



Centralized Access Point Management

Muhti Subiyantoro

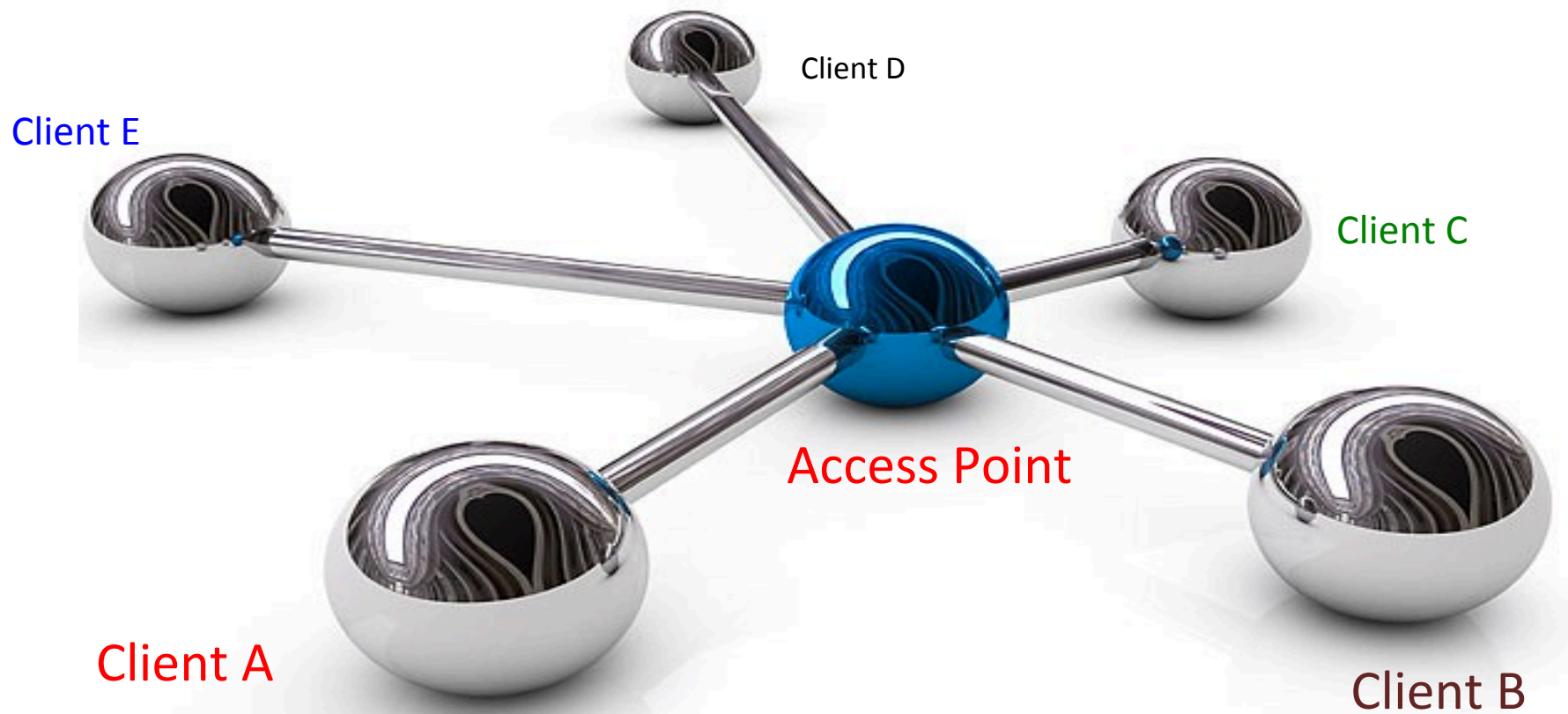
About Me

- Muhti Subiyantoro
 - Trenggalek
- PT. Spectrum Indowibawa
 - Surabaya
- Technical Manager
- Pengguna Mikrotik sejak 2004
- Mikrotik Certified Trainer

