Site to Site VPN on ADSL with

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/iamprajak

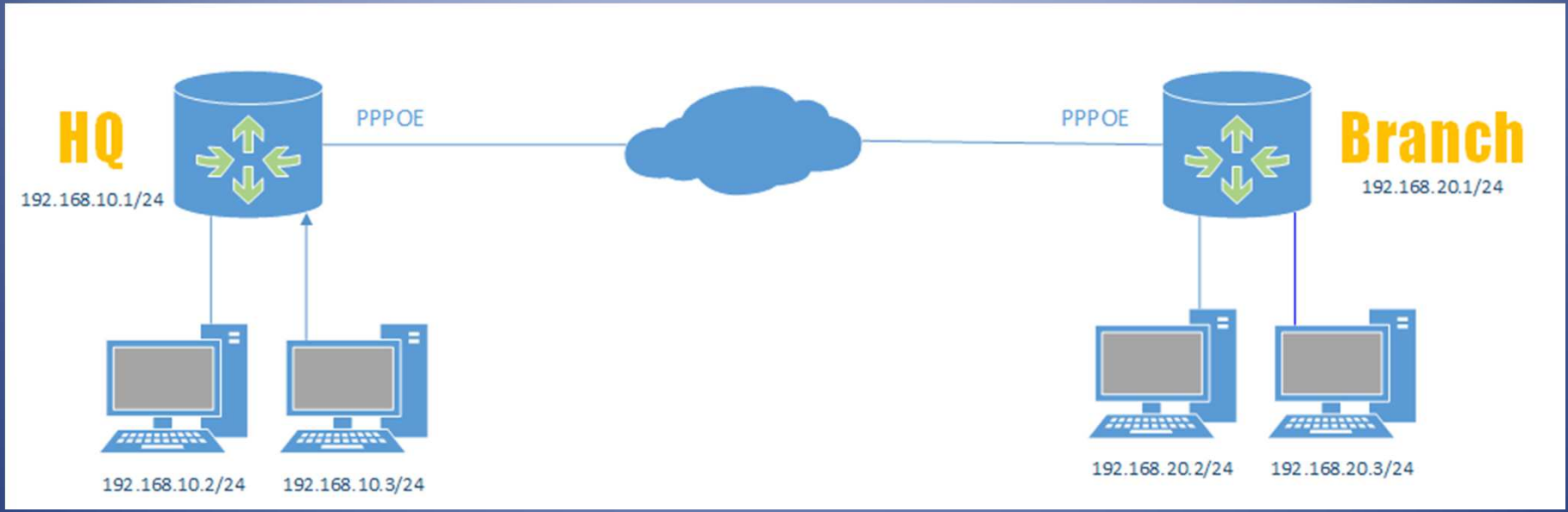
MUM Thailand in May 22, 2014

Introduce

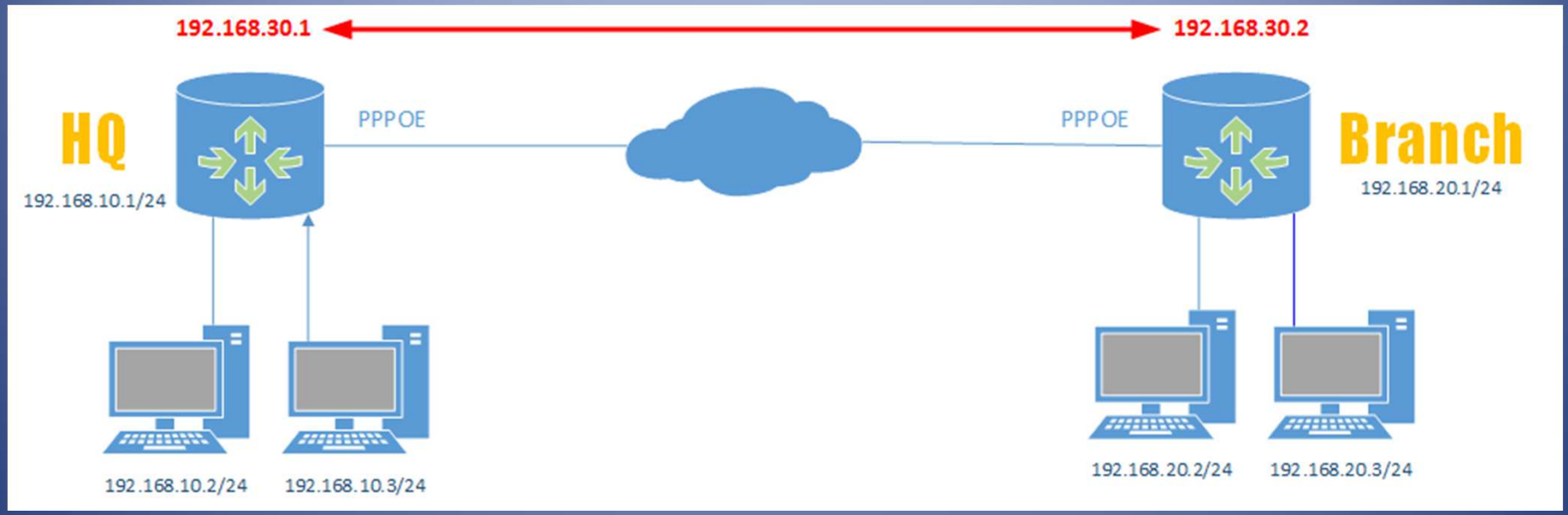
Ruamrudee International School
Technology Committee / Network Admin
2,400 users : Computer 1,300 Units

