

CAPsMANv2

Experiences and performance results



Aidan Venn MSc

About me

- Consult, Configure and Manage small to medium size projects
- *20 plus years networking experience*
- *First Class Masters Degree in Mobile & Distributed Networks*
- *Run a Nano WISP*
- *Mikrotik 3 years + MTCNA, MTCRE, MTCTCE*



What I am looking for:

- **Opportunity's to work on medium to large projects** – preferably with Mikrotik equipment



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CAPsMAN – What is it?

- Controlled Access Point system MANager (CAPsMAN)

“Allows centralization of wireless network management and if necessary, data processing.”

<http://wiki.mikrotik.com/wiki/Manual:CAPsMAN>



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Why I Use Mikrotik

- No expensive licence/upgrade payments
- Price to features and performance ratio – nothing better?
- Proven reliability
- Highly flexible and granular configurability
- Constant development



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Initial Project

18 months ago

Initial Project

Medium sized High School investigating new Wi-Fi:

- Current Netgear Access Points problematic
- Significant budget pressures – austerity

Can we actually afford Ruckus, Meru etc.. Even if we wanted

- Pressure from external bodies grading and parents
- Students tablets/laptops unusable



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Initial Project

- Taking pressures into account | Proposed Mikrotik

Unknown brand = Uncertainty **on top** of "normal" tech uncertainty

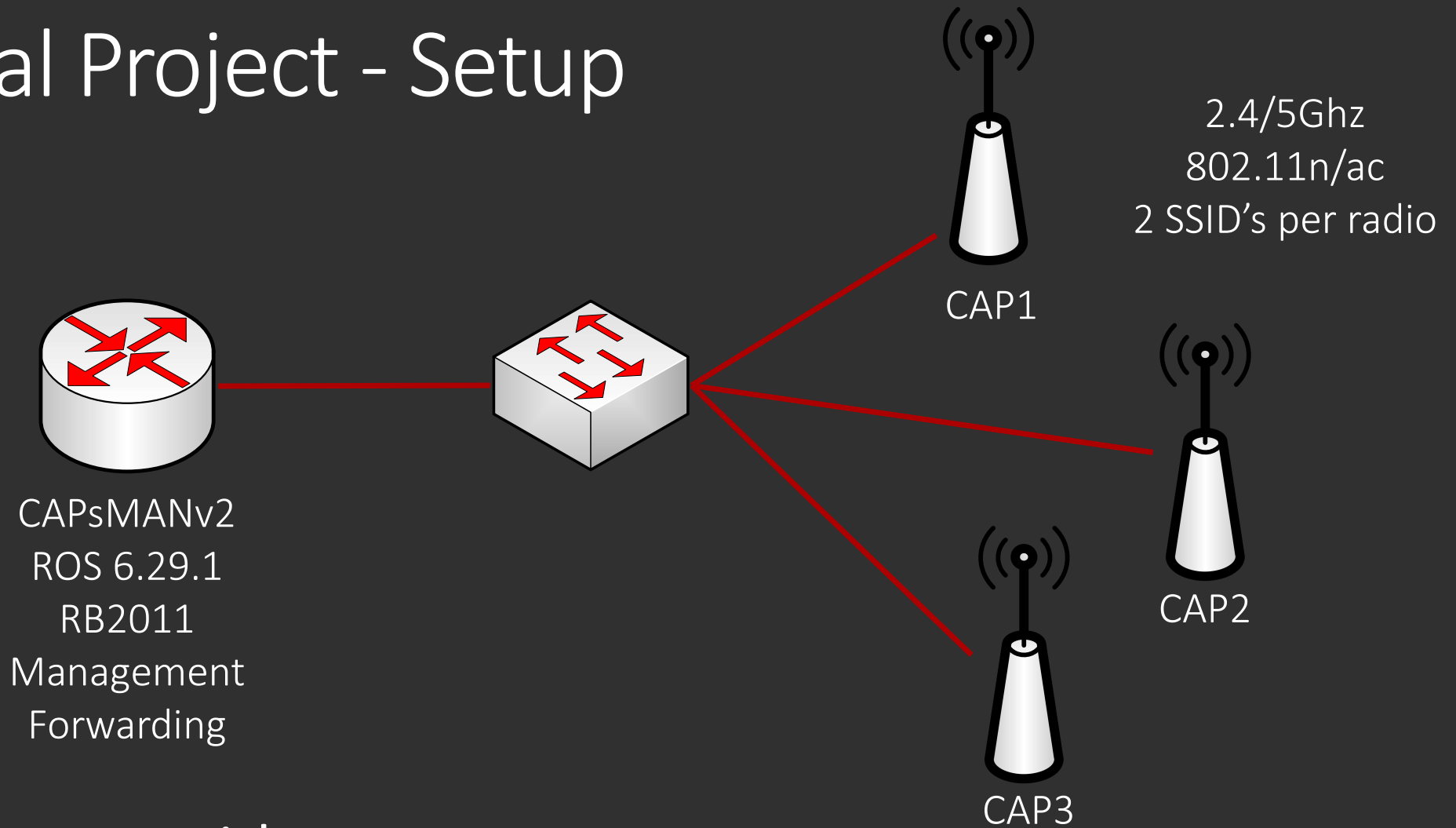
- To reduce uncertainty offered FREE Kit:

RB912 + R11e x 3
RB2011 - CAPsMANv2



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Initial Project - Setup



Initial Project - Result

- 60+ concurrent devices on one AP streaming video
- 18 months – no down time
- 100% satisfaction

“To date no fault has occurred, with feedback from users very positive including one maths teacher judging the system as faultless.”



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Main Project

3months ago

Project Tender including:

- Complete School 802.11ac 2/5GHz Wi-Fi
- BYOD and Domain VLAN
- Support 66 Concurrent devices per AP
- Integration of Light-speed captive portal for BYOD access
- Traffic management options



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Project – Uncertainties

- Do we need to replace RB2011 - likely - What with?
- RB922 fine but superior spec wAP ac just released - suitable?
 - Triple chain
 - PoE 802.3at
 - Cheaper
 - Cleaner aesthetics
- Temp issue forums - True?



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Project - Testing

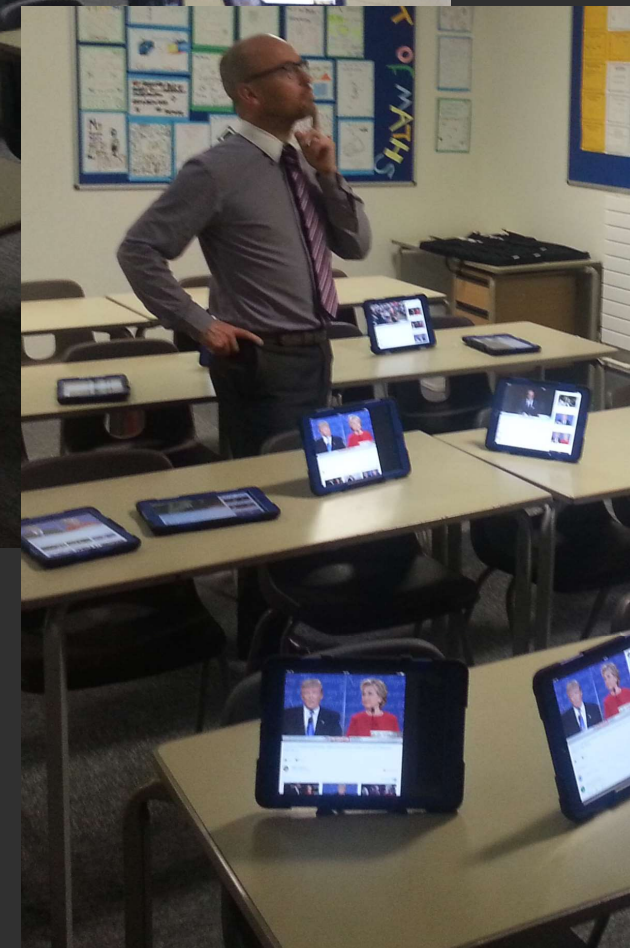
- Reduce uncertainty through secondary and primary research

