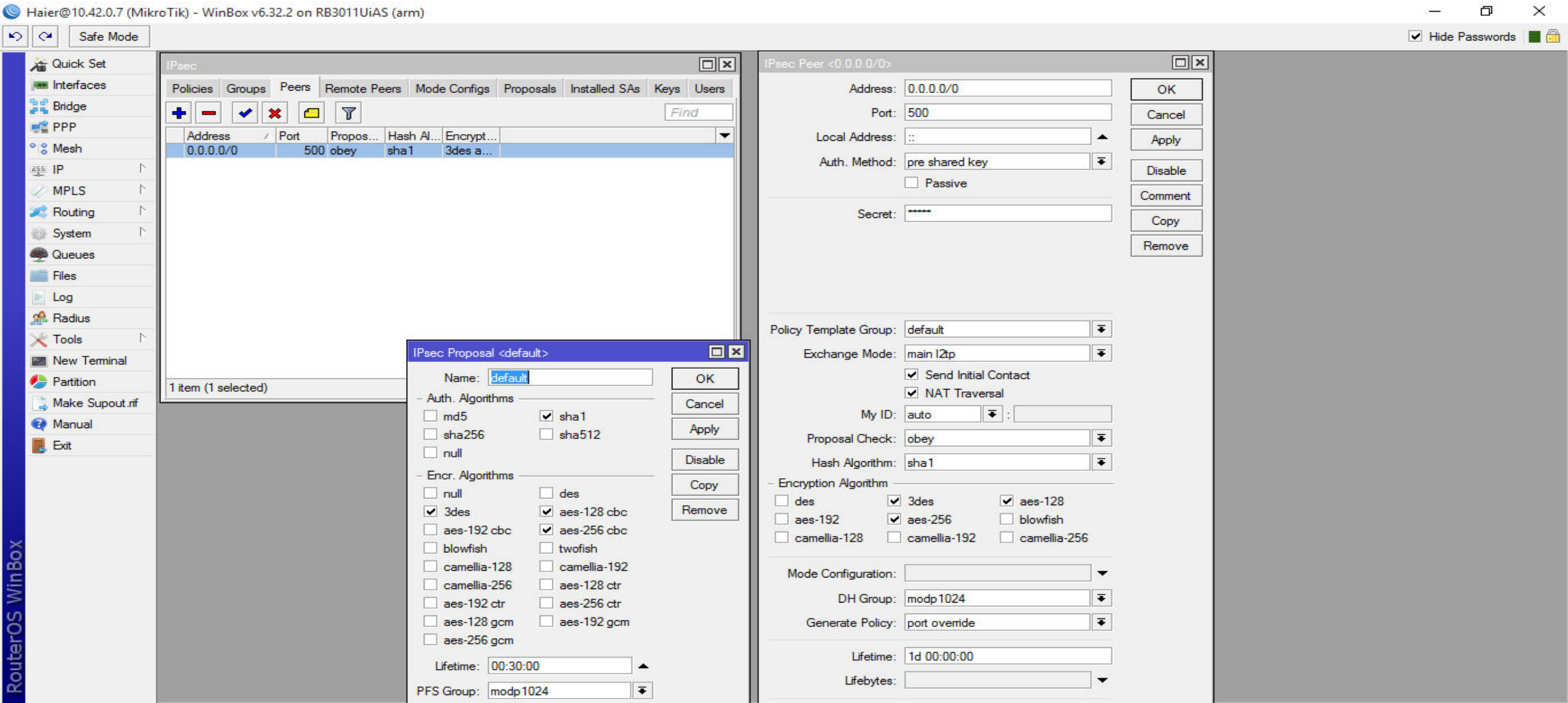
IPsec Peers and Proposals



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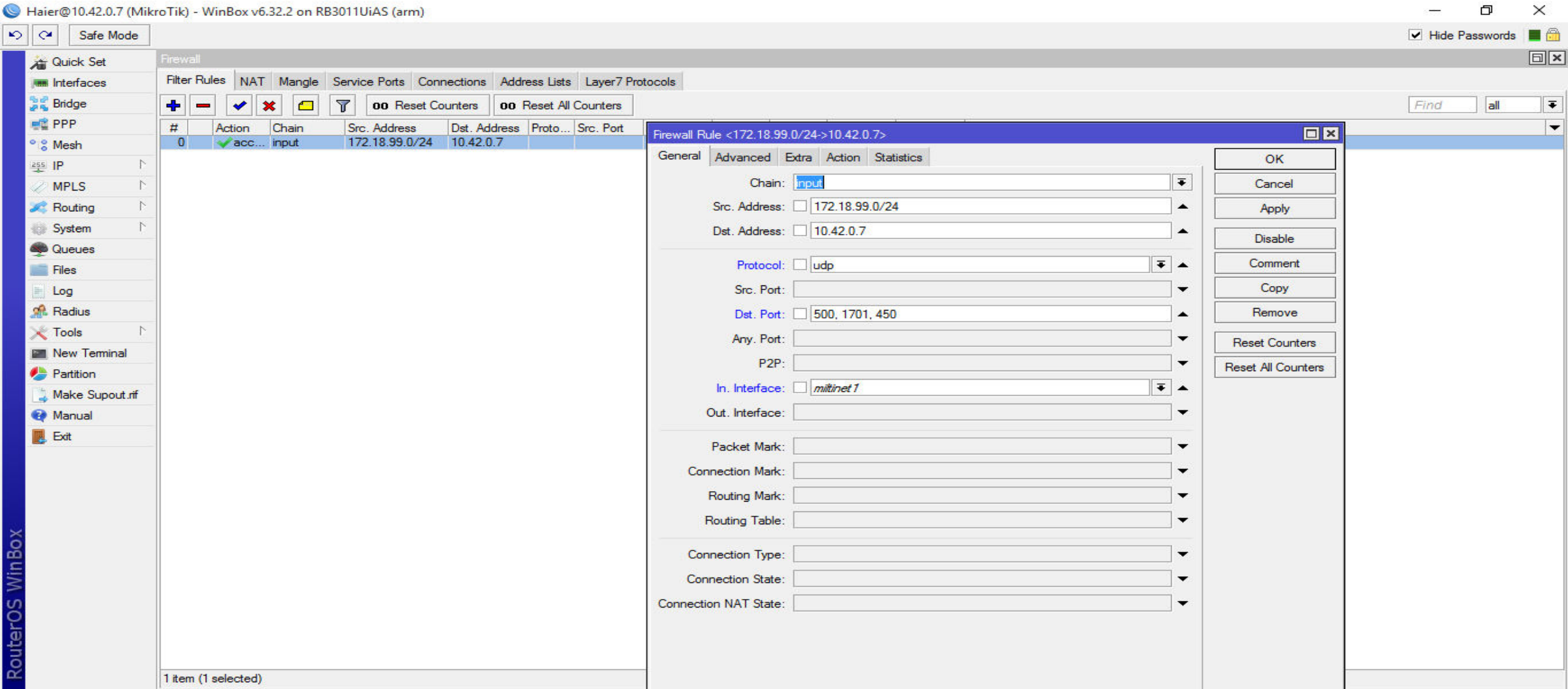
