



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

By: Shoa-Yei Yeong

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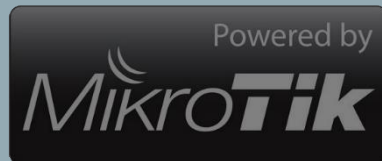
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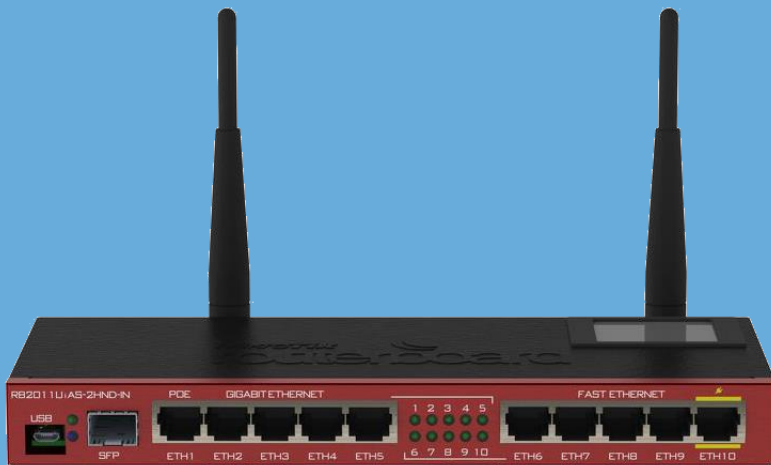
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RB2011UiAS-2HnD-IN:
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AGENDA

- 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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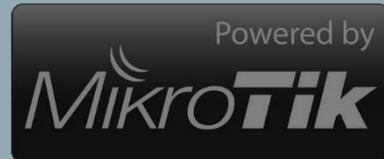
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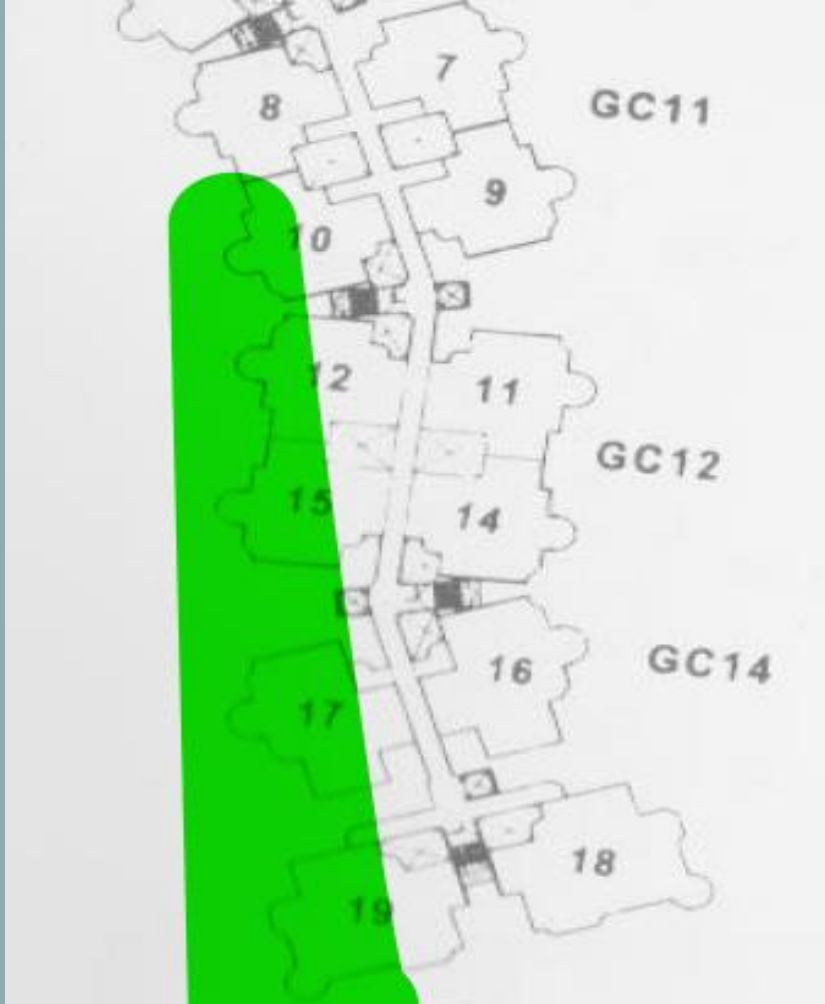
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CASE STUDY: MULTI-STOREY BUILDING

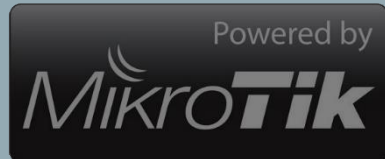


Sector Antenna



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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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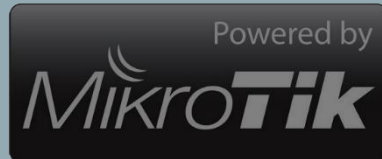
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NETWORK MONITORING

