



*Mikro***Tik**



- 70 employees
- Incorporated in 1996
- RouterOS in 1997
- RouterBOARD in 2002
- MUM in 2006

# EUROPE



# In this MUM

- 700 attendees
- 22 exhibitors
- 17 presentations
- 20<sup>th</sup> MUM

**mum**  
MikroTik User Meeting



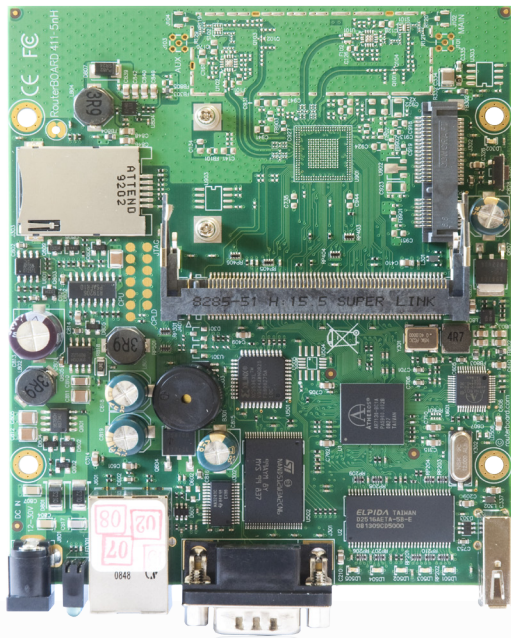
Poland, March 2010

# Meet the staff

- Arnis Riekstiņš CTO
- John Tully CEO
- Janis Jankovskis SALES
- Edmunds Aperans SALES
- Uldis Čerņevskis WIRELESS
- Māris Bulāns ROUTING
- Jānis Meģis QOS
- Normunds Rustanovičs SUPPORT

Current products

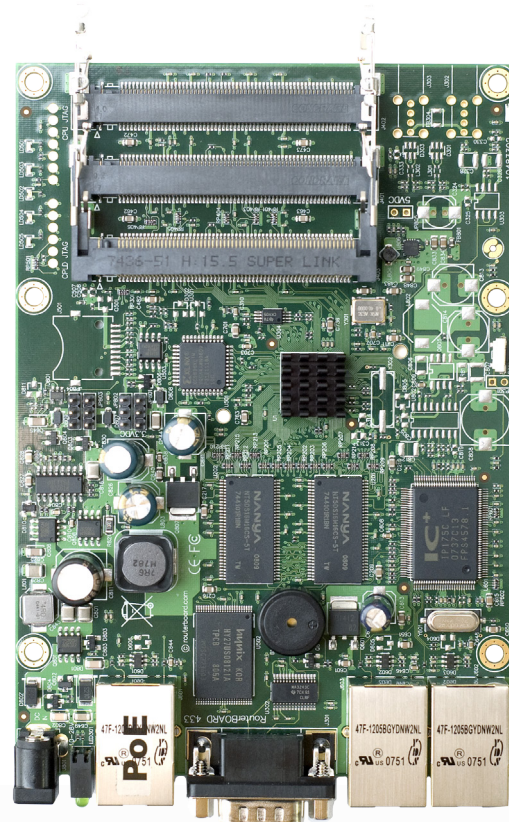




RB411

+

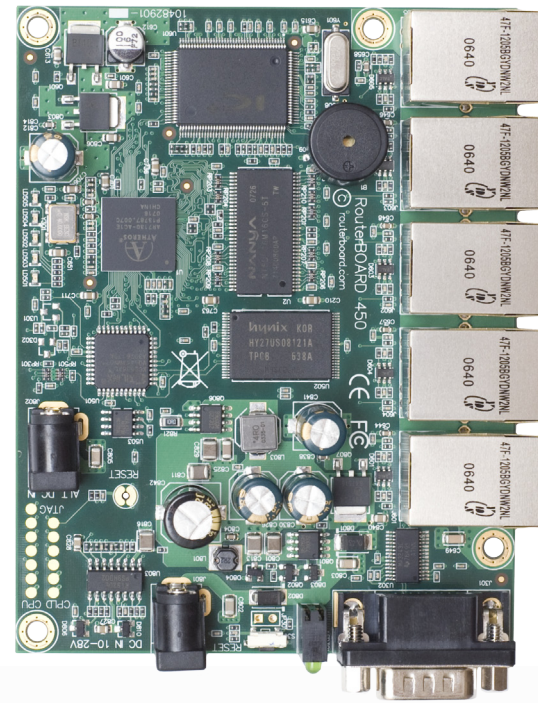
- Faster CPU
- More RAM
- USB port
- miniPCI-e
- Built in radio



