Remote Automation and Poor man GPS

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Background

- Who is Inventech
- What we do
- Our customers requirements
- Our 3G Dual Network Access Point based on Mikrotik's hardware

Dual Network 3G Router

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Our experience

- Dual SIM slots
- Single Sierra Wireless 3G Modem
- Needed a way to swap between networks
- How can we power cycle the modem and not the router

Hey dude where's my router?

- Router's are deployed by our customer country wide
- Monitor them over APN/VPN for failure
- Provide a means of updating firmware remotely
- It would be nice to indicate to location on a Map
- Can the network provide this information to us
- No but the modem can

Hey dude where's my router

- The LAC, CID, MNC, MCC codes
- How do we read these from the modem, since routerOS does not provide a method to read from serial ports
- Modem init-string hack does not return info only good for sending commands
- user-cmd added to ppp info – thanks Mikrotik!
- Please sir can I have some more?

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Getting the GPS coords

- Use a online look up service like:
  - Google Geo-location API
  - http://www.opencellid.org/
  - http://cellphonetrackers.org/
  - AyAuto
- Obtain the GPS coordinates and display

Sample from web

Profone GSM Tracker

Track down mobile devices' location online by cell tower triangulation using LAC (Location Area Code) and CellID.

Got LAC in Hexadecimal? Try the converter.

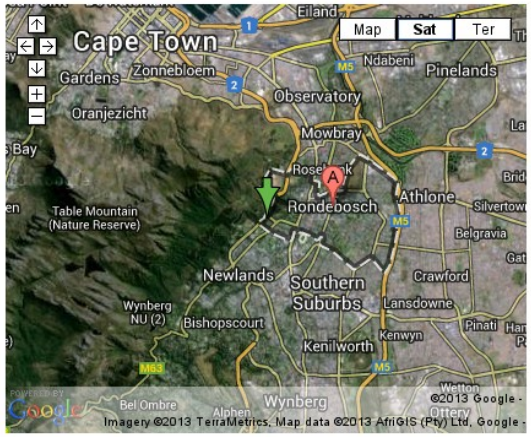
* indicates required

MCC - Mobile Country Code	655
MNC - Mobile Network Code	01
LAC - Location Area Code*	205
CID - Cell ID*	25113