Live Inc. Public Company
IT Director
Broadcasting, High Availability system, Networking

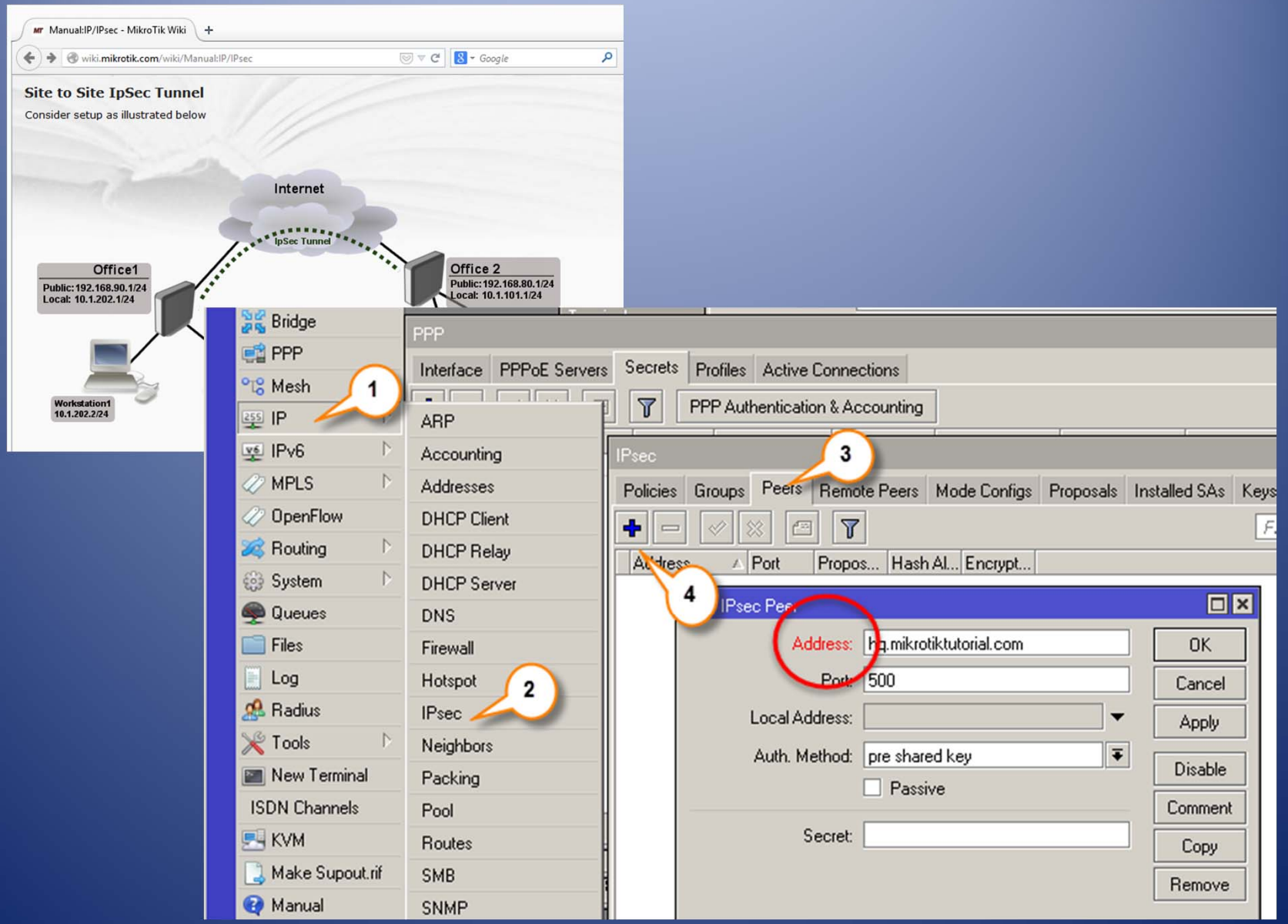
Scenario


HQ
192.168.10.1/24
PPPOE
PPPOE
Branch
192.168.20.1/24
192.168.10.2/24
192.168.10.3/24
192.168.20.2/24
192.168.20.3/24

