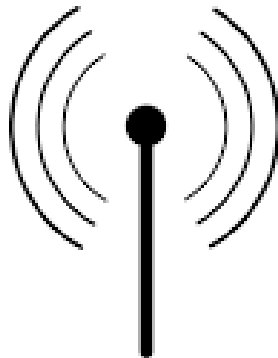


# MikroTik



**WIRELESS** SINGLE **SSID**



**Tokunbo Omolokun**

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# *Who am I*



- ***Tokunbo Omolokun***
- ***MikroTik Certified Consultant***
- ***MikroTik Certified Trainer***
- ***Using MikroTik RouterOS since 2006***
- ***Working in network architecture and deployment since 2002***



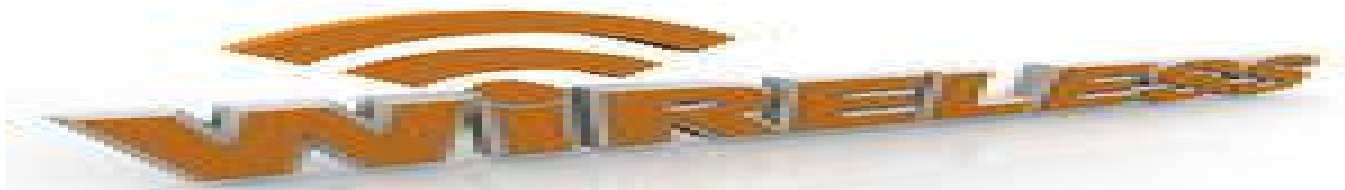
# Objective



- To have understanding of *using single ssid with Multiple Base Stations for user access in a wifi environment.*

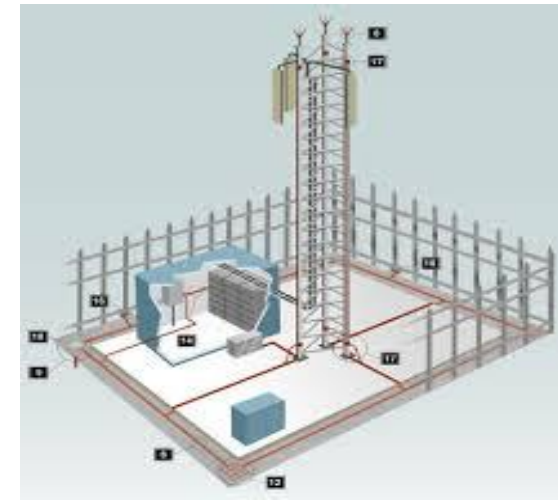
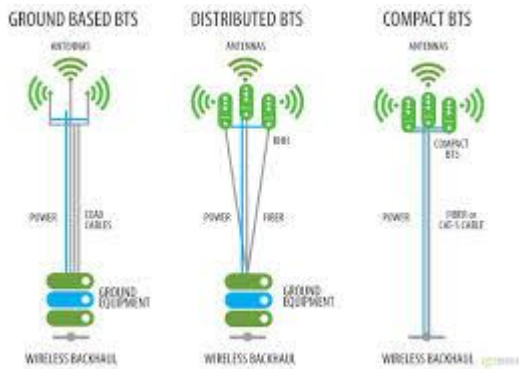


# Definition of **Terms**



- *SSID*

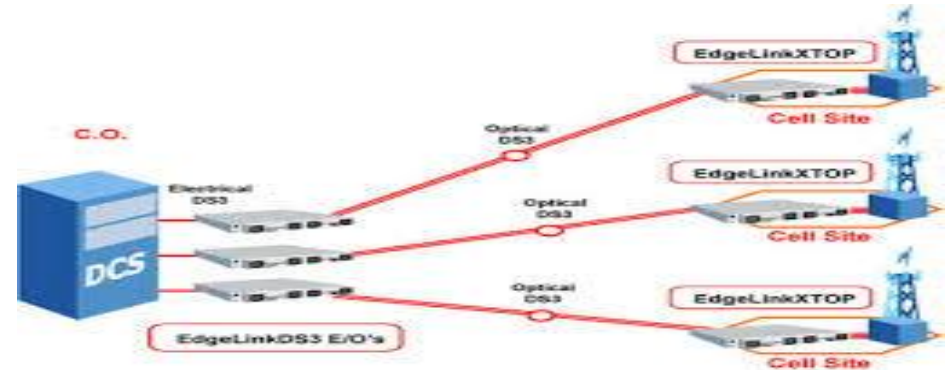
**SSID** stands for **S**ervice **S**et **I**dentifier, which is a 32-character sequence that uniquely identifies a **wireless** LAN (WLAN). In other words, the **SSID** is the name of the **wireless** network.



