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L3-PPPOE + InterVLAN Routing Implementation Over MikroTik

Powered by: POORIA TAABBODI

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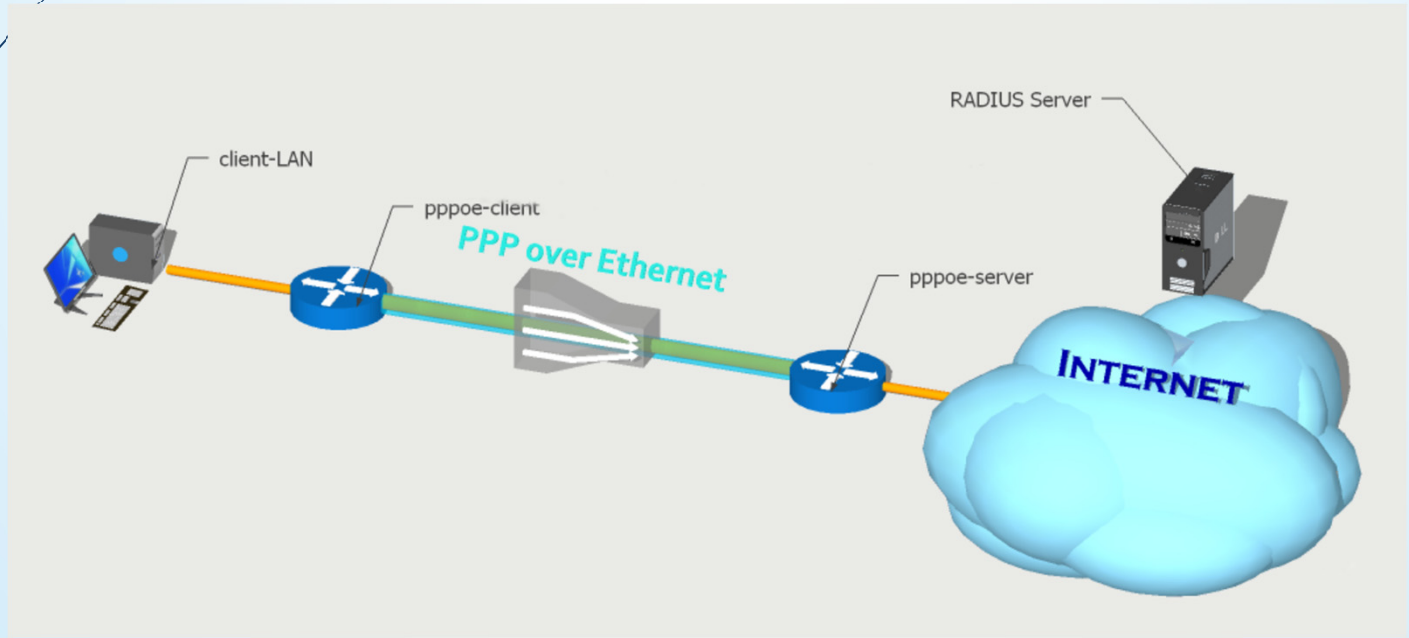
Welcome to this Workshop !

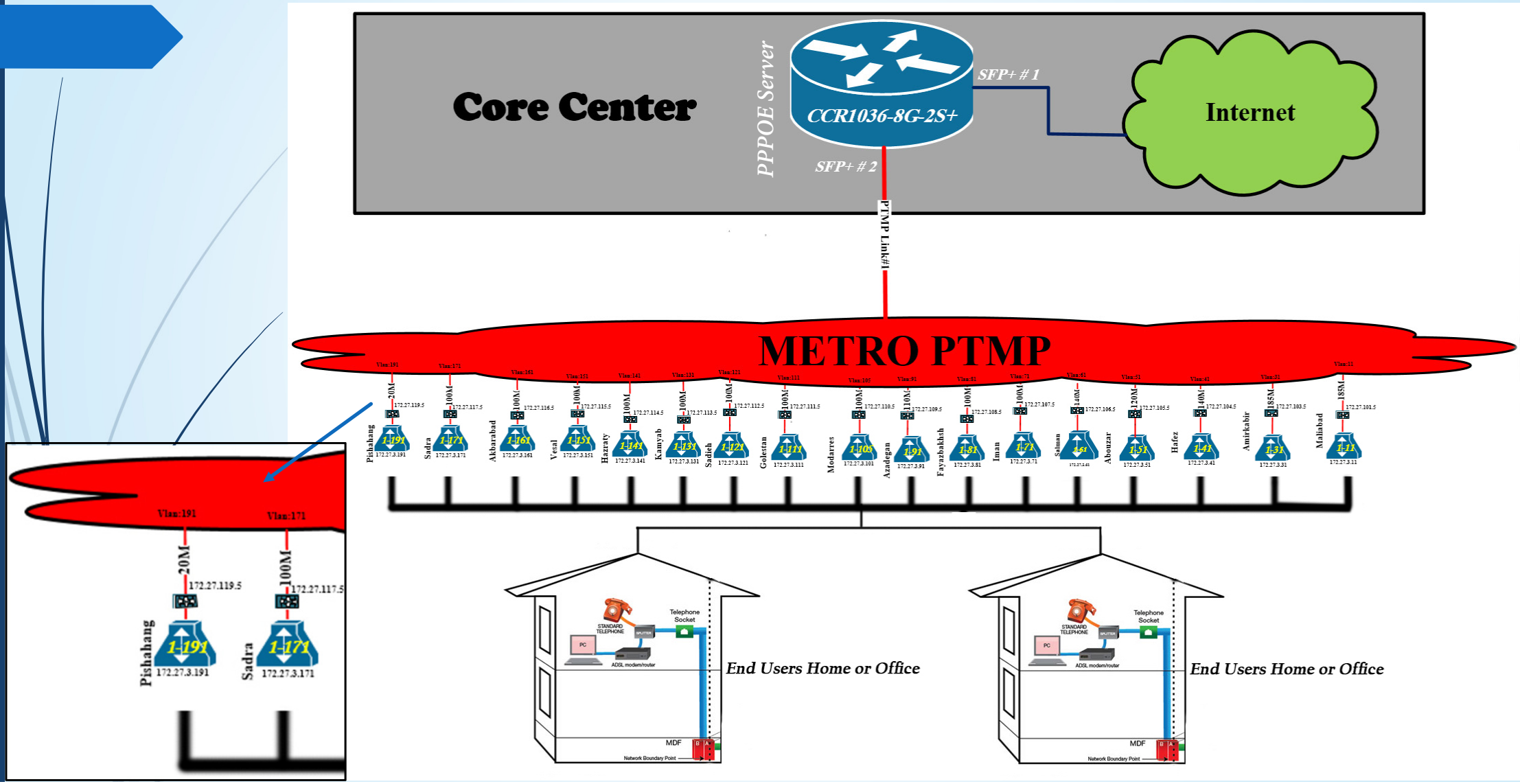
First, some basic concepts …..

What is PPPOE?

Point-to-Point Protocol over Ethernet or PPPoE, is a Layer II network protocol that used for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to a DSL modem over Ethernet. As you know Ethernet networks are packet-based and have no capacity for a connection or circuit. They also lack basic security features to protect against IP and MAC conflicts and rogue DHCP servers, so most Internet providers separate their users traffics to several VLANs .