Concurrent connections test:

- 1 Access Point – wAP ac
- RB2011 CAPsMAN - Manager forwarding
- 33 x iPad Airs Wi-Fi
- Stream video to all from YouTube for approx. 30 mins



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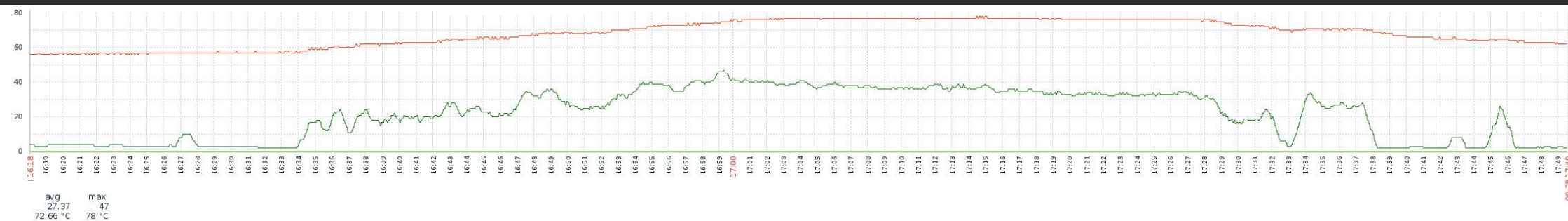


- 33 x IPad Airs Streaming You tube Video



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Project – wAP ac Results



TEMP - Degrees

OID: .1.3.6.1.4.1.14988.1.1.3.10

Lowest: 57

MIKROTIK-MIB

Average Temp: 72.66

Multiply by 0.1

Max Temp: **78**

CPU - Load

OID: .1.3.6.1.2.1.25.3.3.1.2.1

Lowest: 4%

MIKROTIK-MIB

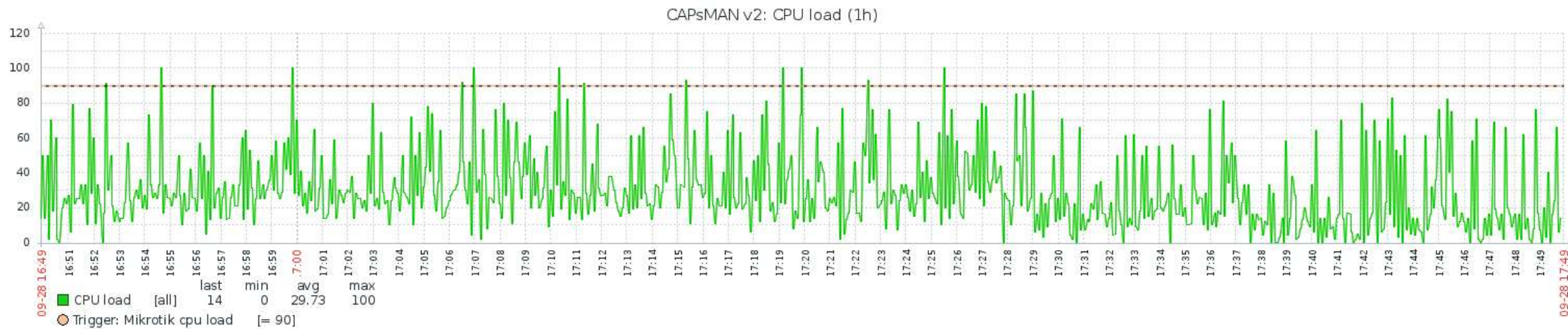
Average: 27%

Max CPU: **47%**



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Project – CAPsMAN RB2011 Results



