

Centralised Router Configuration

using

RouterOS API and PHP

Mike Everest, DuxTel Pty Ltd



Take Control...
www.duxtel.com.au

about us...

about Mike Everest:

- IT and Data Networking since 1986
- Background in ISP since 1995
- MikroTik Enthusiast since 2004
- Formed DuxTel in 2007

about DuxTel:

- ISP and Public Access Specialist
- Data Network Hardware and Software solutions
- MikroTik Distributor in Australia and Pacific
- Predominantly B2B



why API?

API = Application Programming Interface:
A mechanism to automate configuration,
management and monitoring tasks.

Examples:

Network of *Freenet* HotSpot devices based on advertising campaigns. API can be used to develop a means of automatically rolling out a walled garden list to all or selected hotspots, as well as to set campaign-specific info such as SSID name.

Serviced Office network resource. API can be used to develop an automated means to enable/disable Aps and VirtualAPs, set and modify WPA encryption, enable/disable public access and/or authentication.



a live example...

DuxTel -> DuxTelReseller [help](#)

HotSpot details for MUM-AU-2012 (locationID: 832)

Device Name: MUM-AU-2012

Description: MUM Sydney 2012

▶ **Device Properties:**

▼ **Configuration properties:**

Ticket Domain: dtrslr

Logon Host: login.duxtel

Retail Ticket Sales:

Test Mode:

Payment Pop-up Warning:

Configuration Set: demo

Walled Garden Sets (1 selected):
none
Geelong Info.Net
demo set
DuxTel Set

Retail Address:

Street: the vibe

City: Rushcutters bay

State: NSW

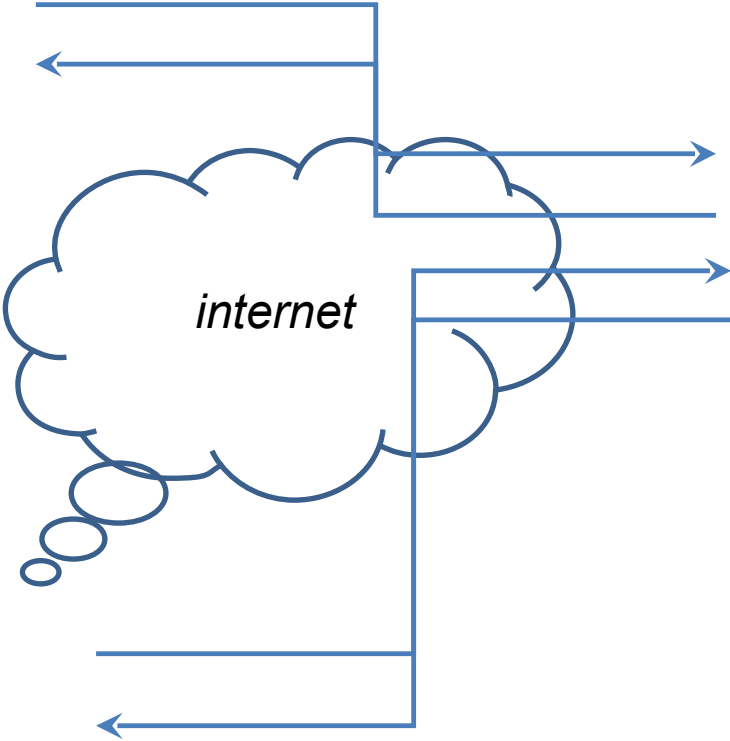
Postcode: 2000

Location Coords: lat: long:

▶ **HotSpot Login Page:**



how it works...



putting it together...

Step1:prepare the router

The screenshot displays the Mikrotik WinBox interface for configuring a user. The main window shows the 'User List' table with the following data:

Name	Polices
api	read write api
full	local telnet ssh ftp reboot read write policy t
read	local telnet ssh reboot read test winbox pas
write	local telnet ssh reboot read write test winbox

A dialog box titled 'IP Service <api>' is open, showing the configuration for the 'api' user:

Name	Port	Available From	Certificate
api	8728	10.220.0.0/24	
ftp	21		
ssh	22		
telnet	23		
winbox	8291		
www	80		
www-ssl	443		none

The 'IP Service <api>' dialog box also shows the following fields:

- Name: api
- Port: 8728
- Available From: 10.220.0.0/24
- enabled

The background shows the Mikrotik WinBox interface with the 'Users' menu open, and the 'User List' dialog box open. The 'User List' dialog box shows the 'api' user selected, and the 'IP Service <api>' dialog box is open, showing the configuration for the 'api' user.



putting it together...

Step2:prepare the web site

- install web server software: apache, IIS, **lighttpd**, etc
- download & install php (<http://php.net>)
- get the PHP API* class from http://wiki.mikrotik.com/wiki/API_PHP_class



API structure...

Official Docs - <http://wiki.mikrotik.com/wiki/Manual:API>

Commands

Filters

Attributes



API structure...