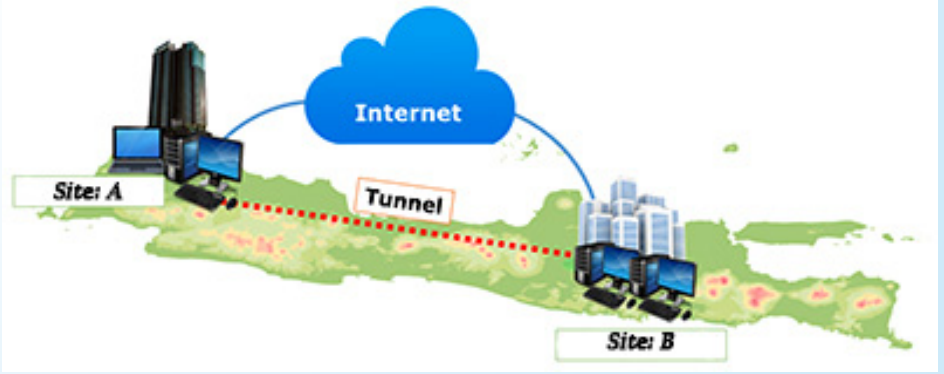
Imagine that our Network Topology is:



EoIP Tunnel

- *Ethernet over IP (EoIP) Tunneling is a MikroTik RouterOS protocol that creates an Ethernet tunnel between two routers on top of an IP connection. The EoIP tunnel may run over IPIP tunnel, PPTP tunnel or any other connections capable of transporting IP.*
- *EOIP tunnels add at least 42 bytes overhead.*

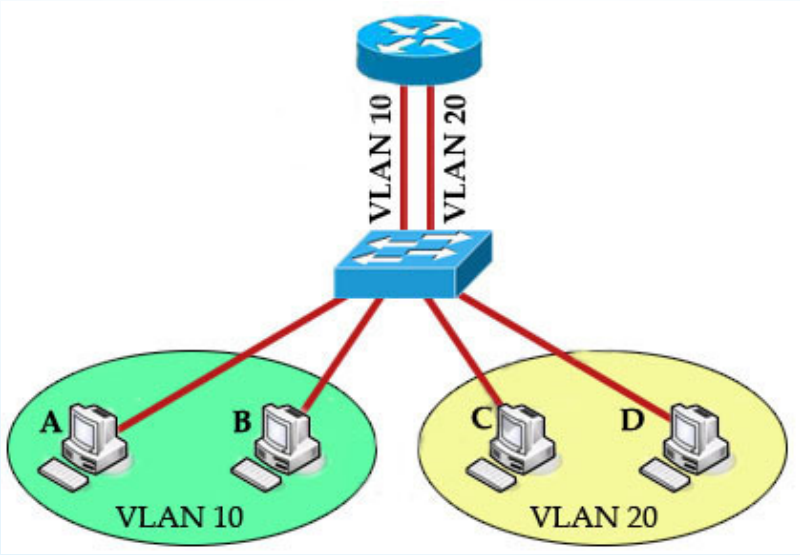
(8 bytes GRE + 14 bytes Ethernet + 20 bytes IP)



InterVLAN Routing

- *Some times in addition to the PPPOE Connection you may need to have Layer III communication between your branches. (for example for managing your devices)*

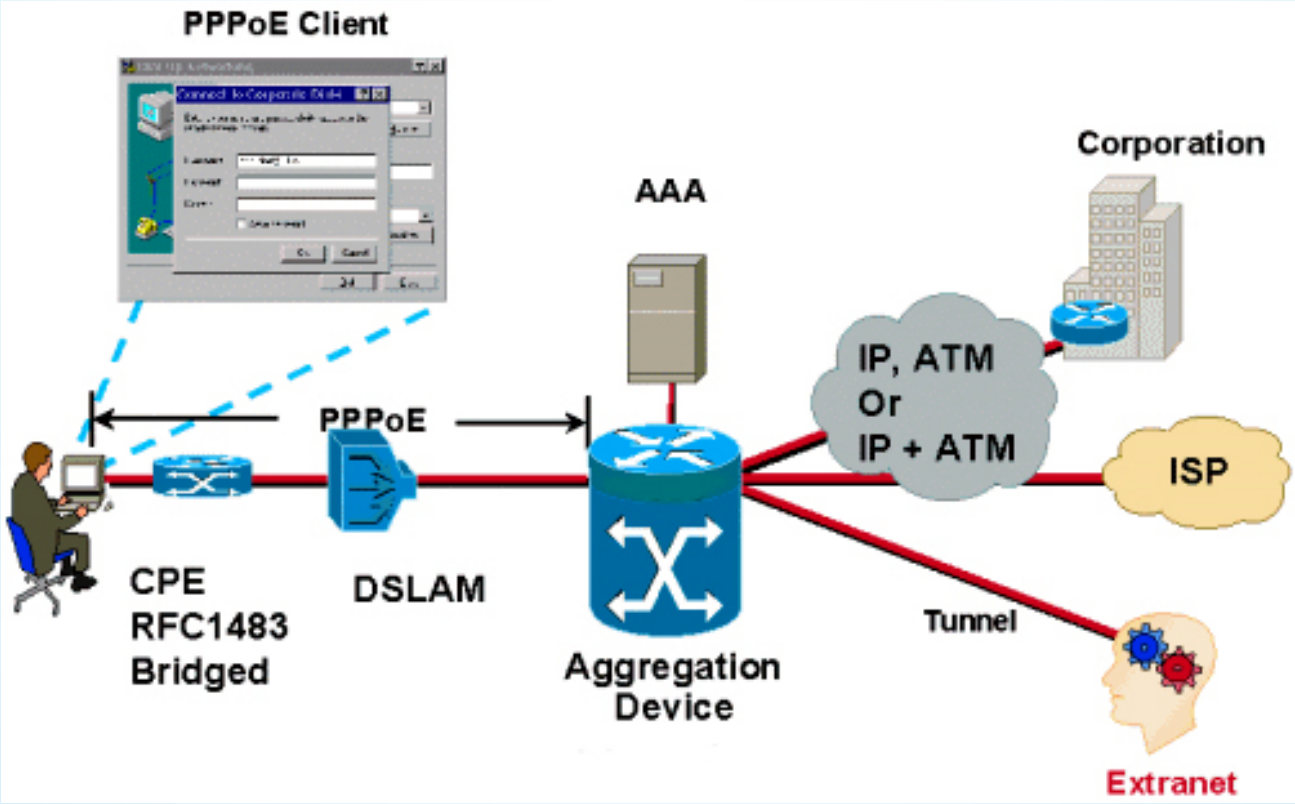
In this case you use InterVLAN Routing…



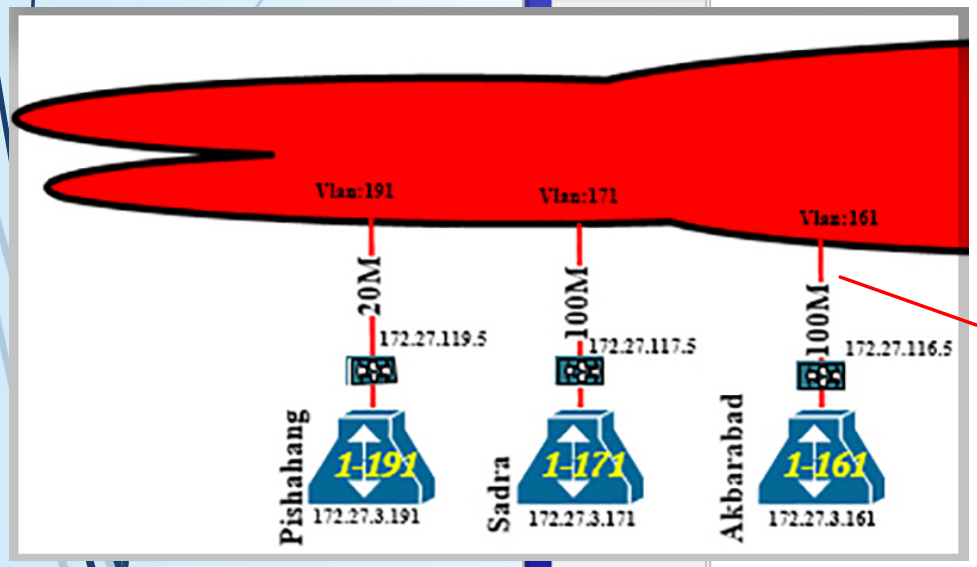
Let`s go to implementing PPPOE over EoIP Tunnel