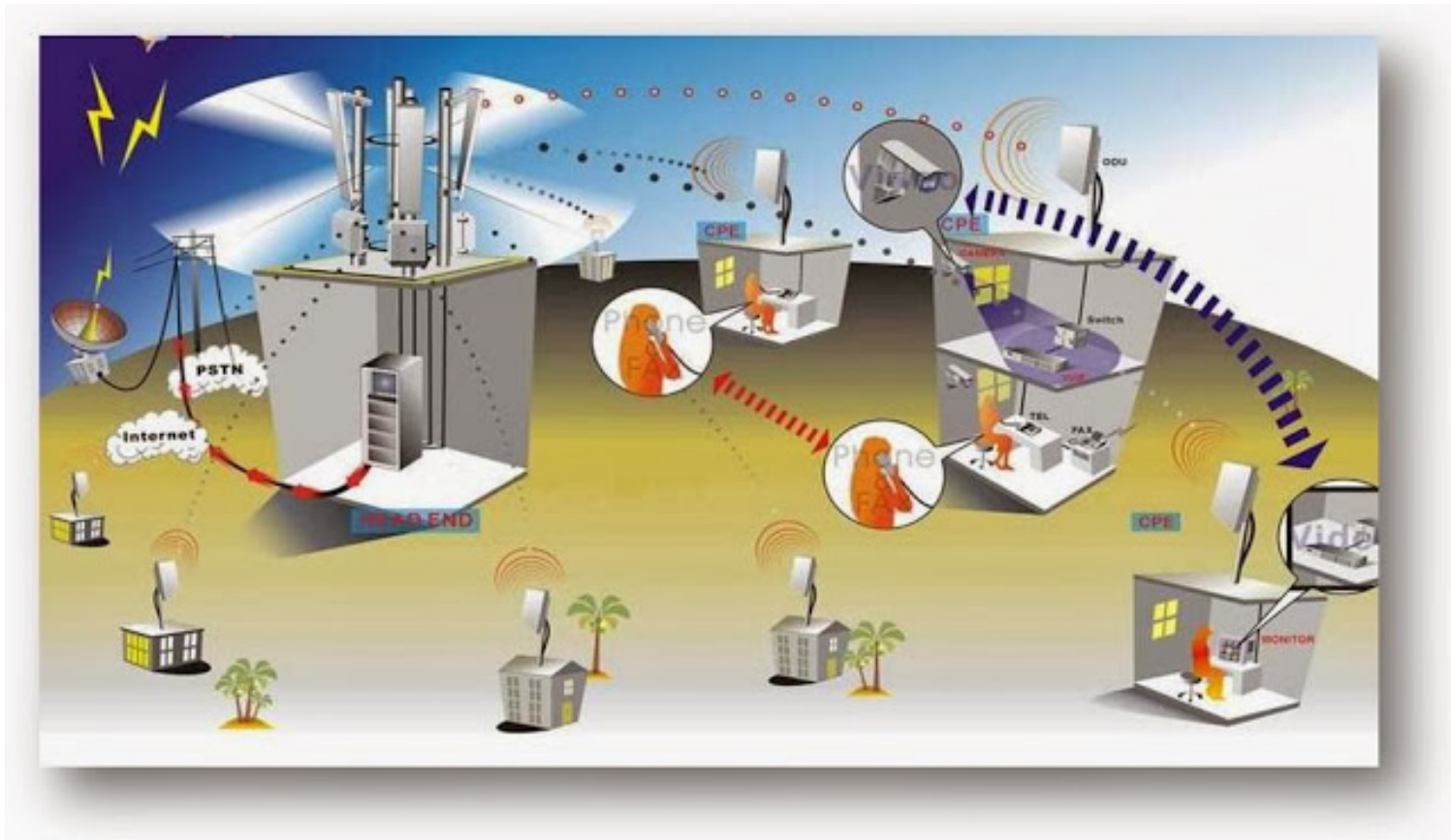


- Reseller Wireless & Router Equipment
- MikroTik
 - Konsultan
 - Certified Training Partner
 - MikroTik Academy Coordinator
 - Network System Integrator