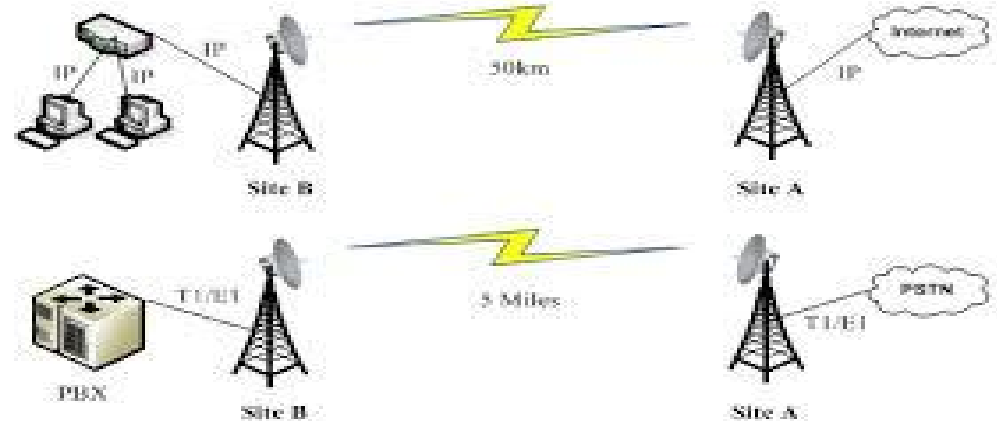
# *Base Station*

Base Station is a short-range transceiver which connects a cordless phone, computer, or other wireless device to a central hub and allows connection to a network.