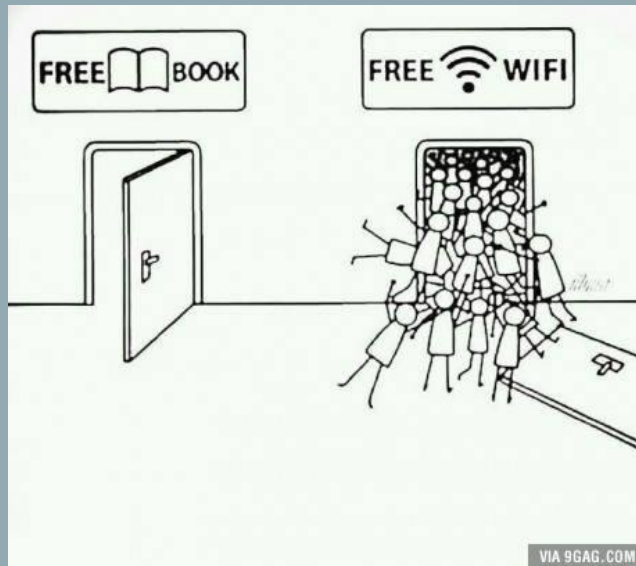


- Site Survey

- 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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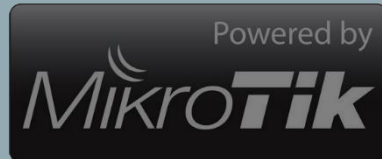
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Channel 1

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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MikroTik

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

+ - ✓ ✗ [icon] [icon]

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

admin@192.168.88.1 (MikroTik)

Sessions Settings Dashboard

Safe Mode Session

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

New Wireless Channel

List: 2.4ghz

Name: ch11

Frequency: 2462.000 MHz

Width: 40.000 MHz

Band: 2GHz-B/G/N

Extension Channel: disabled

enabled

disabled

Ce

Ceee

eC

eCee

eeCe

eeeC

OK

Cancel

Apply

Disable

Comment

Copy

Remove

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

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

WISP AP Quick Set

- Wireless -

Wireless Protocol: ☒ 802.11 ☐ nstreme ☐ nv2

Network Name: MikroTik-36186F

Frequency: ch10 MHz

Band: 2412

Channel Width: 2417

Country: 2422

MAC Address: 2427

Security: 2432

Encryption: ☒ aes ccm ☐ tkip

2437

2442

2447

2452

auto

ch10

ch11

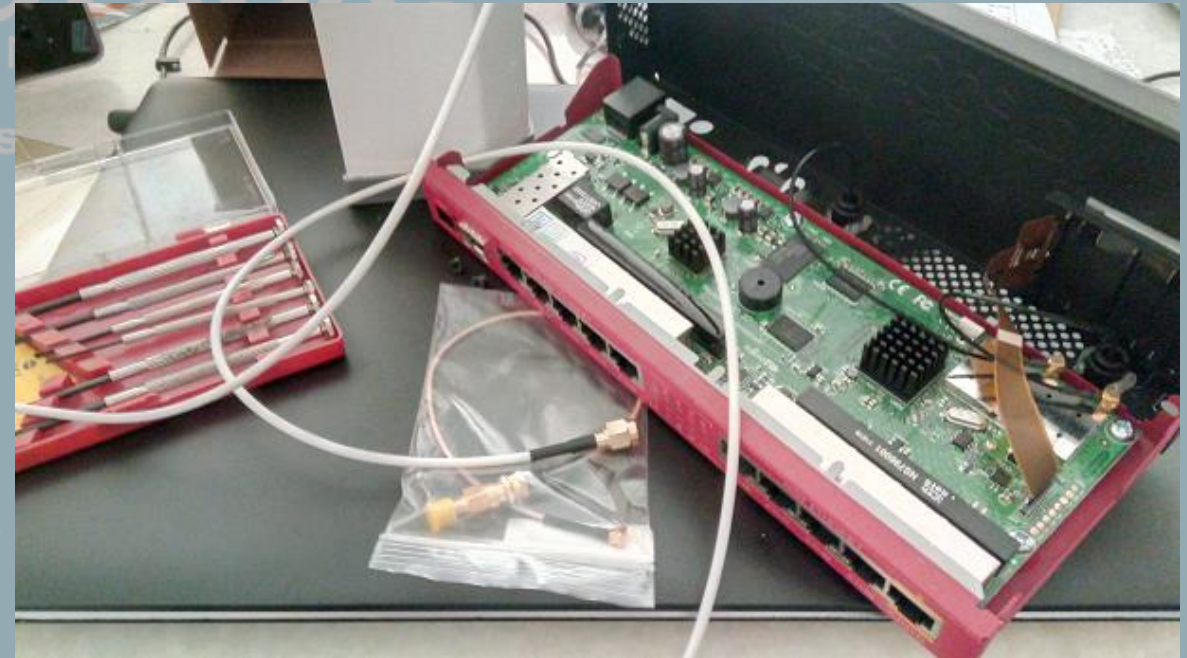
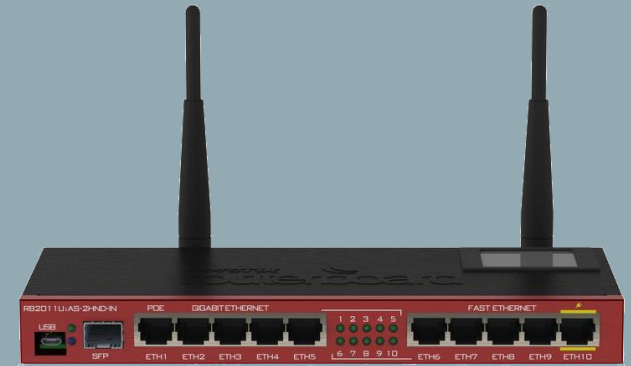
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WHY MIKROTIK

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

RB2011UiAS-2HnD-IN

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



Thank You



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