And

Branches InterVLAN Routing ……



Creating "VLAN Interface" for each branches on Core MikroTik



Core MikroTik

Session Settings Dashboard

Safe Mode Session: 00:0C:29:B4:C9:F3

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP

Interface List

Interface | Interface List | Ethernet | EoIP Tunnel | IP Tunnel | GRE Tunnel | VLAN | VRRP | Bonding | LTE

	Name	Type	MTU	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx
R	vlan161	VLAN	1500	1500		0 bps	0 bps	0	0	0 bps	0 bps
R	vlan171	VLAN	1500	1500		0 bps	0 bps	0	0	0 bps	0 bps

New Interface

General | Loop Protect | Status | Traffic

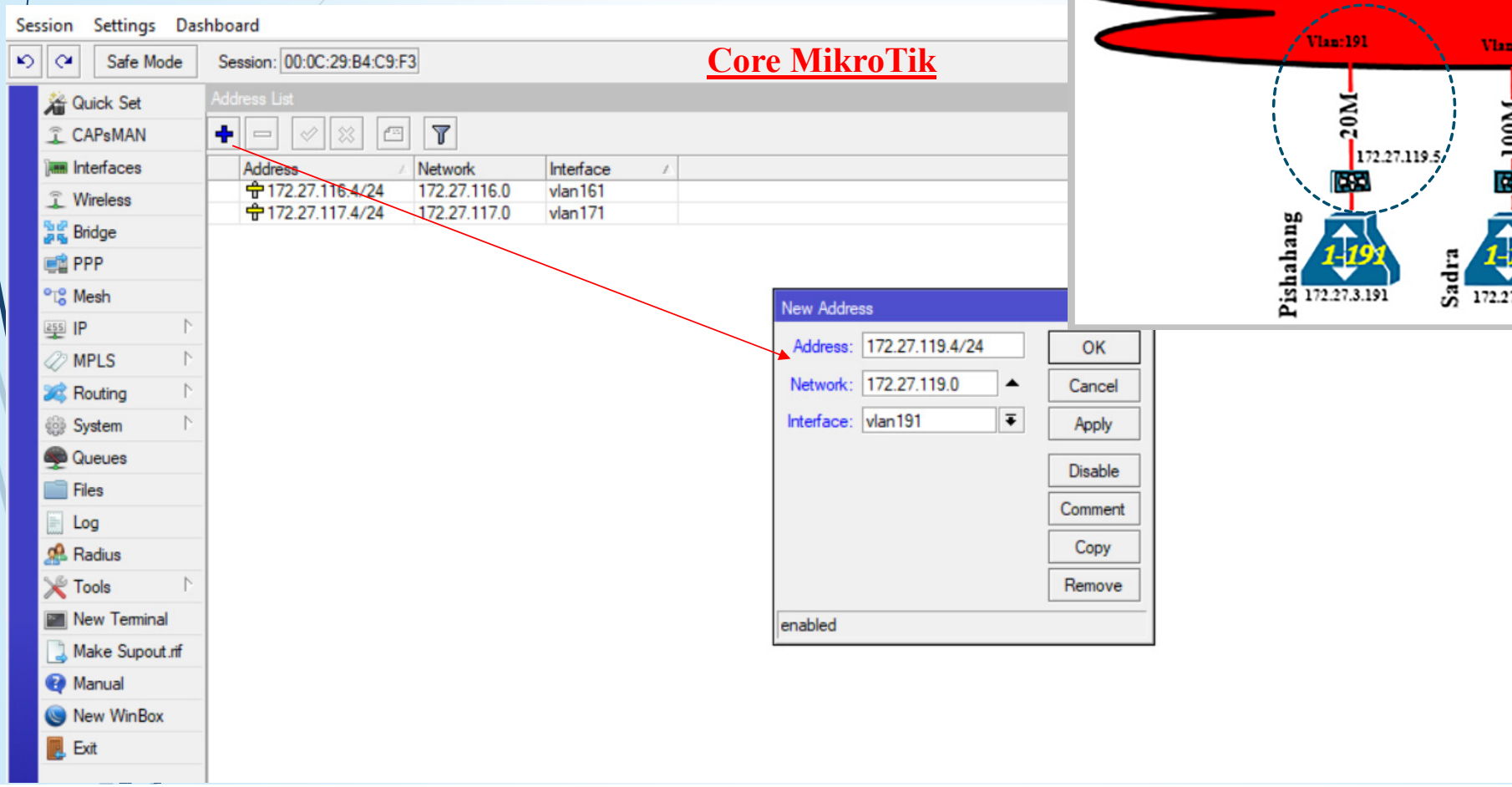
OK
Cancel
Apply
Disable
Comment
Copy
Remove
Torch

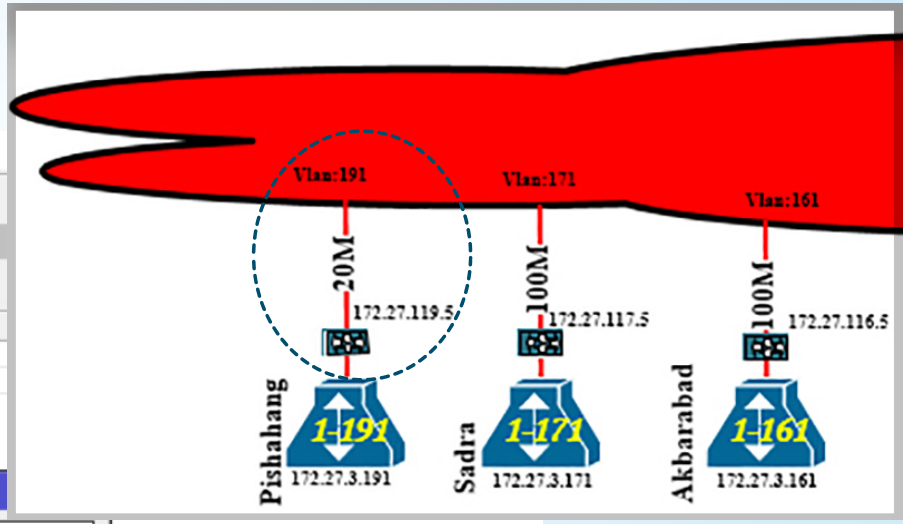
Name: vlan191
Type: VLAN
MTU: 1500
Actual MTU:
L2 MTU:
MAC Address:
ARP: enabled
ARP Timeout:
VLAN ID: 191
Interface: sfp-sfpplus2
Use Service Tag