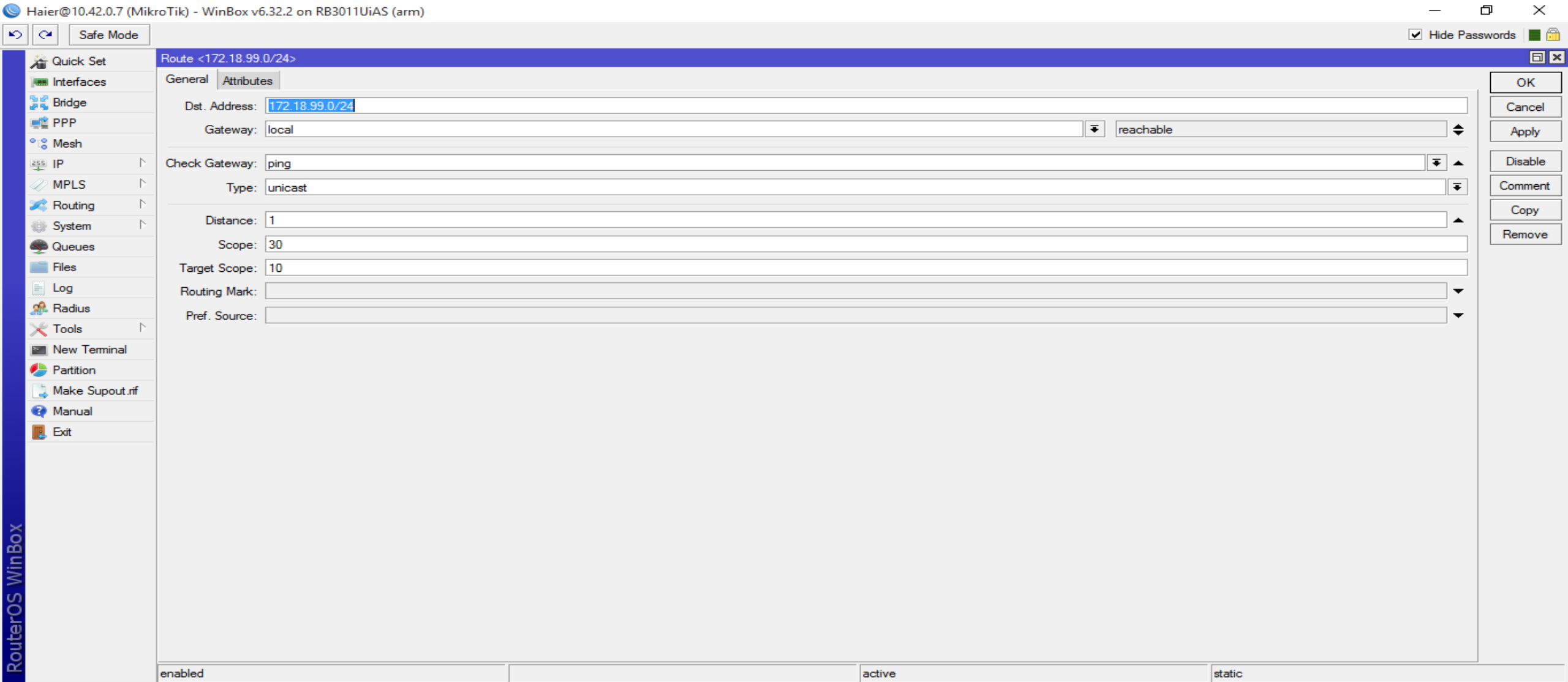
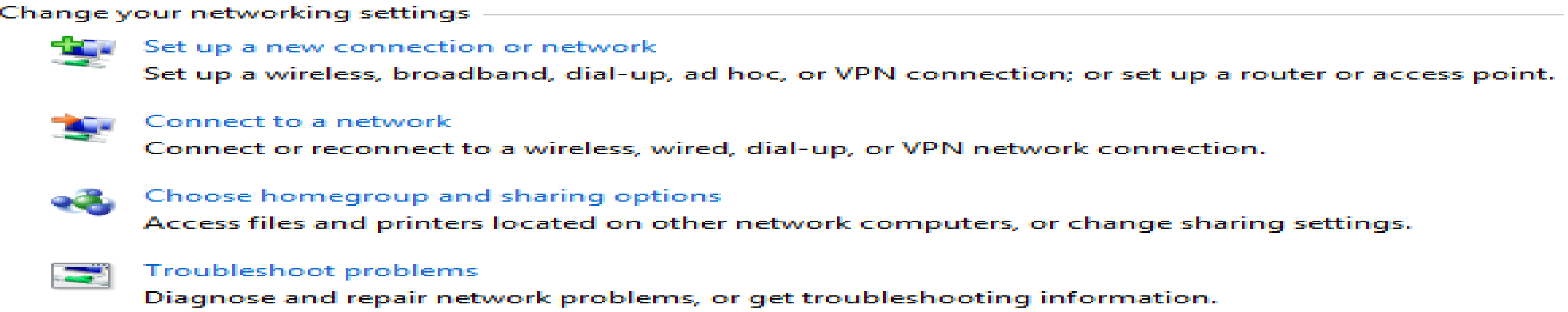
Firewall settings for Outside access



