MUM - PRESENTATION

Assembling ODU and IDU
+ Quick Config

BY

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MTCNA – MikroTik Certified Network Associate

Overview

Aim:

- Assembling Basebox 5 / LHGXL 5
- Mounting Basebox
- Connecting to Site / Fresnel / Scan
- HaP Mini Setup (AP with DHCP)
- PPPOE Client / L2TP (In Brief)

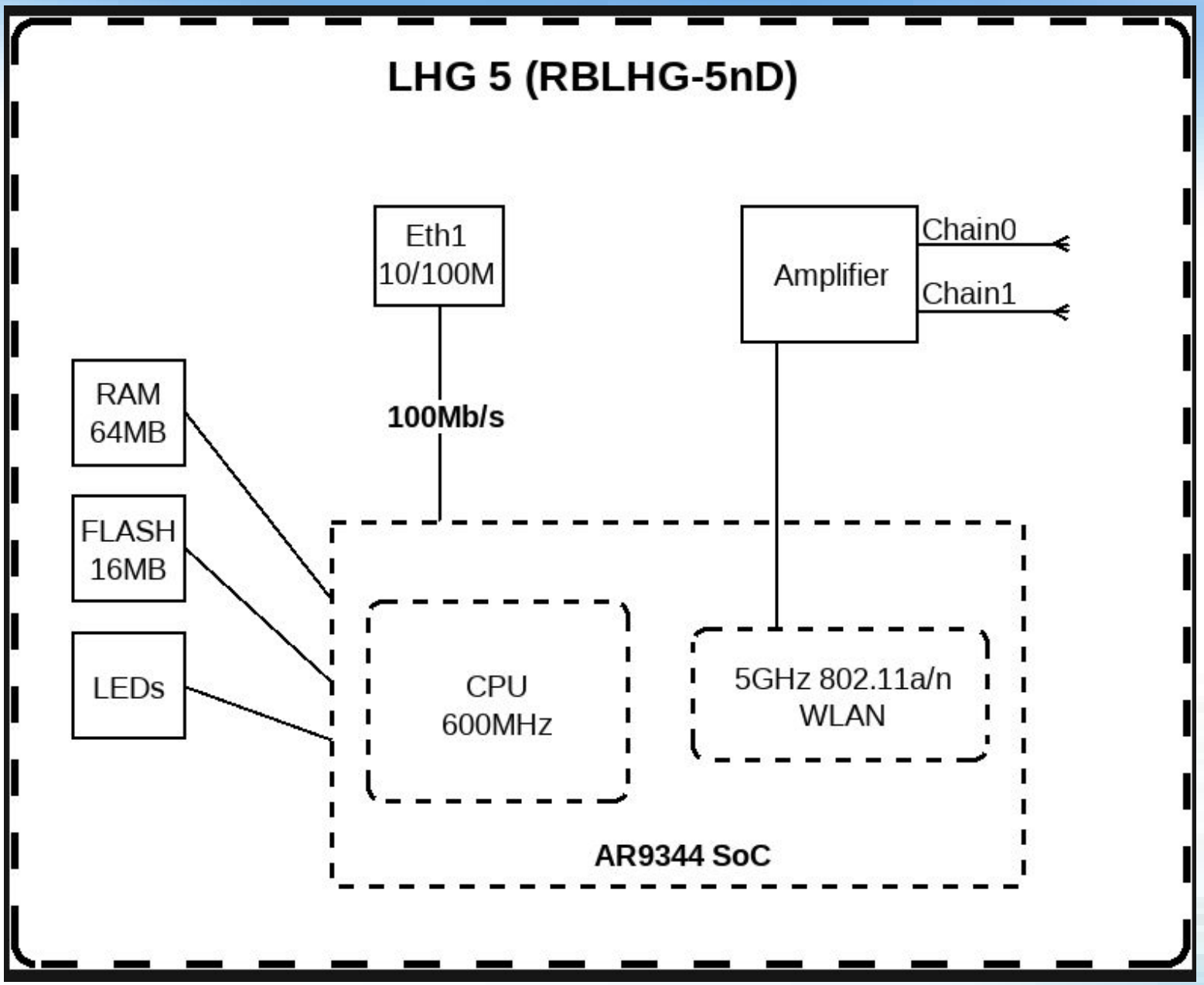
What we will do:

-Establish a connection between the Basebox 5 & MikroTik LHGXL 5

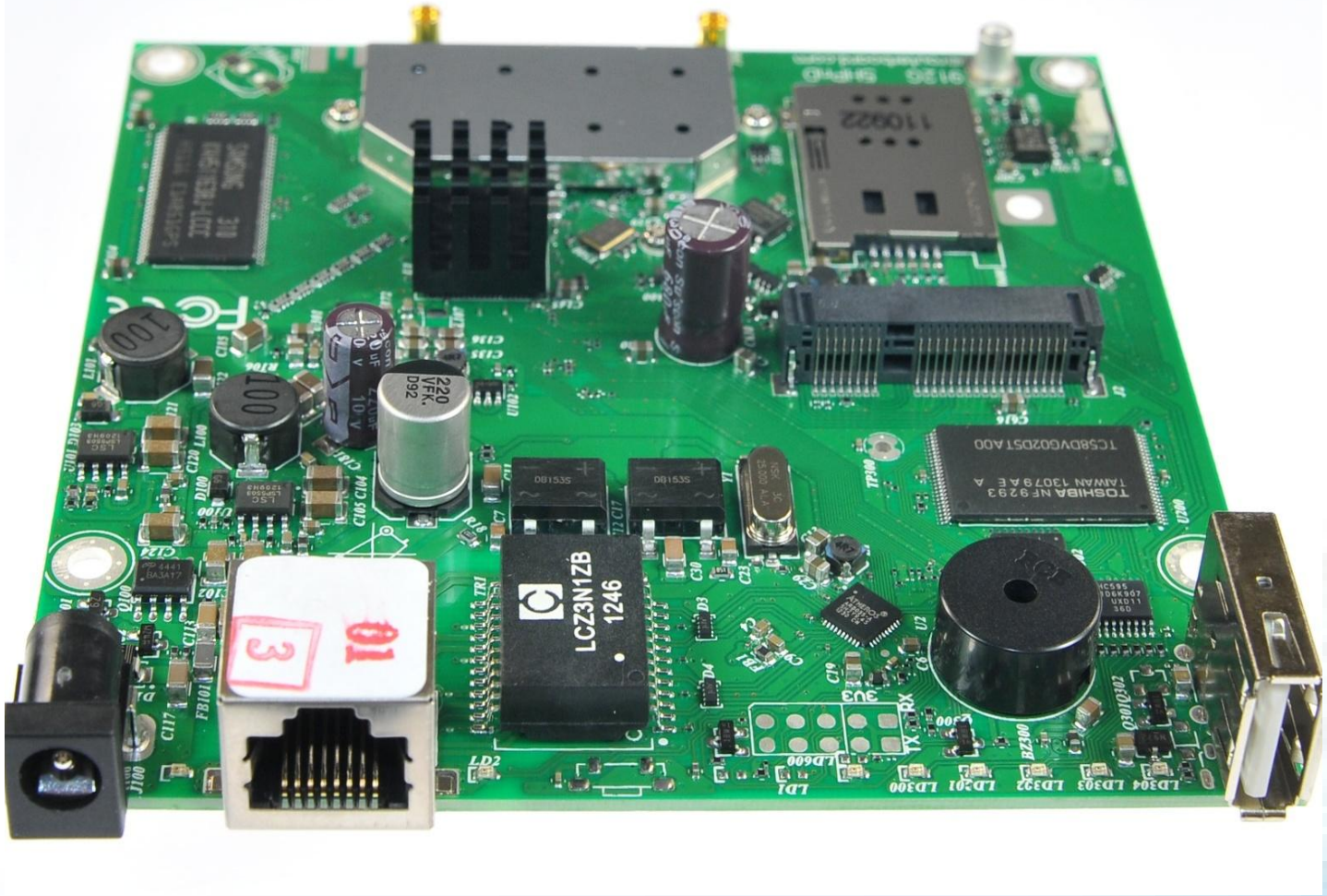
ASSEMBLING LHGXL 5Ghz

The LHG XL HP5 is a 5GHz 802.11 a/n wireless device with an integrated dual polarization 27 dBi grid antenna and high TX output power, designed to reach up to 40 km in point-to-point setups at full speed.

Quick Mount Bracket Comes Separate from the original LHG package, but can be purchased from various outlets.

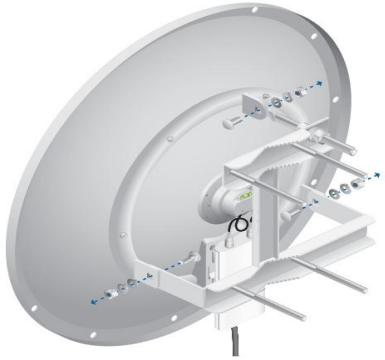

LHG 5 (RBLHG-5nD)
Eth1
10/100M
Amplifier
Chain0
Chain1
RAM
64MB
100Mb/s
FLASH
16MB
LEDs
CPU
600MHz
5GHz 802.11a/n
WLAN
AR9344 SoC

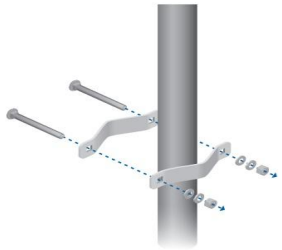
BASEBOX 5 RB

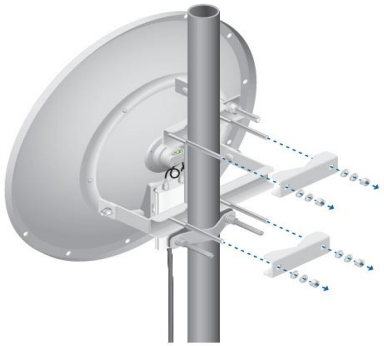


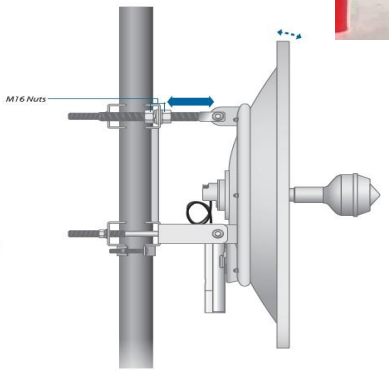
5Ghz Wireless Card
3G Dongle Slot
Beep Alert
Gigabit ETHER SOCKET
CPU
Mini PCI Slot
Power Input