enabled | running | slave

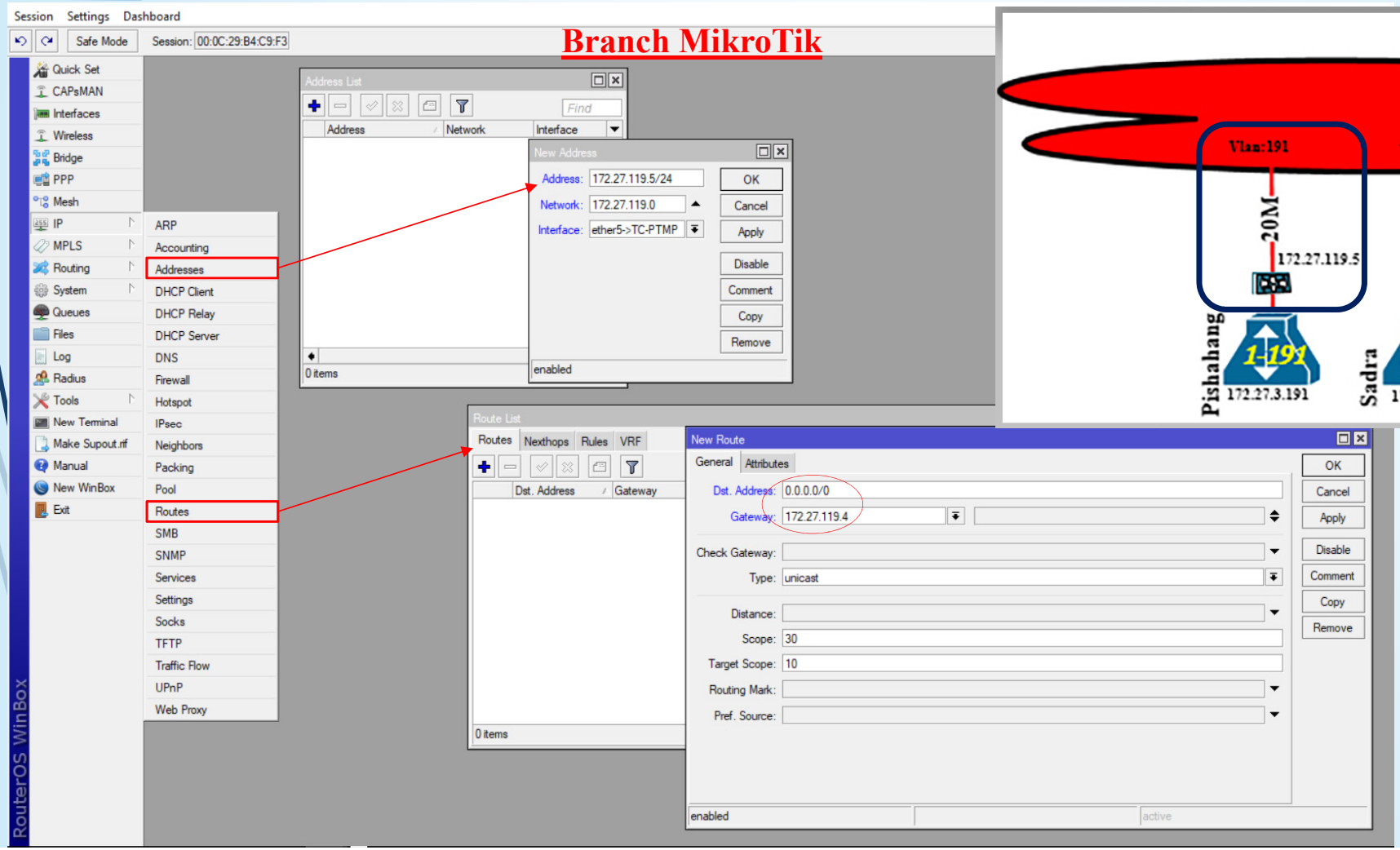
WinBox

Configuring IP Address for branches VLANs

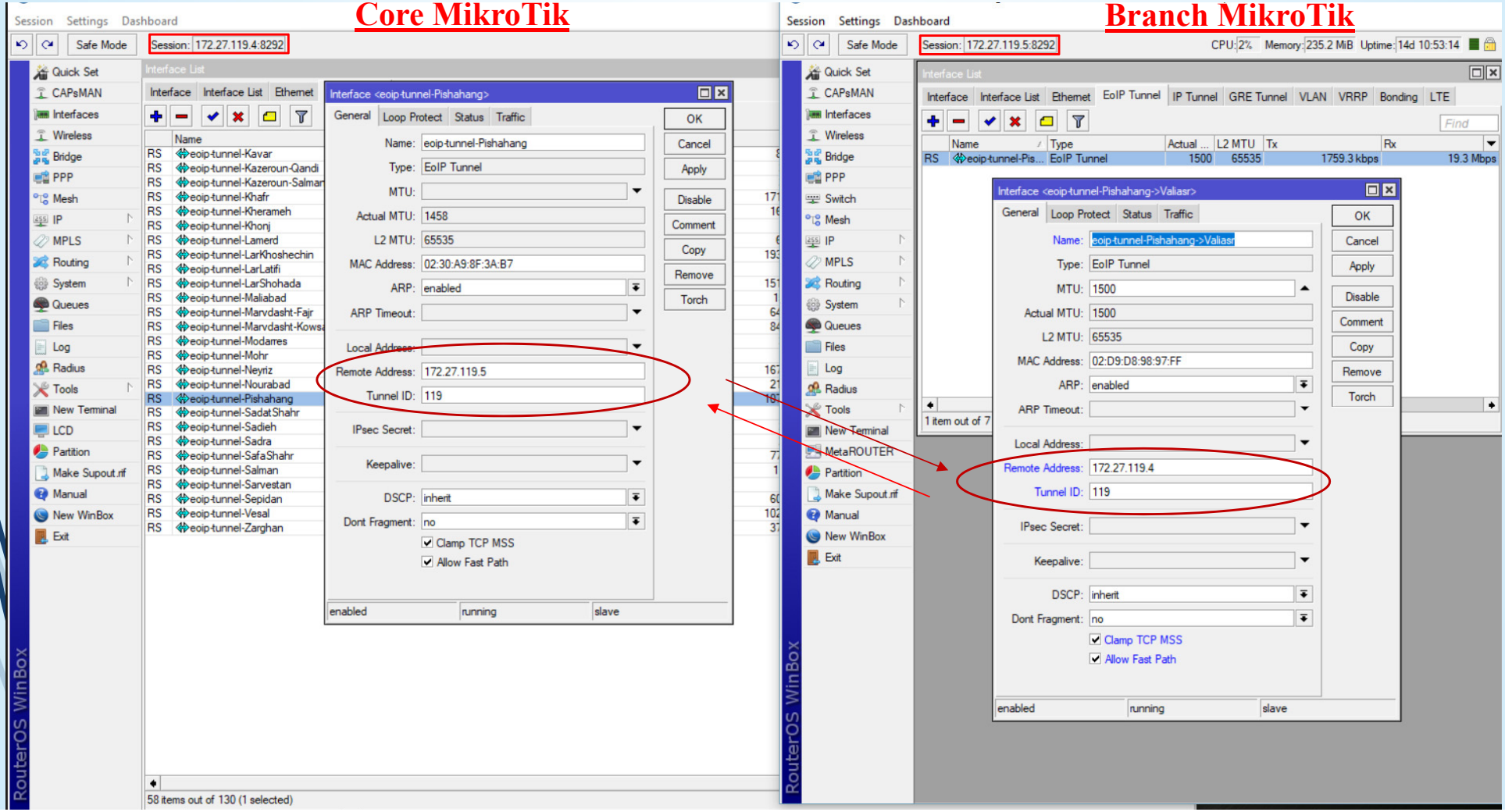