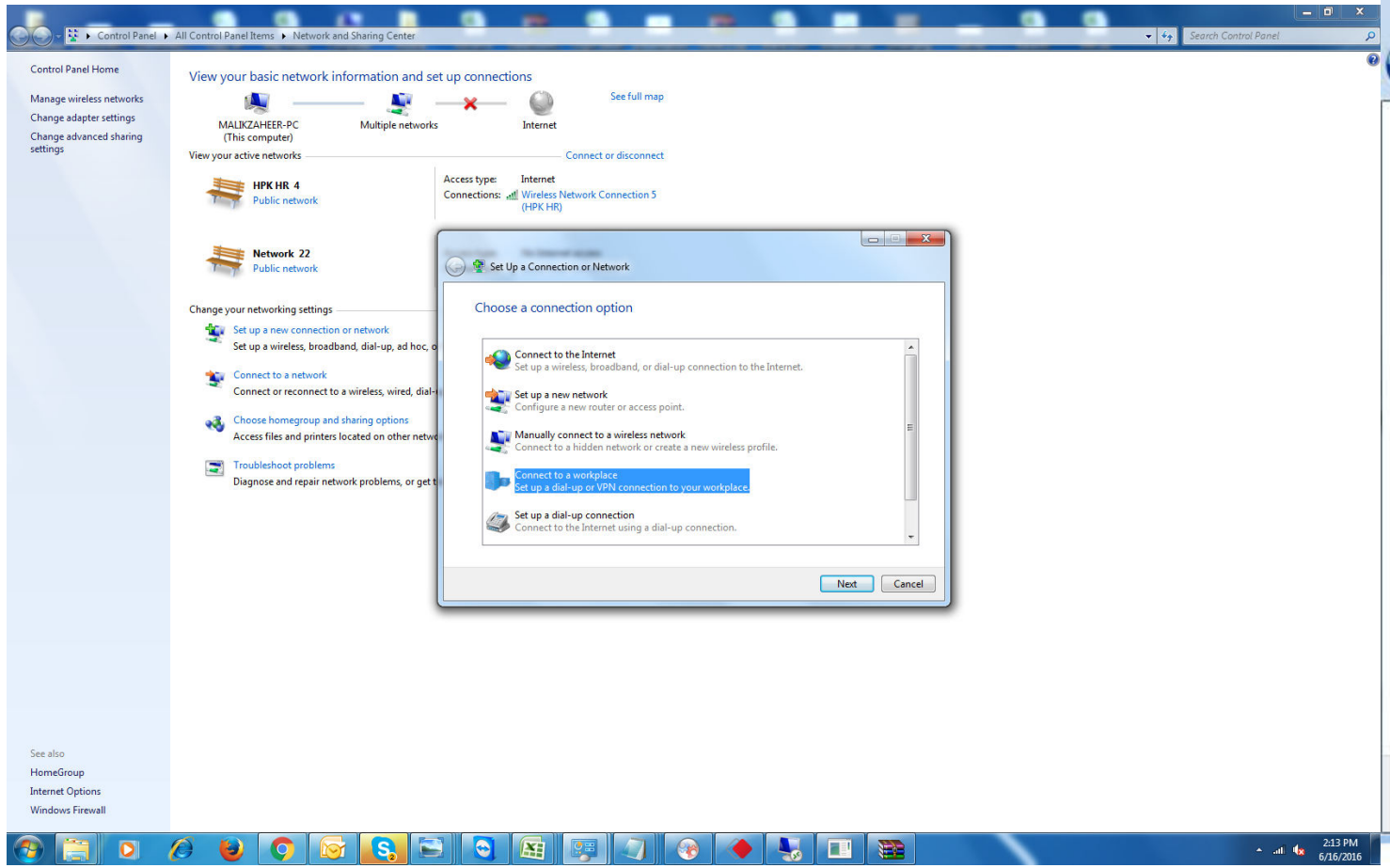
Adding Routes for VPN-User Traffic and VPN Done

