Using Mikrotik in Regional/Rural Australia

A collection of real world case studies

Intro

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Small company located in Cooma, NSW, Australia

- Been using Mikrotik since 2010 (training and MUM in Brisbane)
- Networking (wired and wireless), PBX installs (SIP trunking)
- Data cabling, security, CCTV/NVR
- First In Maintenance for several Carriers
- Whatever the customer wants!

Why do we use Mikrotik?

- **We became attracted to Mikrotik equipment because of lower cost and large range of features.**

- **Lower cost means that our customers can afford to go ahead with a project whereas they might not have if using other brand name gear.**

Why do we use Mikrotik?

- Lower cost also means that we can have spare stock on our shelves in the event we need to replace a router (rare to be honest).
- Reliable distributor (duxtel *Take Control...*) who provides excellent technical support.
- We can afford to have a decent number of test units to bench test with and try advanced features. It is a great way of learning networking when you can have a lab setup at home for such a low cost. **Even though my name is Dave, I have yet to send an email to support@mikrotik.com!**

Variety of installed equipment

- **Power monitoring**
- Wifi in alpine village setting
- Remote pump start
- Last mile link

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A Ski club needed to know if members were staying longer than they had booked.
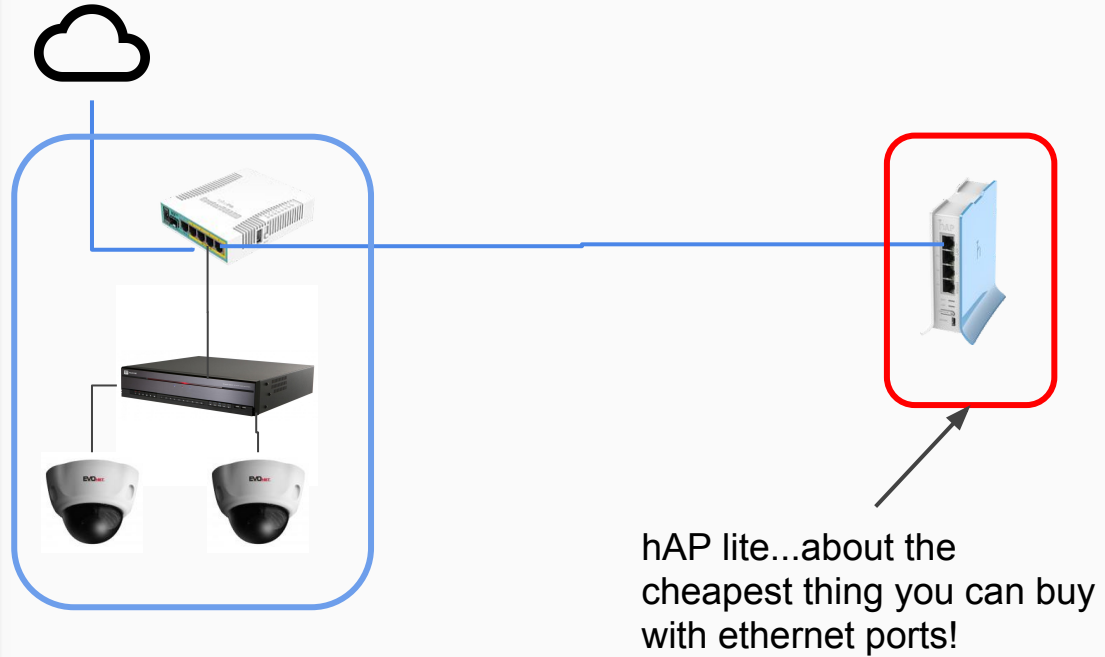
We suggested a power monitor to see when members turned on the main power.

The cheapest option was to monitor an ethernet port on a device connected to the main power circuit.

When the system detects power is on, a notification email gets sent.

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hAP lite...about the cheapest thing you can buy with ethernet ports!

24/7 power circuit

Power circuit activated by members

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hAP lite connected to ether3 of main router. Script is run every minute to check running status of ether3.
If ether3 comes up, we assume power is turned on, and an email is sent.