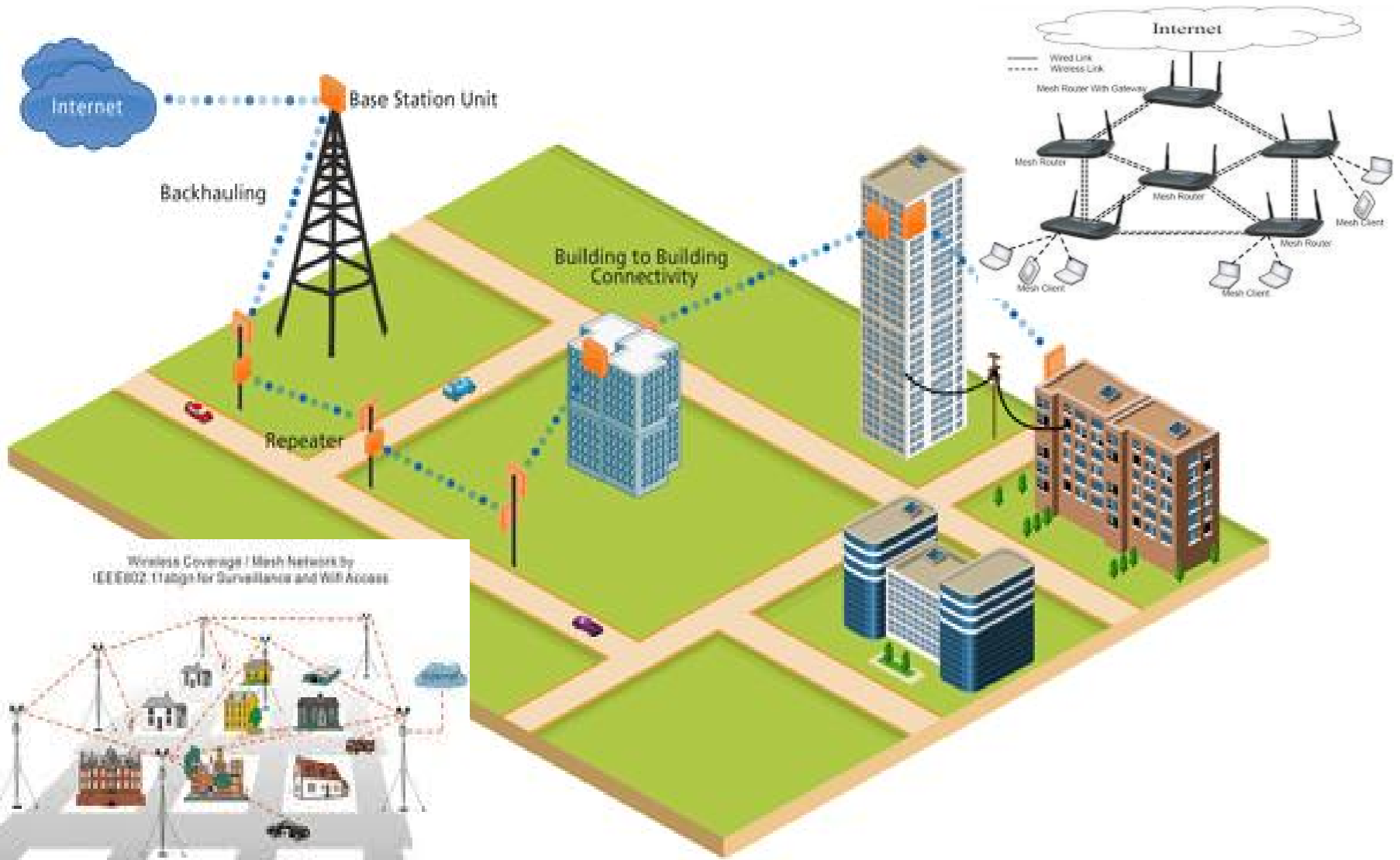
# Backhaul



backhauling is sending network data over an out-of-the-way route (including taking it farther than its destination) in order to get the data there sooner or because it costs less.