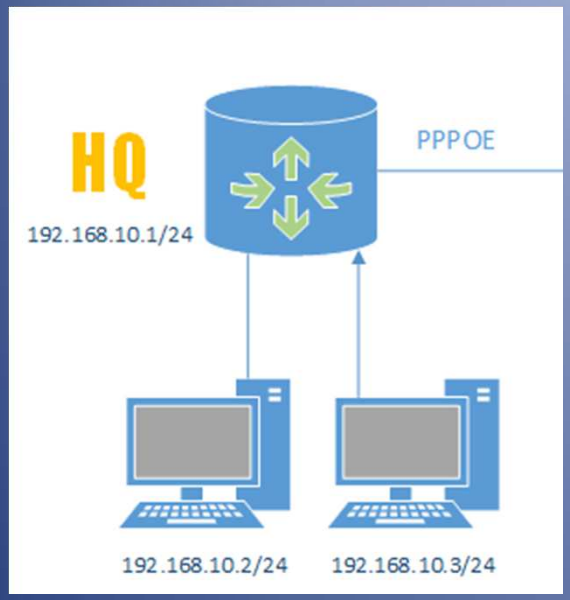
Scenario


192.168.30.1
192.168.30.2
HQ
192.168.10.1/24
PPPOE
PPPOE
Branch
192.168.20.1/24
192.168.10.2/24
192.168.10.3/24
192.168.20.2/24
192.168.20.3/24

http://wiki.mikrotik.com/wiki/Manual:IP/IPsec



Basic Setup for HQ Router



Prevent Confusion

/system identity
set name=HQ

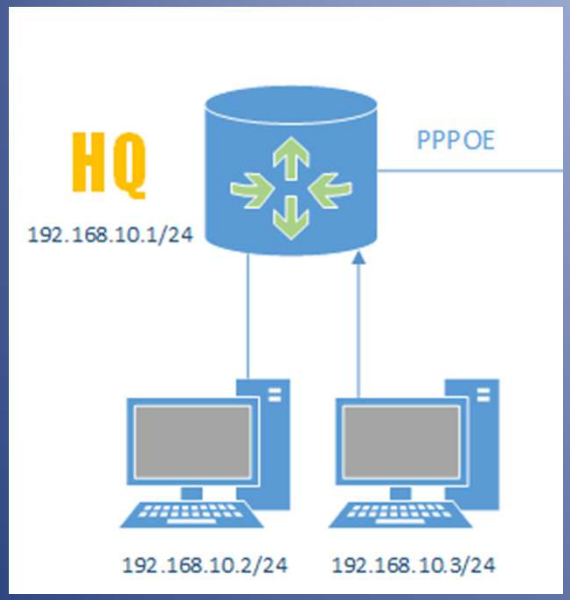
Setup WAN PPPOE

/interface pppoe-client
add user=hq password=hq add-default-route=yes disabled=no name=pppoe-out1 profile=default use-peer-dns=yes interface=ether1

Setup LAN IP

/ip address
add address=192.168.10.1/24 interface=ether2 network=192.168.10.0

Basic Setup for HQ Router (cont.)



Setup DHCP Service

/ip pool
add name=dhcp_pool1 ranges=192.168.10.100-192.168.10.199
/ip dhcp-server
add address-pool=dhcp_pool1 disabled=no interface=ether2 lease-time=1h name=dhcp1
/ip dhcp-server network
add address=192.168.10.0/24 dns-server=192.168.10.1 gateway=192.168.10.1

Setup DNS

/ip dns
set allow-remote-requests=yes

Setup Masquerade (NAT)

/ip firewall nat
add action=masquerade chain=srcnat src-address=192.168.10.0/24

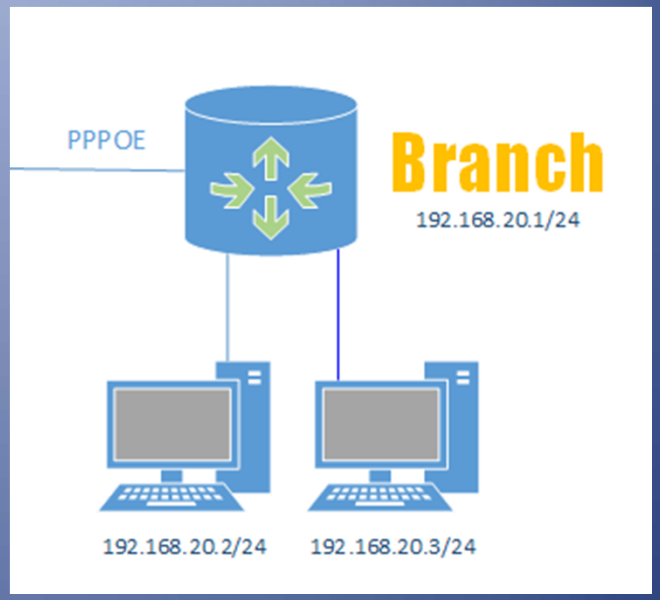
Basic Setup for Branch Router

Prevent Confusion

/system identity
set name=Branch

Setup WAN PPPOE

/interface pppoe-client
add user=branch password=branch add-default-route=yes disabled=no name=pppoe-out1 profile=default use-peer-dns=yes interface=ether1