Script copied/hacked from forum and Greg Sowell's website :-)

```
# Checking eth3 link status:
:global "ether3-state"
:global "ether3-laststate"
/interface ethernet monitor ether3-monitor once do={:set
"ether3-state" $status}
:if ($"ether3-state" != $"ether3-laststate") do={
  /tool e-mail send server=smtp.gmail.com port=587
user=someone@qazxsw.com password="secretstuff" from="Some
Where <somewhere@someplace.com>"
to="someonewhocares@qazxsw.com" subject="$[/system
identity get name]: power status changed" body=("$[/system
clock get date] $[/system clock get time] Interface ether3
- link status changed to:" . $"ether3-state")
  :log info ("Interface ether3 - link status changed to: "
. $"ether3-state")
  :set "ether3-laststate" $"ether3-state"
}
```

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Wifi distribution in Alpine Village setting

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Some of the natives and conditions we work in!

Someone has to do it :-)

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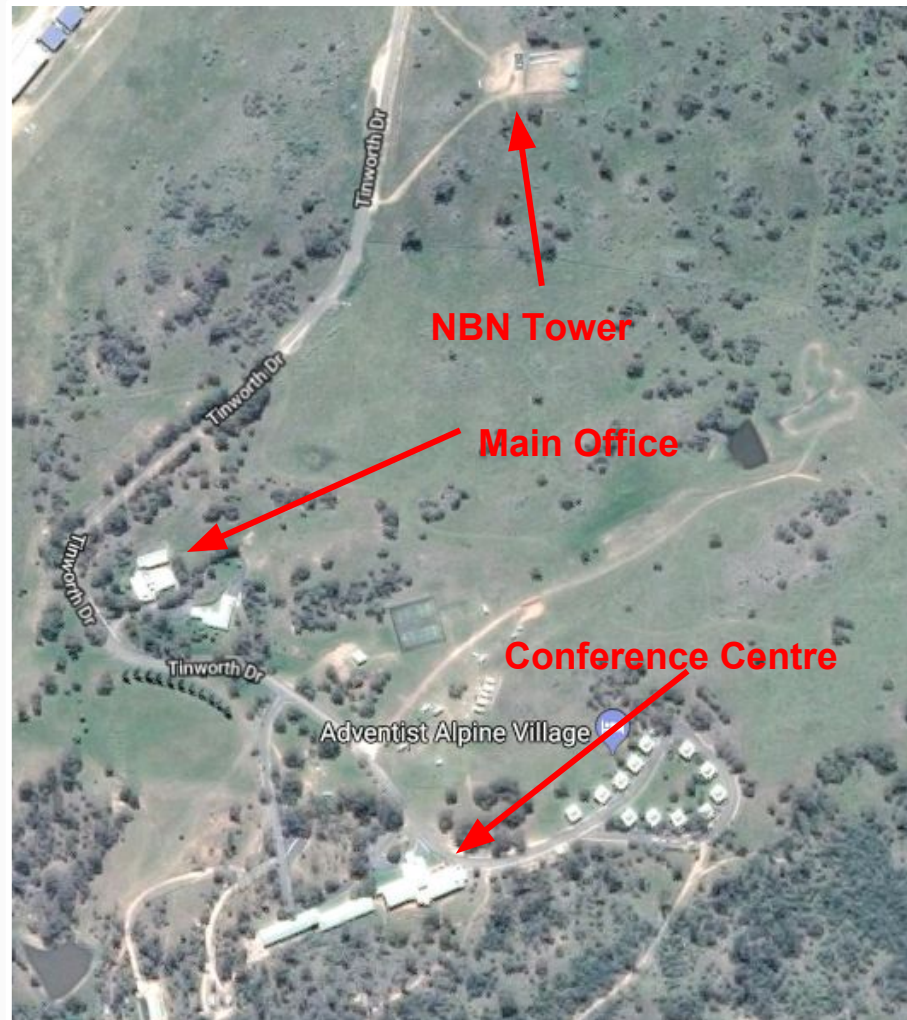- Remote pump start
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An Alpine accommodation village located in the Snowy Mountains of NSW Australia.

The client wanted wifi coverage over selected areas of the village, with capacity to expand later on.

They had an NBN connection at their main office, but not at the conference centre.

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NBN Tower

Main Office

Conference Centre

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We used a SEXTANT link from the NBN NTD in the main office to the conference centre router where a PPPoE connection was created.

Distribution to other parts of the village was via Omnitiks at 5GHz. SXT units at the other ends would connect to Groove 2.4GHz access points and an SXT 2.4GHz sector which would then distribute the wifi signal to the clients.

