LAYER2 VPN WITH MIKROTIK

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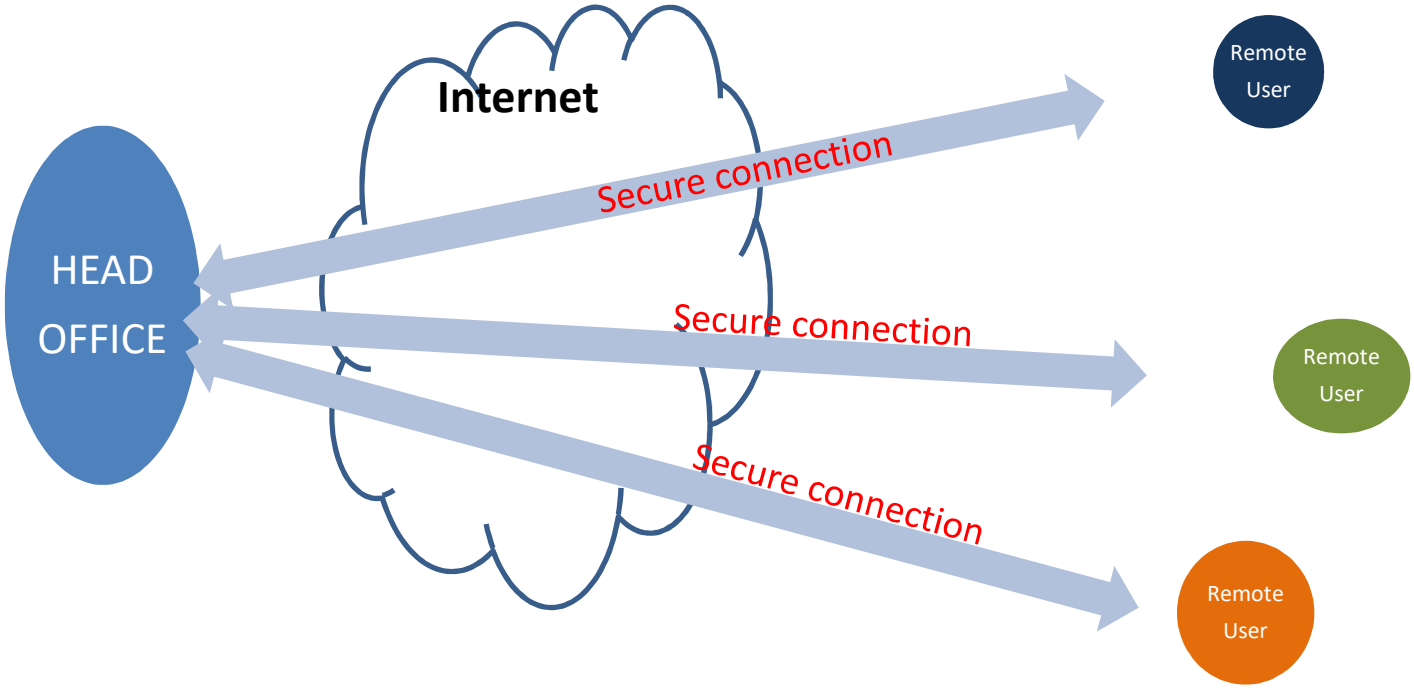