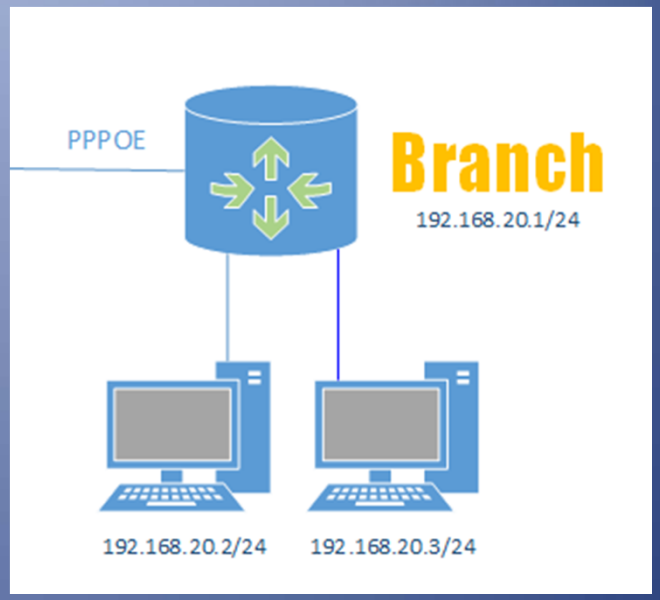
Setup LAN IP

/ip address
add address=192.168.20.1/24 interface=ether2 network=192.168.20.0

Basic Setup for Branch Router (cont.)

Setup DHCP Service

```
/ip pool
add name=dhcp_pool1 ranges=192.168.20.100-
192.168.20.199
/ip dhcp-server
add address-pool=dhcp_pool1 disabled=no
interface=ether2 lease-time=1h name=dhcp1
/ip dhcp-server network
add address=192.168.20.0/24 dns-
server=192.168.20.1 gateway=192.168.20.1
```



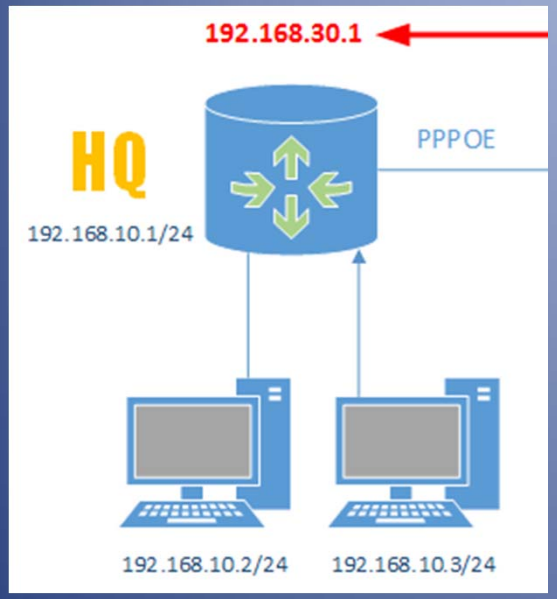
Setup DNS

```
/ip dns
set allow-remote-requests=yes
```

Setup Masquerade (NAT)

```
/ip firewall nat
add action=masquerade chain=srcnat src-address=192.168.20.0/24
```

Setup L2TP Server on HQ



Enable L2TP Server

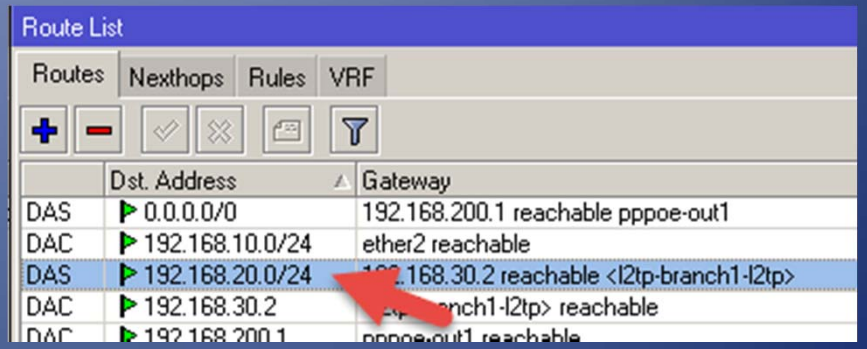
/interface l2tp-server server
set default-profile=Branch1 enabled=yes