Rx
64 to 70 Mbps

CPU - Load

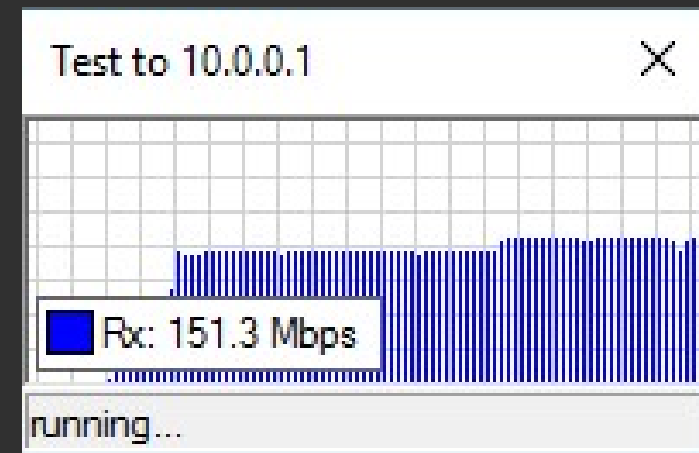
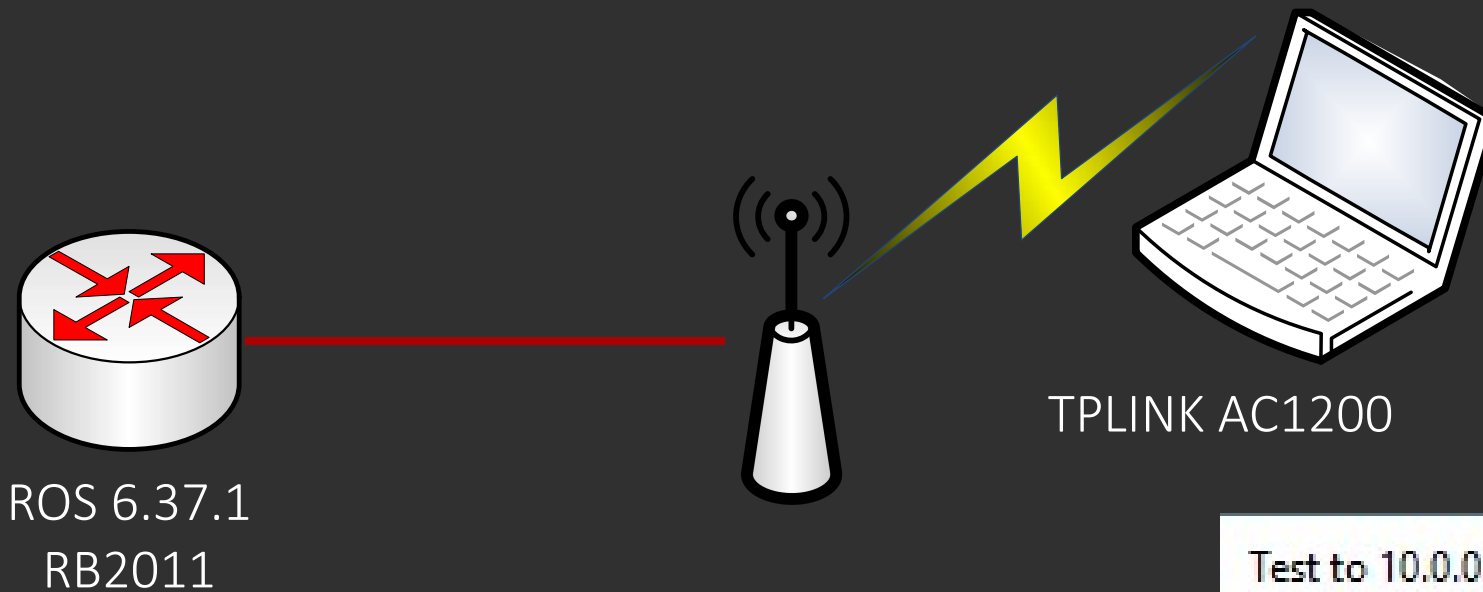
OID: .1.3.6.1.2.1.25.3.3.1.2.1
MIKROTIK-MIB