RB433

+

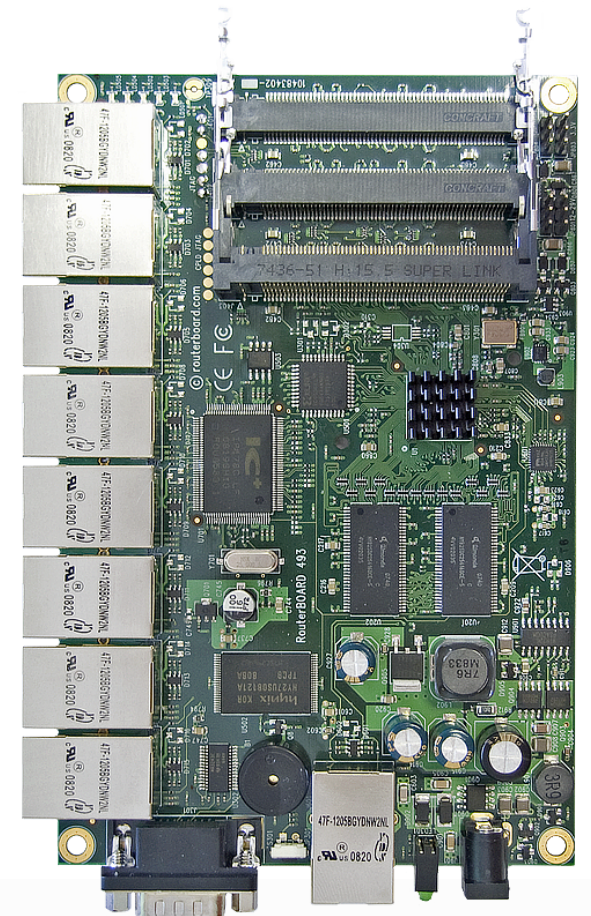
- Faster CPU
- More RAM
- USB ports



RB450

+

- Faster CPU
- More RAM
- Gigabit



RB493

+

- Faster CPU
- More RAM

A - More memory

H - High power

G - Gigabit high power

U - USB

R - Built in Wireless

N - 802.11n

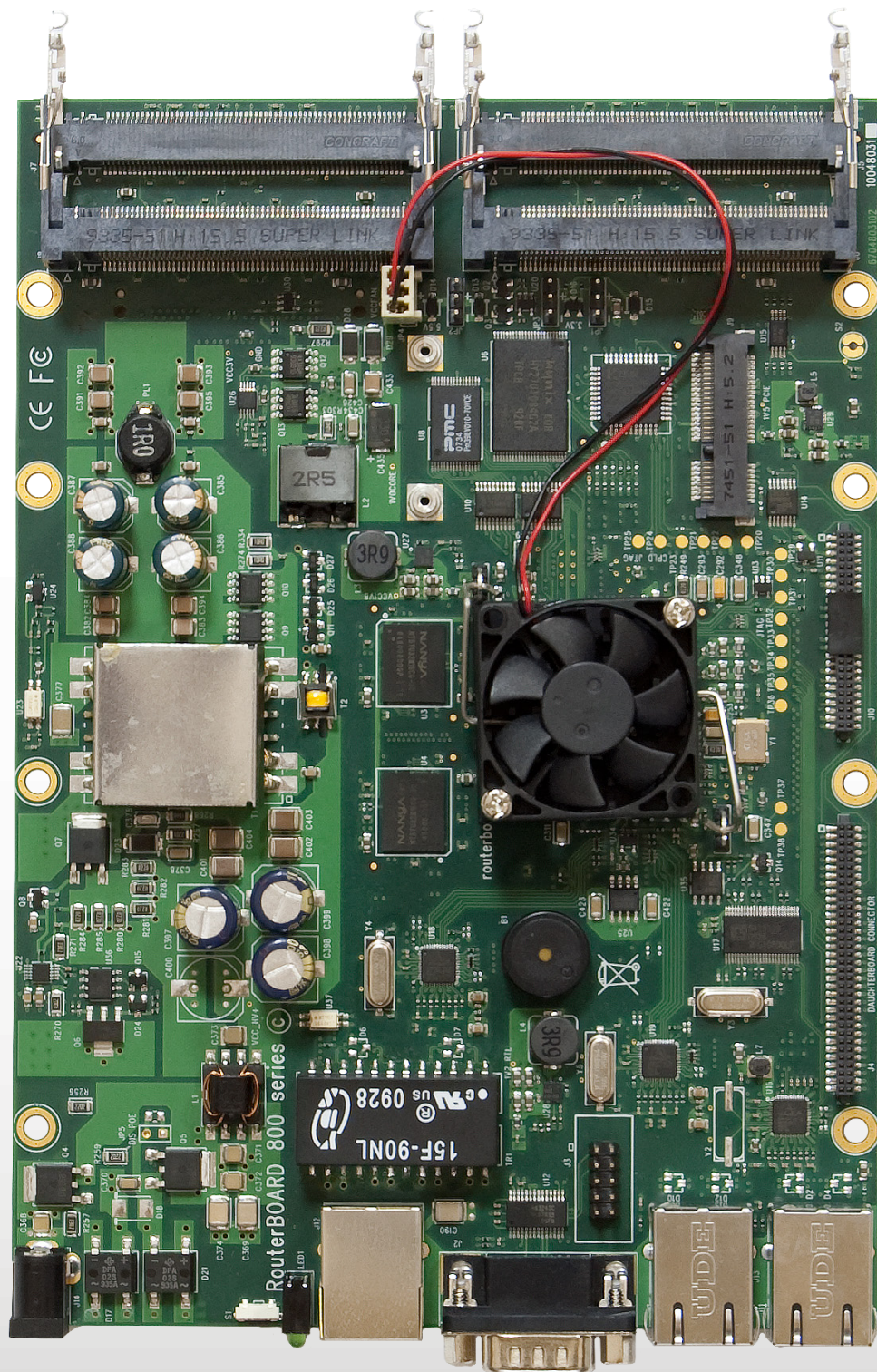
S - ?