Create L2TP Profile

/ppp profile
add name=Branch1

Create Login account for branch

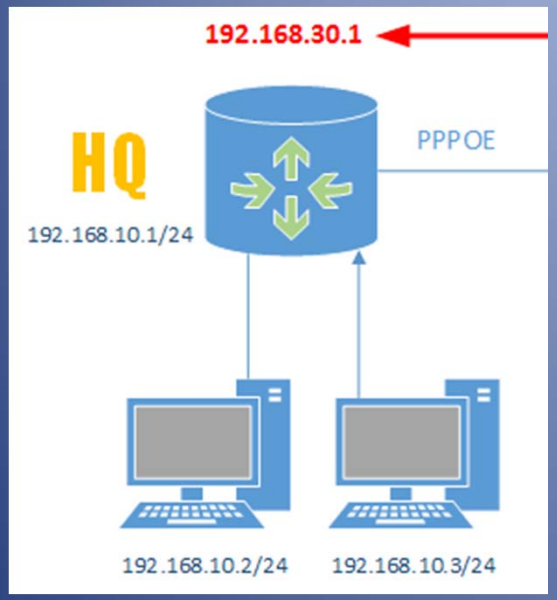
/ppp secret
add local-address=192.168.30.1
name=branch1-l2tp
password=branch1-l2tp profile=Branch1
remote-address=192.168.30.2
routes=192.168.20.0/24 service=l2tp



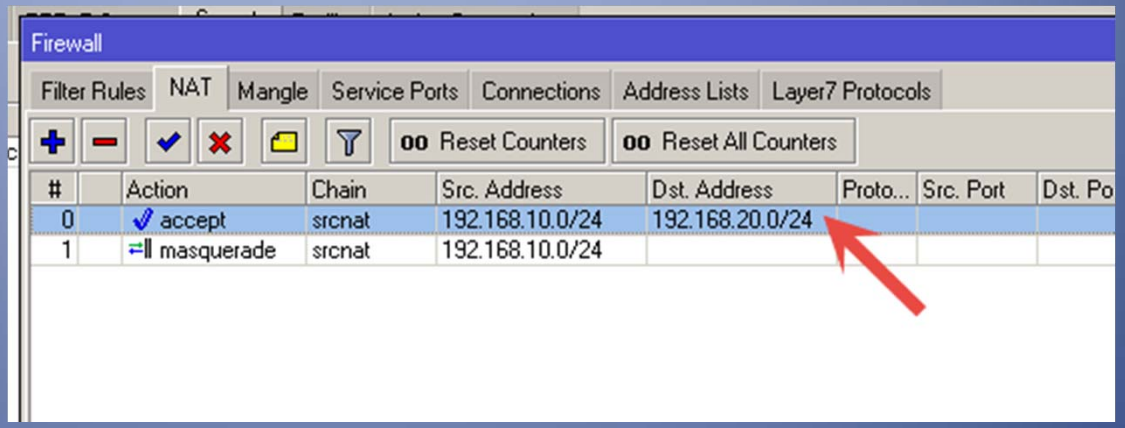
Make NAT Exception for VPN Traffic

/ip firewall nat
add chain=srcnat dst-address=192.168.20.0/24 src-address=192.168.10.0/24

L2TP Server Setup on HQ (cont.)



Make Sure VPN Exception is on top of NAT rule



Setup DynDNS Script on HQ Router

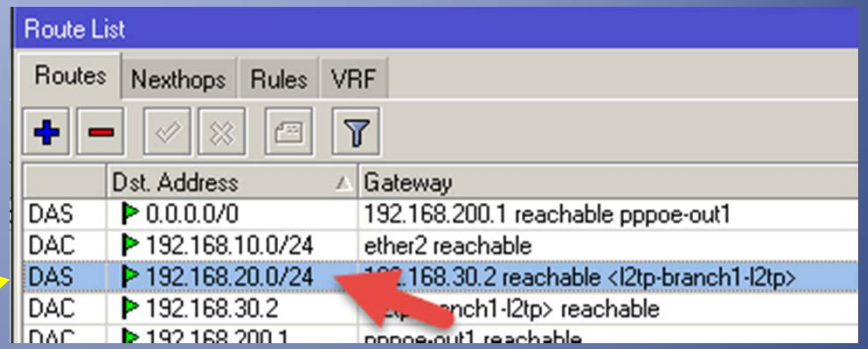
http://wiki.mikrotik.com/wiki/Dynamic_DNS_Update_Script_for_dynDNS