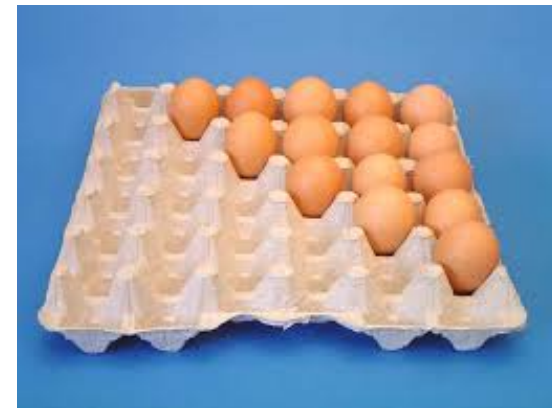
Access Point

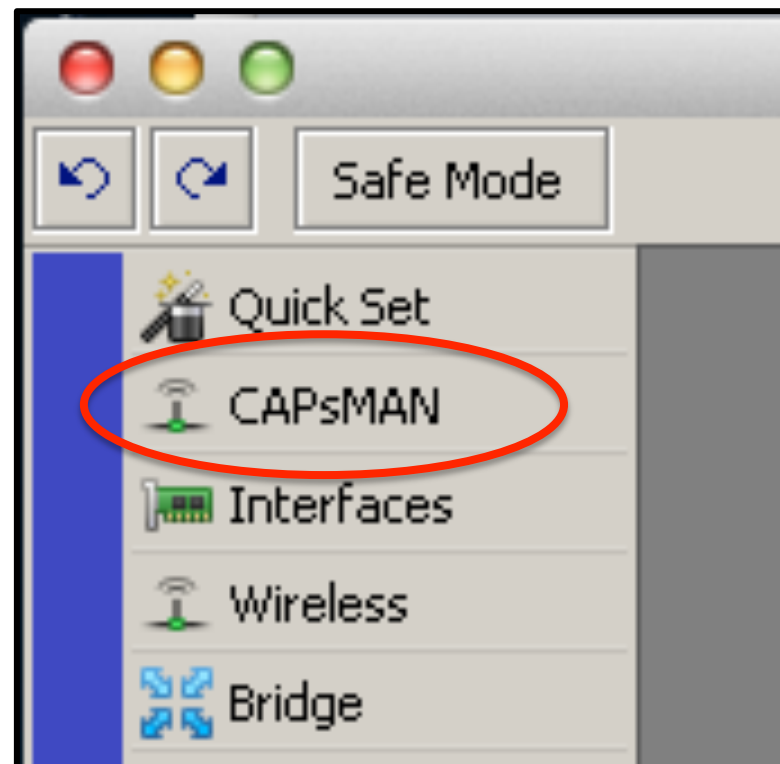


Wireless Access Point



Uncontrolled vs Controlled

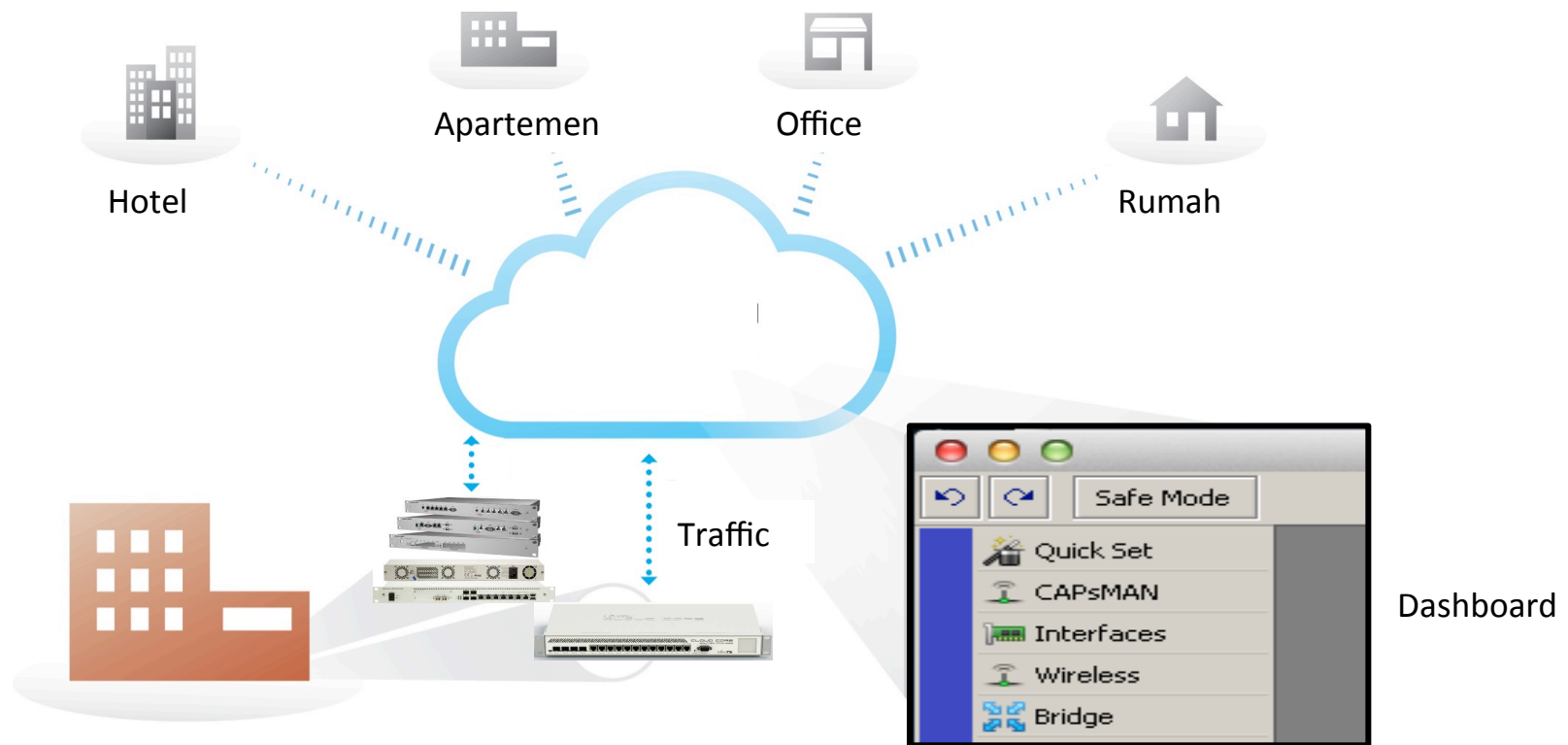




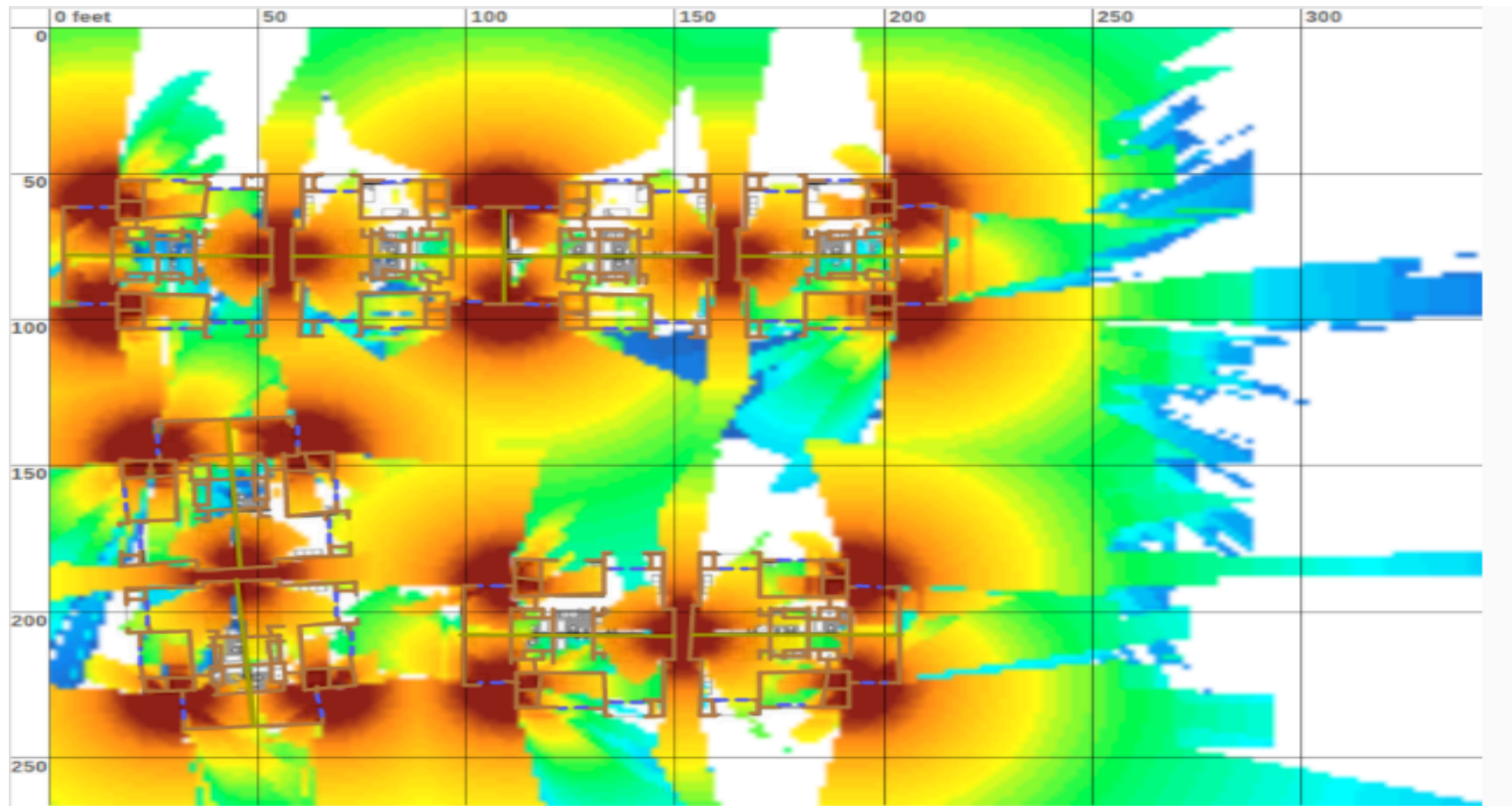
Apa itu CAPsMAN

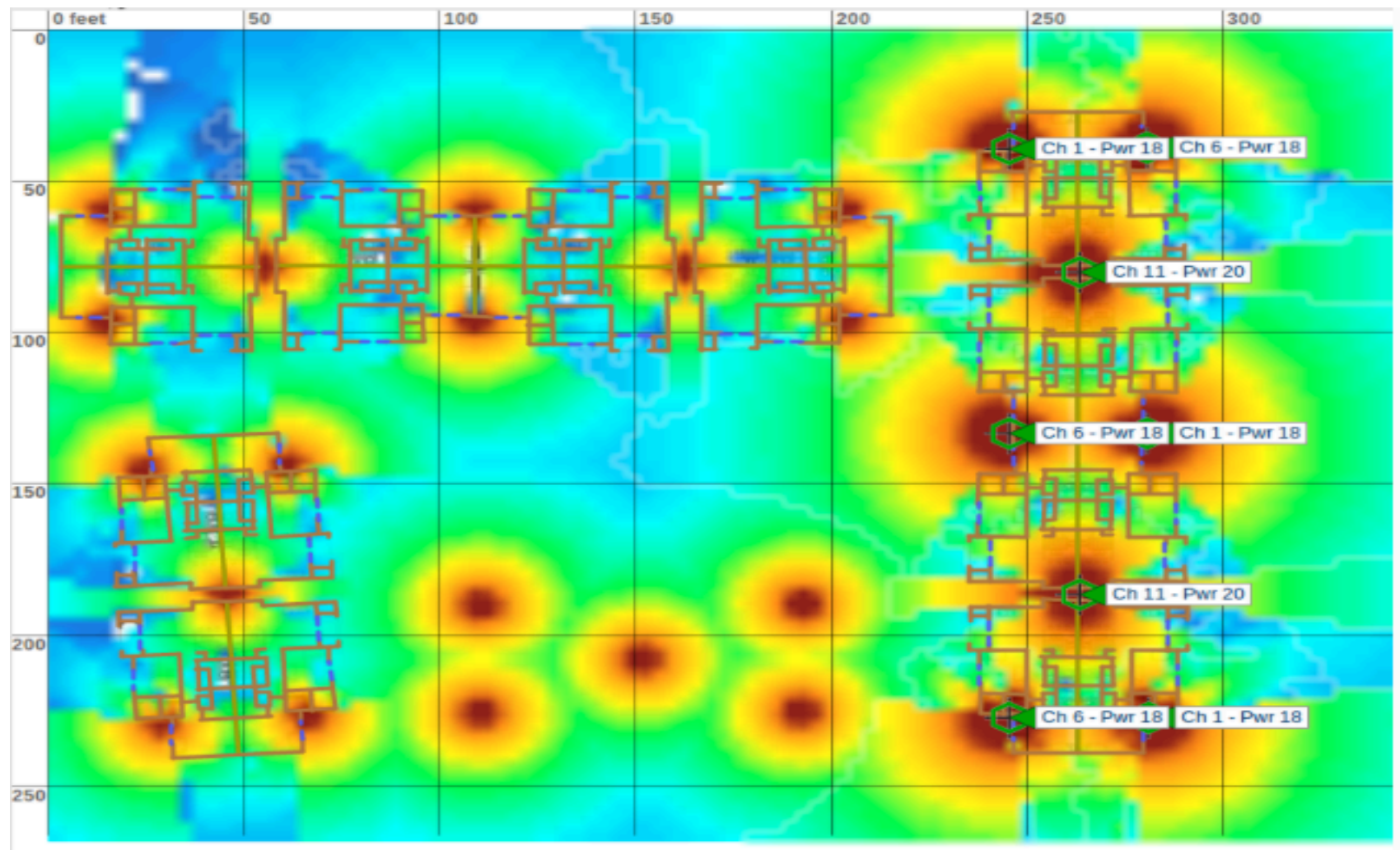
- Controlled Access Point System Manager
- Sentralisasi Jaringan Wireless
- Komponen:
 - Controlled Access Point (CAP)
 - System Manager (CAPsMAN)