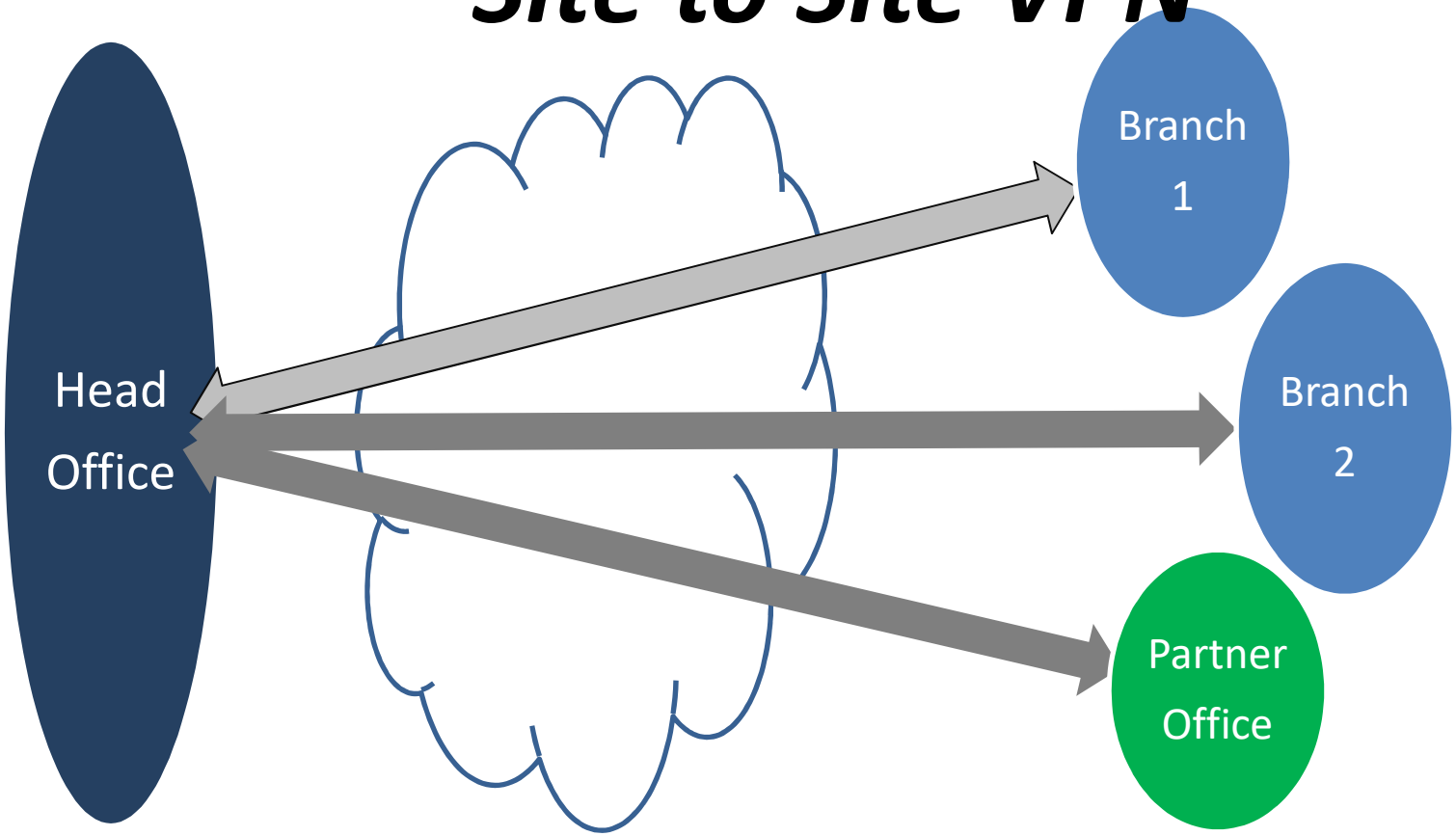
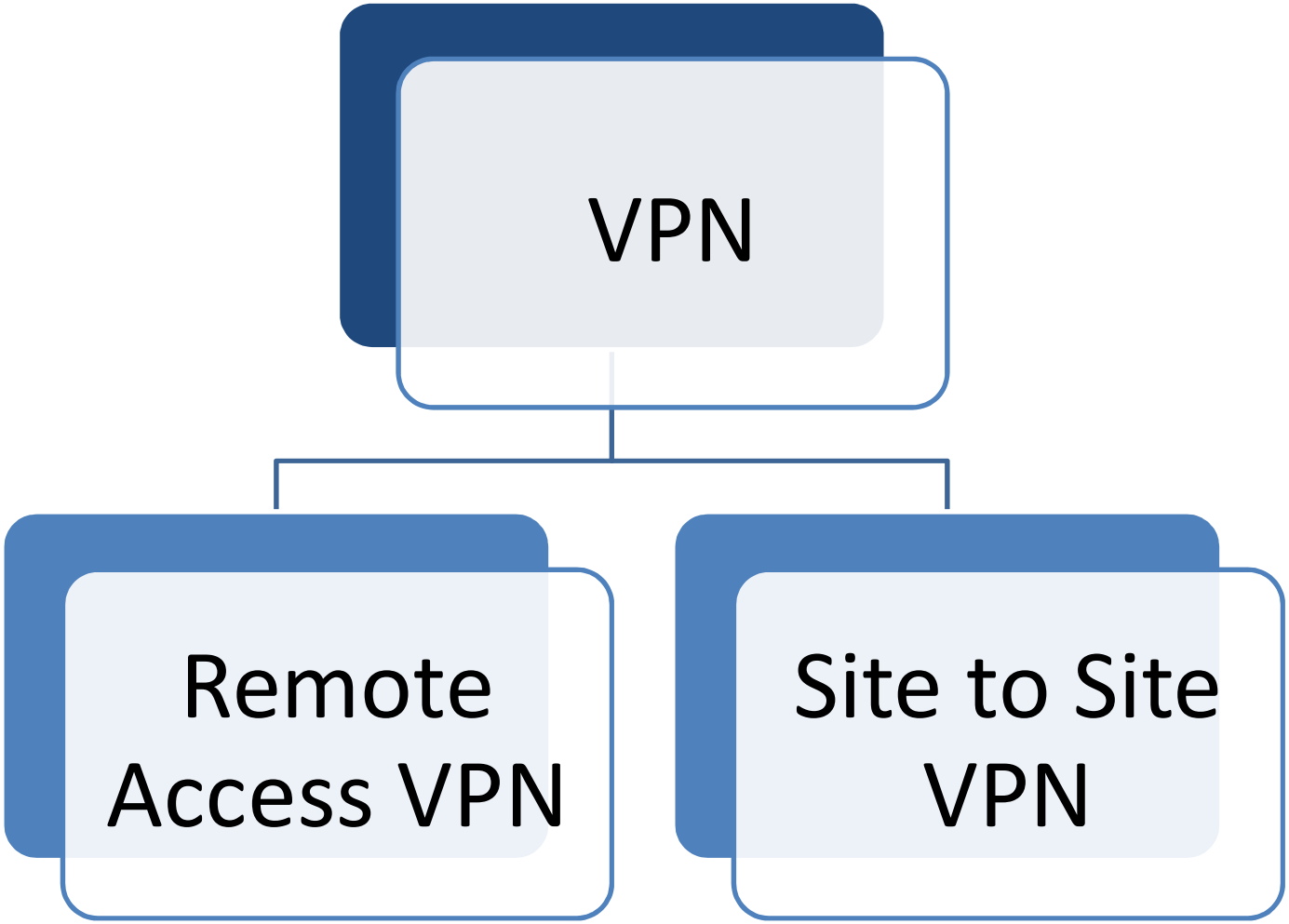
VPN