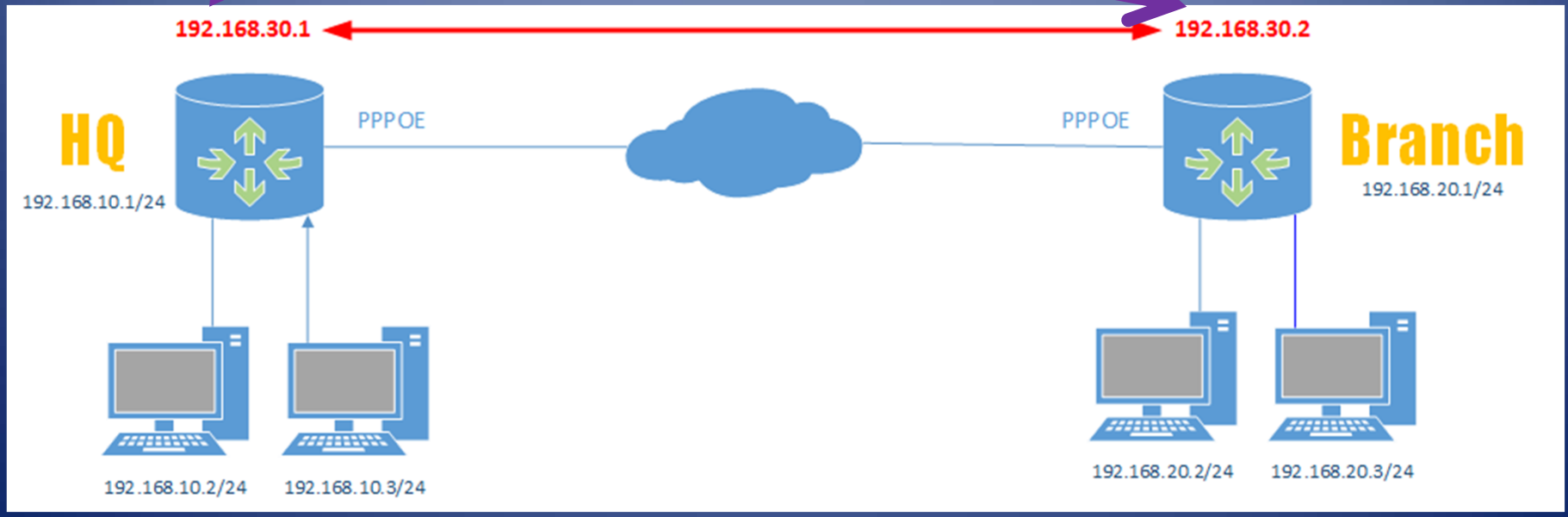
(Scripts for RoS 4.x, 5.x, 6.x and Scheduler)

Remark : in this example I set dynamic DNS name “hq.mikrotiktutorial.com”

L2TP Server Setup on HQ (explain)

```
/ppp secret
add local-address=192.168.30.1
name=branch1-l2tp
password=branch1-l2tp  profile=Branch1
remote-address=192.168.30.2
routes=192.168.20.0/24 service=l2tp
```

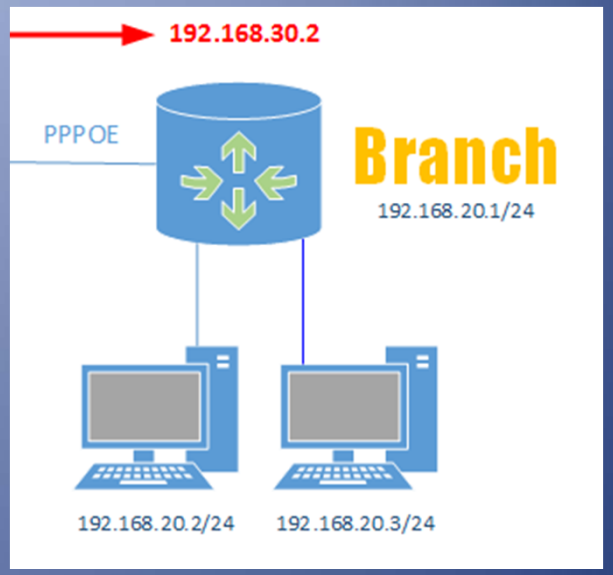




L2TP Client Setup on Branch

Create L2TP Client Connection

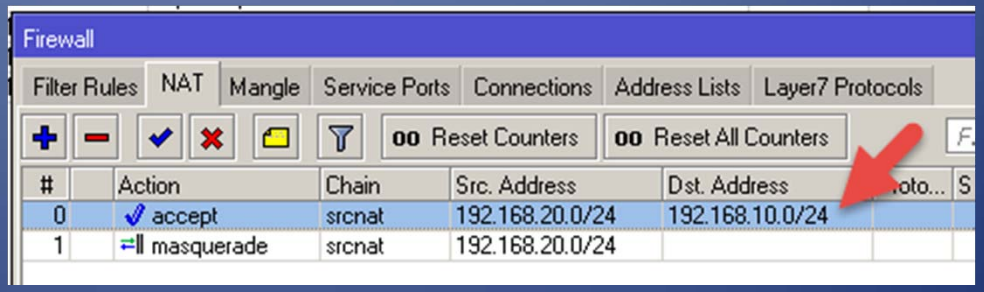
```
/interface l2tp-client
add name=l2tp-to-hq user=branch1-l2tp
password=branch1-l2tp add-default-route=no
connect-to=hq.mikrotiktutorial.com disabled=no
name=l2tp-to-hq profile=default-encryption
```



Route back to HQ

```
/ip firewall nat
add chain=srcnat dst-address=192.168.10.0/24 src-
address=192.168.20.0/24
```