Lowest: 0%
Average: 29.73%
Max CPU: 100%



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Project – wAP ac Speed Test Setup



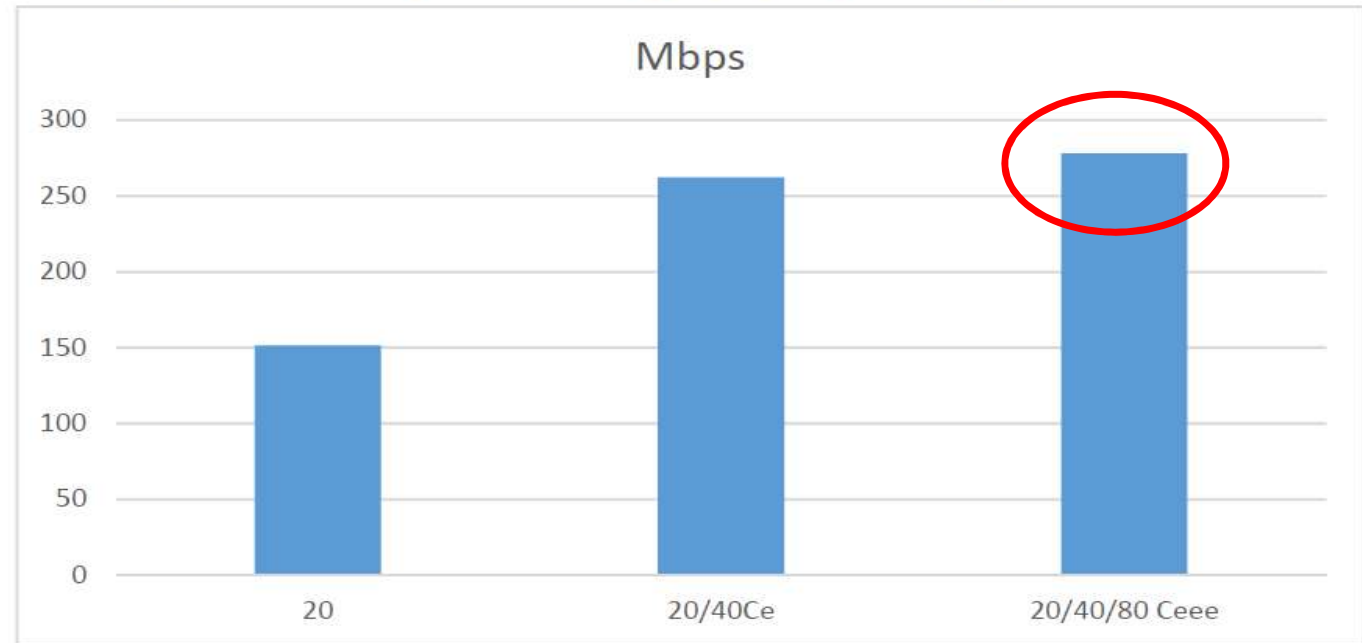
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ac/20/40/80 Ceee

278 Mbps

AP	Freq	Protocol	Band	Width	Chains	Rx Mbps
RB922	5Ghz	802.11	5GHz-A/N/AC	20	2	151.3
RB922	5Ghz	802.11	5GHz-A/N/AC	20/40Ce	2	262.1
RB923	5Ghz	802.11	5GHz-A/N/AC	20/40/80 Ceee	2	278.1



Myself and Scott Normanton did speed test using a 2 chain TPLINK AC1200 USB3 Adapter