Remote Access VPN



Site to Site VPN



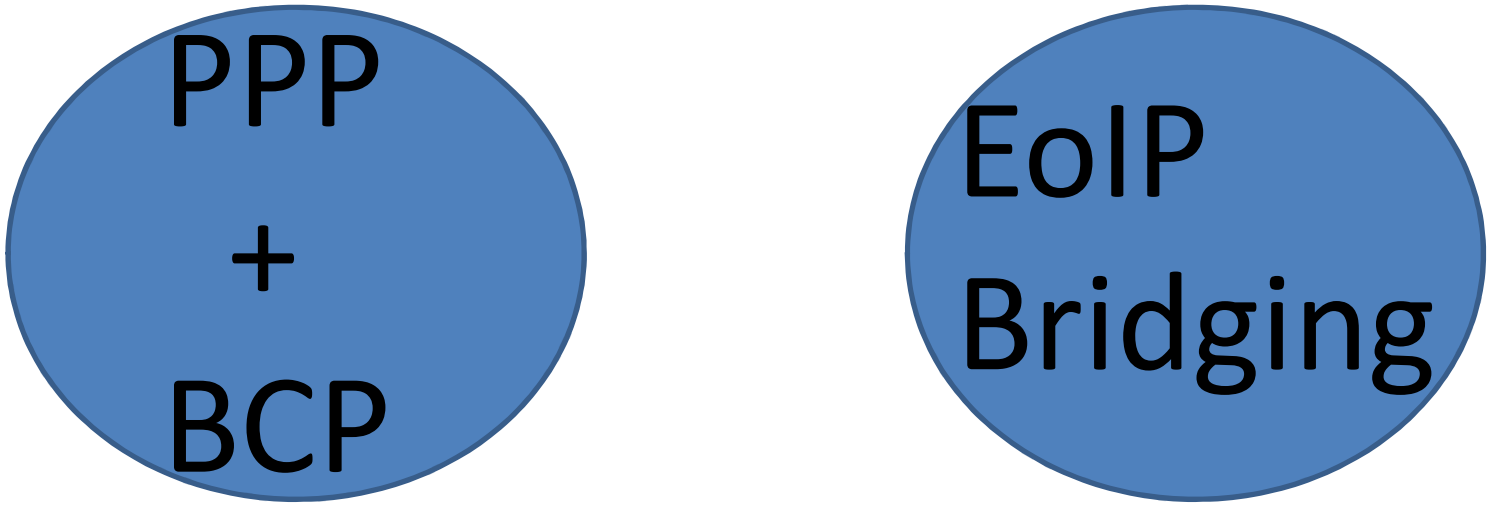

VPN
Remote Access VPN
Site to Site VPN

WHY DO WE NEED VPN?