Track it

MCC=0000028f MNC=00000001 LAC=000000cd CID=00006219

Lat=-33.966038 Lon=18.458096



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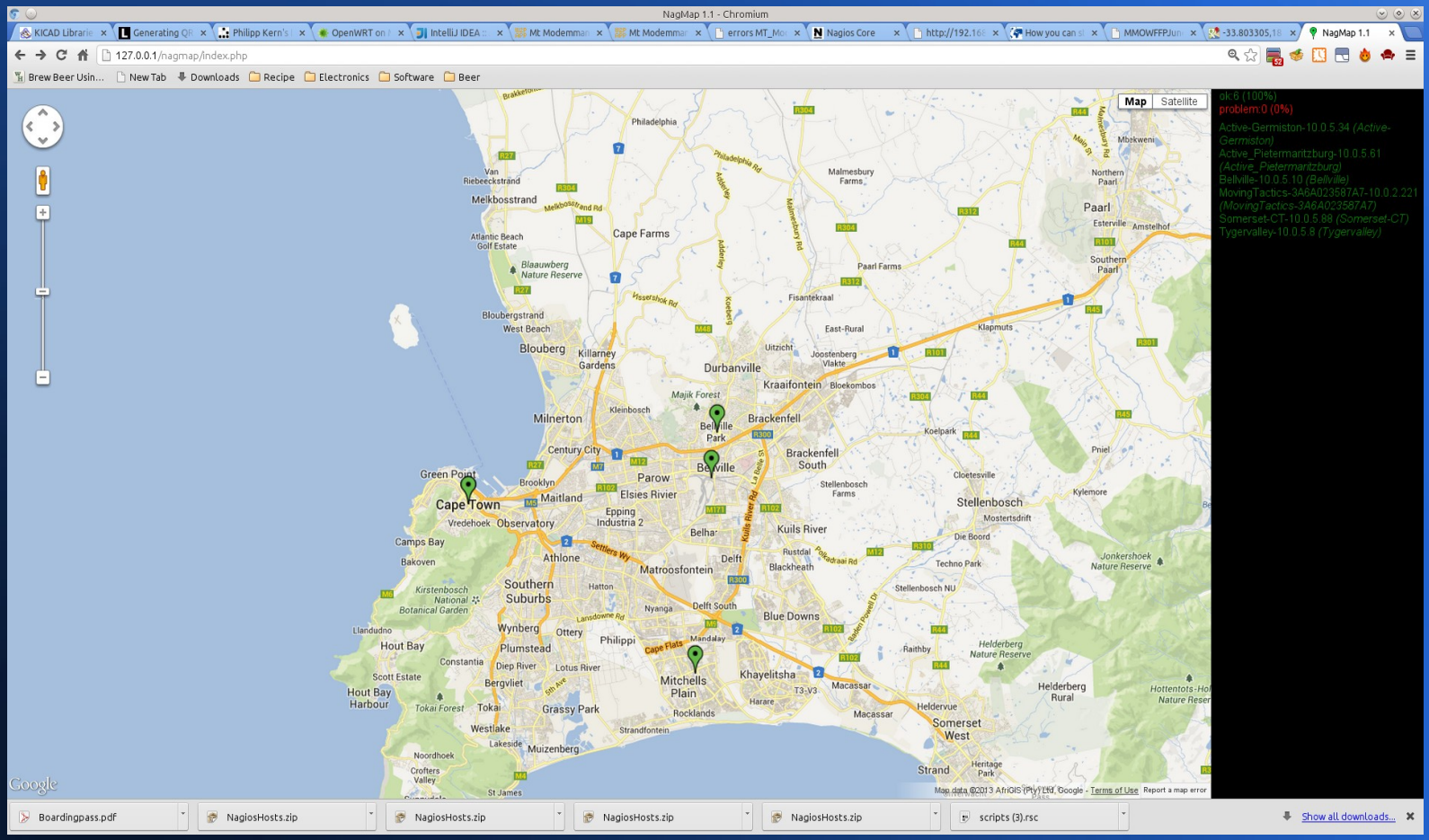
Sample



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Lets see this in practice

- I'm going to show this using Winbox

Remote Automation

- It would be great if it was possible to have RouterOS monitor and control external hardware
- Great for high sites and in the field automation
- No need for extra GSM control units
- We need a device that interface to the real world and communicate with routerOS

USB / SMS switch

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USB Switch

- Has a solid state AC and DC switch
- 2 Analogue / Digital Inputs
- 1 External RS232 port
- GSM modem
- Provides 5 virtual serial ports
- Micro-controller for application development

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How to use it

- Why 5 serial ports
- RouterOS does not allow for reading from Serial devices
- It does allow logging to a file
- If logging is enabled, then it is not possible to write to the same port
- So we have a command port and an read only echo port
- Use init-string to send AT command, read result by parsing the logging file
- It is a hack but it works

External Serial

- All traffic is directed to the external serial port
- Also provides 2nd read only port for incoming data
- Can be read or written to via scripts or API

GPRS Modem

- Can be used to provide limited connectivity to Internet (GPRS speeds!)
- Send and receive SMS from RouterOS
- On board micro controller can intercept incoming SMS to perform independent Reset of power etc.

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Example

- Product is still in beta development, many features still to be added
- Simple AT command interface e.g.
  - AT!IO=1,1
  - AT!WDTSTART=1
  - AT!IO?1
- Controllable from script

Demonstration

- I will demonstrate this using a RB-751 and Winbox

Future Developments

- Just getting started with Mikrotik peripherals
- 8/16 port power switch is currently in development, USB or serial port (DB9) for compatibility with many Mikrotik products
- Controlling/monitoring a remote site over back haul link, using using existing infrastructure
- Your inputs suggestions would be greatly appreciated

Thanks

- Thanks for you time
- Contact me via
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- Questions and Answers

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