Not the improvements anticipated – Feedback welcome – my setup



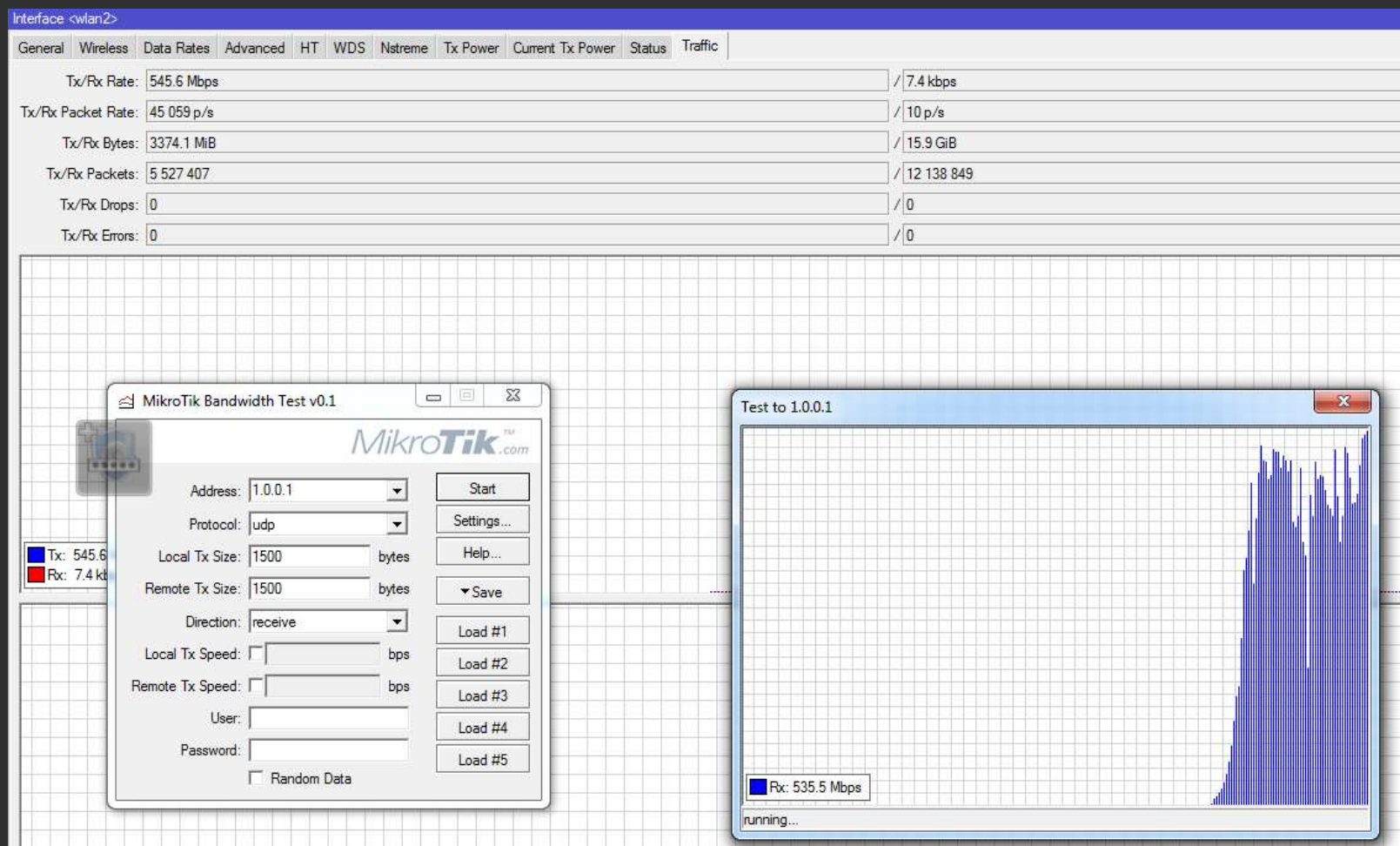
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SSD PC to RB922 to
RB922 to SSD PC

