



Wireless Network Monitoring and Planning for Improving Indoor Multi-Storey Building

By: Shoa-Yei Yeong

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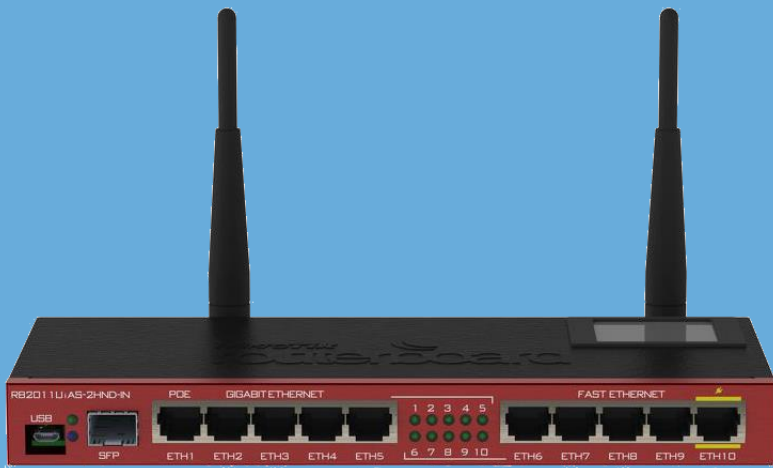


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AGENDA

- Introduction: About Me
- Case Study
- Objective
- Network Monitoring
- Network Planning
- Implementation
- Q & A

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INTRODUCTION: ABOUT ME

Shoa-Yei Yeong:

- MSc in Comp. Networks
- System and Network Engineer
- Freelance Works

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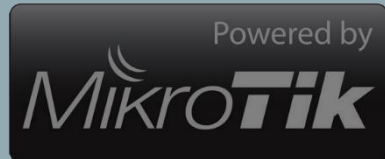
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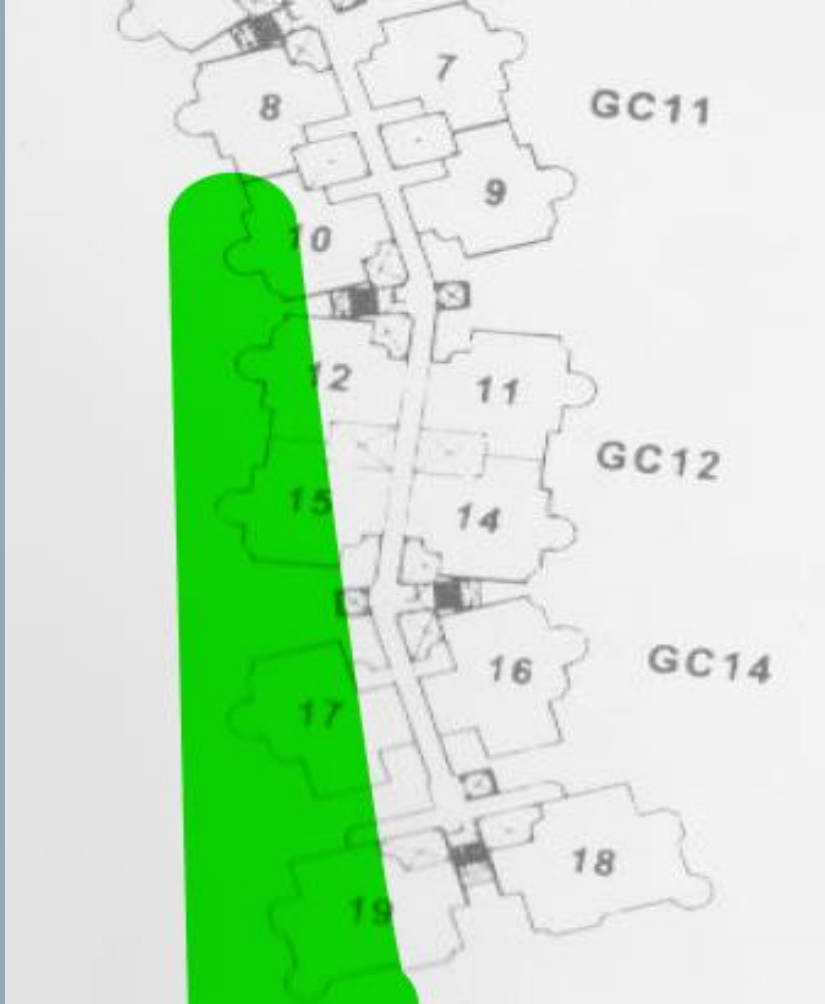
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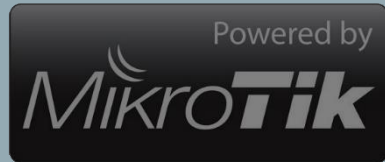