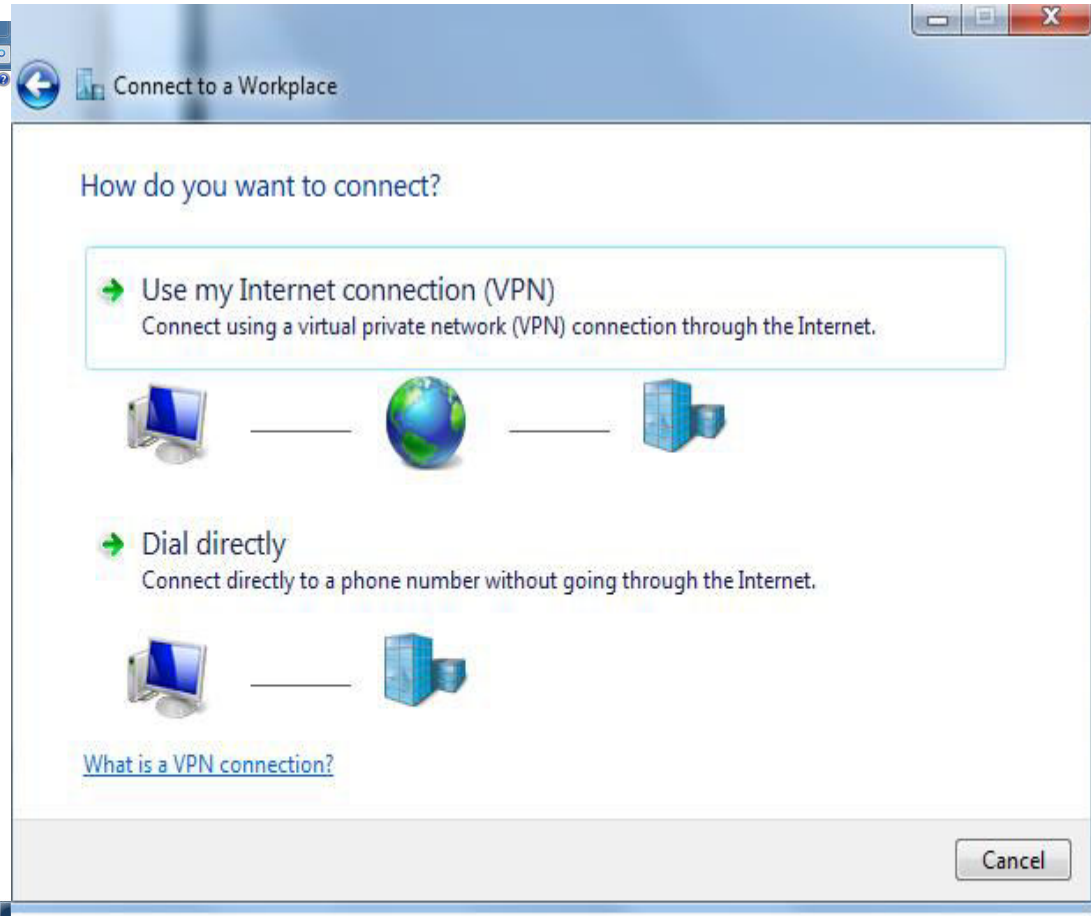


Dialup connection for VPN User



Dialup Connection





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