- Konfigurasi dilakukan dari CAPsMAN:
 - Akses Kontrol (SSID, Freq, Access List, Tx Power, dll)
 - Autentikasi (RADIUS MAC Authentication)
 - WPA/WPA2 security
 - Trafik terpusat di CAPsMAN / forward ke local Access Point

1 Dashboard 4 all



Implementasi [Pengaturan Tx Power]





Syarat

- RouterOS v6.11 ...
- Kontroler tidak perlu Interface Wireless
- CAPsMAN v2 mulai v6.22rc7 (v1≠v2)
- Access Point License level 4
- Package Wireless fp

Koneksi CAP ke CAPsMAN

- MAC Layer
 - Tidak perlu IP di CAP
 - CAP & CAPsMAN dalam layer 2 yang sama
 - Layer 2 physical
 - Layer 2 virtual (layer 2 tunnel)
- IP Layer (UDP)
 - CAP bisa melewati NAT
 - CAP harus bisa menjangkau IP CAPsMAN

CAP memilih CAPsMAN

- Berdasar **caps-man-name (/system identity CAPsMAN)**
- Bila “kosong” akan memilih CAPsMAN yg ada
- Lebih dianjurkan menggunakan koneksi IP
- Datagram Transport Layer Security Authentication:
 - NONE
 - Only Manager
 - CAP & CAPsMAN

Konfigurasi CAP

- Versi 6.11 ke atas
- Wireless di CAP tidak bisa dimanage secara konvensional
- Wireless disable dengan keterangan **managed by CAPsMAN**
 - Forward to CAPsMAN mode
- Wireless enable dengan keterangan **managed by CAPsMAN**
 - Local Forward mode
- Konfigurasi di CAP minim
- Semua konfigurasi wireless CAP dari CAPsMAN