CASE STUDY: MULTI-STOREY BUILDING



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OBJECTIVE



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- To provide low cost, single WiFi Internet connection from 6th floor to 1st floor, with the distance of ~50m

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CHALLENGES: #1

- Coverage
- SNR (Signal-to-Noise Ratio)
- Data Rate
- Obstructions

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NETWORK MONITORING

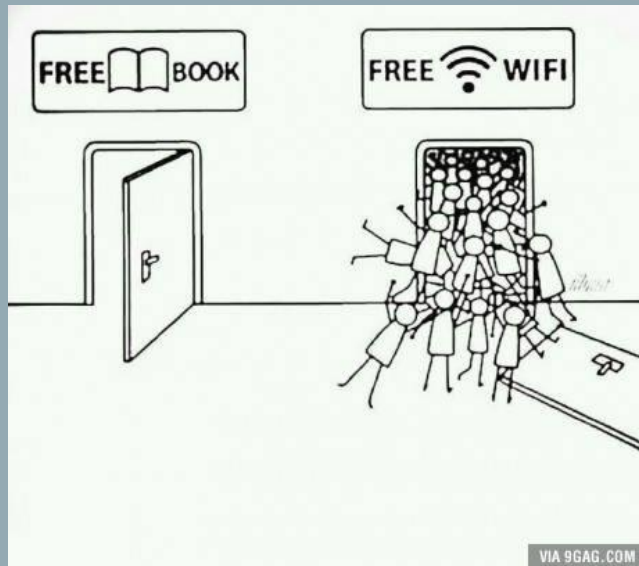


- Site Survey

- I. Active Survey

- II. Passive Survey

- 'User Survey'



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CHALLENGES: #2

- Most residents are not meant to be the WiFi router administrators.
- Interference
 1. Co-Channel (more severe)
 2. Overlapping Channel

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NETWORK PLANNING

QUICK QUESTION

From channel 1 to 13 (2.4GHz WiFi),
which channel is mostly used?

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Channel 1

Frequency	auto	MHz
Band	2412	
Channel Width	2417	
Country	2422	
MAC Address	2427	
Use Access List (ACL)	2432	

2437

2442

2447

2452

auto

In this case study, don't use
2412 MHz (ch1)

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admin@192.168.88.1 (MikroTik) - WinBox v6.33.5 on RB2011UiAS-2HnD (mipsbe)

Sessions Settings Dashboard

Safe Mode Session: 192.168.88.1

- Quick Set
- CAPsMAN
- Interfaces
- Wireless**
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- LCD
- MetaROUTER

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Security Profiles Channels

Find all

#	List	Name	Frequency...	Width ...	Band	Extension Channel
0	2.4ghz	ch10	2457.000	20.000	2GHz-B/G...	eC

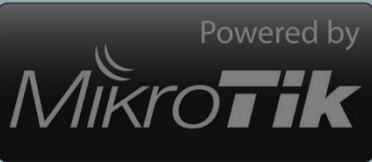
1 item

From Winbox,
Select Wireless -> + button



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Sessions Settings Dashboard

Safe Mode Session

- Quick Set
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New Wireless Channel

List: 2.4ghz

Name: ch11

Frequency: 2462.000 MHz

Width: 40.000 MHz

Band: 2GHz-B/G/N

Extension Channel: disabled

- Ce
- Ceee
- disabled**
- eC
- eCee
- eeCe
- eeeC

enabled

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Add the channel list, name frequency, width, etc...