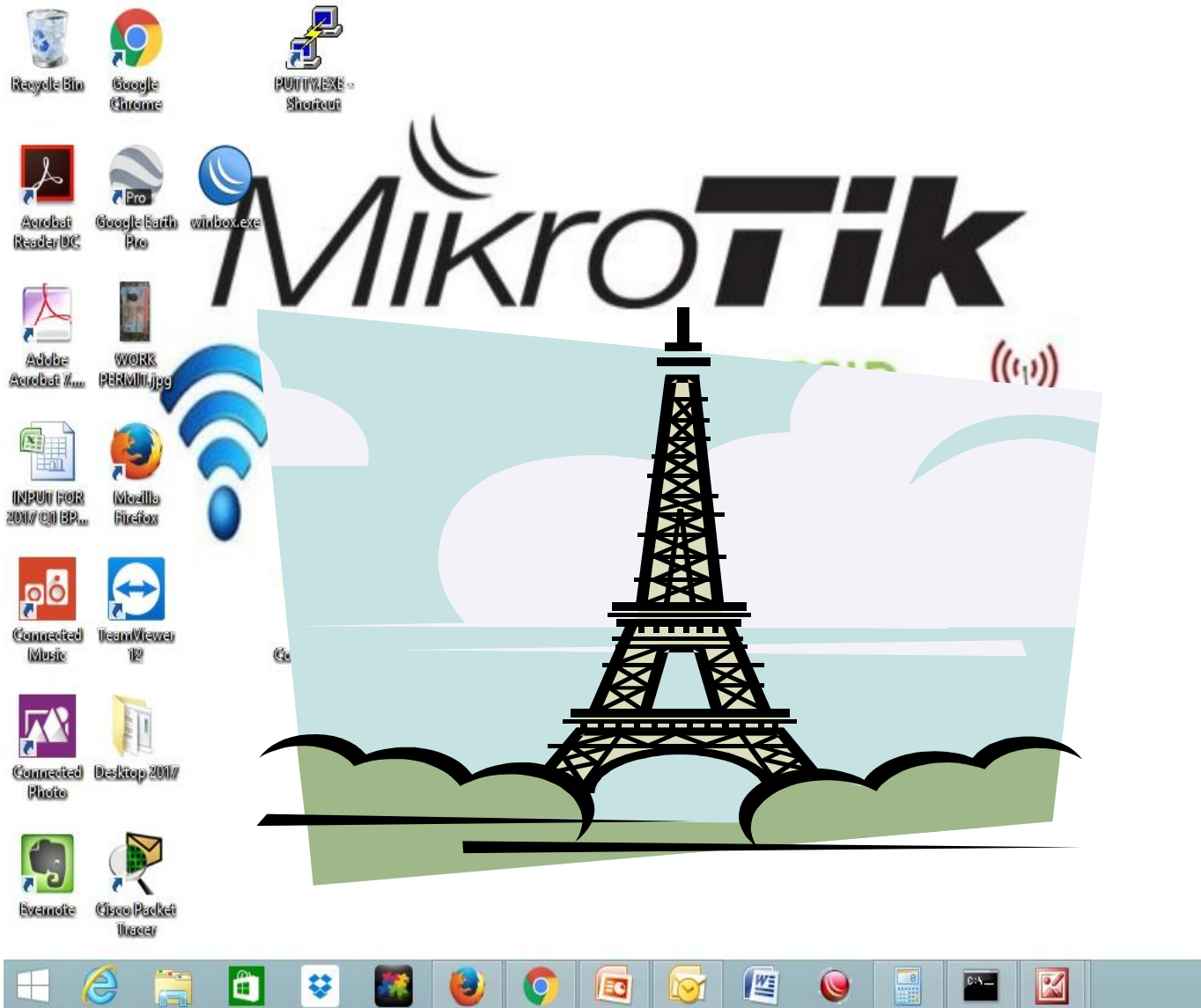


# Multiple **BS** with Multiple **SSIDs**





# Multiple **BS** with Multiple **SSIDs**



## Networks

View Connection Settings

Flight mode

Off

WiFi

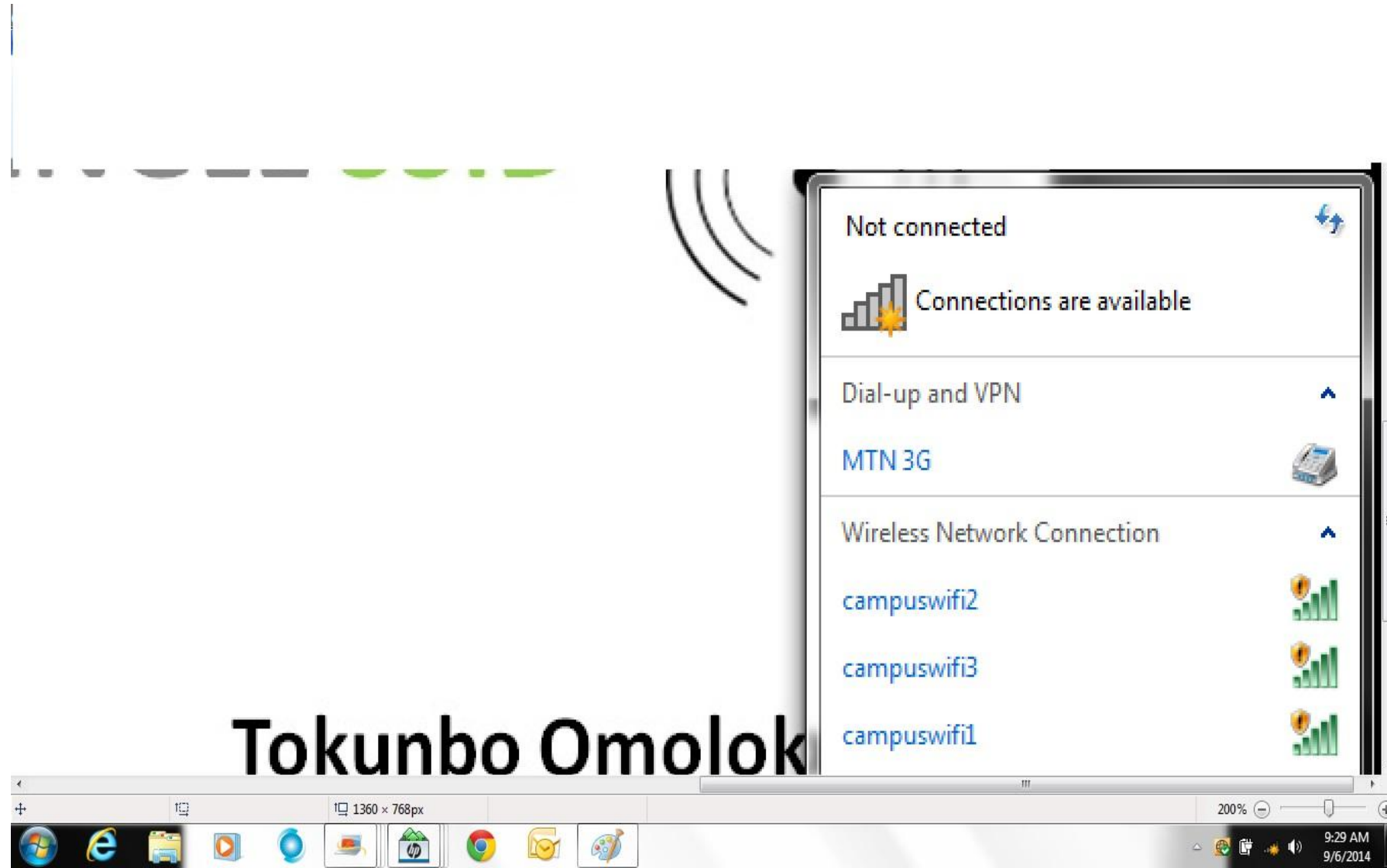
On

globalconnection1

globalconnection2

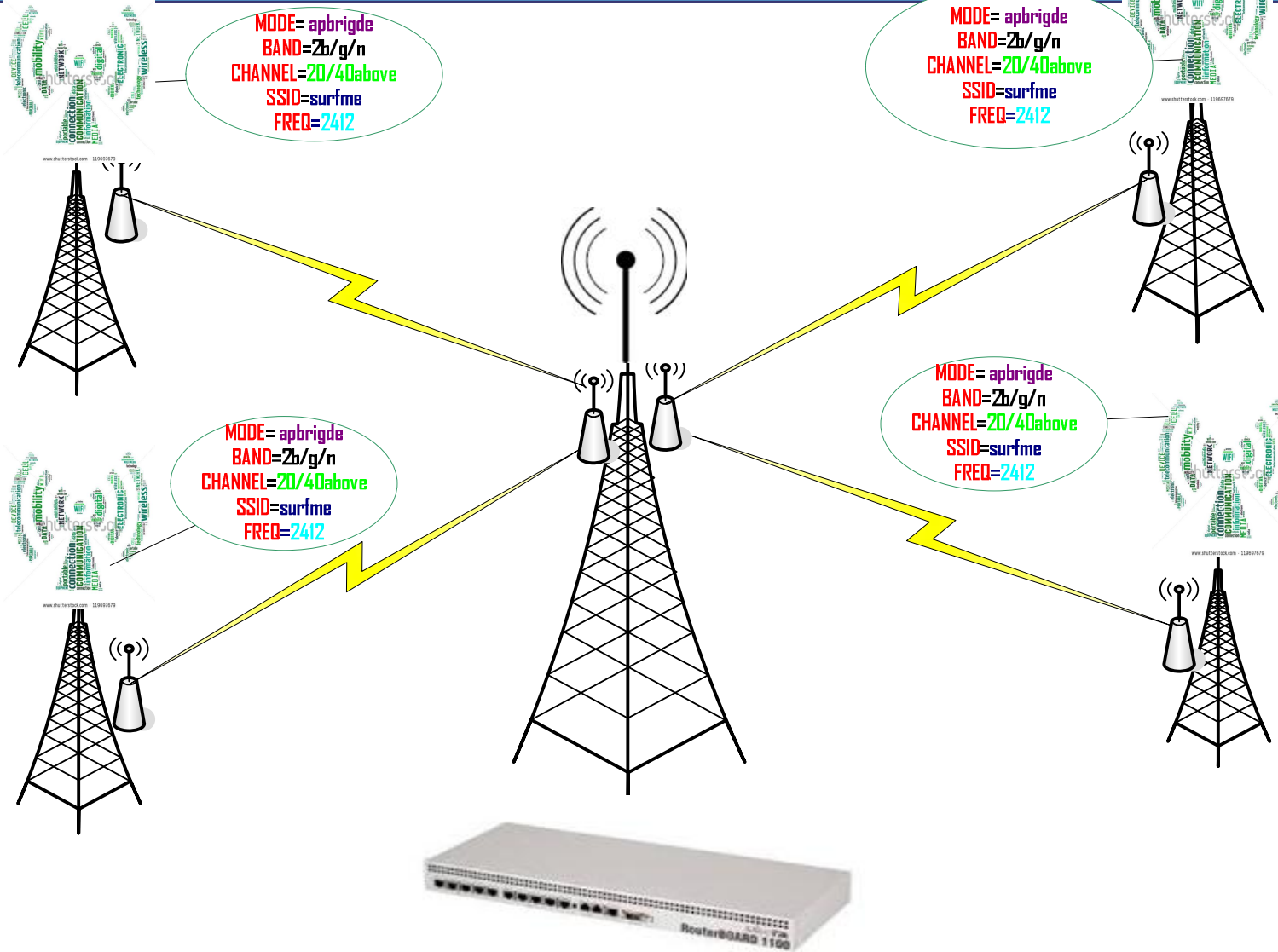
globalconnection3

# Multiple **B S** with Multiple **SSIDs**



*Multiple **B S** with Single **SSID***

# MULTIPLE BASE STATIONS SINGLE SSID



Central DHCP Server / Router

# Multiple **B S** with Single **SSID**

The desktop background features the Mikrotik logo in a large, stylized font. Below the logo, the text "WIRELESS SINGLE SSID" is displayed in red, grey, and green. To the right of the text is a 3D white figure holding a laptop with signal waves emanating from it. Below the figure is a black antenna icon with signal waves. At the bottom right, the name "Tokunbo Omolokun" is written in bold, followed by the email address [tokunbo@globalconnection.com.ng](mailto:tokunbo@globalconnection.com.ng) and the website [www.globalconnection.com.ng](http://www.globalconnection.com.ng). The desktop is populated with various application icons including Recycle Bin, Google Chrome, Winbox.exe, Acrobat Reader DC, Google Earth Pro, Adobe Acrobat, WORK PERMIT.jpg, INPUT FOR 2017 @ BP..., Mozilla Firefox, Connected Music, TeamViewer 12, Cisco Configurat..., Connected Photo, Desktop 2017, Evernote, and Cisco Packet Tracer. The Windows taskbar at the bottom shows icons for Start, Internet Explorer, File Explorer, Microsoft Word, OneDrive, Google Chrome, Microsoft Edge, Mail, Photos, Calendar, and System Tray.