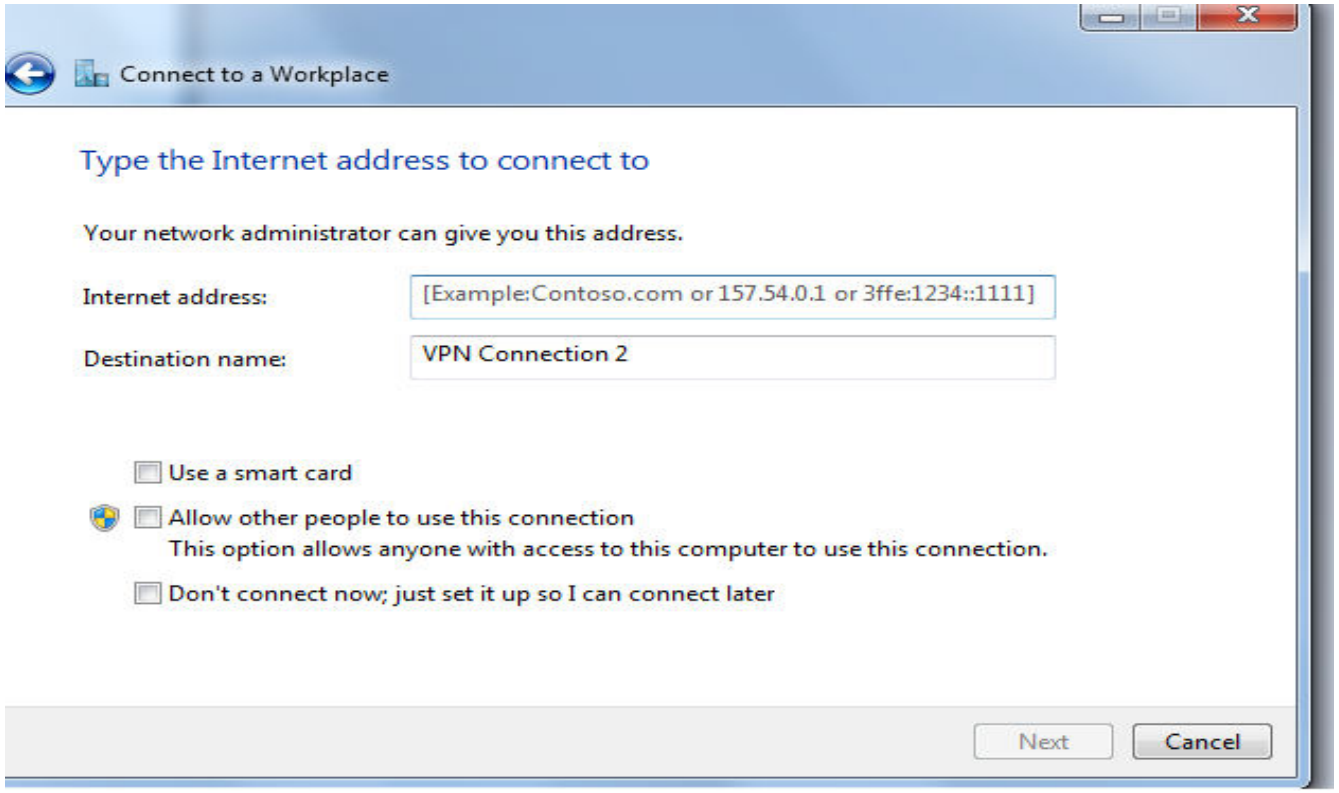
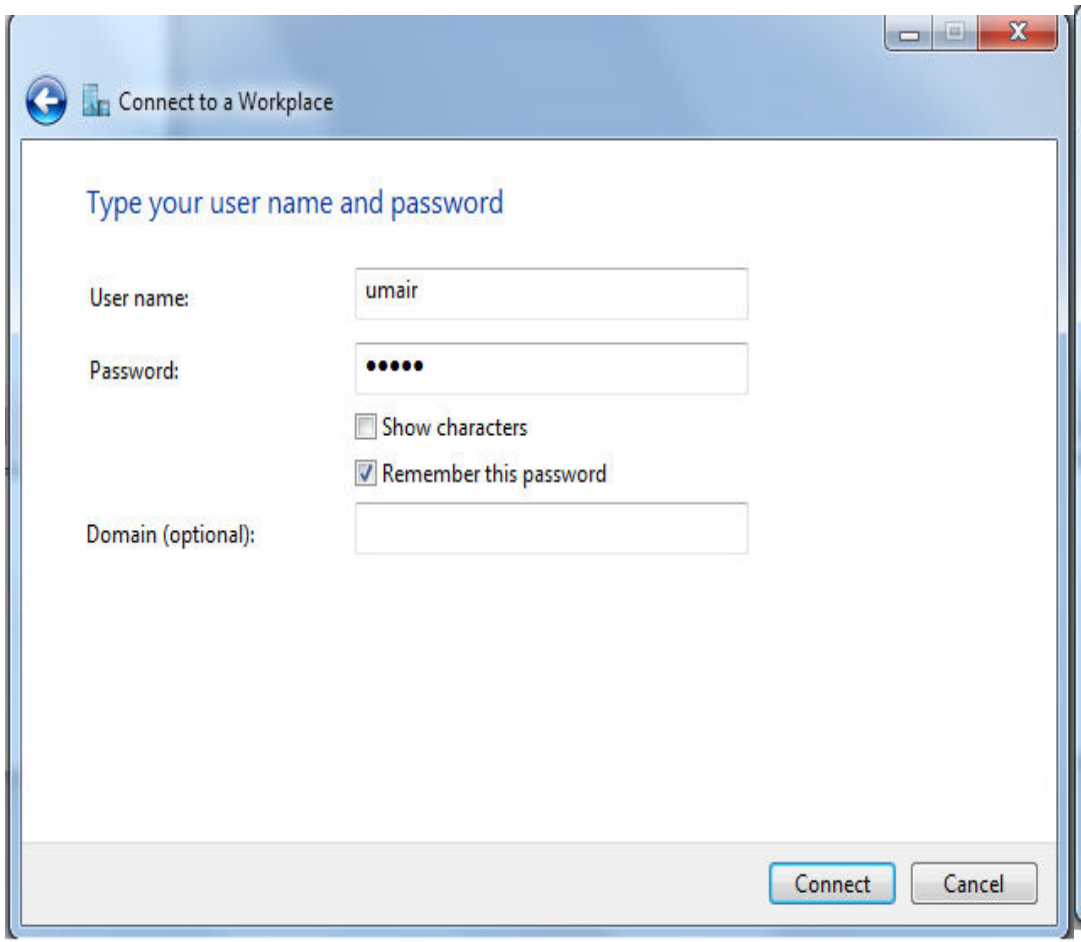
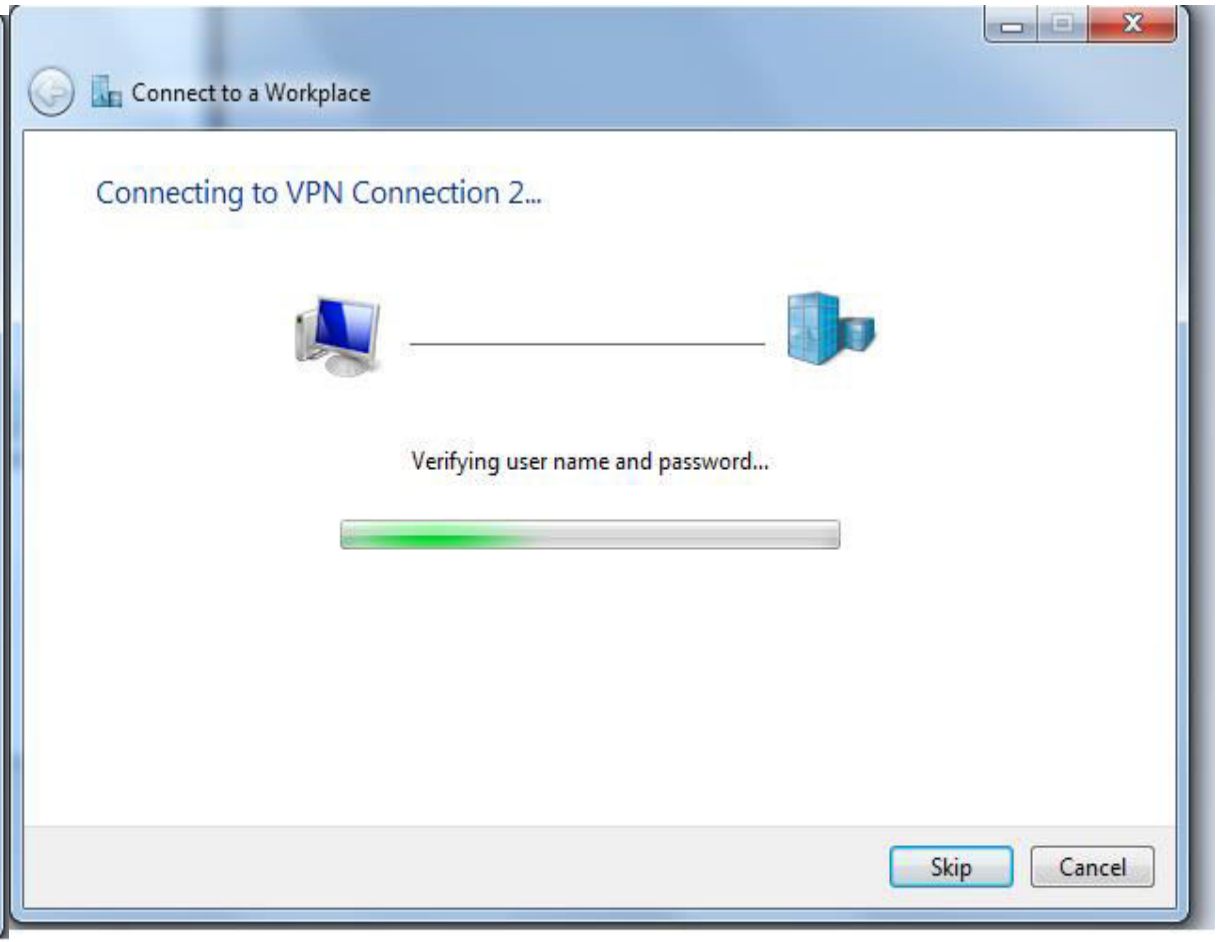
Putting VPN Server Address