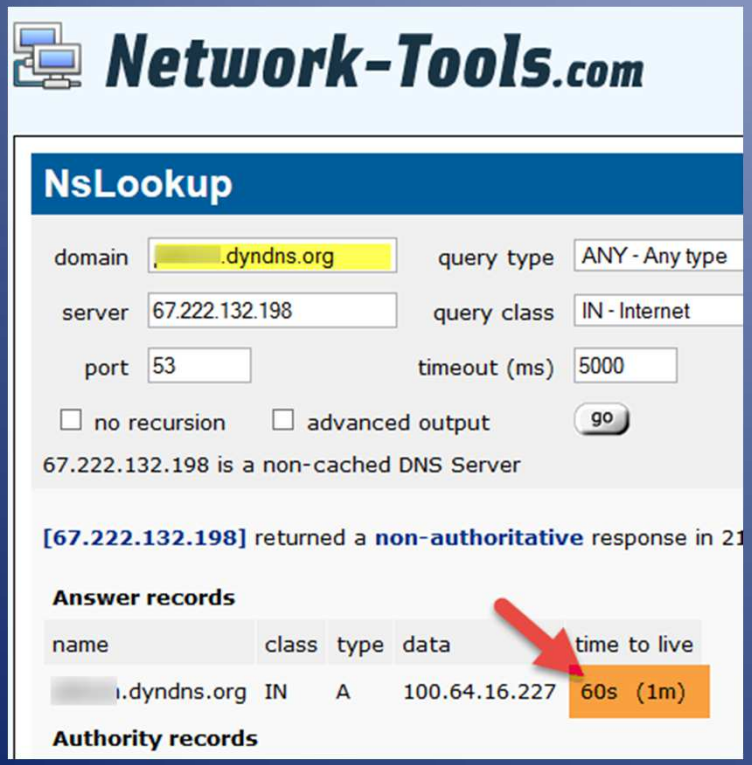
← **Don't forget to move this line on top of default NAT rule.**

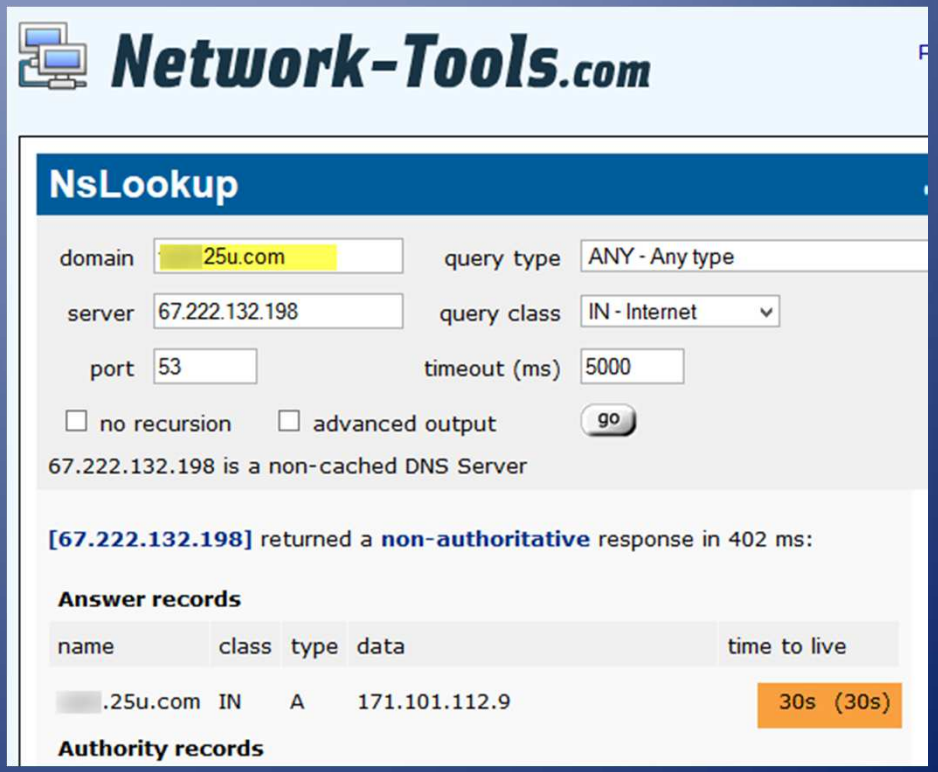



```
/ip route
add dst-address=192.168.10.0/24 gateway=l2tp-to-hq
```

What's else?