The network settings panel is displayed on a dark blue background. It shows the "Networks" section with the following options:

- View Connection Settings
- Flight mode: Off (toggle switch)
- WiFi: On (toggle switch)
- Selected network: globalconnection

# Why Single SSID



## 1. Throughput

*One important reason is higher throughput Unlike a wds system where you tend to loss bandwidth when roaming across links .*

## 2. One B S association

*You only need to associate with one base station across your network.*

## 3. Stable connectivity

*Another reason of single ssid is connectivity consistency.*

# Golden Rules

1. Same ssid
2. Same channels
3. Same frequency
4. One Central DHCP server
5. Same Mode
6. Same security profile



# DISADVANTAGES

## 1. Noise

*There will be a bit of noise introduction across the wireless base stations.*

## 2. Interfarence

*This will be occasionally arise, but from my experience ; it has no serious effect on the seamless connectivity.*

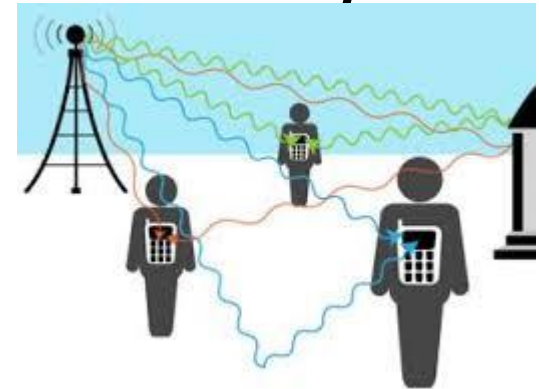
# *LAB WORK*

## **BACKGROUND**

- In this lab, I will walk you through the configuration of multiple Base stations with single SSID, I will position my antennas as different B S and you will use your laptops, phones, ipads etc to establish connectivity to me.
- We shall then start switching off one base station after the other to determine if our link will remain stable and with good throughput while moving across A Ps.