Official Docs - <http://wiki.mikrotik.com/wiki/Manual:API>

Commands

approximately equivalent to shell, e.g:

Filters
`/interface/vlan/remove`
`/ip/route/add`

use 'getall' instead of 'print', e.g:

Attributes
`/ip/address/getall`
`/ppp/secret/getall`
`/hotspot/active/getall`



API structure...

Official Docs - <http://wiki.mikrotik.com/wiki/Manual:API>

Commands

filter results of getall, e.g:

```
/interface/getall  
?name=ether3
```

Filters

Attributes



API structure...

Official Docs - <http://wiki.mikrotik.com/wiki/Manual:API>

Commands

Filters

define specific parameters, e.g:

```
/ip/address/add  
=address=192.168.1.1/24  
=interface=ether3
```

Attributes



sample application...

step1: read the wireless interfaces and display

- API->connect(router_address, uname, passwd)
- API->write(command, process=true)
- API->read(parse=true)

```
1 <?php
2     require('routeros_api.class.php');
3     $API = new routeros_api();
4
5     $API->connect('192.168.88.1', 'duxtel', 'password');
6
7     $API->write('/int/wireless/getall', false);
8
9     $results = $API->read(true);
10    print_r($results);
11    ?>
12    |
```

- Always start with API->connect()
- There must be 1 and only 1 API->read() for each API->write()



sample application...

step2: extract the interface ID, write a change

```
Array
(
  [0] => Array
  (
    [.id] => *1
    [name] => wlan1
    [mtu] => 1500
    [l2mtu] => 2290
    [mac-address] => 00:0C:42:67:FD:49
    [arp] => enabled
    [interface-type] => Atheros 11N
    [mode] => ap-bridge
    [ssid] => MUMAU2012
    [frequency] => 2412
    [band] => 2ghz-b
    [channel-width] => 20mhz
    [scan-list] => default
    [wireless-protocol] => unspecified
    [wds-mode] => disabled
    [wds-default-bridge] => none
    [wds-ignore-ssid] => false
    [bridge-mode] => enabled
    [default-authentication] => true
    [default-forwarding] => true
    [default-ap-tx-limit] => 0
    [default-client-tx-limit] => 0
    [hide-ssid] => false
    [security-profile] => default
    [compression] => false
    [running] => false
    [disabled] => true
    [comment] => a comment
  )
)
```



sample application...

step2: extract the interface ID, write a change

```
1  <?php
2      require('routeros_api.php');
3
4      $API = new routeros_api();
5
6      $API->connect('192.168.88.1', 'duxtel', 'password');
7
8      $API->write('/int/wireless/getall', false);
9      $API->write('?name=wlan1');
10
11     $results = $API->read(true);
12
13     echo 'interface id='.$results[0]['.id'];
14
15     $API->write('/int/wireless/set', false);
16     $API->write('=.id='.$results[0]['.id'], false);
17     $API->write('=ssid=MUMAU2012', false);
18     $API->write('=disabled=no');
19
20     $results = $API->read(true);
21
22     echo '<pre>';
23     print_r($results);
24     echo '</pre>';
25
26     $API->disconnect();
27 ?>
```



sample application...

step3: generalise it

```
1 <?php
2     require('routeros_api.php');
3
4     $routeraddress = '192.168.88.1';
5     $login = 'duxt看el';
6     $pass = 'password';
7
8     $wlanname='wlan1';
9     $wlanssid='MUM2012';
10    $disabled='no';
11
12    $API = new routeros_api();
13
14    $API->connect($routeraddress, $login, $pass);
15
16    $API->write('/int/wireless/getall', false);
17    $API->write('?=name='. $wlanname);
18
19    $results = $API->read(true);
20
21    echo 'interface id='.$results[0]['.id'];
22
23    $API->write('/int/wireless/set', false);
24    $API->write('=.id='.$results[0]['.id'], false);
25    $API->write('=ssid='.$wlanssid, false);
26    $API->write('=disabled='.$disabled);
27
28    $results = $API->read(true);
29
30    echo '<pre>';
31    print_r($results);
32    echo '</pre>';
33
34    $API->disconnect();
35    ?>
36
```



sample application...