MikroTIK supported Tunnel Protocols

Individual Protocols	PPP based Protocols	MPLS based Protocol
EoIP	PPP	VPLS
IPIP	PPPoE	TE
GRE	PPTP	
IPsec	L2TP	
	SSTP	
	OVPN	

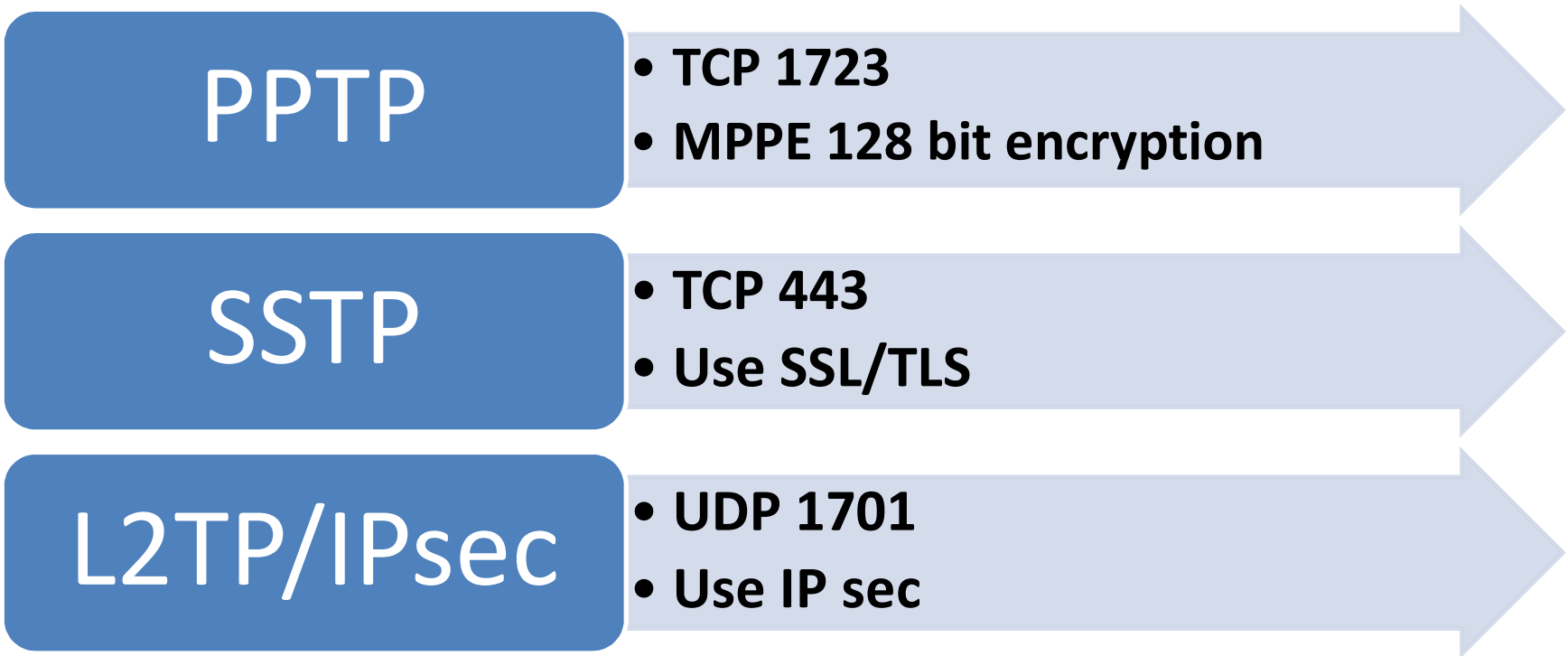
Layer 2 Tunnel Options



Requirements of PPP+BCP

A tunnel Protocol
BCP
Multilink PPP

A Tunnel Protocol

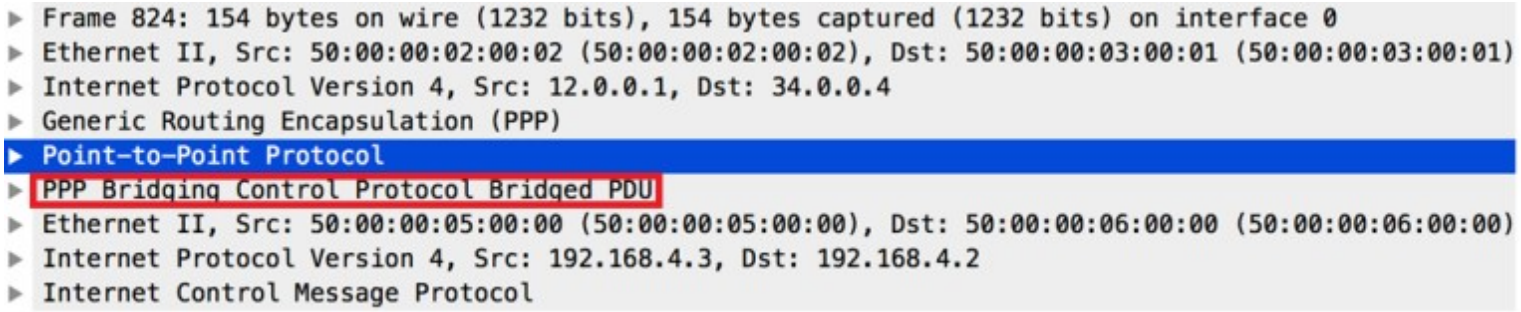


L2TP/IPsec

- **A highly secure VPN**
- **Client requires IKE udp:500, ESP /50, udp:1701**
- **Clients in most modern OS**
- **Faster than SSTP**

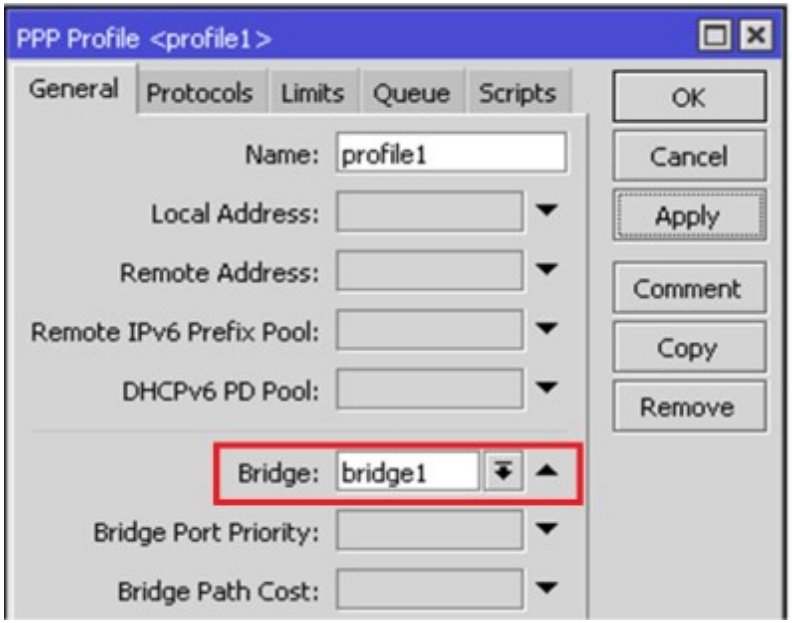
BCP