2 Chain

ac/20/40/80 Ceee

545 Mbps



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Solution

Secondary and primary research led to the following choices:

- Cloud Core Router 1036 – Over Spec? but future proof
- 38 x wAP ac
- CAPsMANv2 – ROS 3.67.1
- Manager forwarding – all data/admin through the CCR
- 2 SSIDs on 2.4Ghz
- 2 SSIDs on 5Ghz



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Psychological Band Steering

- We want more devices on 5GHz for performance reasons
- We can only encourage through various techniques including higher 5Ghz power settings
- However I took a different approach - let the client pick

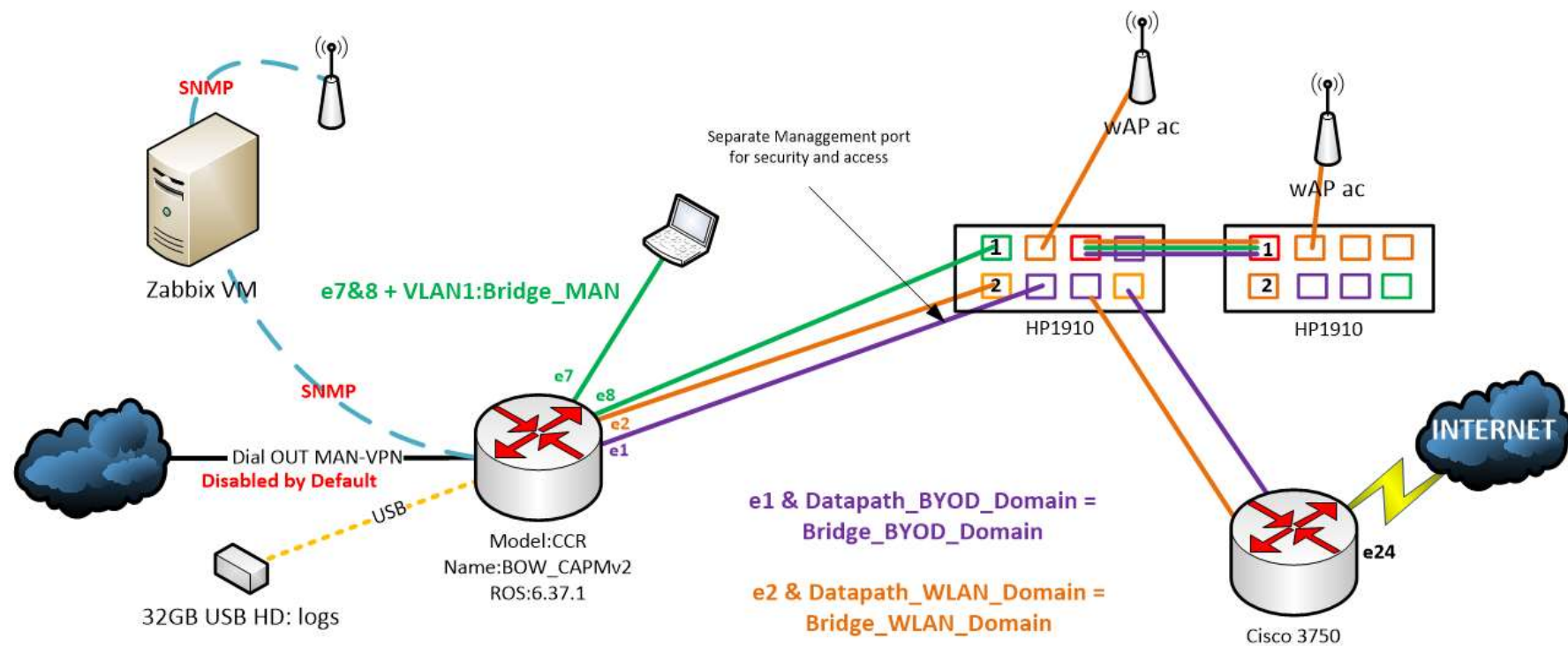
2.4Ghz SSID called *Fast*