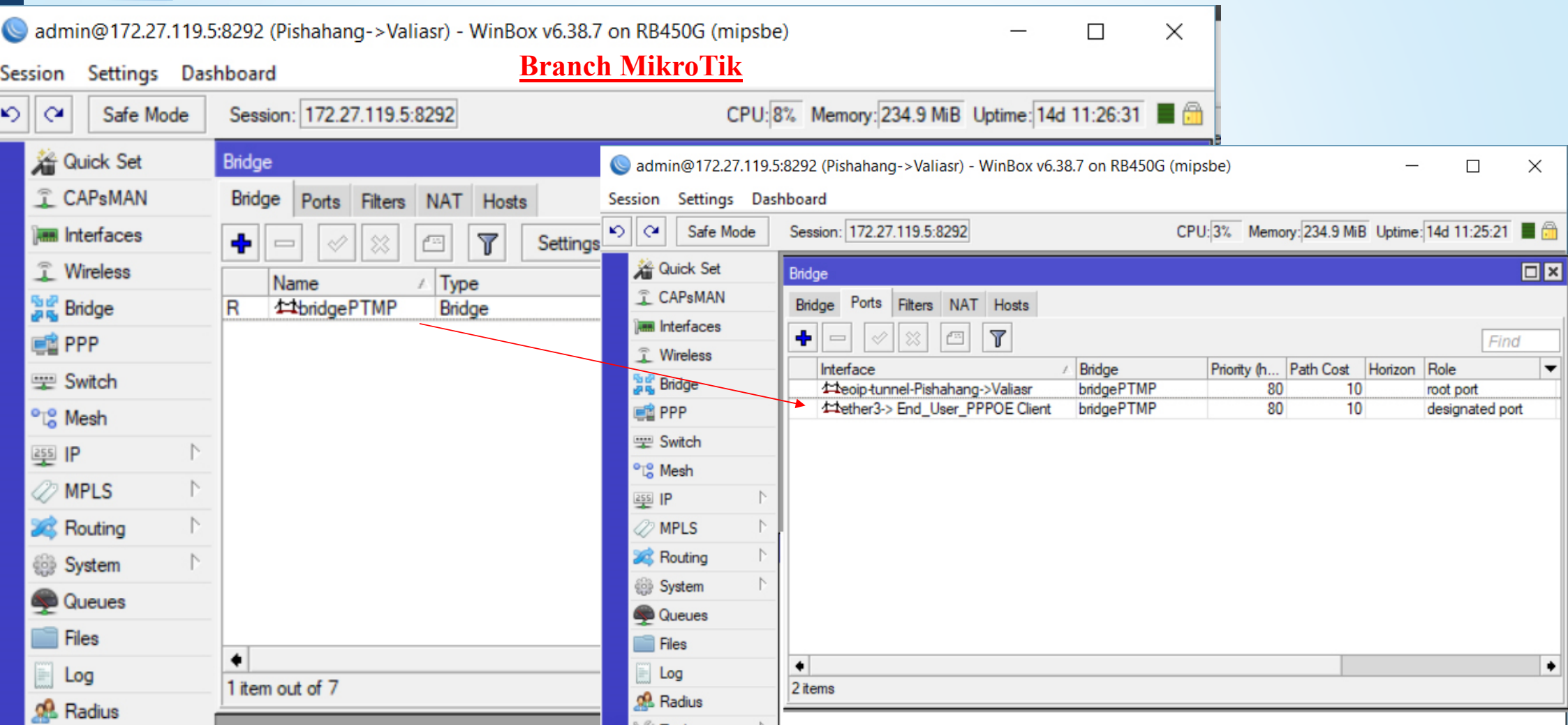
Branches Basic IP Configurations



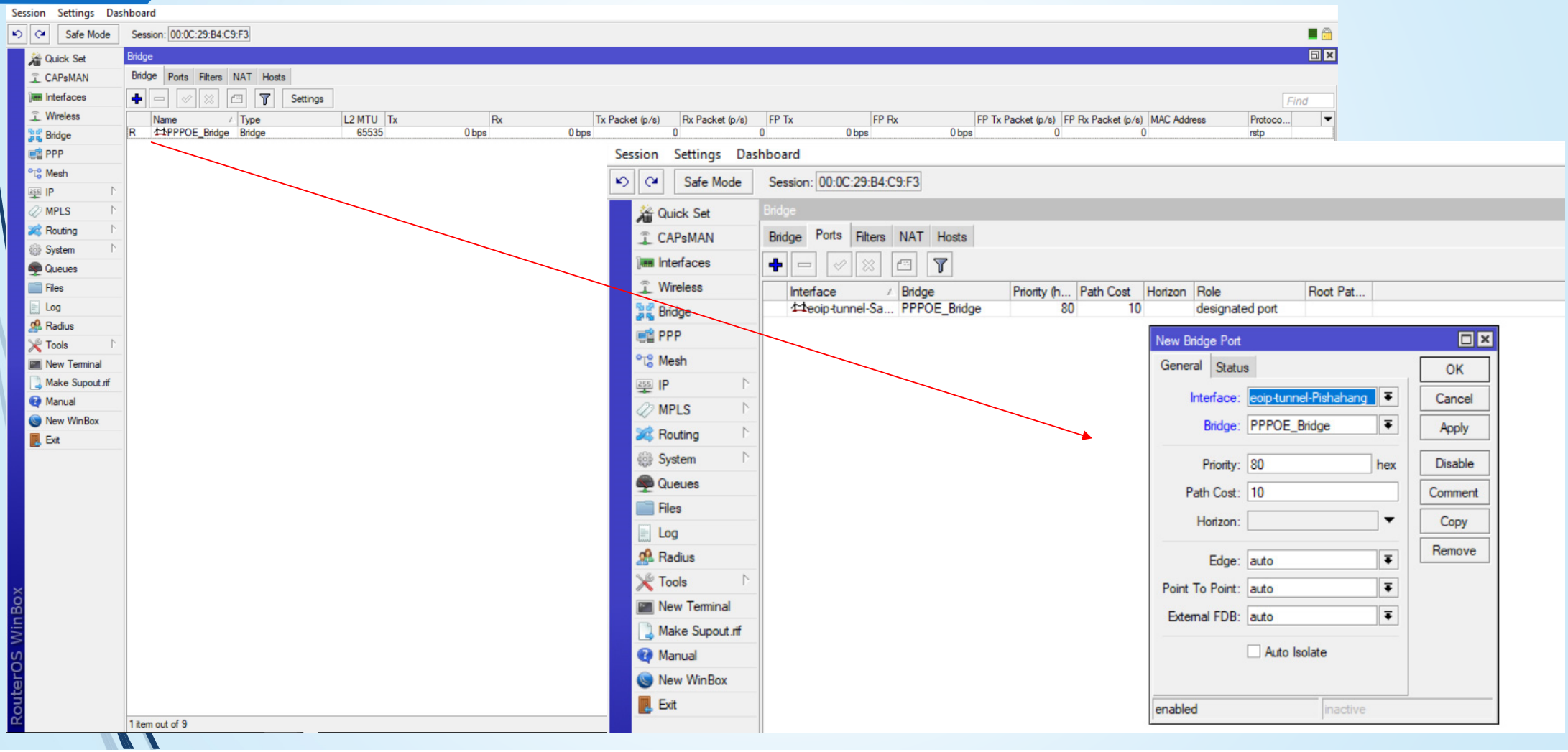
Creating & Configuring EoIP Tunnels