# RB750 + RB750G

ROUTEROS AFFORDABLE  
SMALL FAST FEATURED +



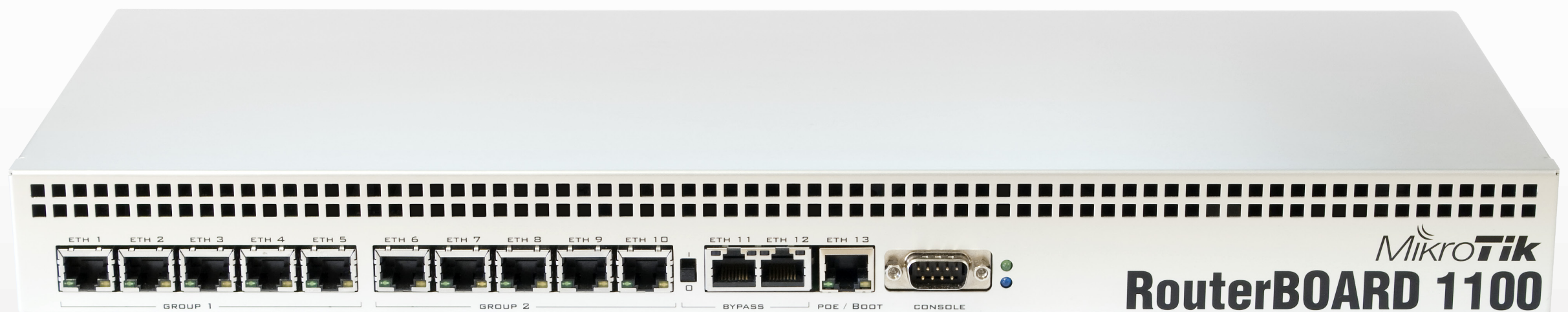
# RB800

- 4 miniPCI slots
- 3 Gigabit ports
- 2 Daughterboard ports
- 1 miniPCI-e slot

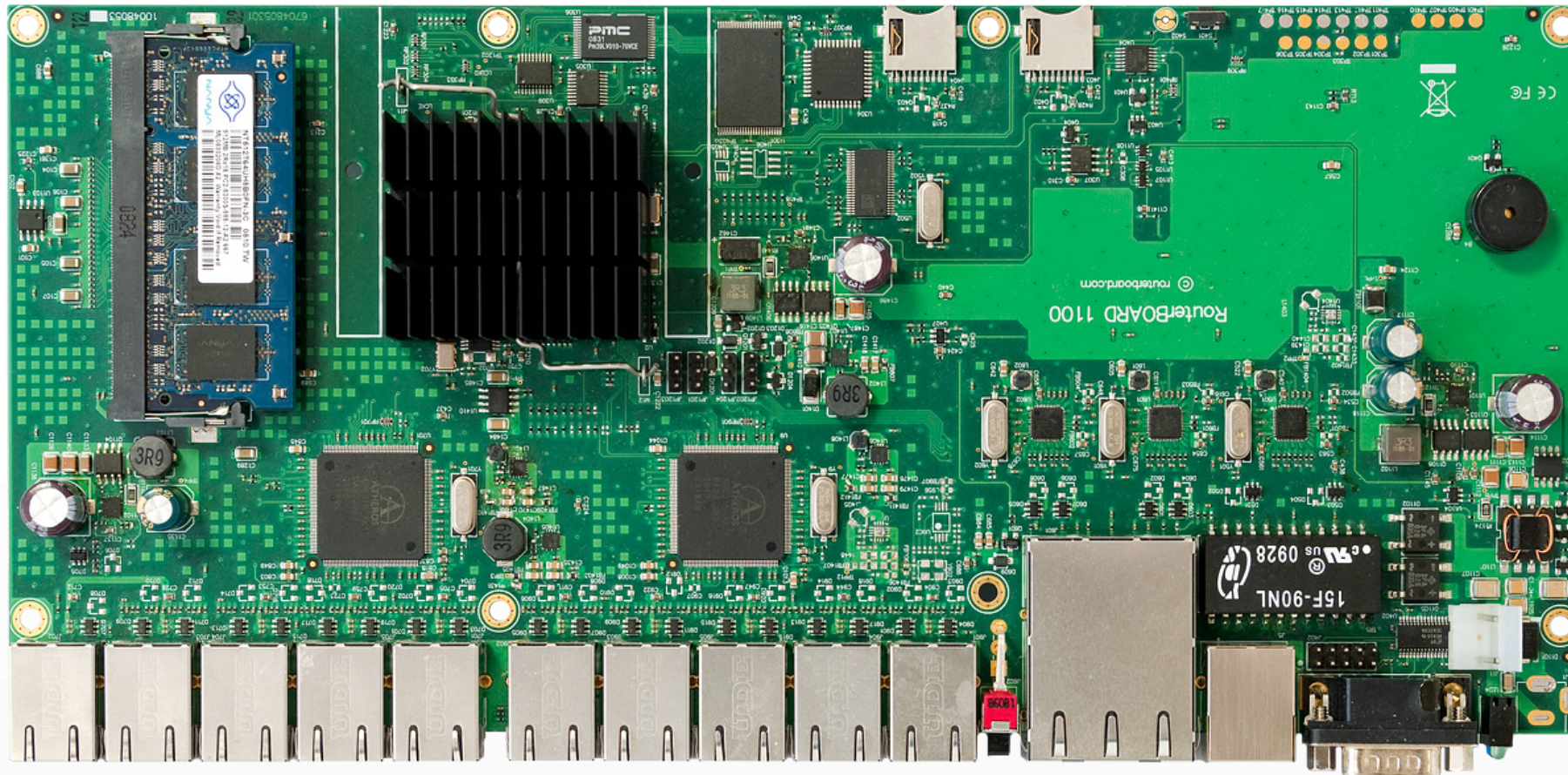
New products



# RB 1100



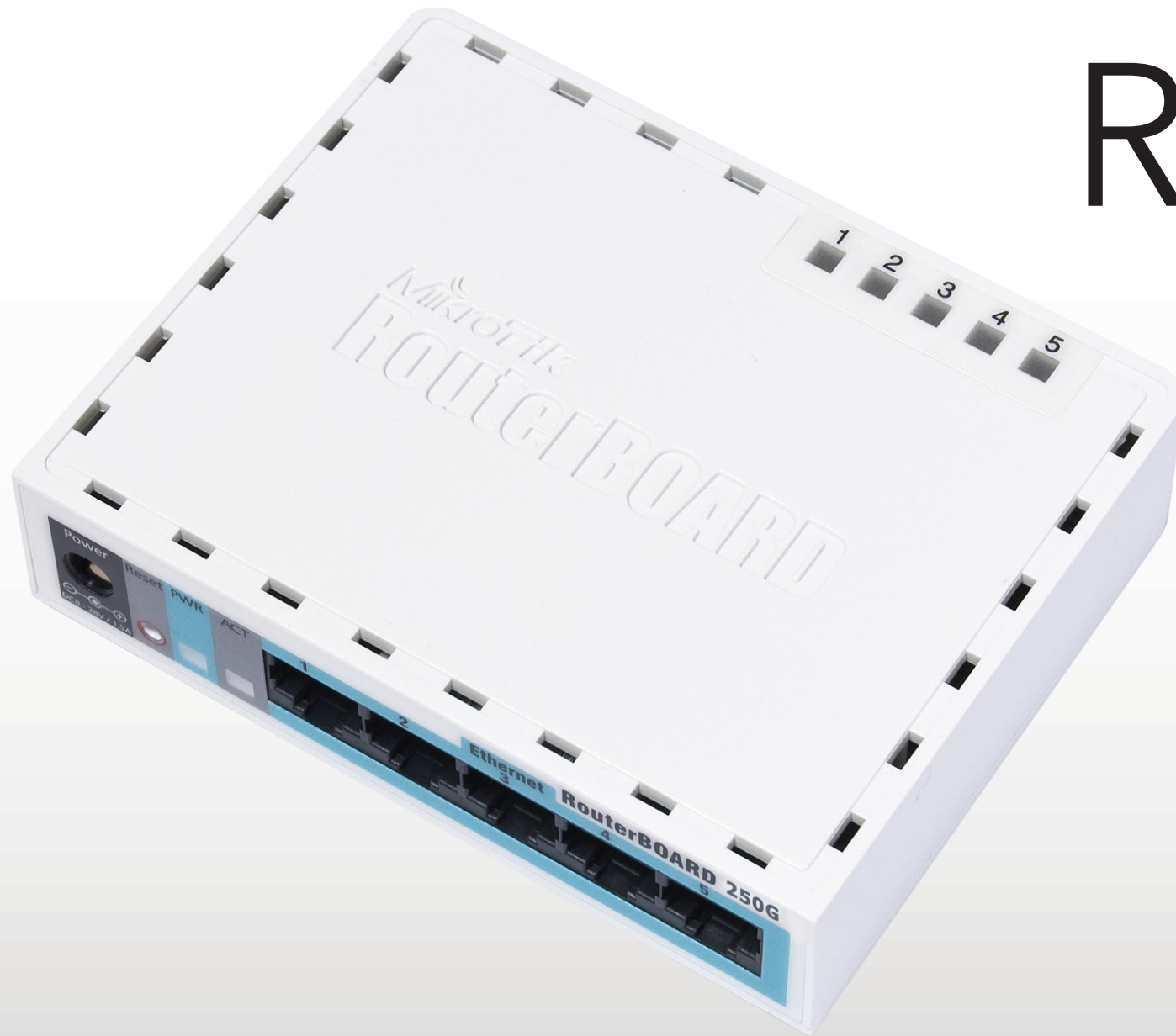
# RB1100



- 13 Gigabit ports