Mounting the Basebox 5

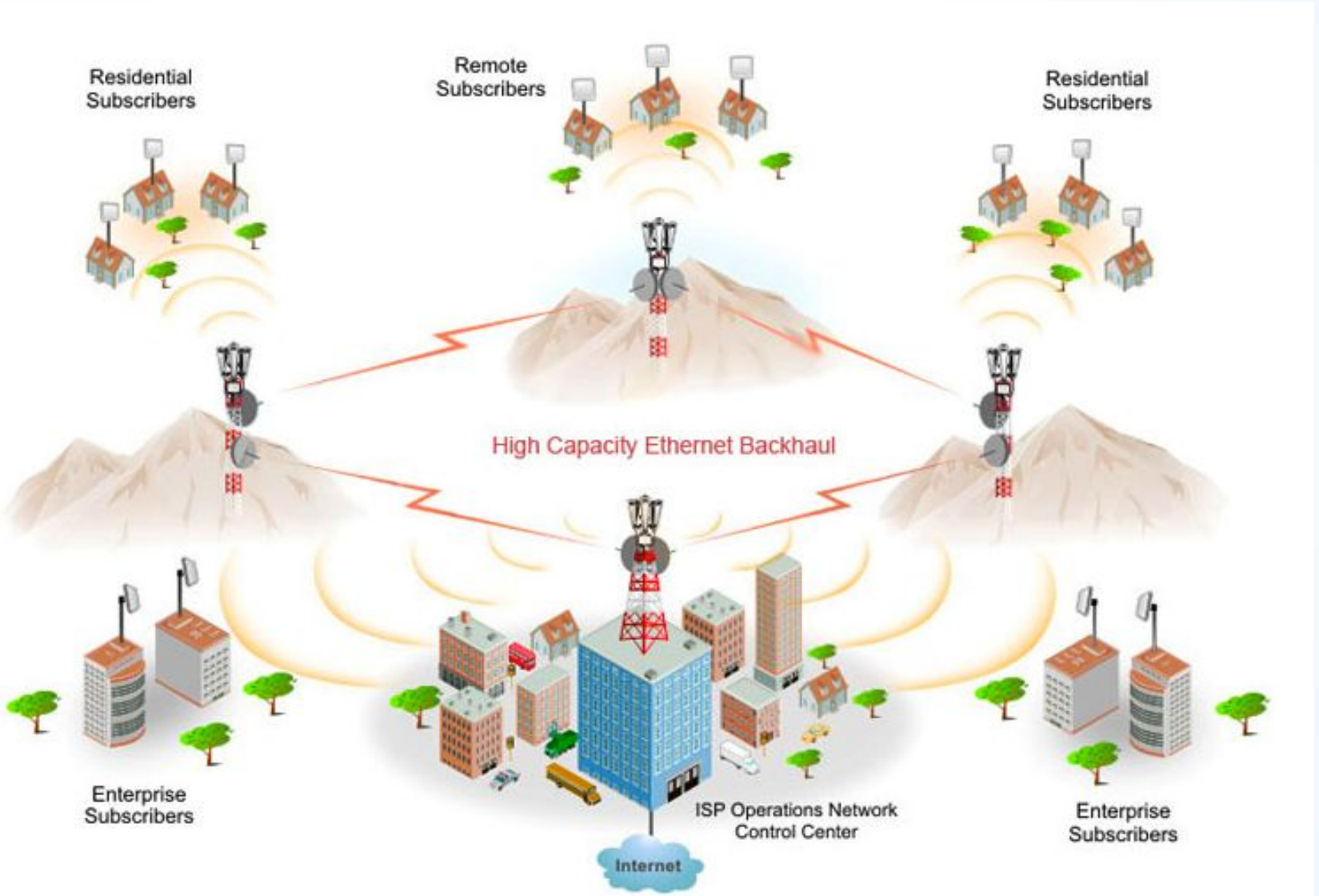




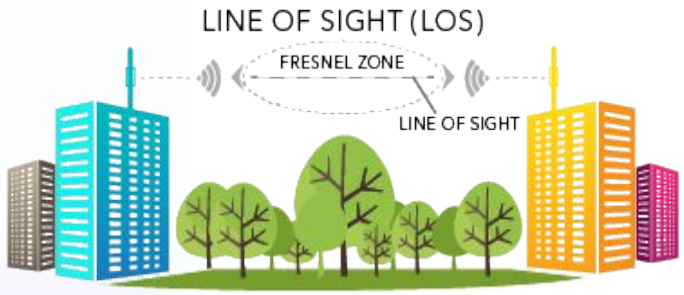




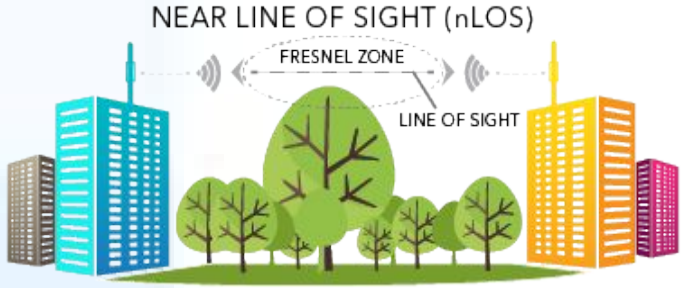
Connecting to a High Site



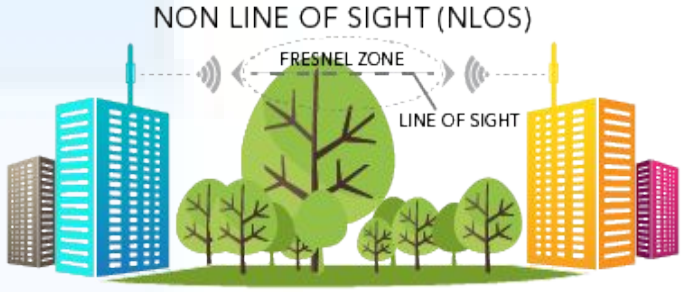
LINE OF SIGHT



LOS – Clear line of sight
Clear line of sight must be established to ensure that the customer has fast and stable internet speed.



nLOS - Near line of sight
The near Line of Sight is when the transmission line can reach the provider's high site, but there are obstructions present in the Fresnel zone. These obstructions will cause the internet to be slow and unstable.