Main office router
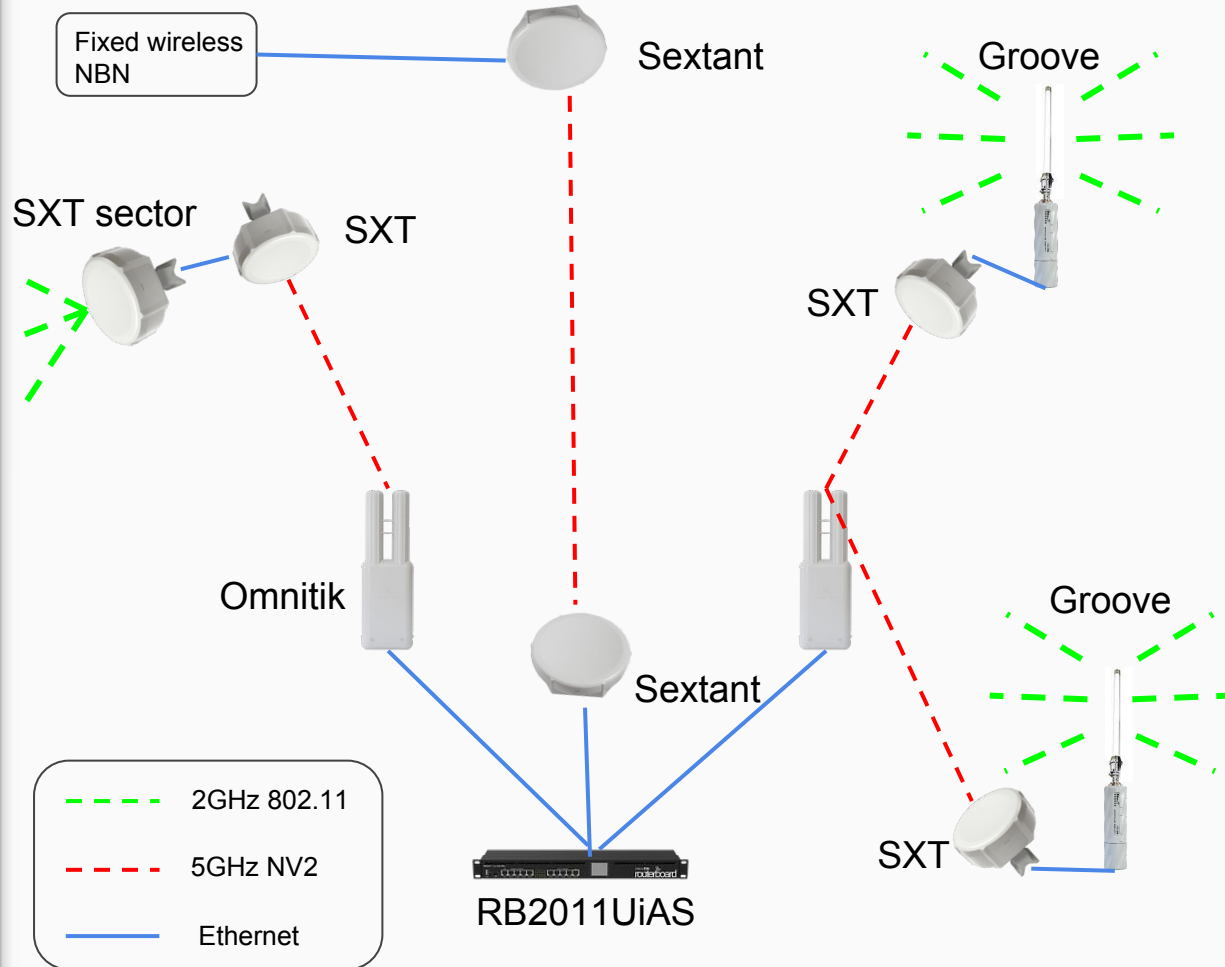
Sextant link to conference centre

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Fixed wireless NBN

Sextant

Groove

SXT sector

SXT

SXT

Groove

Omnitik

Sextant

SXT

RB2011UiAS

- - - 2GHz 802.11
- - - 5GHz NV2
——— Ethernet

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For ease of management and control, CAPSMAN and a hotspot were used on the main router.

With CAPSMAN, it is easy to see how many clients are on which AP.

With the correct configuration, we can name the AP's with a location.

This way we can see if any particular AP is being overloaded.

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By using a custom skin for webfig, we can allow the onsite admin staff to change guest passwords and other features quite easily, without giving them full router access.

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A local council was using a 240V control line to start a water pump located at their weir in order to send water to their treatment plant.

The local electricity company needed to reroute their power lines, meaning that the control line was to be removed.