Dialup User Credentials





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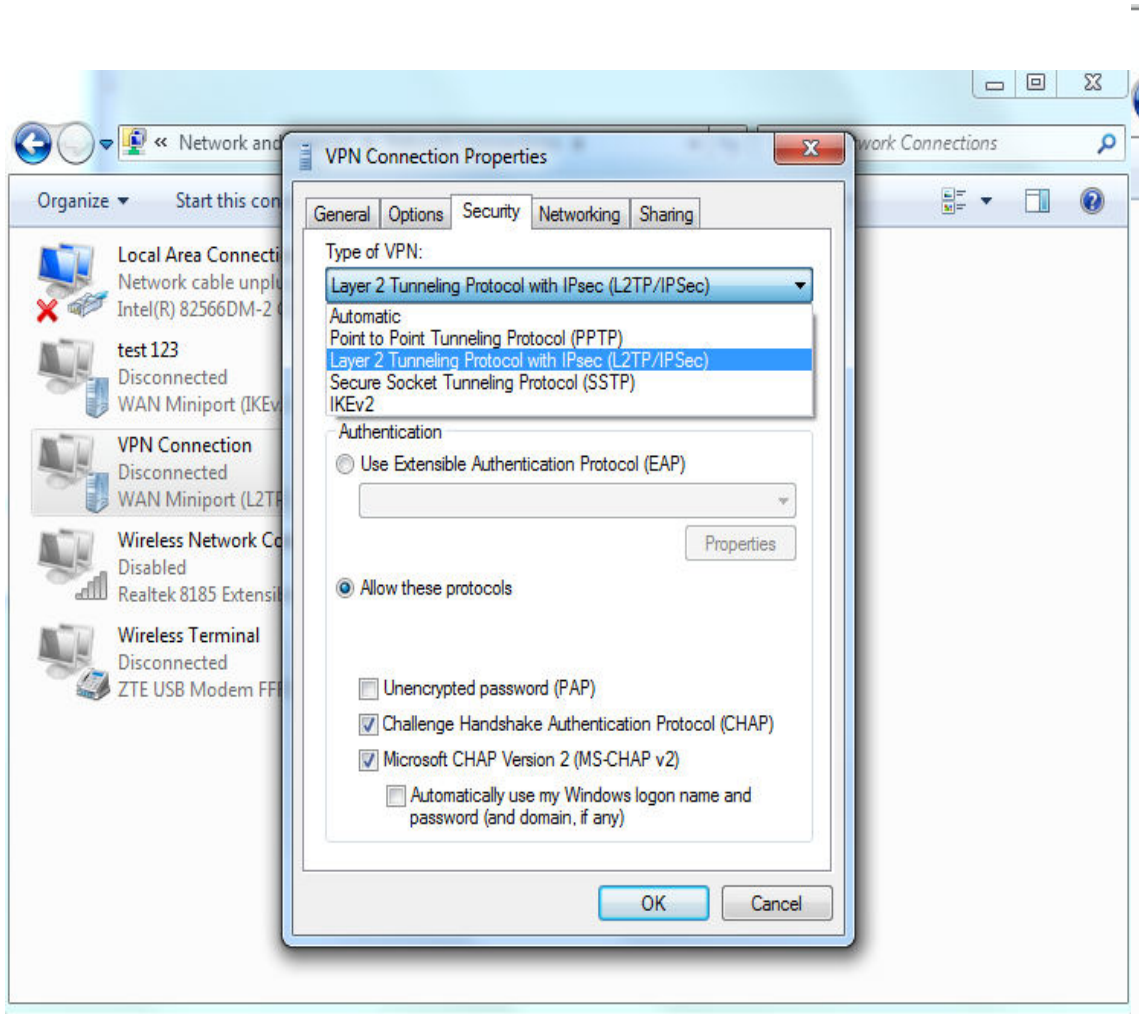
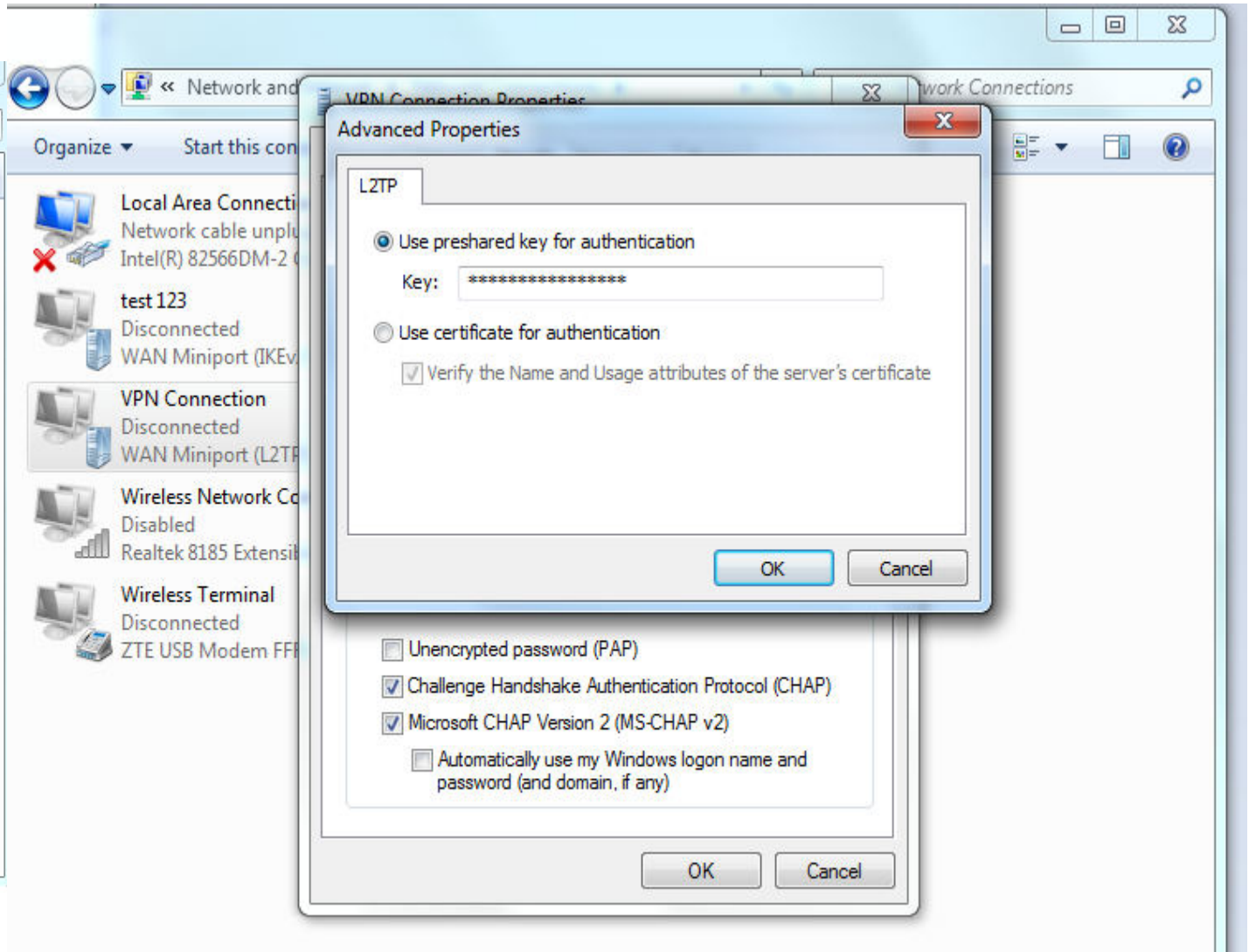
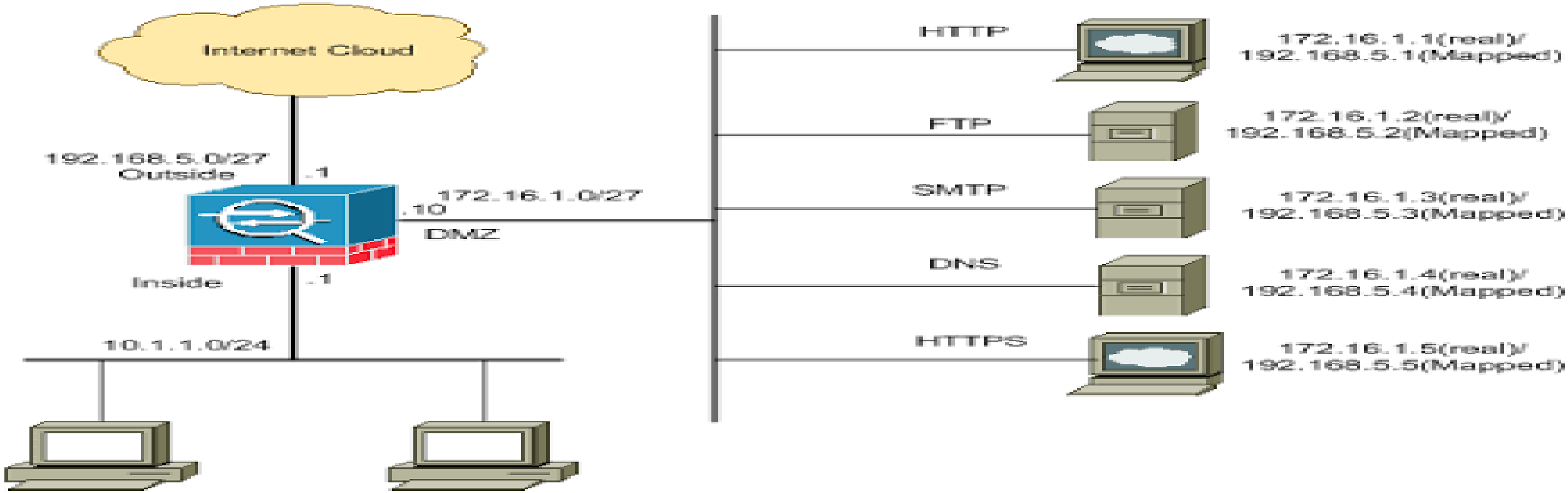
Setting IPSec preshared Key