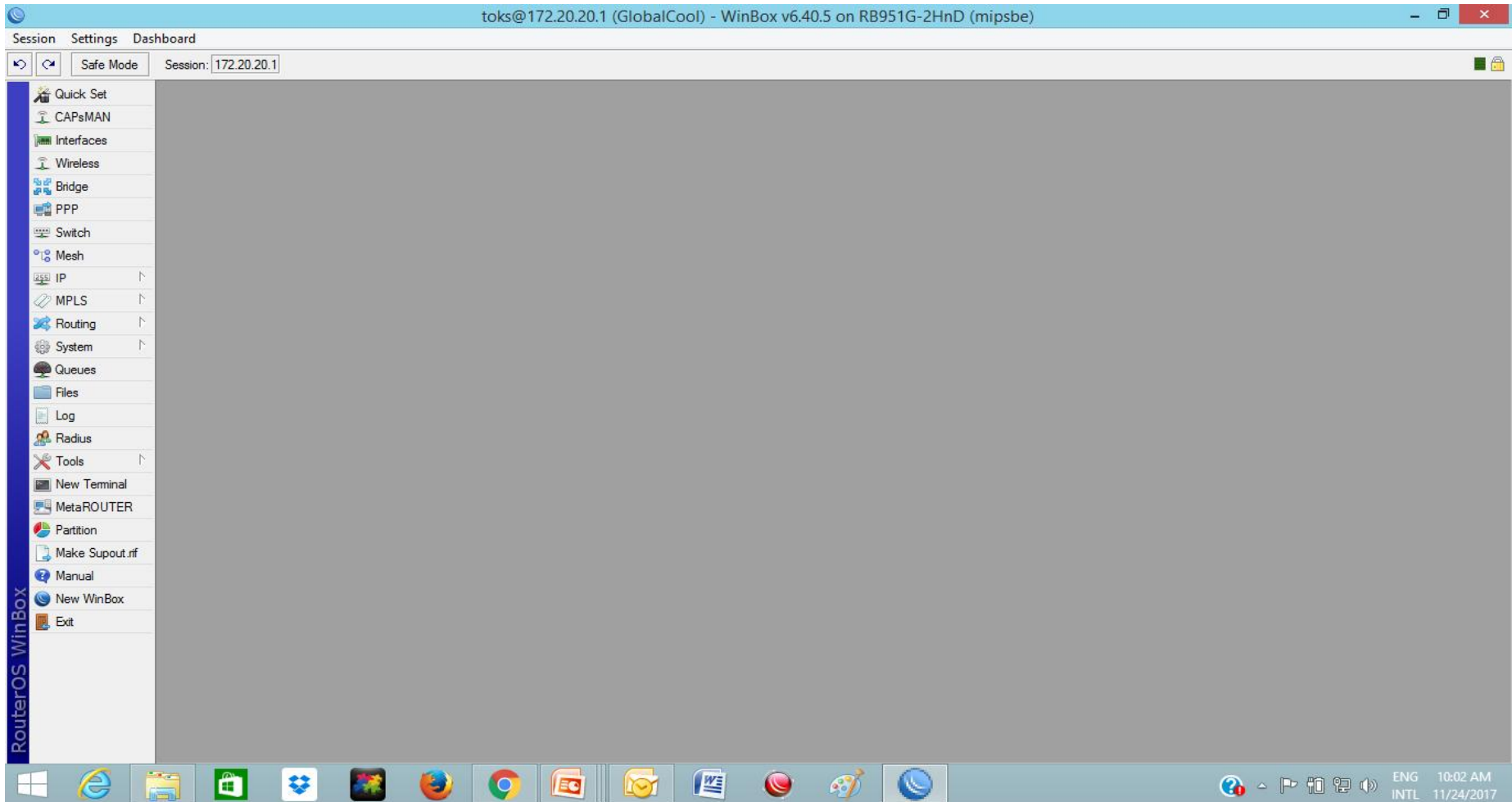
# OBJECTIVE

- The objective of this LAB is to configure Multiple **Base Station** and single ssid to determine throughput and link stability.



# Configure All Base stations with same parameters

mode, band, channel, profile, frequency and ssid



Session Settings Dashboard

Safe Mode Session: 172.20.20.1

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- MetaROUTER
- Partition
- Make Supout.rtf
- Manual
- New WinBox
- Exit

Wireless Tables

Wireless Tables													
Interfaces													
Nstreme Dual Access List Registration Connect List Security Profiles Channels													
CAP WPS Client Setup Repeater Scanner Freq. Usage Alignment Wireless Sniffer Wireless Snooper													
Find													
Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)	FP Tx Packet (p/s)	FP Rx Packet (p/s)	
wlan1	Wireless (Atheros AR9...	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	0	0	64

1 item out of 8

RouterOS WinBox

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- MetaROUTER
- Partition
- Make Supout.tif
- Manual
- New WinBox
- Exit

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List

+ - [check] [x] [lock] [filter] CAP WPS Client Se

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros AR9...	1500	

1 item out of 8 (1 selected)

Interface <wlan1>

General Wireless HT HT MCS WDS Nstreme Status Traffic

Mode: ap bridge

Band: 2GHz-B/G/N

Channel Width: 20/40MHz Ce

Frequency: 2412 MHz

SSID: globalconnection

Scan List: default

Wireless Protocol: 802.11

Security Profile: mum

WPS Mode: push button

Bridge Mode: enabled

VLAN Mode: no tag

VLAN ID: 1

Default AP Tx Rate: bps

Default Client Tx Rate: bps

Default Authenticate

Default Forward

Hide SSID

OK Cancel Apply Disable Comment Advanced Mode Torch WPS Accept WPS Client Setup Repeater Scan... Freq. Usage... Align... Sniff... Snooper... Reset Configuration

enabled running slave running ap

Find

FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
0 bps	0	0

# Create same security profile for all Access points

The screenshot shows the Mikrotik WinBox interface for a RouterOS system. The main window displays the 'Security Profiles' configuration page. A modal window titled 'Security Profile <mum>' is open, showing the configuration for a profile named 'mum'. The 'General' tab is selected, and the 'Mode' is set to 'dynamic keys'. The 'Authentication Types' section has 'WPA2 PSK' checked. The 'Unicast Ciphers' and 'Group Ciphers' sections both have 'aes ccm' and 'tkip' checked. The 'WPA2 Pre-Shared Key' is set to 'coolclass'. The 'Management Protection' is set to 'allowed'. The 'Management Protection Key' field is empty.

Wireless Tables

Name	Mode	Authenticatio...	Unicast Ciphers	Group Ciphers
default	none			
mum	dynamic keys	WPA2 PSK	aes ccm tkip	aes ccm tkip

2 items

Security Profile <mum>

General | RADIUS | EAP | Static Keys

Name: mum

Mode: dynamic keys

Authentication Types:  WPA PSK  WPA2 PSK  
 WPA EAP  WPA2 EAP

Unicast Ciphers:  aes ccm  tkip

Group Ciphers:  aes ccm  tkip

WPA Pre-Shared Key:

WPA2 Pre-Shared Key: coolclass

Supplicant Identity:

Group Key Update: 00:05:00

Management Protection: allowed

Management Protection Key:

OK Cancel Apply Comment Copy Remove

# Input the security into the security profile under wireless interface

The screenshot displays the Mikrotik WinBox interface for configuring a wireless interface. The main window is titled "Interface <wlan1>" and shows the "Wireless" tab. The configuration includes:

- Mode: ap bridge
- Band: 2GHz-B/G/N
- Channel Width: 20/40MHz Ce
- Frequency: 2412 MHz
- SSID: globalconnection
- Scan List: default
- Wireless Protocol: 802.11
- Security Profile: mum
- WPS Mode: mum
- Bridge Mode: enabled
- VLAN Mode: no tag
- VLAN ID: 1
- Default AP Tx Rate: bps
- Default Client Tx Rate: bps
- Default Authenticate:
- Default Forward:
- Hide SSID:

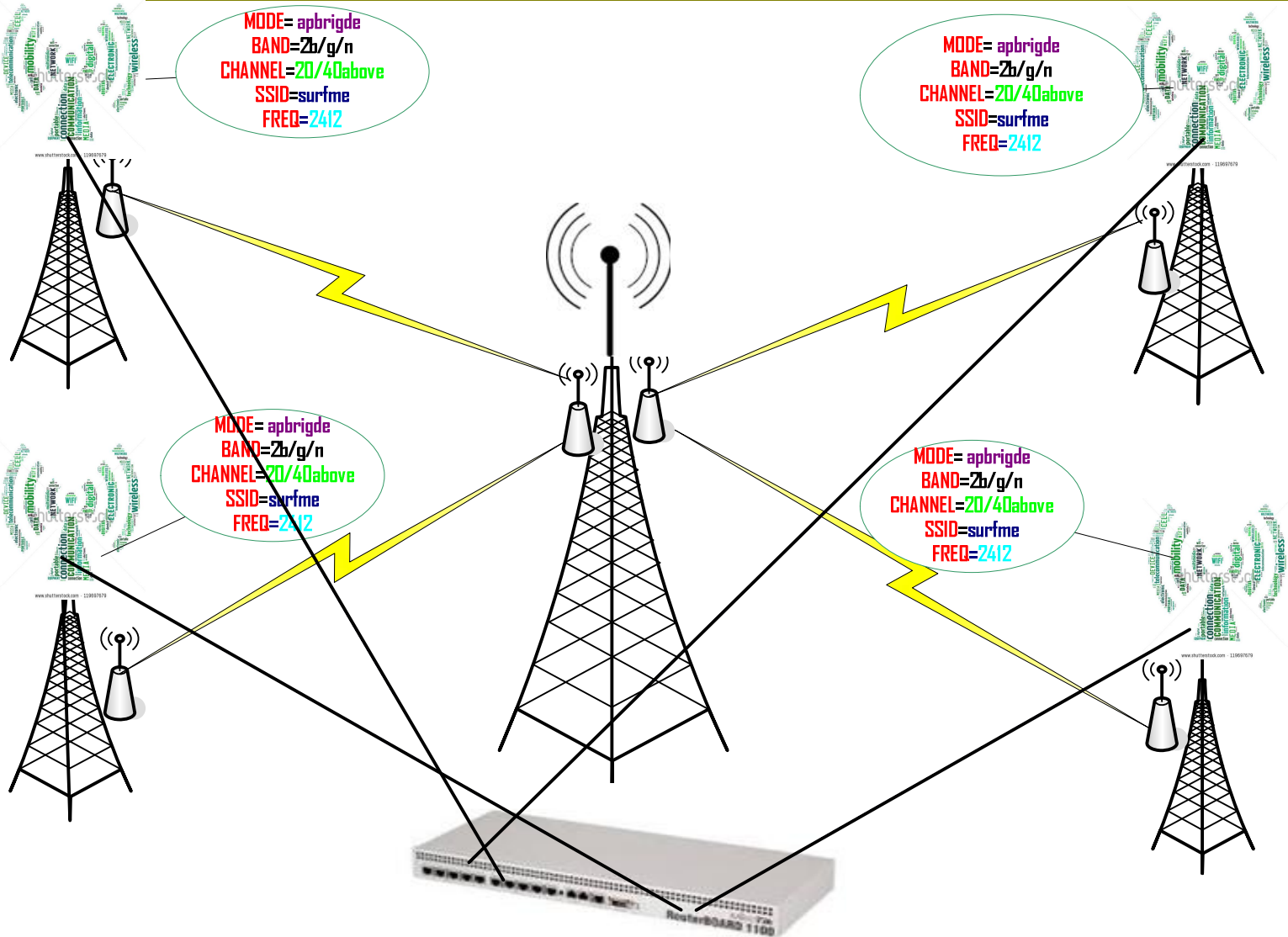
The "Wireless Tables" section shows a table with one entry:

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros AR9...	1500	

The interface status is shown as "running ap". The bottom of the window shows the Windows taskbar with the time 10:21 AM and date 11/24/2017.



# ALL BASE STATIONS CONNECTED TO ONE DHCP SERVER



Central DHCP Server / Router

Connect all **base stations** to central **DHCP server**

- In this design, **Base stations** are connected to DHCP via direct cable link or wireless backhaul link.
- The wireless interface of all base stations are bridged to the ethernet port that is used to interconnect to central **DHCP server**



*ANY QUESTIONS ?*



***THANK YOU***