RJS first suggested a UHF irrigation pump control. This suffered from unknown interference - enter a point-to-point link using Mikrotik!

We knew the topography would not allow a direct, single hop link, so a dual hop link was designed.

Since mains power was no longer available, a solar powered setup was required.

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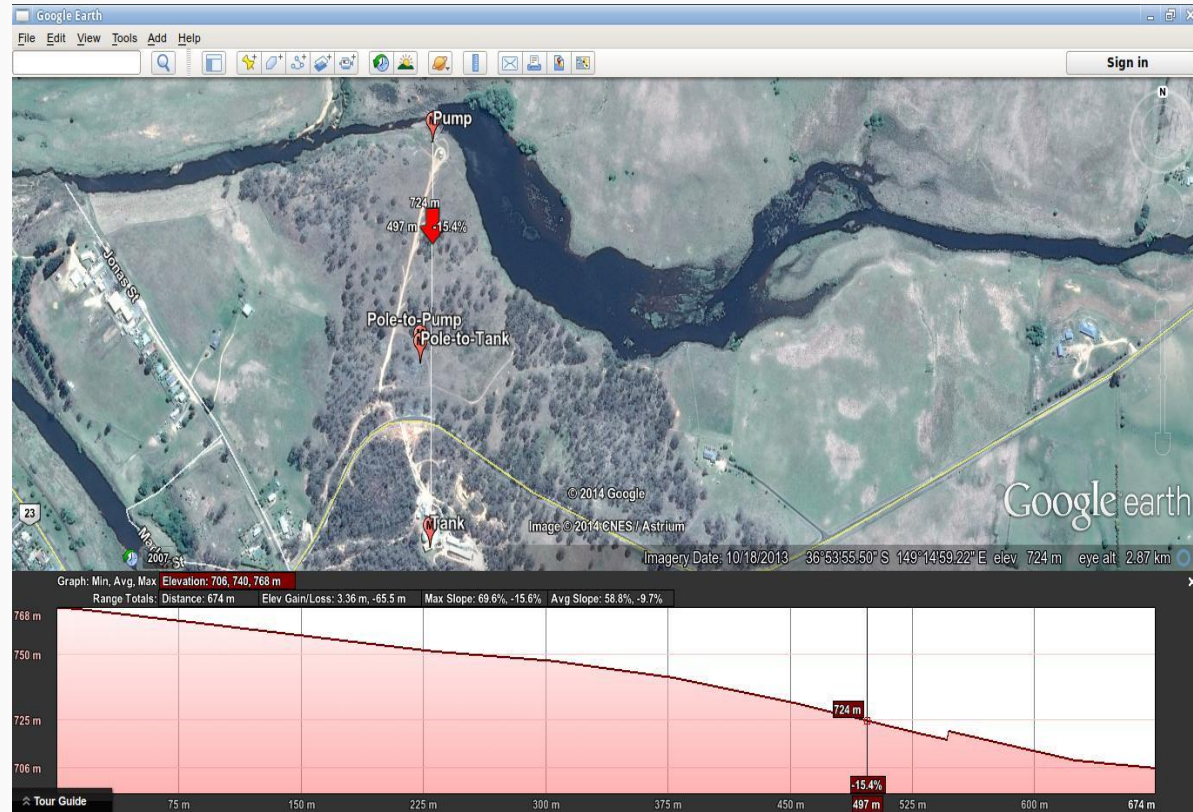- **Remote pump start**
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Custom designed and made mounts for the Sextants and the solar panel.

Meter box mount allows a ladder to be safely leaned against it.

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Solar controller and batteries.

Batteries were designed to supply power for approximately 4 days without solar input.

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Morning salute to the SXT!

Bombala water supply weir.