5 Ghz SSID called *SuperFast*

- On the network I experimented on 80% swing – *Everyone Picks SUPERFAST!!!*



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Lab Setup

VLAN4 WLAN BYOD

VLAN 2 Domain

VLAN Trunk 1,2,4

VLAN1 MANAGE

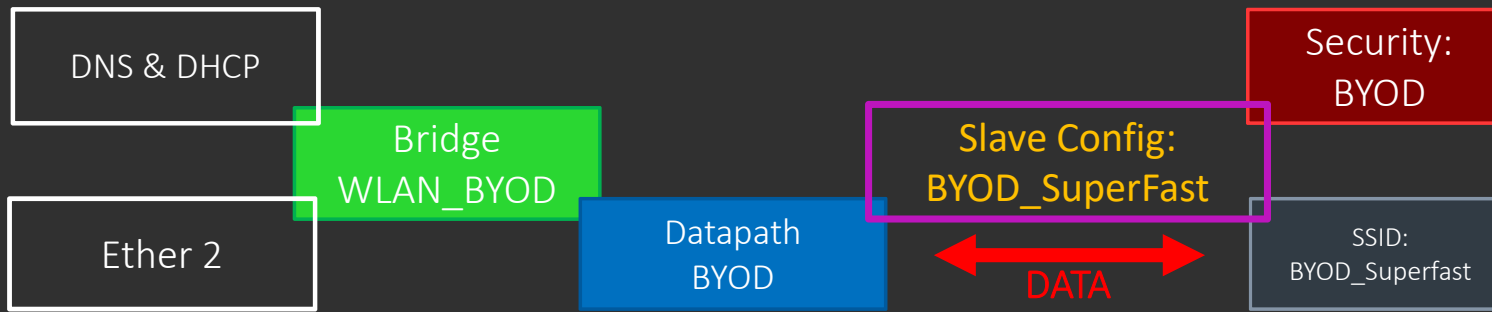
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Date: 08/10/2016
Author: Aidan Venn
Reviser: n/a
Client:



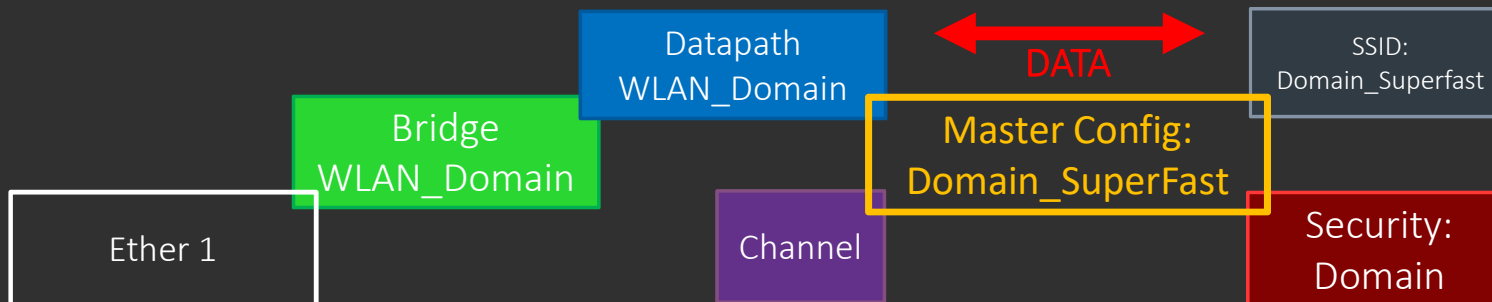
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Technical Visual

BYOD



DOMAIN



5GHz



An attempt on visually representing how its all stitched together!



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Questions?



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