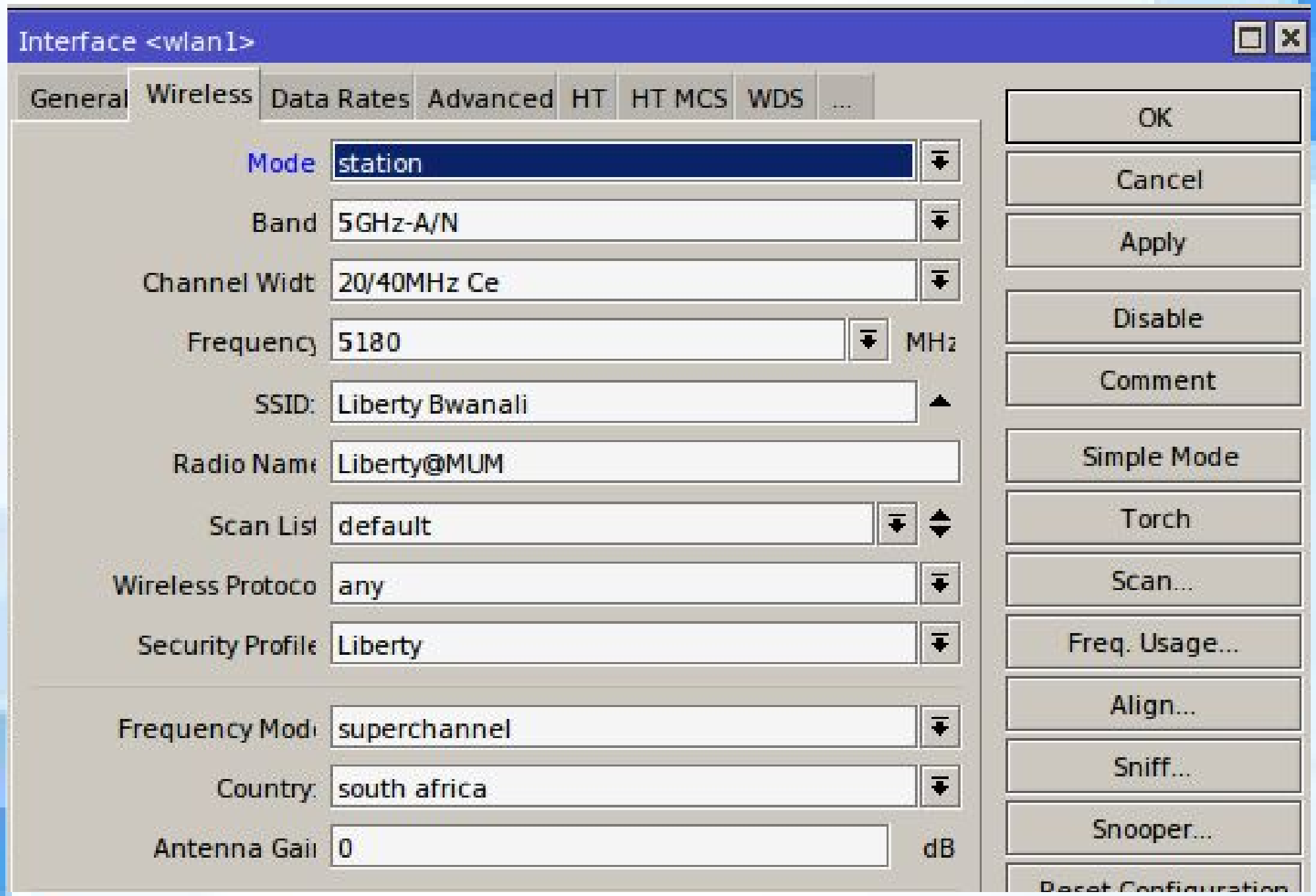
NLOS - Non-line of sight
There is No Line Of Sight because of too many obstructions in the Fresnel zone causing weak to no signal for an internet connection.

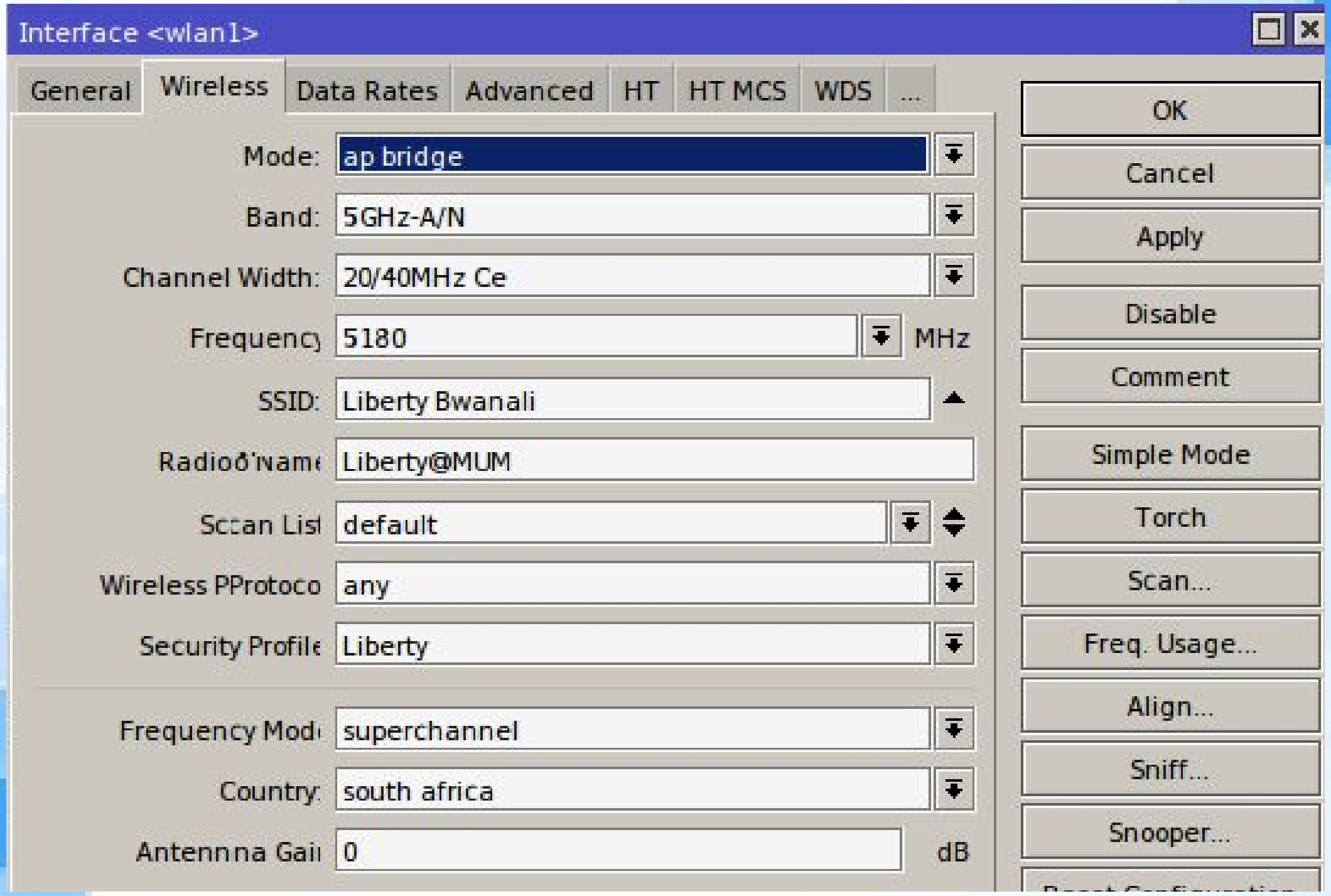
SETUP OF LHG 5

MODE = STATION

In this Section we will setup our LHG 5 as Station to be able to connect to the BASEBOX which will be in AP Mode.