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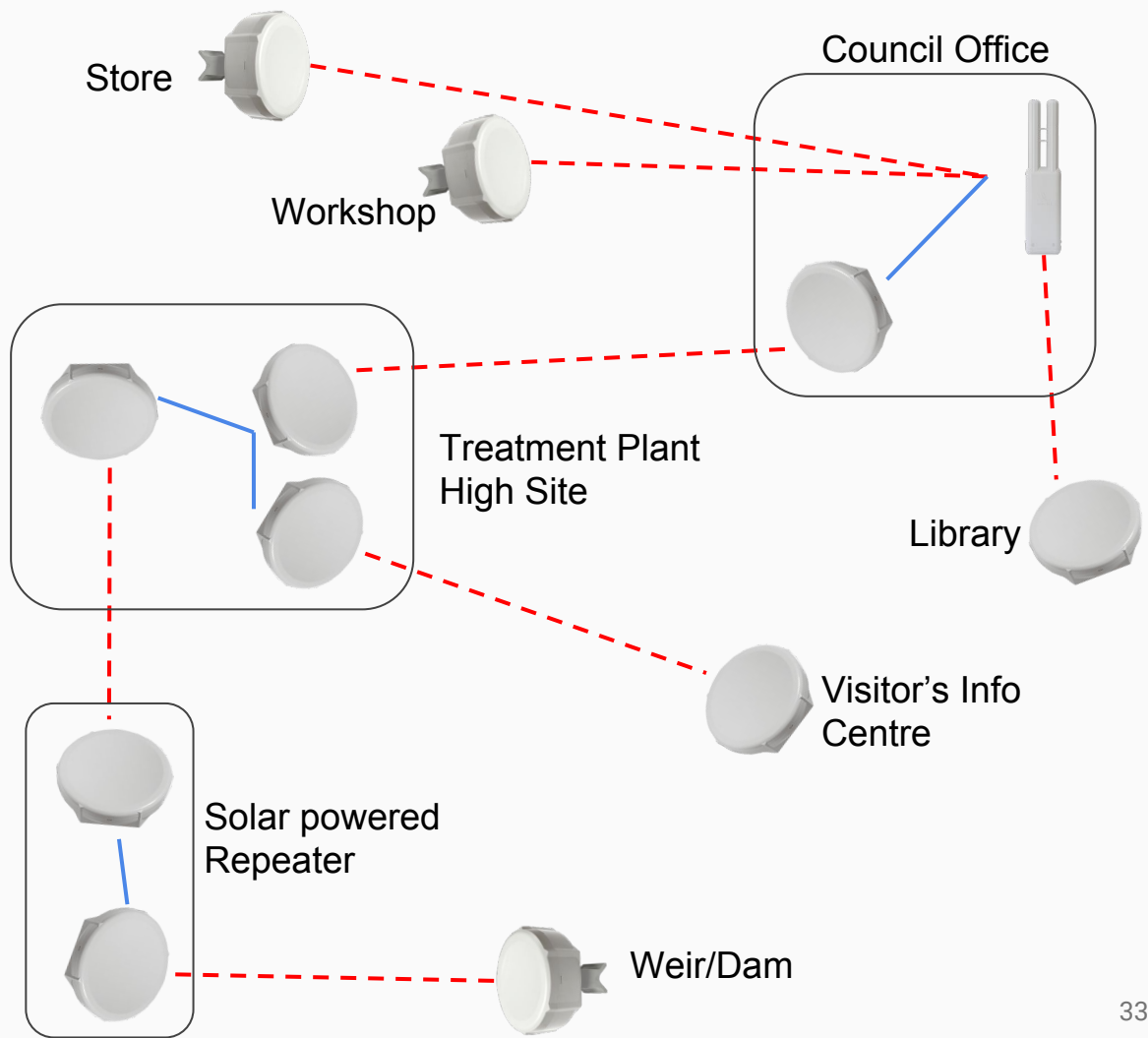

Control panel at water treatment plant.

Web based relay sends pump start signal to other end over Sextant link.

Heartbeat between the two relays prevents the pump end from overflowing the tank, by stopping the pump if it does not receive a signal from the tank end.

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Store

Workshop

Council Office

Library

Treatment Plant High Site

Visitor's Info Centre

Solar powered Repeater

Weir/Dam

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Quick install of last mile link.

An engineering group required a data link that could not be satisfied by current methods (no NBN at that stage).

An alternate ISP was able to provide a link but only to a high spot nearby.

RJS then installed a short hop link (130m) using an SXT and a RB711G routerboard mounted in an antenna enclosure.

The enclosure allowed us to use a USB 3G modem for OOB management. This was particularly useful, as the client end had been configured for 100Mbps while the SXT was set for 1Gbps. As this was causing some issues, it was a simple matter of re-configuring the SXT port remotely, and happy client.

It also allowed us to analyse some issues with strange MAC addresses populating another radio in the path.

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A mix of Mikrotik gear allows the last mile link to be established quickly.

We can mix and choose the necessary components from what we had available.

Carrier wireless

RB711U

3G USB modem

CPE

Mikrotik

Cost effective, flexible networking equipment for the masses!

Thank you for listening.

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Cooma