- Bypass ability
- 1U rackmount case
- Fastest RouterBOARD

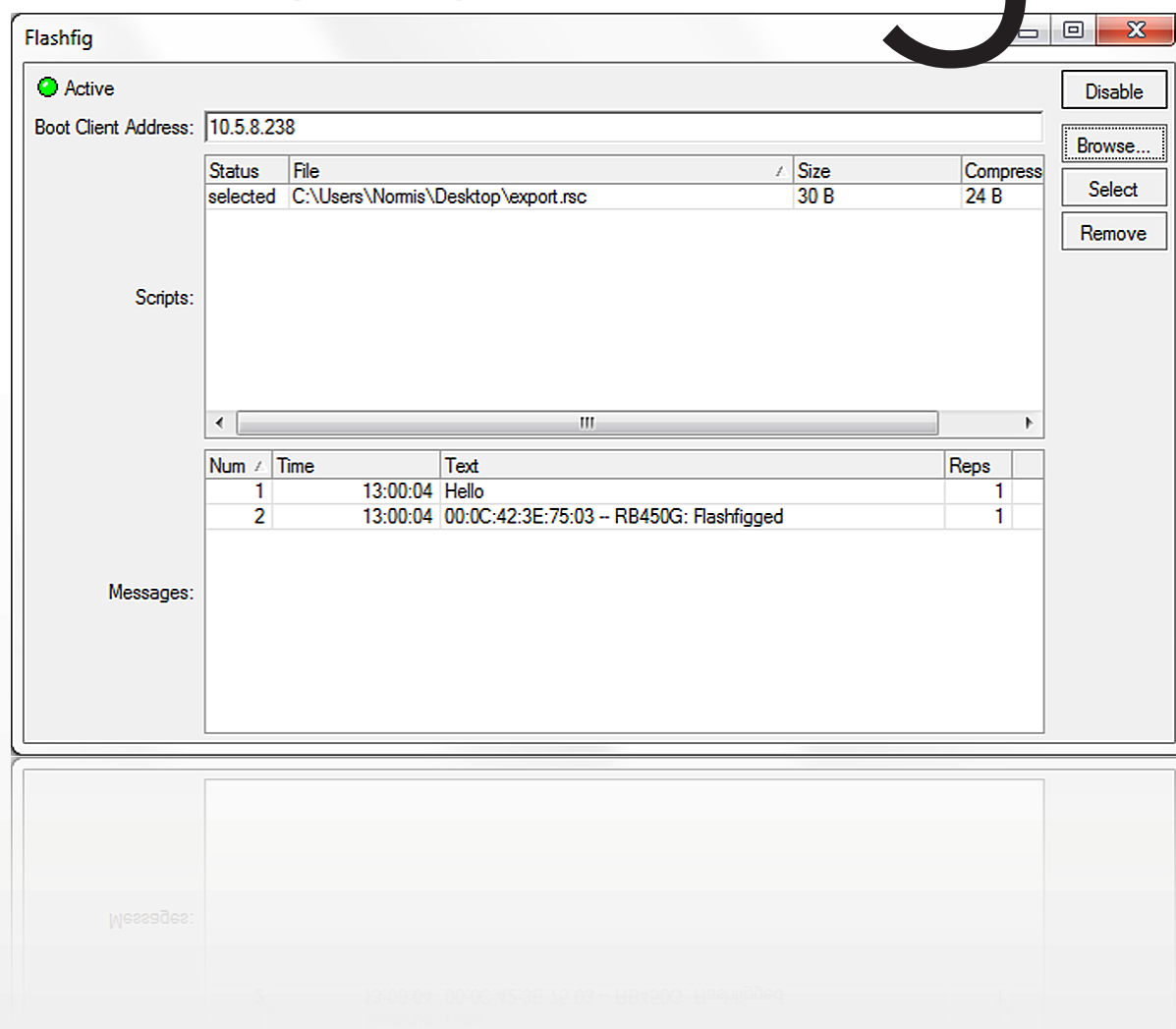


# RB250GS



- Gigabit switch
- Runs SwOS
- Fast and Affordable
- Regular or Smart

# Flashfig



- Included in Netinstall
- Uses RSC files
- Factory preconfigured
- Plug and go

3 seconds!

# RouterOS 5

- new kernel 2.6.32.5
- support for IPv6 over PPP
- support for MPLS over PPP
- added support for SSTP VPN
- new ssh
- ssh supports forwarding
- new Intel ethernet drivers
- updated SMP support for multicore

Webfig



- completely new web interface
- winbox inside browser
- works on all platforms
- works on modern phones
- first version already in v5 beta 1

RouterOS 5 public beta  
expected in 2 weeks

SwOS

- SwOS – Switch Operating System allows you to access all switch-chip build-in features
- Web (http) based configuration
- Very fast
- No latency even on wire speed throughput
- Supported only on RouterBOARD switches (RB250GS)

# NDP support

Neighbour Discovery Protocol Support

WinBox Loader v2.2.16

Connect To:  ...