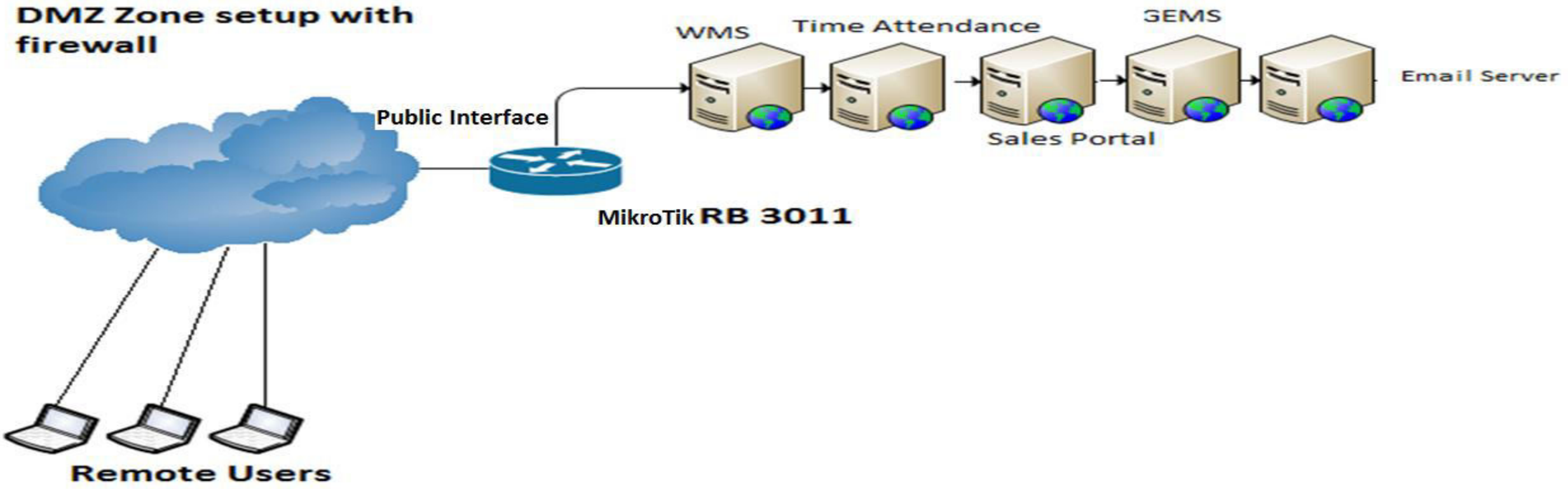


DMZ Network Zone

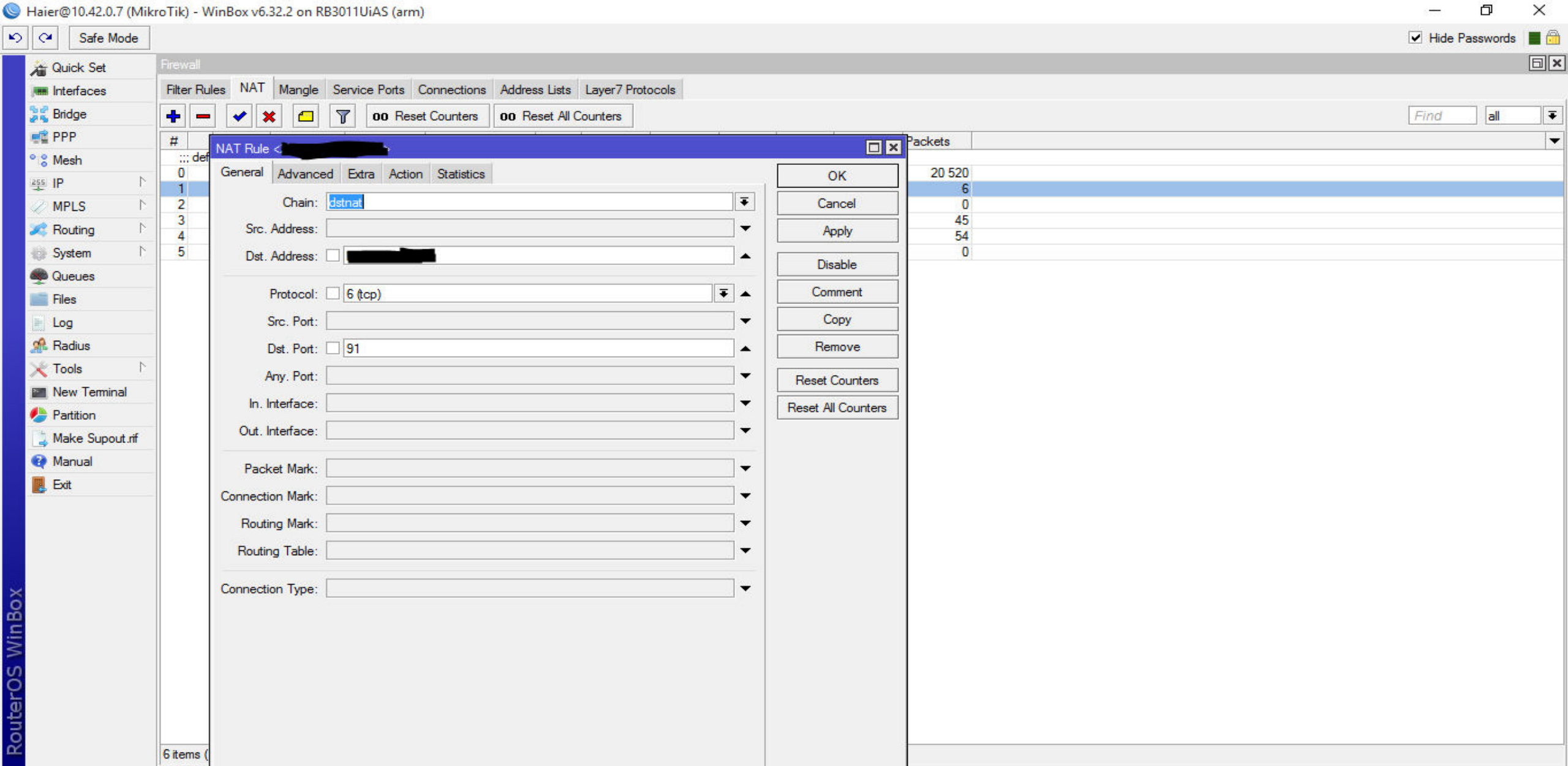
- Demilitarized zone (DMZ) is a host or network segment located in a "neutral zone" between the Internet and an organization’s intranet (private network). It prevents outside users from gaining direct access to an organization’s internal network while not exposing a web, email or DNS server directly to the Internet.