Konfigurasi CAP #1-FWD

- Konfigurasi Minim, forward to CAPsMAN
 - CAP dalam layer 2 dengan CAPsMAN
 - Semua traffic client CAP diforward ke CAPsMAN
 - Seting:
 - `/system identity set name=Office-AP (optional)`
 - `/interface wireless cap set enabled=yes`
`interfaces=wlan1 discovery-interfaces=ether1`

Konfigurasi CAPsMAN #1-FWD

- Mode: forward to CAPsMAN
- Seting:
 - /caps-man datapath add name=FWD
 - /caps-man channel add name=channel_1-24
band=2ghz-b/g frequency=2412
 - /caps-man configuration add name=Area_1-24
channel=channel_1-24 datapath=FWD
ssid=muhti_24_1
 - /caps-man interface set cap1
configuration=Area_1-24

STATUS INTERFACE CAP #1-FWD

```
[admin@Office-AP] > interface wireless print
Flags: X - disabled, R - running
0 X   ::: managed by CAPsMAN
      ::: channel: 2412/20/g(30dBm), SSID: multi_24_1, CAPsMAN forwarding
      name="wlan1" mtu=1500 mac-address=00:0C:42:65:D8:1B arp=enabled
      interface-type=Atheros AR5413 mode=station ssid="MikroTik" frequency=5180
      band=5ghz-a channel-width=20mhz scan-list=default wireless-protocol=any
      antenna-mode=ant-a vlan-mode=no-tag vlan-id=1 wds-mode=disabled
      wds-default-bridge=none wds-ignore-ssid=no bridge-mode=enabled
      default-authentication=yes default-forwarding=yes default-ap-tx-limit=0
      default-client-tx-limit=0 hide-ssid=no security-profile=default
      compression=no
```

STATUS INTERFACE CAPsMAN #1-FWD

11	R	bridge1	bridge	1500	1522
12	R	bridge2	bridge	1500	1518
13	RS	cap1	cap	1500	1600
14	X	pppoe-out1	pppoe-out		
15	X	pptp-out1	pptp-out		
16	X	pptp-out2	pptp-out		
17	X	pptp-out3	pptp-out		

```
[muhti@Corner-CAPsMAN] > interface bridge port print
Flags: X - disabled, I - inactive, D - dynamic
```

#	INTERFACE	BRIDGE	PRIORITY
0	ether3	bridge1	0x80
1	I ether2	bridge2	0x80
2	ether1	bridge1	0x80
3	wlan3-surya	bridge2	0x80
4	I wlan3	bridge2	0x80
5	vlan1	bridge2	0x80
6	D cap1	bridge2	0x80

Konfigurasi CAP #2-LOCAL

- Konfigurasi Minim, forward ke AP Local
 - CAP dalam layer 2 dengan CAPsMAN
 - Semua traffic client CAP diforward ke AP Local
 - Set IP, GW, DNS & SRC-NAT
 - Set DHCP Server di interface wlan1
 - Selanjutnya:
 - `/system identity set name=Office-AP (optional)`
 - `/interface wireless cap set enabled=yes
interfaces=wlan1 discovery-interfaces=ether1`









Konfigurasi CAPsMAN #2-LOCAL

- Mode: forward to CAPsMAN
- Seting:
 - /caps-man datapath add name=LOCAL local-forwarding=yes
 - /caps-man channel add name=channel_1-24 band=2ghz-b/g frequency=2412
 - /caps-man configuration add name=Area_1-24 channel=channel_1-24 datapath=LOCAL ssid=muhti_24_1
 - /caps-man interface set cap1 configuration=Area_1-24