- **DNS TTL**
  - http://network-tools.com/nslook/





Q & A

Thank you

http://www.mikrotiktutorial.com

```
# HQ
# may/22/2014 05:58:13 by RouterOS 6.13
#
/interface wireless security-profiles
set [ find default=yes ] supplicant-identity=MikroTik
/ip hotspot user profile
set [ find default=yes ] idle-timeout=none keepalive-timeout=2m \
    mac-cookie-timeout=3d
/ip ipsec proposal
set [ find default=yes ] enc-algorithms=3des
/ip pool
add name=dhcp_pool1 ranges=192.168.10.100-192.168.10.199
/ip dhcp-server
add address-pool=dhcp_pool1 disabled=no interface=ether2 lease-time=1h name=\
    dhcp1
/port
set 0 name=serial0
set 1 name=serial1
/ppp profile
add name=Branch1
/interface pppoe-client
add ac-name="" add-default-route=yes allow=pap,chap,mschap1,mschap2 \
    default-route-distance=1 dial-on-demand=no disabled=no interface=ether1 \
    keepalive-timeout=60 max-mru=1480 max-mtu=1480 mrru=1600 name=pppoe-out1 \
    password=hq profile=default service-name="" use-peer-dns=yes user=hq
/system logging action
set 0 memory-lines=100
set 1 disk-lines-per-file=100
/interface l2tp-server server
set default-profile=Branch1 enabled=yes
/ip address
add address=192.168.10.1/24 interface=ether2 network=192.168.10.0
add address=192.168.200.100/24 disabled=yes interface=ether1 network=\
    192.168.200.0
/ip dhcp-server network
add address=192.168.10.0/24 dns-server=192.168.10.1 gateway=192.168.10.1
/ip dns
set allow-remote-requests=yes
/ip firewall filter
add action=drop chain=forward disabled=yes src-address=192.168.20.0/24
/ip firewall nat
add chain=srcnat dst-address=192.168.20.0/24 src-address=192.168.10.0/24
add action=masquerade chain=srcnat src-address=192.168.10.0/24
/ip upnp
set allow-disable-external-interface=no
/ppp secret
add local-address=192.168.30.1 name=branch1-l2tp password=branch1-l2tp profile=\
    Branch1 remote-address=192.168.30.2 routes=192.168.20.0/24 service=l2tp
/system identity
set name=HQ
/system lcd
set contrast=0 enabled=no port=parallel type=24x4
/system lcd page
set time disabled=yes display-time=5s
set resources disabled=yes display-time=5s
set uptime disabled=yes display-time=5s
set packets disabled=yes display-time=5s
set bits disabled=yes display-time=5s
set version disabled=yes display-time=5s
set identity disabled=yes display-time=5s
set pppoe-out1 disabled=yes display-time=5s
set <l2tp-branch1-l2tp> disabled=yes display-time=5s
set ether1 disabled=yes display-time=5s
set ether2 disabled=yes display-time=5s
```

```
#Branch
# may/22/2014 05:58:56 by RouterOS 6.13
#
/interface wireless security-profiles
set [ find default=yes ] supplicant-identity=MikroTik
/ip hotspot user profile
set [ find default=yes ] idle-timeout=none keepalive-timeout=2m mac-cookie-timeout=3d
/ip ipsec proposal
set [ find default=yes ] enc-algorithms=3des
/ip pool
add name=dhcp_pool1 ranges=192.168.20.100-192.168.20.199
/ip dhcp-server
add address-pool=dhcp_pool1 disabled=no interface=ether2 lease-time=1h name=dhcp1
/port
set 0 name=serial0
set 1 name=serial1
/interface l2tp-client
add add-default-route=no allow=pap,chap,mschap1,mschap2
connect-to=hq.mikrotiktutorial.com dial-on-demand=no \
    disabled=no keepalive-timeout=60 max-mru=1450 max-mtu=1450 mrru=1600 name=l2tp-to-hq
    password=branch1-l2tp \
    profile=default-encryption user=branch1-l2tp
/interface pppoe-client
add ac-name="" add-default-route=yes allow=pap,chap,mschap1,mschap2
default-route-distance=1 dial-on-demand=no \
    disabled=no interface=ether1 keepalive-timeout=60 max-mru=1480 max-mtu=1480
    mrru=1600 name=pppoe-out1 \
    password=branch1 profile=default service-name="" use-peer-dns=yes user=branch1
/system logging action
set 0 memory-lines=100
set 1 disk-lines-per-file=100
/ip address
add address=192.168.20.1/24 interface=ether2 network=192.168.20.0
/ip dhcp-server network
add address=192.168.20.0/24 dns-server=192.168.20.1 gateway=192.168.20.1
/ip dns
set allow-remote-requests=yes
/ip firewall nat
add chain=srcnat dst-address=192.168.10.0/24 src-address=192.168.20.0/24
add action=masquerade chain=srcnat src-address=192.168.20.0/24
/ip route
add distance=1 dst-address=192.168.10.0/24 gateway=l2tp-to-hq
/ip upnp
set allow-disable-external-interface=no
/system identity
set name="Branch 1"
/system lcd
set contrast=0 enabled=no port=parallel type=24x4
/system lcd page
set time disabled=yes display-time=5s
set resources disabled=yes display-time=5s
set uptime disabled=yes display-time=5s
set packets disabled=yes display-time=5s
set bits disabled=yes display-time=5s
set version disabled=yes display-time=5s
set identity disabled=yes display-time=5s
set pppoe-out1 disabled=yes display-time=5s
set l2tp-to-hq disabled=yes display-time=5s
set ether1 disabled=yes display-time=5s
set ether2 disabled=yes display-time=5s
```