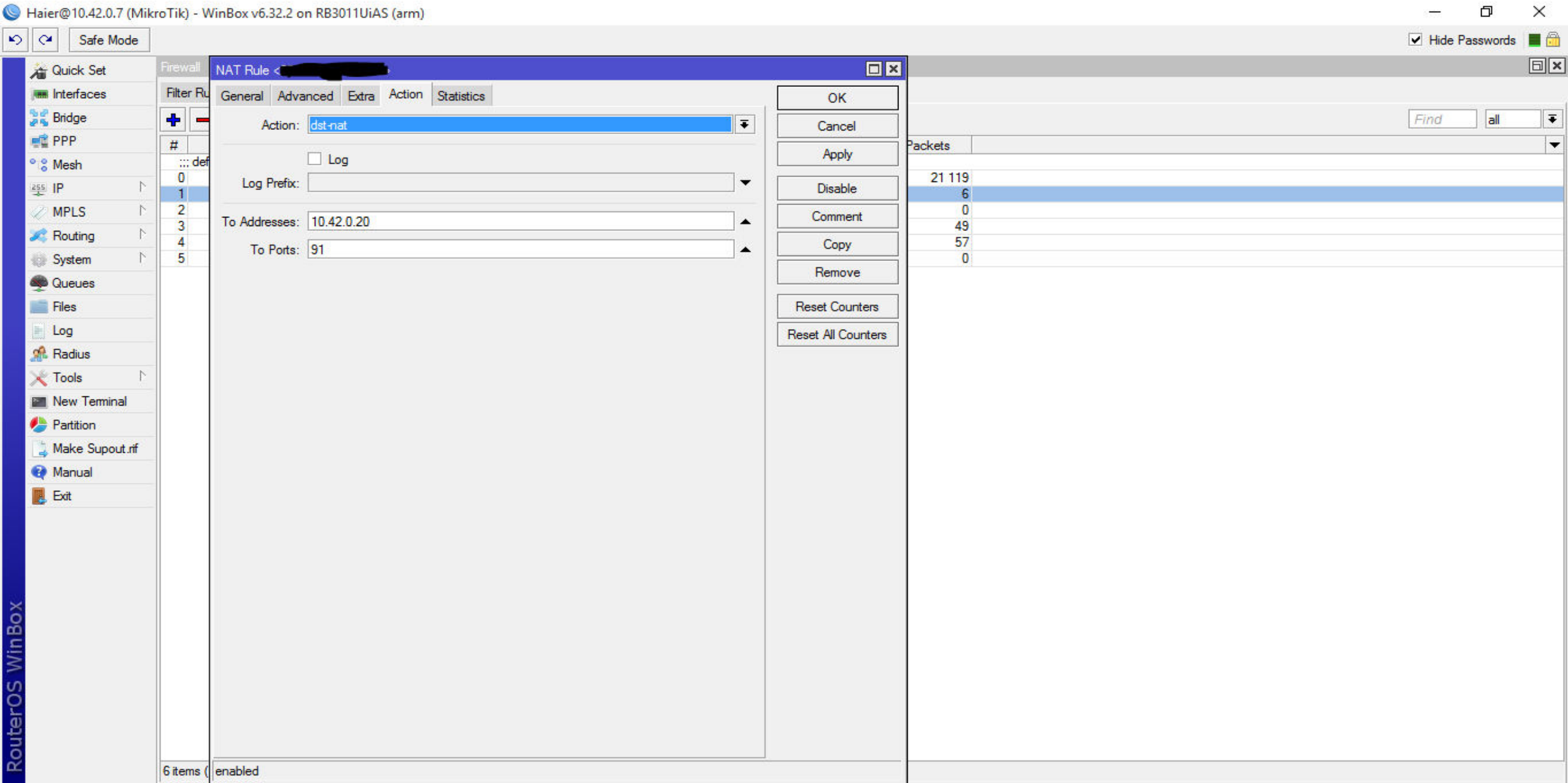
DMZ Zone firewall setup Network Diagram



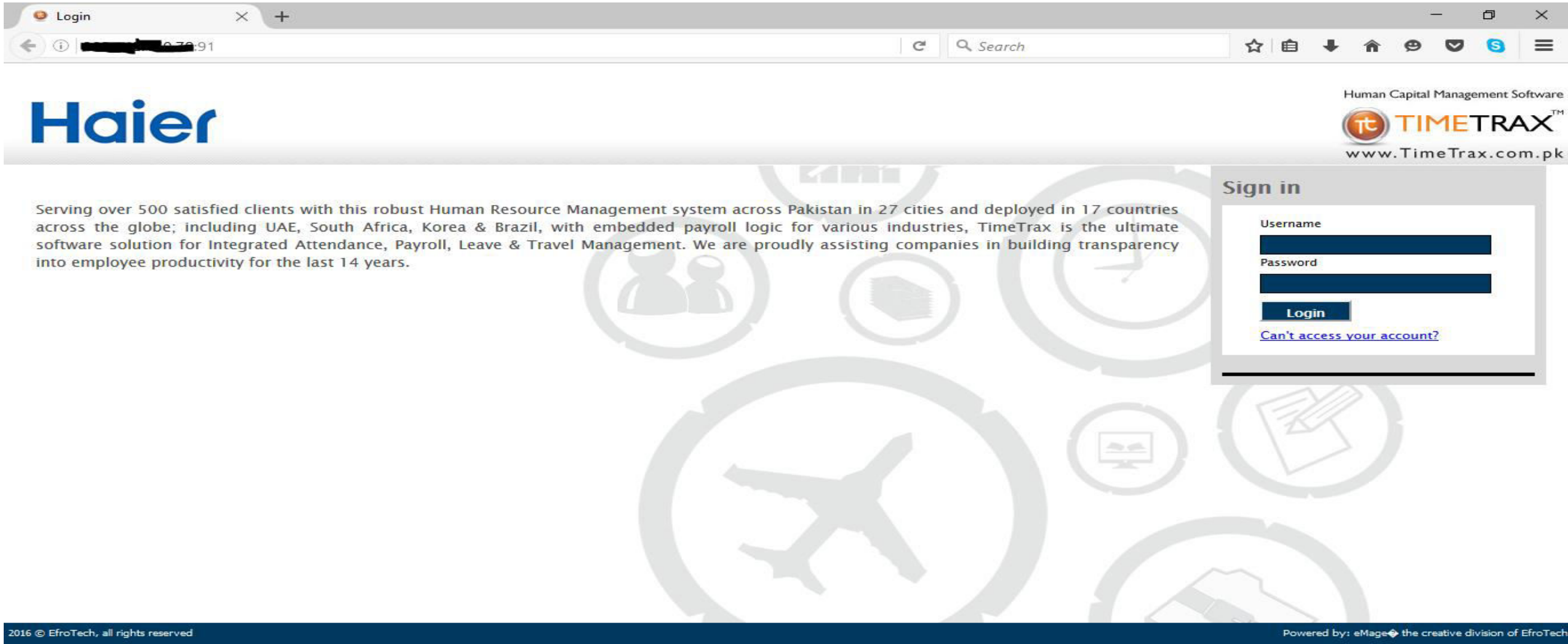
DMZ Network Setup LAB



Dst-Nat for Local Server and DMZ Setup done



Time Attendance System through DMZ setup done



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Questions and Answers

Contact Details

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