Setup Done Via WINBOX


Interface <wlan1>
General
Wireless
Data Rates
Advanced
HT
HT MCS
WDS
...
Mode
station
Band
5GHz-A/N
Channel Widt
20/40MHz Ce
Frequency
5180
MHz
SSID:
Liberty Bwanali
Radio Name
Liberty@MUM
Scan List
default
Wireless Protoco
any
Security Profile
Liberty
Frequency Mode
superchannel
Country:
south africa
Antenna Gain
0
dB
OK
Cancel
Apply
Disable
Comment
Simple Mode
Torch
Scan...
Freq. Usage...
Align...
Sniff...
Snooper...


Interface <wlan1>
General
Wireless
Data Rates
Advanced
HT
HT MCS
WDS
...
Mode:
ap bridge
Band:
5GHz-A/N
Channel Width:
20/40MHz Ce
Frequency:
5180
MHz
SSID:
Liberty Bwanali
Radio Name:
Liberty@MUM
Scan List:
default
Wireless Protocol:
any
Security Profile:
Liberty
Frequency Mode:
superchannel
Country:
south africa
Antenna Gain:
0
dB
OK
Cancel
Apply
Disable
Comment
Simple Mode
Torch
Scan...
Freq. Usage...
Align...
Sniff...
Snooper...

SETUP OF BASEBOX 5

MODE = AP BRIDGE (Access Point Bridge)

In this Section we will setup our BASEBOX 5 as AP to be able to accept connection from LHG 5 which is in STATION Mode.

Setup Done Via WINBOX

SETUP OF HAP MINI

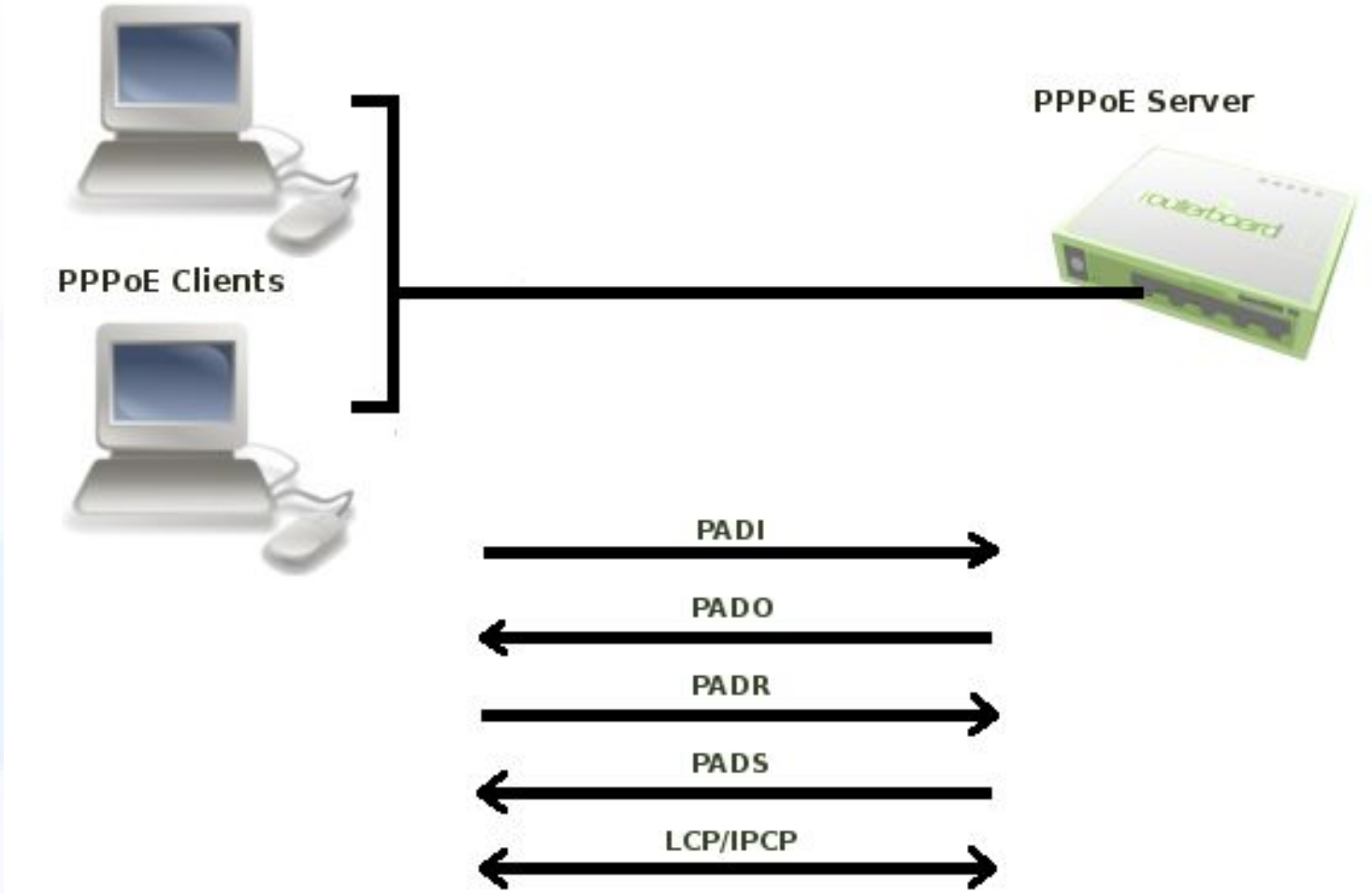
MODE = AP (Access Point)

DHCP = Dynamic Host Configuration Protocol

In this Section we will setup our HaP Mini as AP to be able to accept connection from Various Devices in 2.4ghz Frequency

Setup Done Via WINBOX

PPPoE CLIENT



Used Packet Types

Packet	Description
PADI	**PPPoE Active Discovery Initialization** The PPPoE client sends out a PADI packet to the broadcast address. This packet can also populate the "service-name" field if a service name has been entered in the dial-up networking properties of the PPPoE client. If a service name has not been entered, this field is not populated
PADO	**PPPoE Active Discovery Offer** The PPPoE server, or Access Concentrator, should respond to the PADI with a PADO if the Access Concentrator is able to service the "service-name" field that had been listed in the PADI packet. If no "service-name" field had been listed, the Access Concentrator will respond with a PADO packet that has the "service-name" field populated with the service names that the Access Concentrator can service. The PADO packet is sent to the unicast address of the PPPoE client
PADR	**PPPoE Active Discovery Request** When a PADO packet is received, the PPPoE client responds with a PADR packet. This packet is sent to the unicast address of the Access Concentrator. The client may receive multiple PADO packets, but the client responds to the first valid PADO that the client received. If the initial PADI packet had a blank "service-name" field filed, the client populates the "service-name" field of the PADR packet with the first service name that had been returned in the PADO packet.
PADS	**PPPoE Active Discovery Session confirmation** When the PADR is received, the Access Concentrator generates a unique session identification (ID) for the Point-to-Point Protocol (PPP) session and returns this ID to the PPPoE client in the PADS packet. This packet is sent to the unicast address of the client.
PADT	**PPPoE Active Discovery Terminate** can be sent anytime after a session is established to indicate that a PPPoE session terminated. It can be sent by either server or client.