- BCP allows to bridge Ethernet packets through the PPP link



BCP setting on MikroTIK

The bridge should either have an administratively set MAC address or an Ethernet-like interface in it, as PPP links do not have MAC addresses.

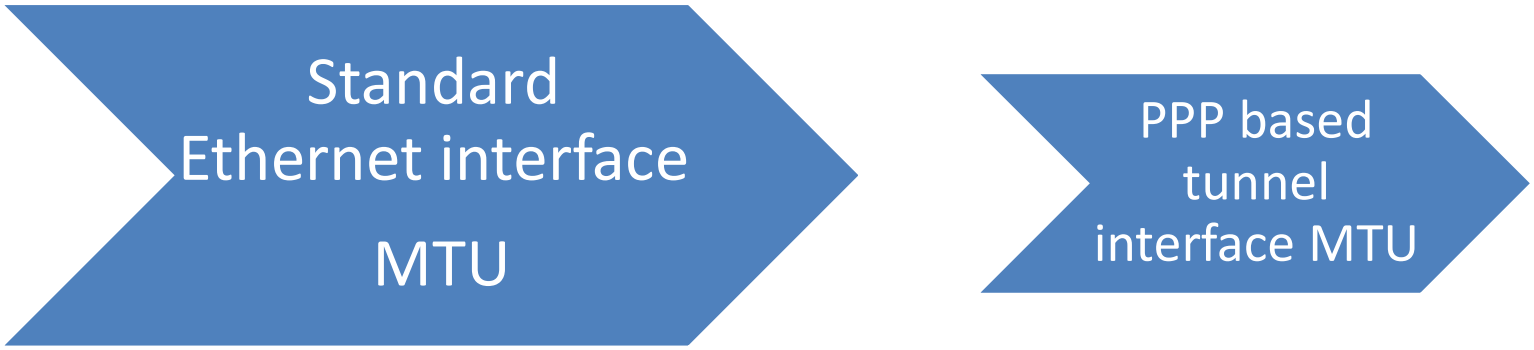


MLPPP

- **Multi-Link Point to Point Protocol (MP, Multi-Link PPP, MultiPPP or MLPPP) is a method of splitting, recombining, and sequencing data across multiple logical data links or over a single PPP link.**

- **Source: https://wiki.mikrotik.com/wiki/Manual:MLPPP_over_single_and_multiple_links**