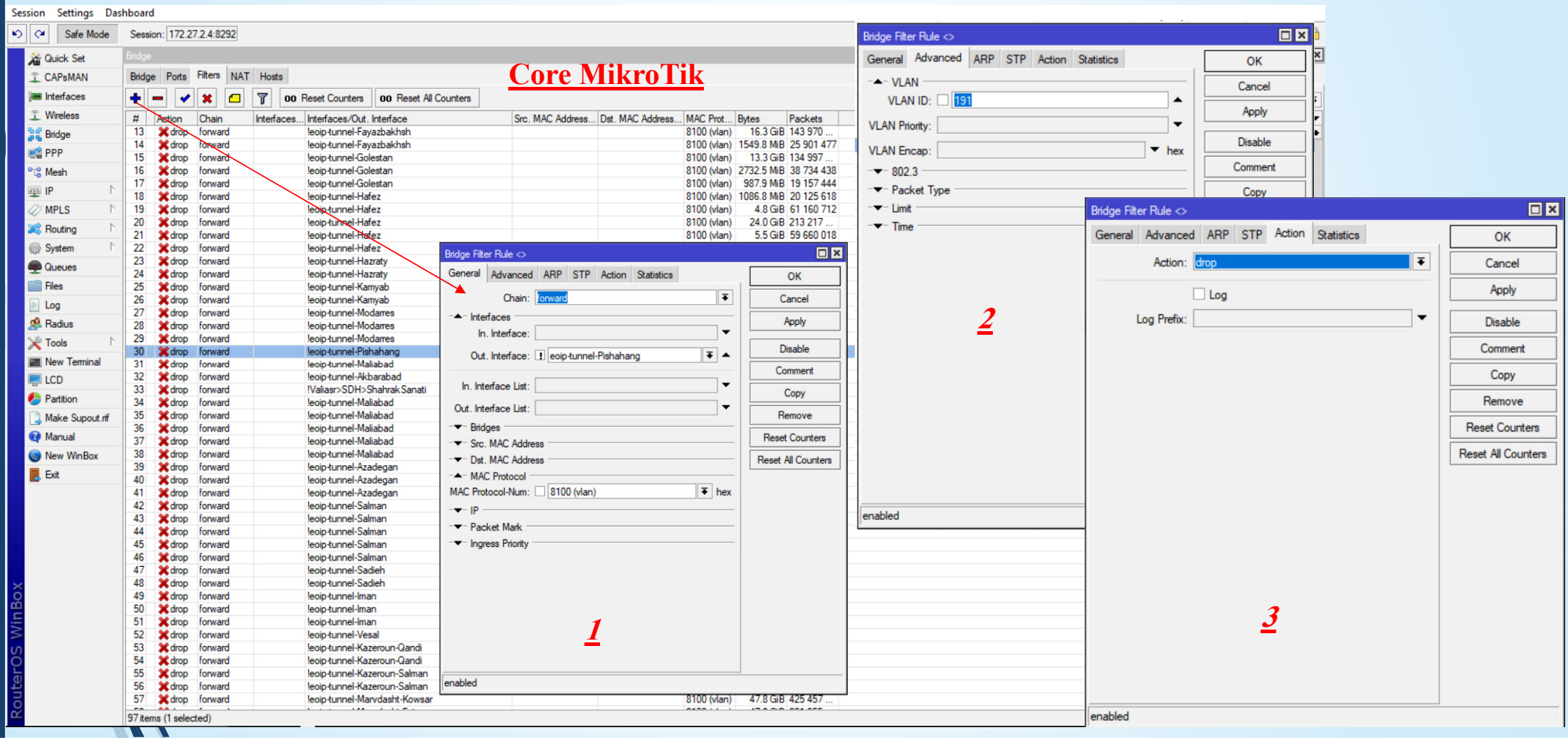
Bridging EoIP Tunnel with End-Users Interface



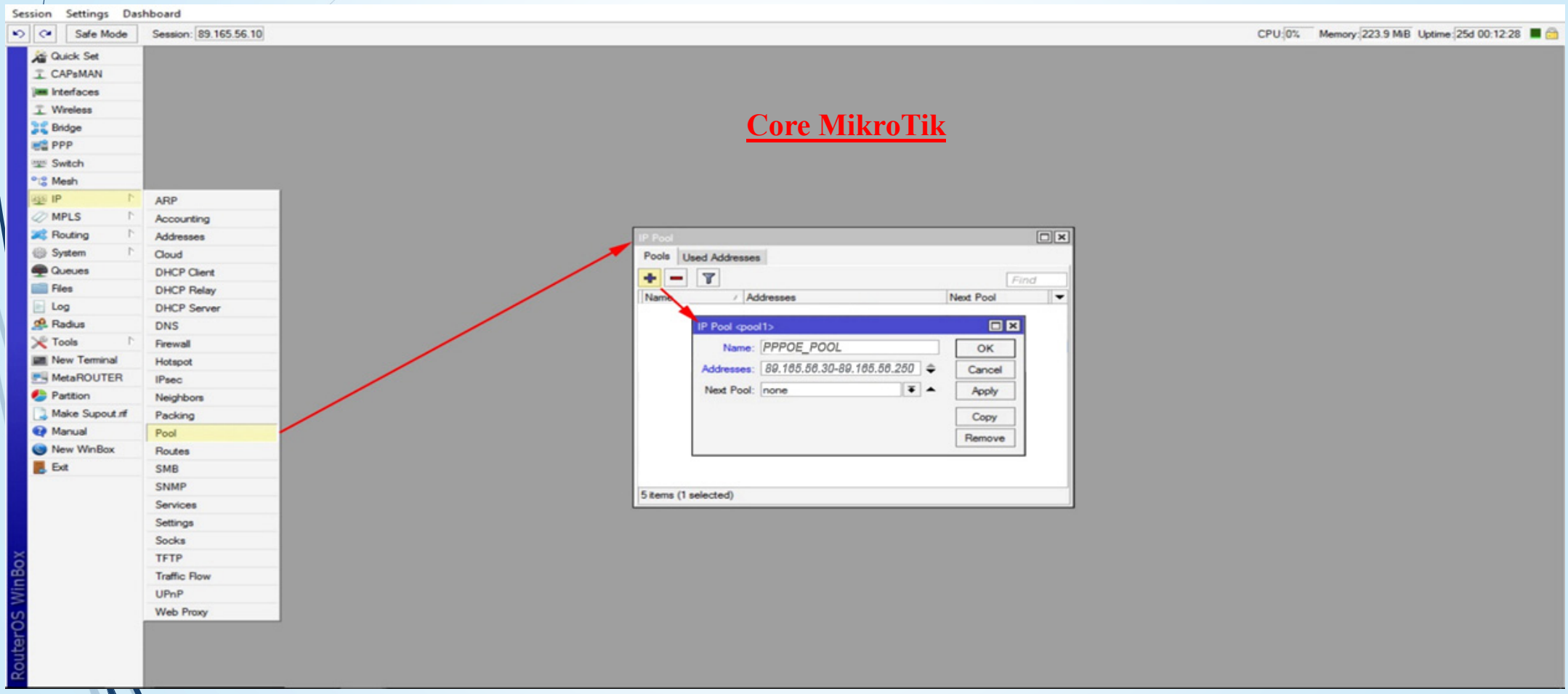
Bridging Branches EoIP Tunnels on Core MikroTik