PPP:

In PPP you can pass credentials for authentication using

- **PAP - Password authentication protocol**
- **CHAP - challenge handshake authentication protocol**

- On the interface, issue the encapsulation **ppp** command. Enable the use of **CHAP** authentication on both routers with the **ppp** authentication **chap** command. Configure the usernames and passwords

admin@64:D1:54:7C:DB:50 (Liberty@MUM) - WinBox v6.39.2 on LHG XL HP5 (mipsbe)

hboard

Session: 64:D1:54:7C:DB:50

Interface <pppoe-out1>

General | Dial Out | Status | Traffic

Service:

AC Name:

User: exampe@isp.co.za

Password: *********

Profile: default

Keepalive Timeou: 10

☐ Dial On Demand

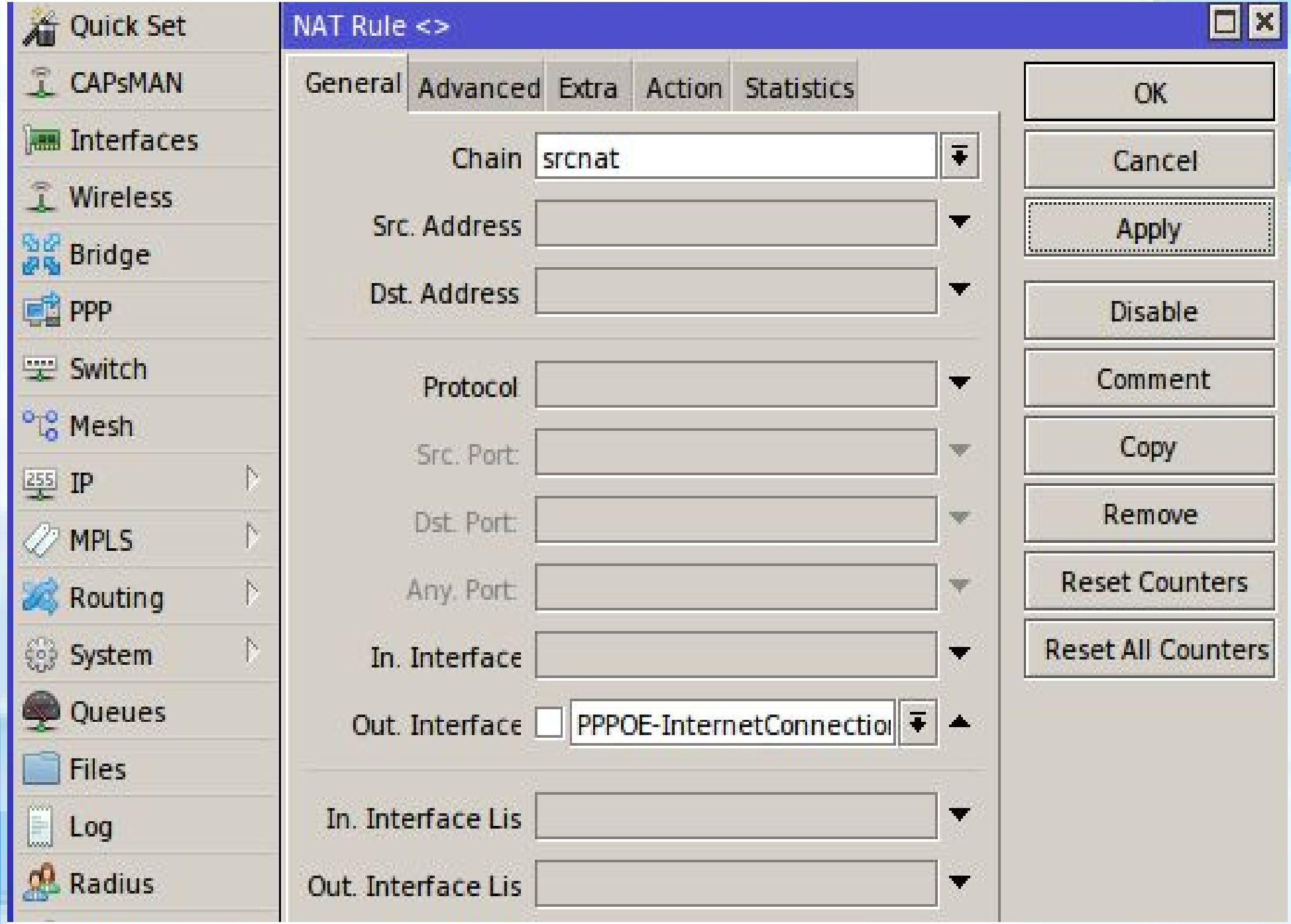
