



Monitoring PowerBox with The Dude on Rural Area

by Paul Darius

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About Presenter

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- **From Padang – Sumatra Barat - Indonesia**
- **Founder & owner Sky Networks Solusindo (2007)**
- **First time introduce to MikroTik @ 2004 with RB230+R52**
- **MTCNA (2011), MTCTCE (2012), MTCUME (2013), MTCRE (2014), MTCINE (2014)**

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West Sumatra - Indonesia



About Mentawai Islands

- **Biggest regency in West Sumatra**
- **Totally rural area; 140-160KM distance from Sumatra land**
- **Traditional**
- **Mosquitos**
- **Earthquake**
- **Best surfing spot area**

Live in Mentawai



Mentawai Traditional House **(called UMA)**



One of Surfing Spot Area



Objective

- **When we have a Cell Tower to serve customer on rural area.**
- **No commercial power available on the sites.**
- **Too expensive to run power generator as always depend on unrenewable power / fuel.**
- **So far only Solar Panel available as an option.**

Most Common Installation

- **From Solar Grid go to Charge Controller such as MPPT or others.**
- **From Charge Controller connect to batteries and the loads.**
- **The connection to the loads are very vary depend of the needs.**
 - **DC cable directly goes to the radio unit.**
 - **Use the PoE and goes to the radio unit.**
 - **Use another unit to control such as PowerBox / RB750Pr2**

Example of typical installation



Problem on that installation

- **Not good looking**
- **Too many cables**
- **Too many PoE and Power Adaptors**
- **Too many hassle during installation**
- **Not easy to do regular maintenance**
- **The cables may be too sensitive**

PowerBox/hEX Specification

10/100 Ethernet ports	5
10/100/1000 Ethernet ports	0
PoE in on ether1	yes
PoE out on ether2-5 (firmware v2.0)	yes, max 1A per port, total 2.2A for all ports
Supported input voltage	8-30VDC
Voltage Monitor	yes
Max Power consumption	Up to 3W



Product Varians

- **RB750UP (shown on prev picture)**
- **RB750UPr2 or hEX PoE Lite**
- **RB750P-PBr2 or PowerBox**
- **RB960PGS or hEX PoE**
- **RB OmniTikUPA-5HnD or OmniTIK 5 PoE**
- **RB OmniTikPG-5HacD / OmniTIK 5 PoE ac**

See <http://www.routerboard.com> for the detail of the above items.

Installation with PowerBox/hEX PoE Lite



Installation with PowerBox/hEX PoE Lite

- **Look nice / pretty**
- **One cable for each device**
- **Only one power adaptor need**
- **No PoE unit needs**
- **No hassle on installation**
- **Easy to do the maintenance**
- **The on/off and reboot can be done remotely.**
- **Add-on: monitoring
(we will focus on this)**

Direct Monitoring

To do direct monitoring, logon into routerboard and issue the command as follow :

```
[admin@MikroTik] > interface ethernet poe monitor [find]
```

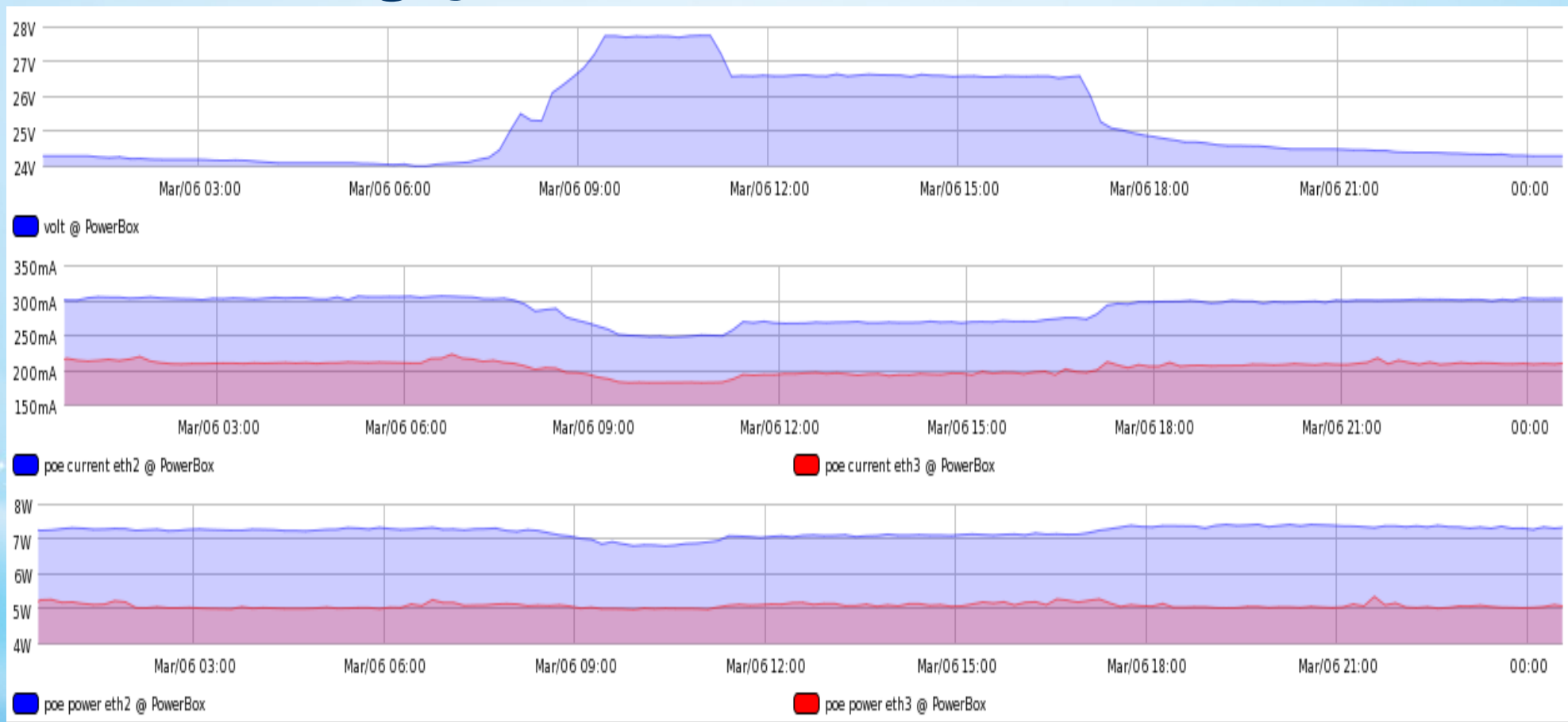
	name: ether2	ether3	ether4	ether5
poe-out-status:	powered-on	powered-on	powered-on	powered-on
poe-out-voltage:	23.6V	23.6V	23.6V	23.6V
poe-out-current:	38mA	30mA	83mA	112mA
poe-out-power:	0.8W	0.7W	1.9W	2.6W