Why We need MLPPP



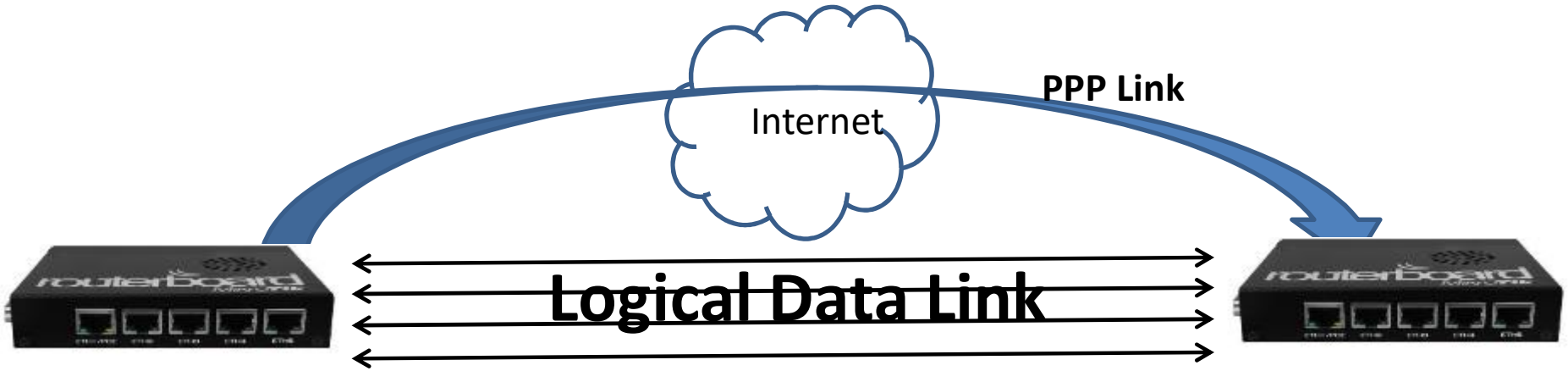
PPP interface MTU is smaller than standard Ethernet interface MTU

Why We need MLPPP

- **L2 tunnels over L3 networks require transmitting Ethernet through VPN tunnels**

- **Tunnel MTU's + tunnel overhead can't pass the whole frame so we have to have a way to get the whole data through the tunnel in pieces and reassemble**