STATUS INTERFACE CAP #2-LOCAL

```
[admin@Office-AP] > interface wireless print
Flags: X - disabled, R - running
0 R ::: managed by CAPsMAN
   ::: channel: 2412/20/g(30dBm), SSID: multi_24_1, local forwarding
   name="wlan1" mtu=1500 mac-address=00:0C:42:65:D8:1B arp=enabled
   interface-type=Atheros AR5413 mode=station ssid="MikroTik" frequency=5180
   band=5ghz-a channel-width=20mhz scan-list=default wireless-protocol=any
   antenna-mode=ant-a vlan-mode=no-tag vlan-id=1 wds-mode=disabled
   wds-default-bridge=none wds-ignore-ssid=no bridge-mode=enabled
   default-authentication=yes default-forwarding=yes default-ap-tx-limit=0
   default-client-tx-limit=0 hide-ssid=no security-profile=default
   compression=no
```

STATUS INTERFACE CAPsMAN #2-LOCAL

R	 bridge1	Bridge	1522	26.1 kbps	1276.3 kbps
R	 bridge2	Bridge	1518	1375.0 kbps	22.7 kbps
MB	 cap1	Interfaces	1600	0 bps	0 bps
RS	 ether1	Ethernet	1526	26.1 kbps	1289.0 kbps
S	 ether2	Ethernet	1522	0 bps	0 bps
RS	 ether3	Ethernet	1522	1576 bps	0 bps
RS	 vlan1	VLAN	1518	0 bps	0 bps
R	 vlan2	VLAN	1514	0 bps	0 bps

Pengembangan Konfigurasi

- CAP dan CAPsMAN dalam segment berbeda
- CAP bisa berada di belakang src-nat
- Konfigurasi custom di suatu CAP bisa dilakukan dengan meng-overwrite seting profile group
- Dalam satu RB bisa lebih dari satu wireless card

2 RB @2 MiniPCI

CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security Cfg.

+ - ✓ ✗ [Icon] [Icon] Manager AAA

	Name ▲	SSID	Frequency ▼	Bridge	
SMB	cap1	muhti_24_1	2412MHz	bridge2	
SMB	cap2	muhti_58_1	5180MHz	bridge2	
SMB	cap3	muhti_24_2	2462MHz	bridge2	
SMB	cap4	muhti_58_2	5300MHz	bridge2	

CAPsMAN

Provisioning Configurations Channels Datapaths Security Cfg. Access L

+ - [Icon] [Icon]

Name ▲	SSID	Channel	Datapath
Area_1-24	muhti_24_1	channel_1-24	FWD
Area_1_58	muhti_58_1	channel_3-58	FWD
Area_2-24	muhti_24_2	channel_2-24	FWD
Area_2_58	muhti_58_2	channel_4-58	FWD

CAPsMAN

Provisioning Configurations Channels Datapaths Security

+ - [Icon] [Icon]

Name ▲	Frequency	Width
channel_1-24	2412MHz	
channel_2-24	2462MHz	
channel_3-58	5180MHz	
channel_4-58	5300MHz	

CAPsMAN

Provisioning Configurations Channels Datapaths Security Cfg.

+ - [Icon] [Icon]

Name ▲	Bridge	Local Forwarding	Client To...
FWD	bridge2		
LOCAL		yes	

2 RB @2 MiniPCI

Interface List

Interface	Ethernet	EoIP Tunnel	IP T
Name	Type		
R	bridge1	Bridge	
R	bridge2	Bridge	
SMB	cap1	Interfaces	
SMB	cap2	Interfaces	
SMB	cap3	Interfaces	
SMB	cap4	Interfaces	
RS	ether1	Ethernet	
S	ether2	Ethernet	
RS	ether3	Ethernet	

Bridge

Bridge	Ports	Filters	NAT	Hosts	
Interface	Bridge	Priority (...)	Path Cost	Horizon	Role
DI	cap1	bridge2	80	10	disabled port
DI	cap2	bridge2	80	10	disabled port
DI	cap3	bridge2			
DI	cap4	bridge2			
	ether1	bridge1			
I	ether2	bridge2			
	ether3	bridge1			
	vlan1	bridge2			
I	wlan3	bridge2			

GP-03

GP-04

GRAHA-PTP

muhti_24_1

muhti_24_2

muhti_58_1

muhti_58_2

My Speedy@2154

PAM-WIFI-SBY

TIME TO **SHARE**



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