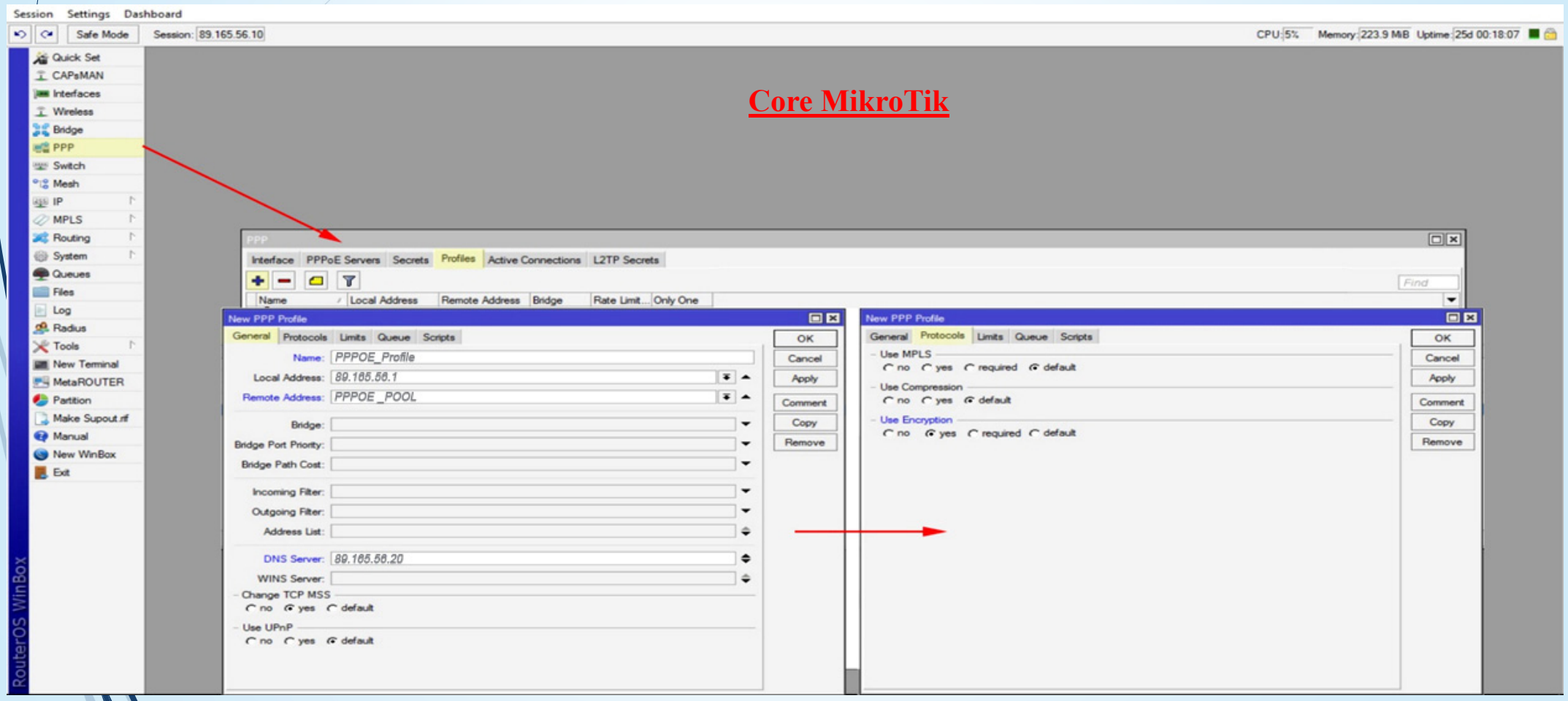
Filtering Branches Layer II Traffics



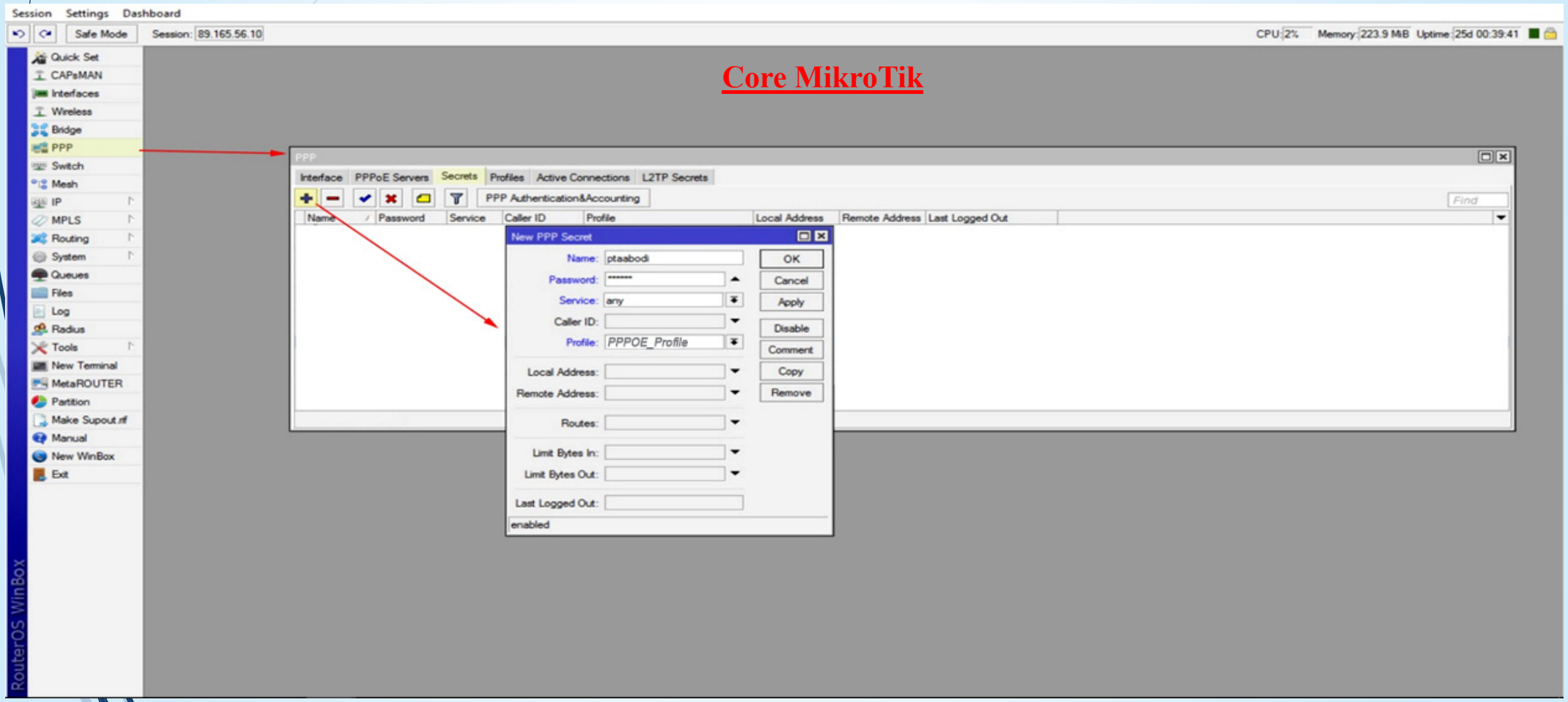
Providing "IP Pool" for PPOE Clients



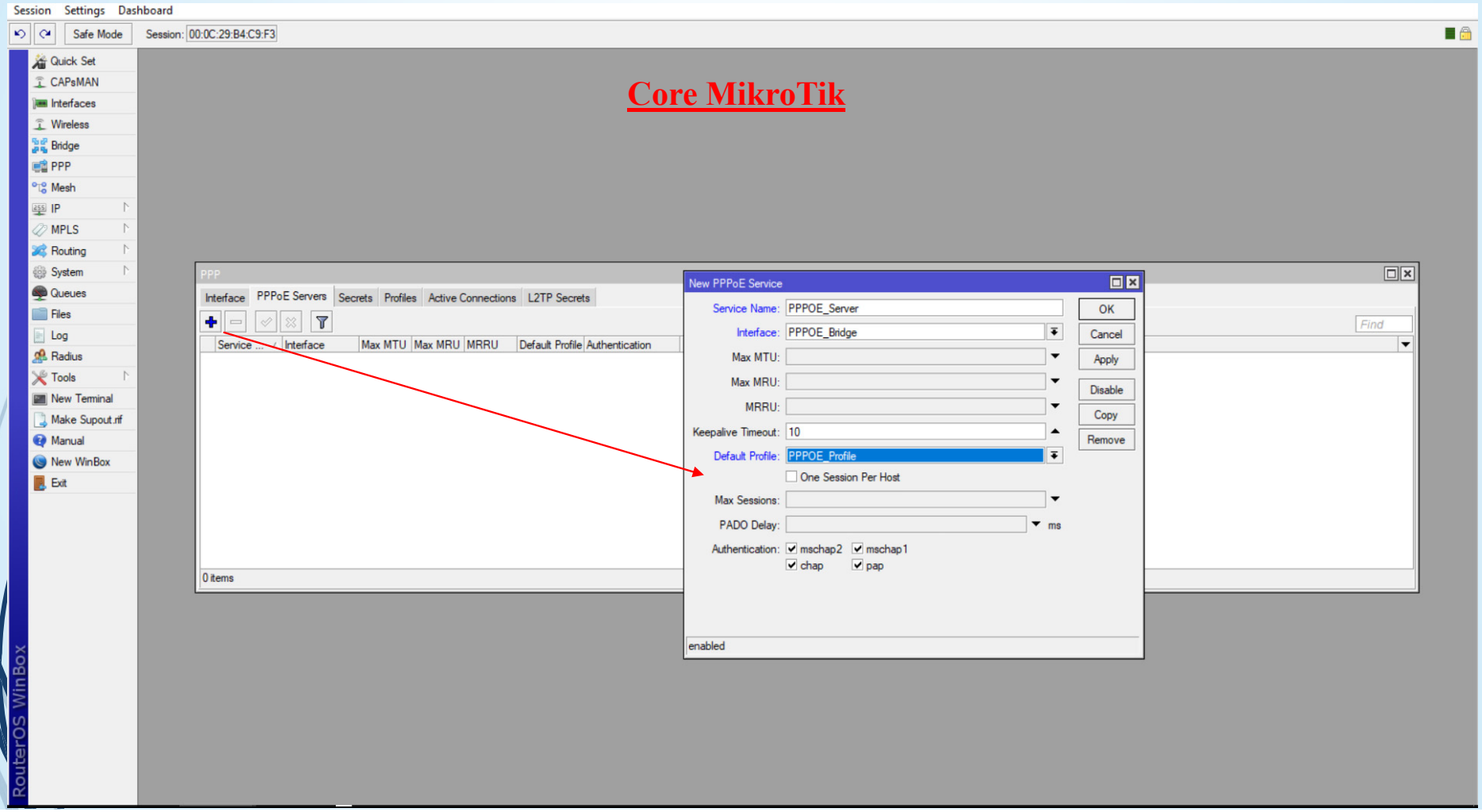
Creating "PPP Profile" for PPPOE Connections



Creating "PPP Secret" for PPPOE Clients