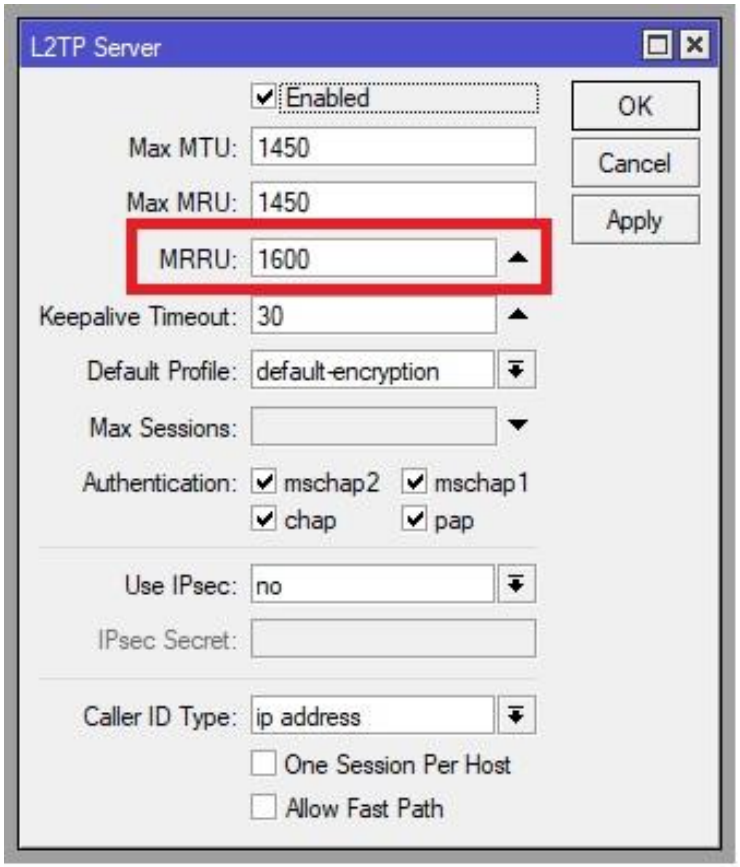
How MLPPP solve this Problem

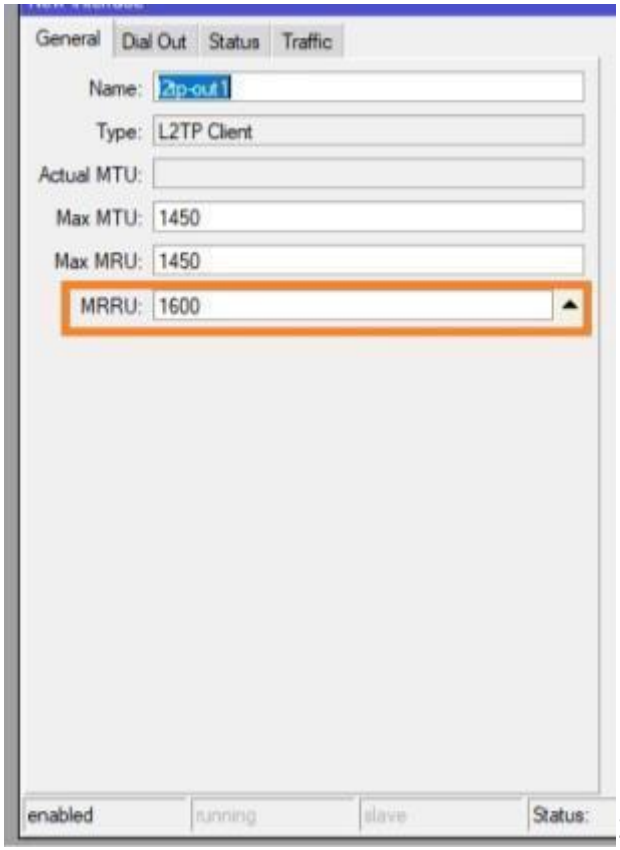


How to enable MLPPP on MikroTik

- **We must specify Maximum Received Reconstructed Unit MRRU Option**

How to enable MLPPP on MikroTik





PPP+BCP Server

- **1. Create Bridge Interface**
- **2. Add LAN interface to the Bridge**
- **3. Create IP Pool for VPN point-to-point Ips**
- **4. Create PPP Profile by assigning the Bridge in the profile**
- **5. Create PPP Secret using PPP Profile you created in Step 4**
- **6. Enable L2TP VPN Server with Multi-Link PPP**

PPP+BCP Client

- **1. Create Bridge Interface**
- **2. Add LAN interface to the Bridge**
- **3. Create PPP Profile by assigning the Bridge in the profile**
- **4. Create L2TP Client Interface with Multi-Link PPP**

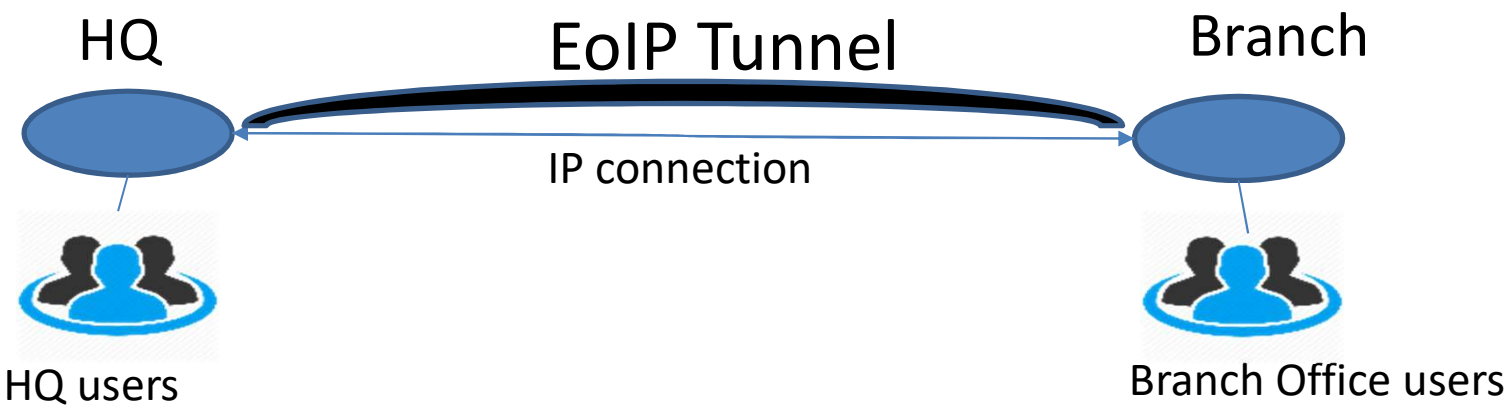
ETHERNET OVER IP

What is EoIP?