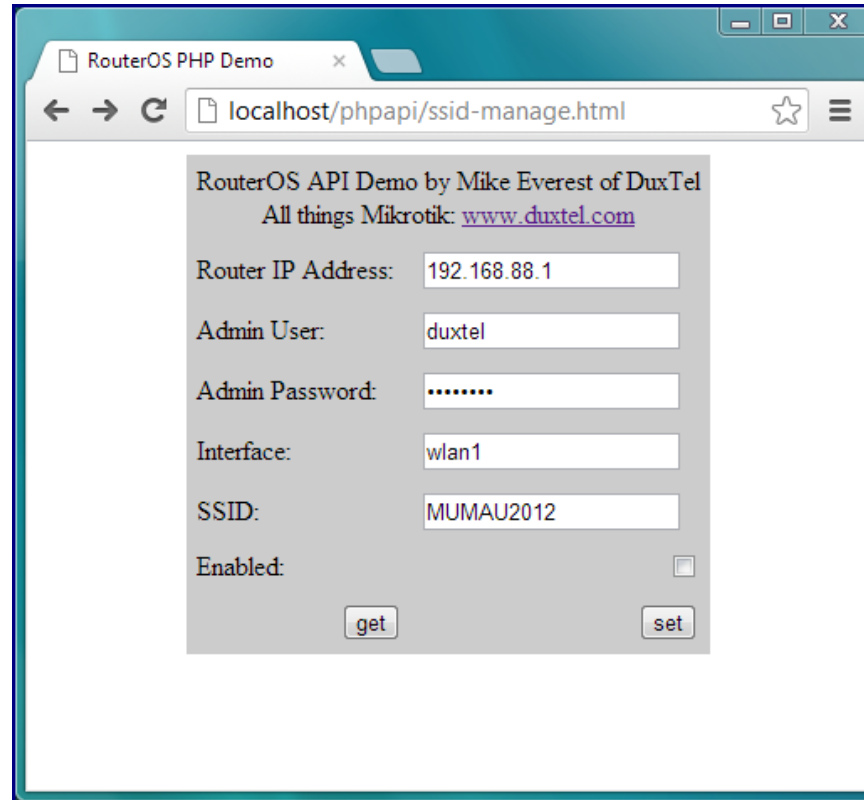
step3: generalise it

```
1 <?php
2     require('routeros_api.php');
3
4     $routeraddress = $_GET['host'];
5     $login = $_GET['login'];
6     $pass = $_GET['pass'];
7
8     $wlanname=$_GET['interface'];
9     $wlanssid=$_GET['ssid'];
10    $disabled=$_GET['disabled'];
11
12    $API = new routeros_api();
13
14    $API->connect($routeraddress, $login, $pass);
15
16    $API->write('/int/wireless/getall', false);
17    $API->write('?name='.$wlanname);
18
19    $results = $API->read(true);
20
21    echo 'interface id='.$results[0]['id'];
22
23    $API->write('/int/wireless/set', false);
24    $API->write('=.id='.$results[0]['id'], false);
25    $API->write('=ssid='.$wlanssid, false);
26    $API->write('=disabled='.$disabled);
27
28    $results = $API->read(true);
29
30    echo '<pre>';
31    print_r($results);
32    echo '</pre>';
33
34    $API->disconnect();
35    ?>
36
```



sample application...

step4: AJAX abstraction



The screenshot shows a web browser window titled "RouterOS PHP Demo" with the address bar displaying "localhost/phpapi/ssid-manage.html". The page content includes a header with the text "RouterOS API Demo by Mike Everest of DuxTel" and "All things Mikrotik: www.duxtel.com". Below the header is a form with the following fields and values:

Router IP Address:	<input type="text" value="192.168.88.1"/>
Admin User:	<input type="text" value="duxtel"/>
Admin Password:	<input type="password" value="....."/>
Interface:	<input type="text" value="wlan1"/>
SSID:	<input type="text" value="MUMAU2012"/>
Enabled:	<input type="checkbox"/>

At the bottom of the form are two buttons: "get" and "set".



do it yourself...

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shop.duxtel.com.au

.....meet us at the MUM!
MikroTik User Meeting in Sydney Australia
October 24th 2012

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DuxTel: the MikroTik Wholesale Distributor for Australia and Pacific

RB2011UAS-RM: 2011 Router SFP, 5Fe, 5GBe, USB, Serial, Rack Mou

RB2011UAS-RM: The suped up 2011 router with SFP and USB! RouterBOARD 2011UAS, in comparison with RB2011L series, not only has five Gigabit LAN ports and five Fast Ethernet LAN ports, but also has...

\$118.15 - \$139.00

MORE INFO >

New Products For October

- RB2011UAS-RM: 2011 Router SFP, 5Fe, 5GBe, USB, Serial, Rack Mou \$118.15 - \$139.00
- RB2011UAS-IN: 2011 Router with SFP, 5Fe, 5GBe, USB, Serial and \$118.15 - \$139.00
- 24POW19: 24V, 19.2W Switch Mode Plug Pack Power Supply \$17.60 - \$19.90
- RB2011UAS-2HnD-IN: 2011 RouterBoard with the lot! \$126.65 - \$149.00
- RB/711UA-5HnD: 711 router for Base Station/AP with dual chain 5G \$75.65 - \$89.00
- RB2011L-RM: 5Fe and 5GBe in rack mount case \$97.75 - \$115.00

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Bestsellers

- Nf2MMCX: NFem: MMCX Pigtail
- Nf2UFL: NFem-UFL Pigtail
- RB751U-2HnD: Soho wireless AP with 5 ethernet and USB
- RB/433: Mikrotik RouterBoard 433
- R52Hn: High Power dual band 802.11a/b/g/n miniPCI wireless

Specials

- 5SECT20-DP-E: Dual Polarity 90° Sector Antenna with Enclosure ~~\$199.00~~ \$110.00

Reviews

questions...?

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