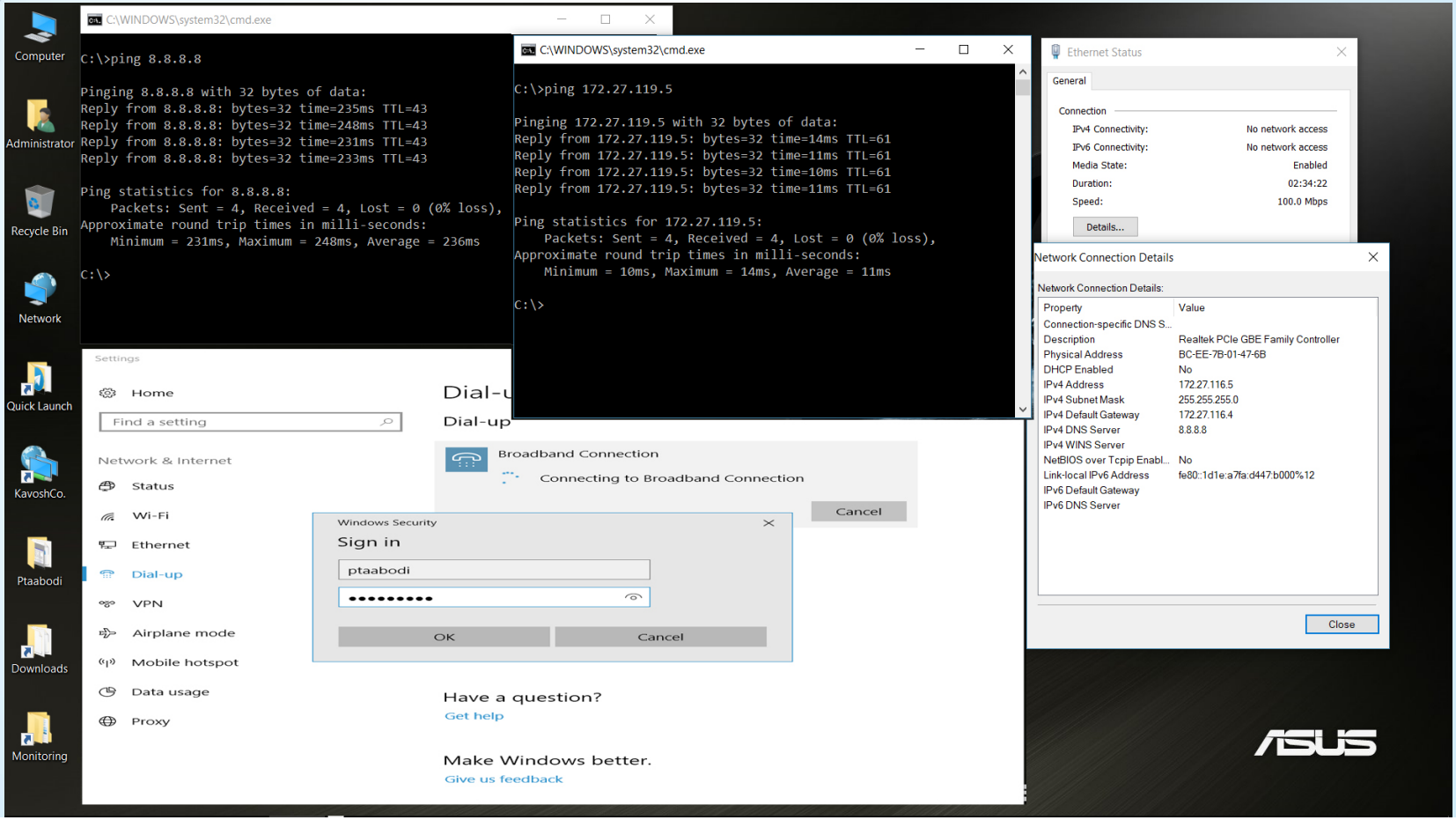


Enable & Configuring PPPOE Server



Conclusion

- *You have L3-Communication on Branches…*
- *Clients have Internet access by a PPOE Client Connection*




Any Questions?

Thank You!

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