- A MikroTik RouterOS Protocol

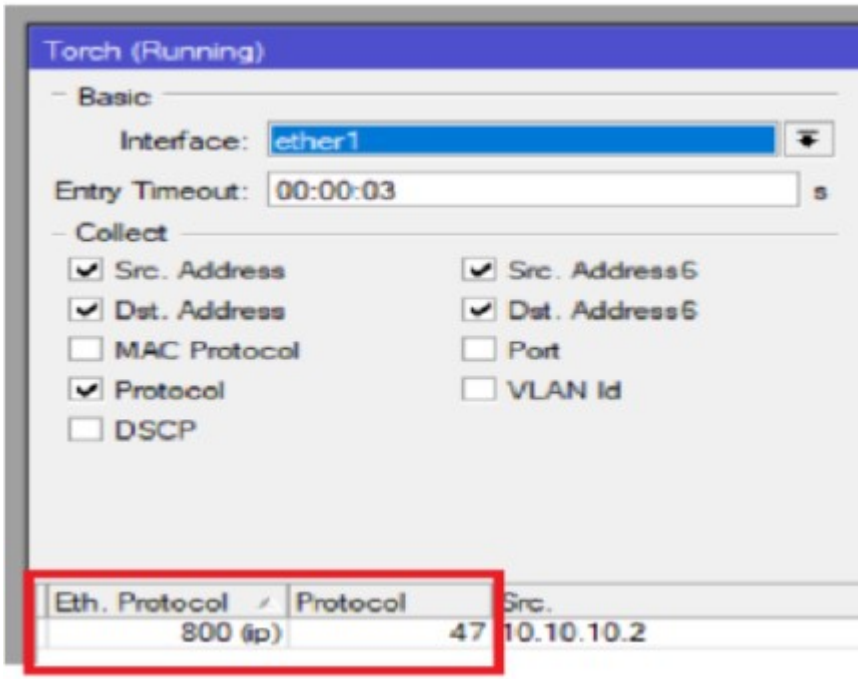
EoIP

What is EoIP?

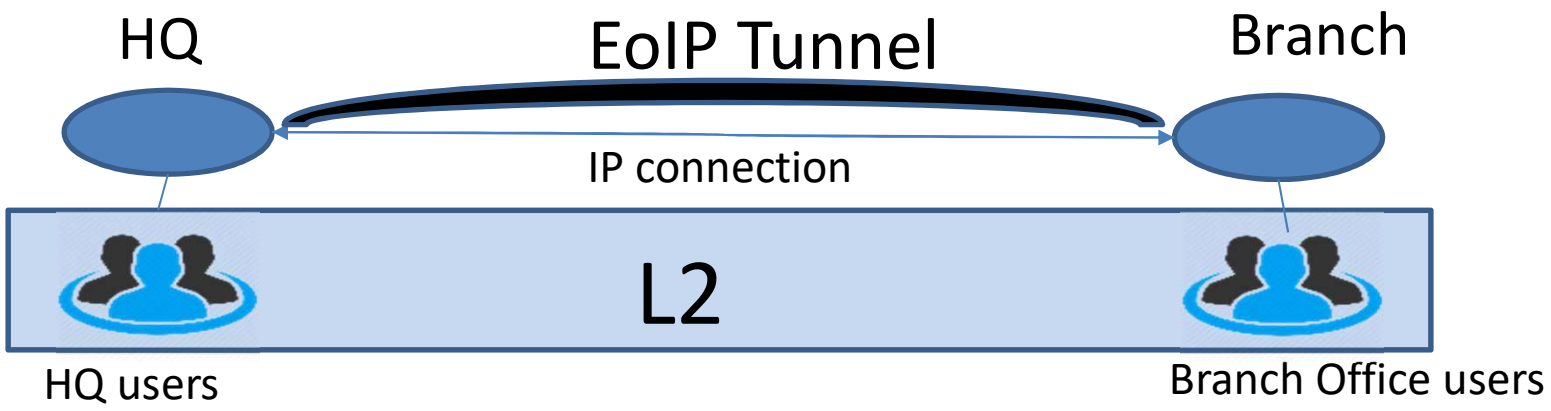

HQ
EoIP Tunnel
Branch
IP connection
HQ users
Branch Office users

What is EoIP ?

Encapsulates ethernet frames into IP protocol 47 gre packets



What EoIP can make



EoIP Configuration

- **1. Create Bridge Interface**
- **2. Create EoIP Tunnel to HQ**
- **3. Add your LAN interface and EoIP Tunnel as Bridge Ports to the Bridge**

EoIP

- **IPSec encryption but no authentication mechanism**
- **Typically requires both ends to be directly connected to the internet or you build the tunnel over another tunnel protocol like L2TP, PPTP, etc.**
- **Additional packet overhead, additional configuration steps**
- **Easy to configure, harder to maintain. Must create one static tunnel per client.**

Thank you