Info from Direct Monitoring

- **The info shown one unit PowerBox with 4 devices connected and powered.**
- **The info shown only when the command issued (current situation), such as power out status, the power voltage, current (mA) and power consumption (W) on each port.**
- **As the input voltage may be up and down, we can not gather the history info.**

Monitoring the PowerBox

With the proper setup of snmp both on routerboard and The Dude, than we can get the monitoring picture like the following picture :



Monitoring the PowerBox

12 hours daytime version

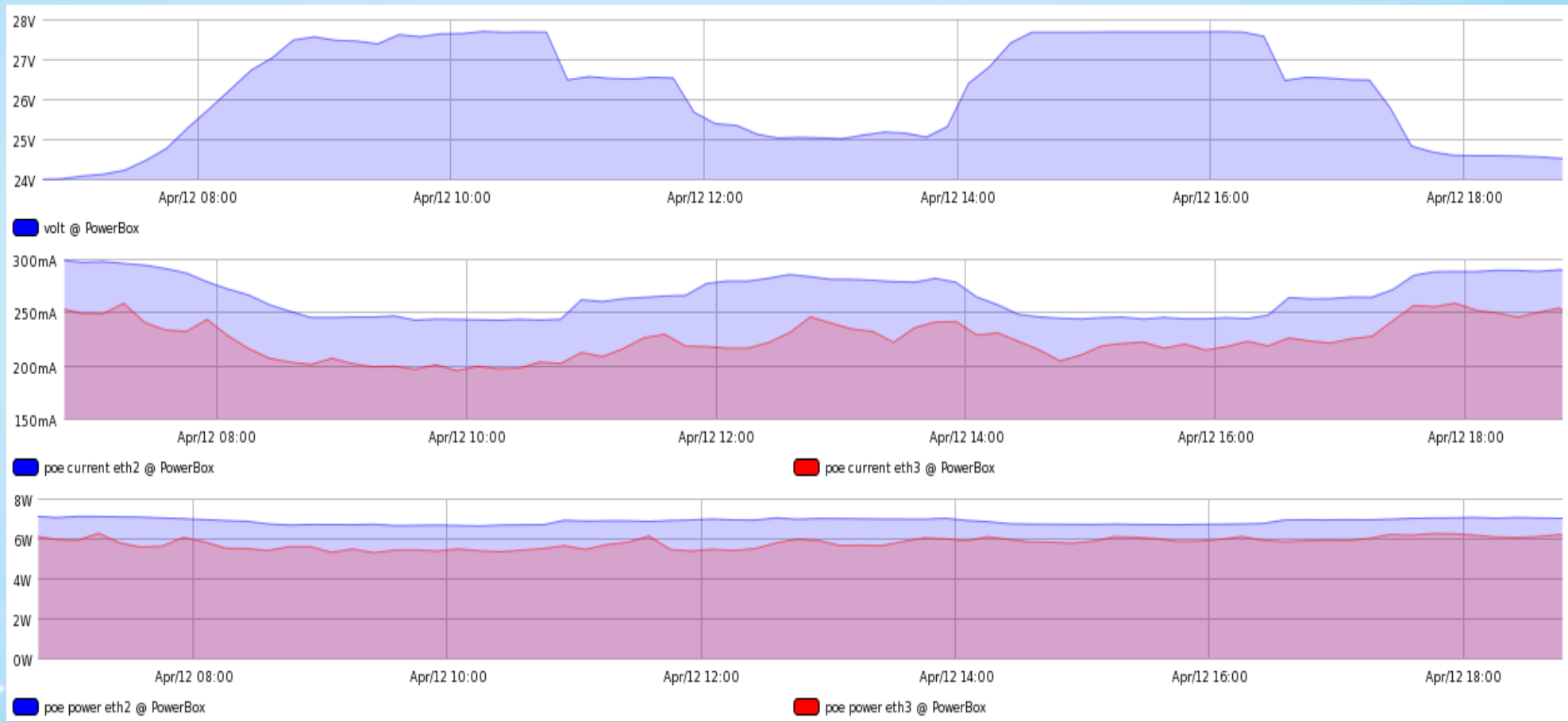


Monitoring the PowerBox

The previous picture show :

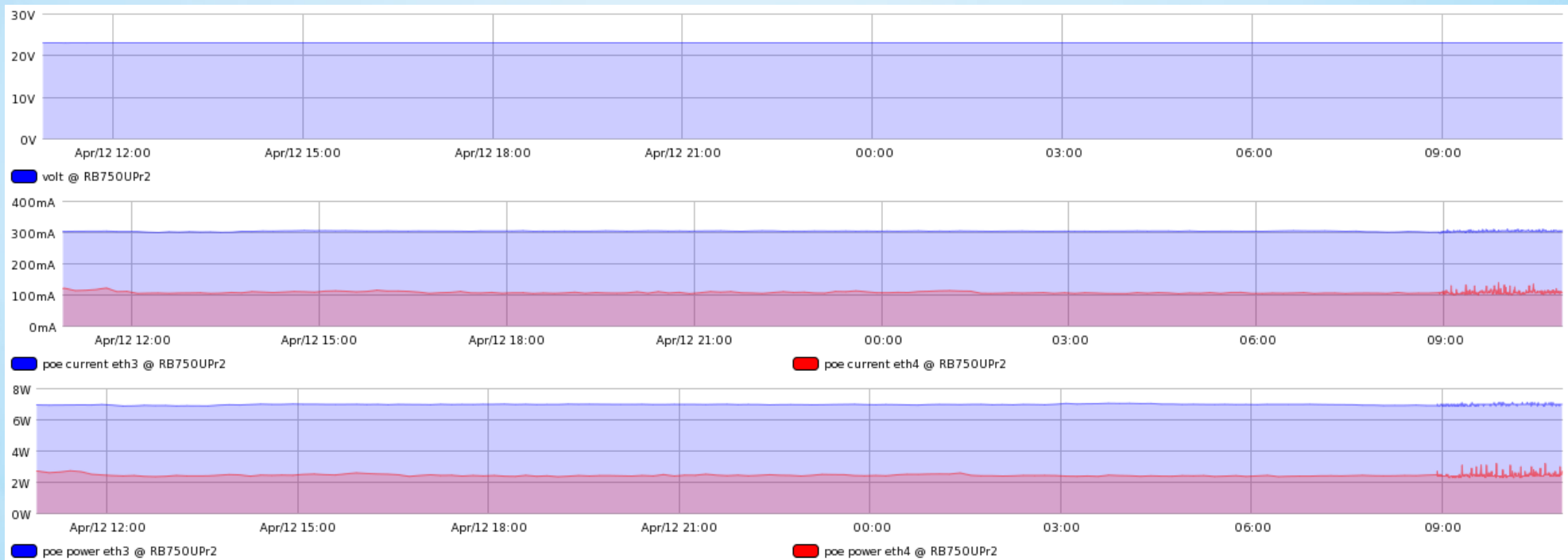
- **One unit PowerBox powered with solar panel on rural area**
- **The mention PowerBox connected with another 2 devices and powered up.**
- **The input voltage during last 24 hours.**
- **The changes of input voltage will impact to the current supplied into each devices.**

Monitoring the PowerBox another 12 hours daytime version



**The above graph show the bad weather condition
around 12pm - 2pm**

No Monitoring need of Stable Static Power



Conclution (1)

- **With the proper setup of snmp at routerboards and The Dude, we can monitor not only the device status and bandwidth, but the power parameters as well.**
- **The devices will consume almost the same amount of power (W) at any voltage supplied**
- **The higher of input voltage will trigger the lower current supplied**
- **The lower of input voltage will trigger the higher current supplied**

Conclution (2)

- **With the power situation graphed, we will know the batteries bank capacities compare to the output power supplied.**
- **We will know when the batteries bank need to be replaced and or added.**
- **The graphs also show the weather condition during day time :) *Bonus**
- **For advance usage, we can put script that will send an alert (by email and or sms) when the voltage lower than the certain value (such as lower than 24V)**

Advice and or question ?

Thank you for watching this presentation.
For any other further enquiries, please email
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