Login:

Password:

Note:

MAC Address	IP Address	Identity	Version	Board Name
00:0C:42:00:2F:FF	192.168.88.1	MikroTik	1.0beta1	RB250GS

Address



- Port forwarding table - allows or restricts traffic flow between two specific ports
- Port lock - MAC address filter, allow communications only with hosts specified in "Static Host" menu
- Port mirroring - allows to mirror any traffic to a specific port for capture and analysis
- Bandwidth limit - hardware level speed limitation

# Forwarding

MikroTik SwOS

[Link](#)[Forwarding](#)[Statistics](#)[VLAN](#)[VLANs](#)[Static Hosts](#)[Hosts](#)[SNMP](#)[ACL](#)[System](#)[Logout](#)

	Port1	Port2	Port3	Port4	Port5
<b>Forwarding</b>					
From Port 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
From Port 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
From Port 3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
From Port 4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
From Port 5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Port Lock</b>					
Port Lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lock On First	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Forwarding

☐☒☒☒☒☒☐☒☒☒☒☒☐☒☒☒☒☒☐☒☒☒☒☒☐

## Port Lock

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# Forwarding

## Port Mirroring

Mirror Ingress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mirror Outgress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mirror To					

## Bandwidth Limit

Ingres Rate	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Outgres Rate	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

## Broadcast Storm Control

Storm Rate	1k f/s ▼	unlimited ▼	unlimited ▼	unlimited ▼	unlimited ▼
Include Unicast	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Broadcast Storm Control – allows to limit the number of broadcast packets sent by interface.

# Statistics

MikroTik SwOS

[Link](#)[Forwarding](#)[Statistics](#)[VLAN](#)[VLANs](#)[Static Hosts](#)[Hosts](#)[SNMP](#)[ACL](#)[System](#)[Logout](#)

	Port1	Port2	Port3	Port4	Port5
<b>Rx</b>					
<b>Bytes</b>	49137755	2696843756	3478396191	3528748534	3558993306
<b>Total Packets</b>	594977	341935851	142862936	142945886	143012335
<b>Unicasts</b>	559918	341934740	142861928	142944878	143011277
<b>Broadcasts</b>	202	1105	1002	1002	1052
<b>Multicasts</b>	34857	6	6	6	6
<b>64</b>	559464	2039	1622	1562	1612
<b>65-127</b>	370	72839	72472	69122	72032
<b>128-255</b>	134	202582	201464	192248	200498
<b>256-511</b>	27	729555	725659	692549	722436
<b>512-1023</b>	6062	3932190	1725775	1854335	1879518
<b>1024-1518</b>	28920	336996646	140135944	140136070	140136239
<b>1519-max</b>	0	0	0	0	0
<b>Pauses</b>	557751	0	0	0	0
<b>Total Errors</b>	0	1	0	1	1
<b>FCS Errors</b>	0	1	0	0	0

# VLAN

It is possible to specify what VLANs are supported by specific interfaces

MikroTik SwOS

Link Forwarding Statistics VLAN **VLANs** Static Hosts Hosts SNMP ACL System Logout

Pending changes

VLAN ID	Port1	Port2	Port3	Port4	Port5		
<input type="text" value="11"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cut	Insert
<input type="text" value="12"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cut	Insert
<input type="text" value="13"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cut	Insert