Quick Set

CAPsMAN

Interfaces

Wireless

Bridge

PPP

Switch

Mesh

IP

MPLS

Routing

System

Queues

Files

WISP AP Quick Set

- Wireless

Wireless Protocol: 802.11 nstreme nv2

Network Name: Mikro Tik-36186F

Frequency: ch10 MHz

Band: 2412

2417

2422

Channel Width: 2427

2432

Country: 2437

2442

MAC Address: 2447

2452

Security: auto

ch10

ch11

Encryption: aes ccm tkip

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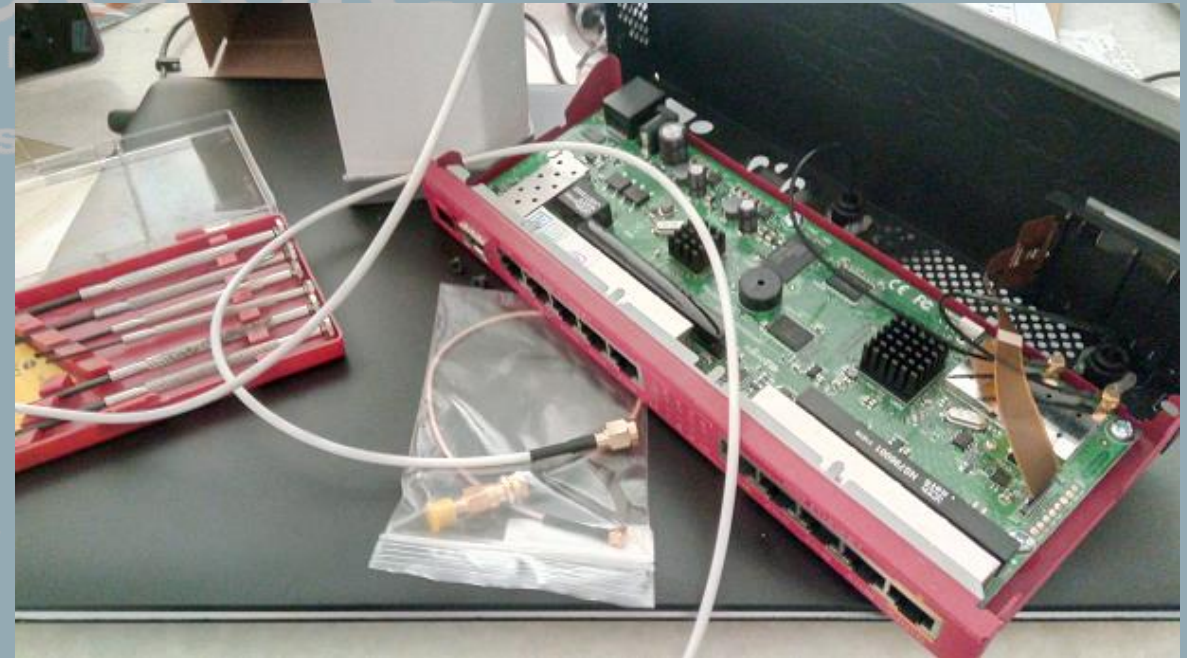
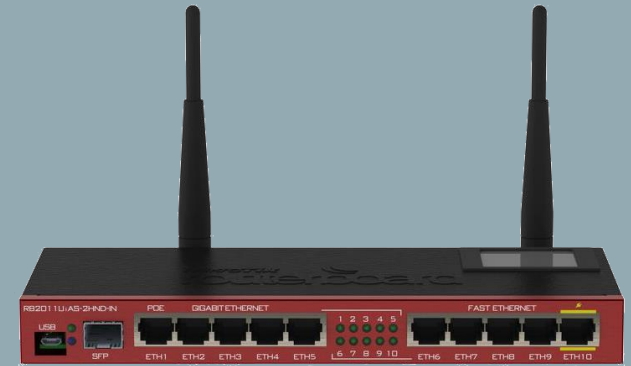
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WHY MIKROTIK

- Flexible
- Feature rich (example: Virtual AP)
- Powerful

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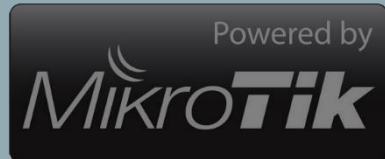
- 802.11n 2.4GHz
- Free WiFi Hotspot
- Sector Antenna



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Thank You



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Q & A

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