☑ Use Peer DNS

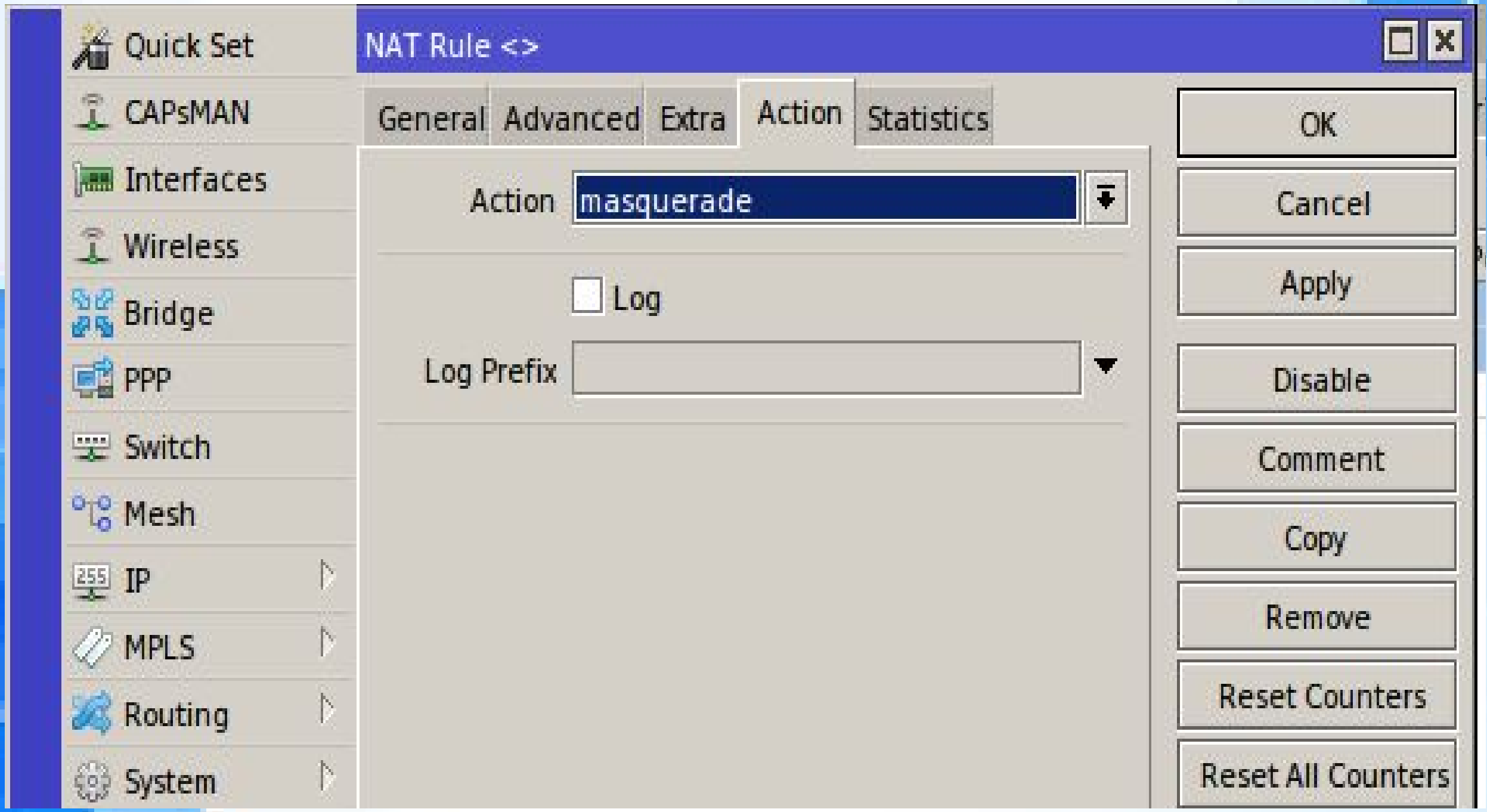
☑ Add Default Route

Default Route Distanc: 0

Allow: ☑ mschap2 ☑ mschap1

☑ chap ☑ pap


Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
Radius
NAT Rule <>
General
Advanced
Extra
Action
Statistics
Chain
srcnat
Src. Address
Dst. Address
Protocol
Src. Port:
Dst. Port:
Any. Port:
In. Interface
Out. Interface
PPPOE-InternetConnectio
In. Interface Lis
Out. Interface Lis
OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters


Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
NAT Rule <>
General
Advanced
Extra
Action
Statistics
Action
masquerade
Log
Log Prefix
OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters

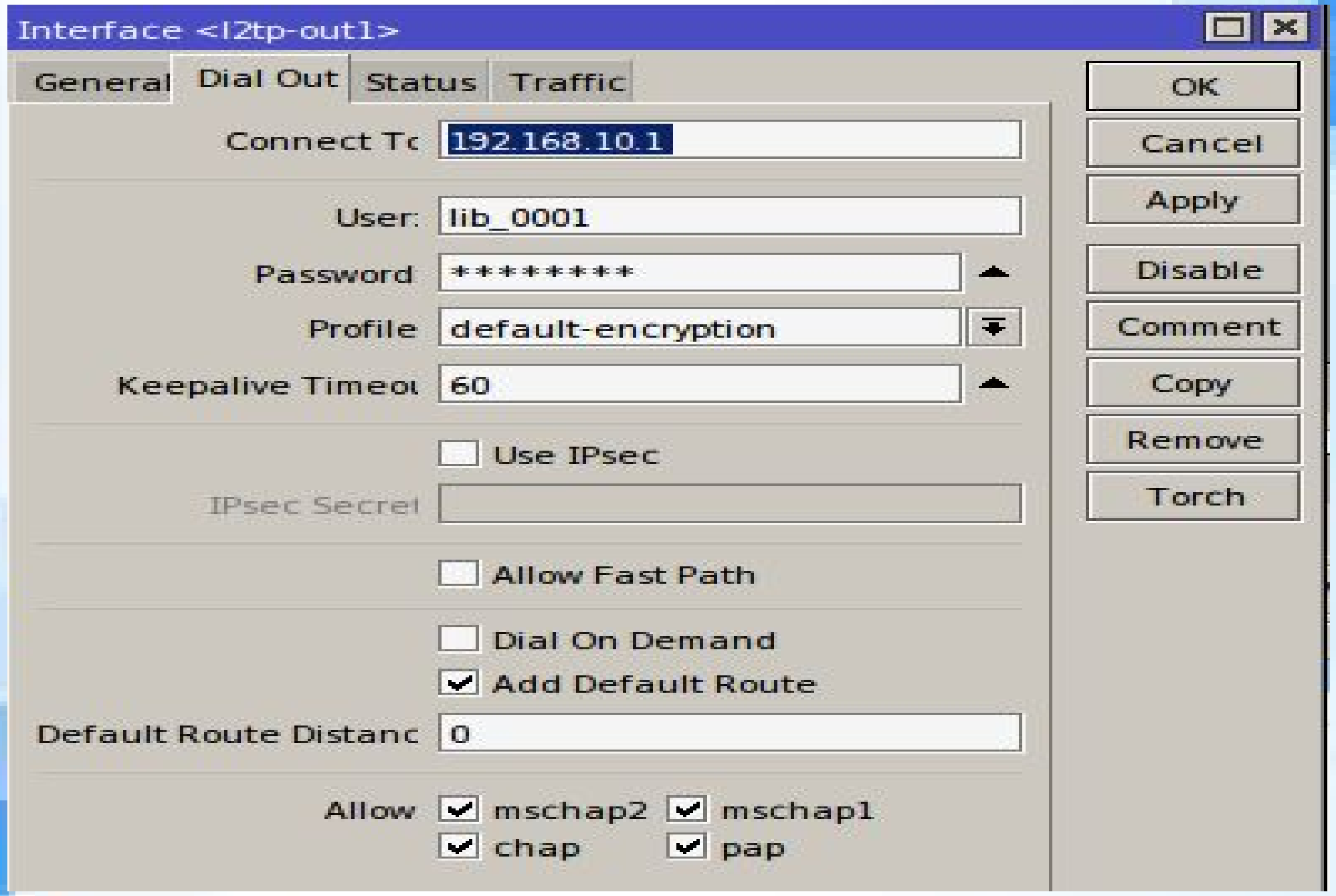
L2TP

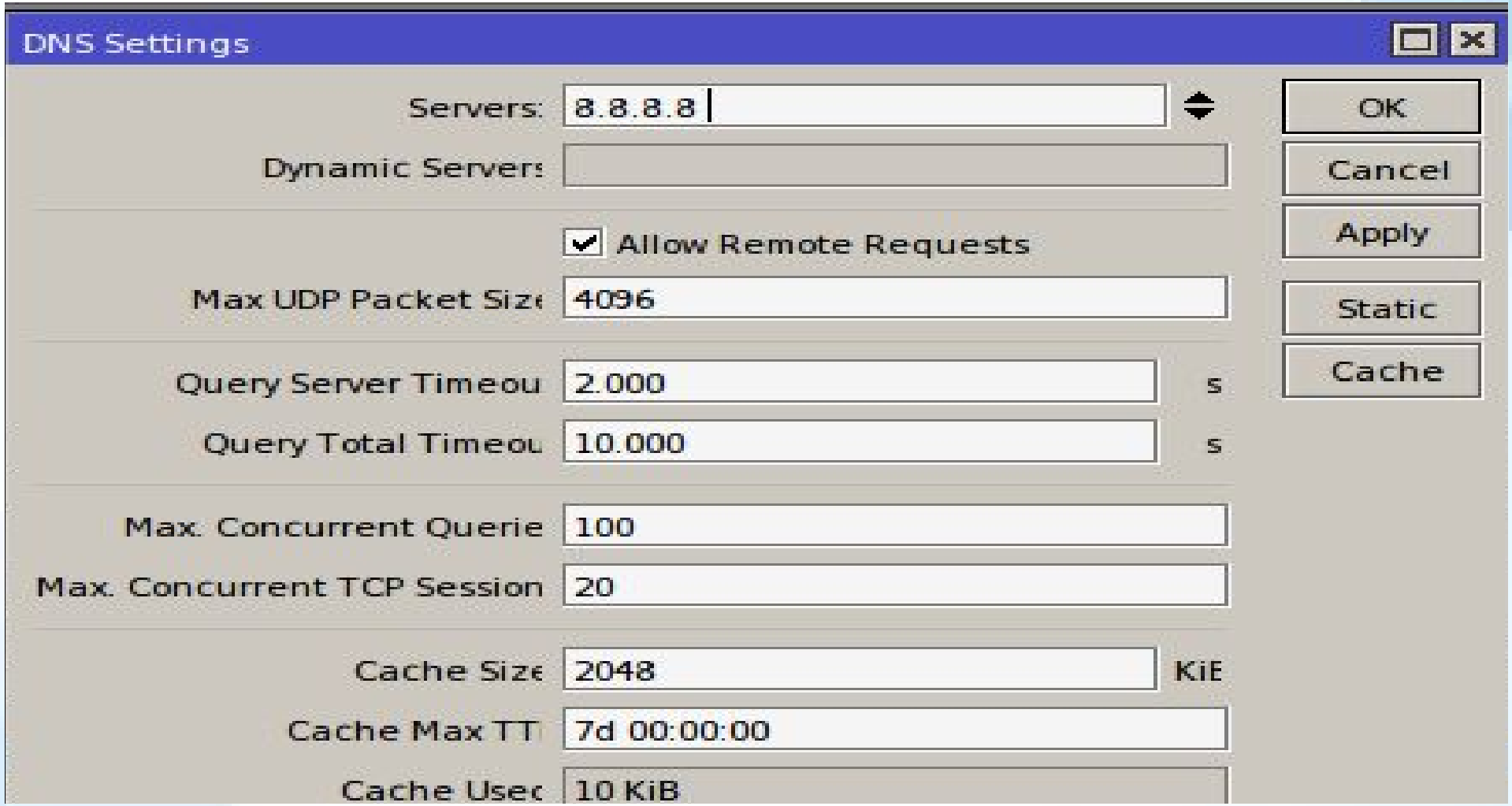
- Layer 2 Tunneling Protocol

Consists of 3 parts:

- USER
- LAC - L2TP Access Concentrator
- LNS - L2TP Network Server

User establish a PPP call which pass through the LAC to LNS for access to the PRIVATE NETWORK


Interface <l2tp-out1>
General
Dial Out
Status
Traffic
OK
Cancel
Apply
Disable
Comment
Copy
Remove
Torch
Connect To
192.168.10.1
User:
lib_0001
Password
****
Profile
default-encryption
Keepalive Timeout
60
Use IPsec
IPsec Secret
Allow Fast Path
Dial On Demand
Add Default Route
Default Route Distance
0
Allow
mschap2
mschap1
chap
pap



For L2TP session to be able to function correctly we will need to add:

Default Route and Gateway
Setup Static DNS
Firewall = src - output = L2TP - Action = Masquerade

Question & Answers

MUM - PRESENTATION

Assembling ODU and IDU
+ Quick Config

BY

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