# VLAN

- Each interface support 4 VLAN modes

Disabled – ignore VLAN table

Optional – drop packets with restricted VLAN tags

Enabled – accept packets with allowed VLAN tags

Strict – same as Enable, but also checks VLAN support for inbound interface

- Default VLAN ID
- Force VLAN ID

# VLAN

MikroTik SwOS

Link

Forwarding

Statistics

VLAN

VLANs

Static Hosts

Hosts

SNMP

ACL

System

Logout

	Port1	Port2	Port3	Port4	Port5
Ingress					
VLAN Mode	<div>disabled</div>	<div>enabled</div>	<div>strict</div>	<div>strict</div>	<div>strict</div>
Default VLAN ID	<div>1</div>	<div>1</div>	<div>11</div>	<div>12</div>	<div>13</div>
Force VLAN ID	<div><input type="checkbox"/></div>	<div><input type="checkbox"/></div>	<div><input type="checkbox"/></div>	<div><input type="checkbox"/></div>	<div><input type="checkbox"/></div>
Egress					
VLAN Header	<div>leave as is</div>	<div>add if missing</div>	<div>always strip</div>	<div>always strip</div>	<div>always strip</div>
					<div>Discard Changes</div> <div>Apply All</div>

# Dynamic/Static Host Table

MikroTik SwOS

Link

Forwarding

Statistics

VLAN

VLANs

Static Hosts

Hosts

SNMP

ACL

System

Logout

Port1	Port2	Port3	Port4	Port5	MAC
					00:00:00:00:00:01
			X		00:00:0a:0a:0a:03
				X	00:00:0a:0a:0a:04
	X				00:00:0a:0a:0a:0b
	X				00:00:0a:0a:0a:0e
	X				00:00:0a:0a:0a:0f
	X				00:00:0a:0a:0a:10

MikroTik SwOS

Link

Forwarding

Statistics

VLAN

VLANs

Static Hosts

Hosts

SNMP

ACL

System

Logout

Pending changes

Port1	Port2	Port3	Port4	Port5	MAC	Drop	Mirror		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="00:00:0a:0a:0a:01"/>	<input type="checkbox"/>	<input type="checkbox"/>	Out	Insert
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text" value="00:00:0a:0a:0a:02"/>	<input type="checkbox"/>	<input type="checkbox"/>	Out	Insert
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="00:00:0a:0a:0a:03"/>	<input type="checkbox"/>	<input type="checkbox"/>	Out	Insert

# Access-List Rules

- SwOS allow you to implement limited number of Access-List rules (32 simple rules or 16 complex rules)
- Access-List rules allow you to capture traffic by MAC and IP header fields and change the value of some fields or redirect/mirror traffic to a different switch port

# Access-List Rules

MikroTik SwOS

Link

Forwarding

Statistics

VLAN

VLANs

Static Hosts

Hosts

SNMP

ACL

System

Logout

Pending changes

From: ☒ 1 ☒ 2 ☒ 3 ☒ 4 ☒ 5

Clear

Out

Insert

MAC Src:

MAC Dst:

Ethertype:  hex

VLAN: any ▼

VLAN ID:

Priority:

IP Src:

IP Dst:

Protocol:  DSCP:

☐ Redirect To ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ Mirror

Set VLAN ID:  Priority:

From: ☒ 1 ☒ 2 ☒ 3 ☒ 4 ☒ 5

Clear

Out

Insert

MAC Src:

MAC Dst:

Ethertype:  hex

VLAN: any ▼

VLAN ID:

Priority:

IP Src:

IP Dst:

Protocol:  DSCP:

☐ Redirect To ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ Mirror

Set VLAN ID:  Priority:

Append

Discard Changes

Apply All

# System Configuration

MikroTik SwOS

Link

Forwarding

Statistics

VLAN

VLANs

Static Hosts

Hosts

SNMP

ACL

**System**

Logout

## General

IP Address

192.168.88.128

Identity

MikroTik

Allow From

Watchdog

☐

MAC Address

00:00:00:00:00:01

Version

v0.9.4

Uptime

2:30:15

Discard Changes

Apply All

## Password Change

Old Password

New Password

Confirm Password

Change Password

# System Configuration

## Firmware Upgrade

File for Upgrade	<input type="text"/>	Browse...
		Upgrade
		Reset Configuration Reboot

- Easy IP address change
- Simple software upgrade
- Password change
- Identity for NDP
- Watchdog

# Still working on

- Configuration management (import, export)
- The Dude integration
- Rapid Spanning Tree Protocol (RSTP)
- SNMP expansion
- You are welcome to send your SwOS feature suggestions
  - Send mail to [support@mikrotik.com](mailto:support@mikrotik.com) with subject "SwOS suggestion"
  - Best suggestion will receive prize at end of the MUM





routerboard