MikroTik User Meeting in South Africa 2013

Keynote overview

1. About the MUM

2. Recently announced products

3. New products

MUM #48 is in South Africa!

MikroTik

- 100 employees

- Established in 1996

- RouterOS in 1997

- RouterBOARD in 2002

- First MUM Prague2006

- Biggest MUM Indonesia 2012

Where is Latvia?

Staff

- Janis Jankovskis (Sales)

- Uldis Cernevskis (Support)

- Sergejs Boginskis (Support, Training)

5 Exhibitors

Special Thanks

At the MUM

- Wireless access **MUM** password **mikrotik**

- Lunch with vouchers at NCC room (next door)

- Distributor's hall

- Raffle at the end

After the MUM

- Presentation slides - wiki.mikrotik.com

- Presentation videos - tiktube.com

- License - will be sent by e-mail within few days

RECENTLY INTRODUCED

CCR 1036

- 36 core CPU

- 12 Gigabit Ethernet ports

- 4 SFP ports

CCR 1016

- 16 core CPU

- 12 Gigabit Ethernet ports

CCR EXTENDED RAM

- Same as CCR1036-12G-4S

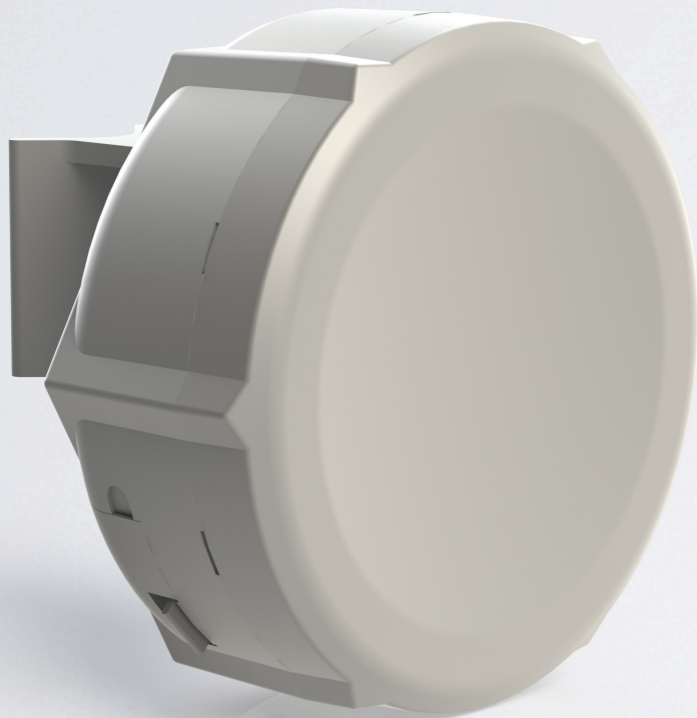- 16GB of RAM included

SFP MODULES

- Disruptive price (from $22)

- Single or Multi mode

- 550m or 20Km

- DDM supported
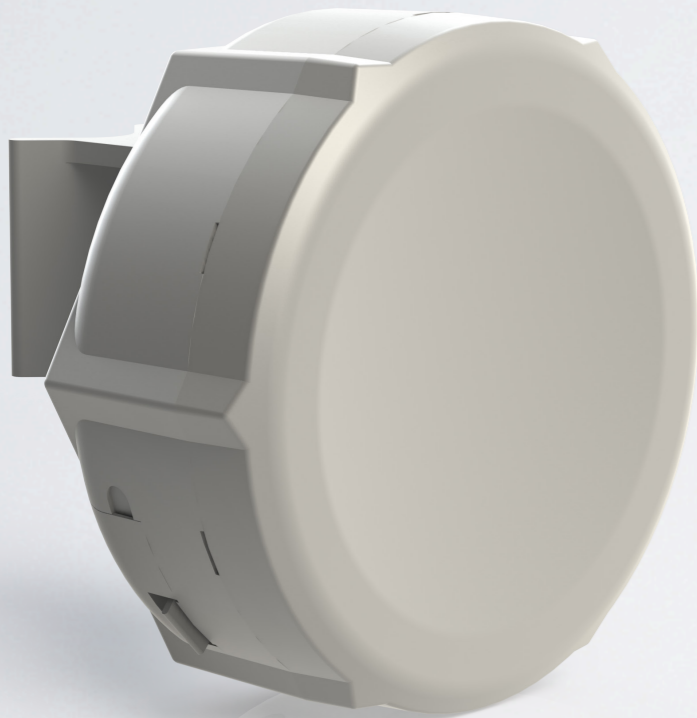
CCR IMPROVEMENTS

- Software updated all the time

- Brings speed improvements for many features

- Simple Queues now 9x faster on CCR

- Hw encryption, L7, PPP and others in the works

SXT 5GHZ

- High power model (30dBm, 5HPnD)

- "Lite" model (27dBm, Lite5)
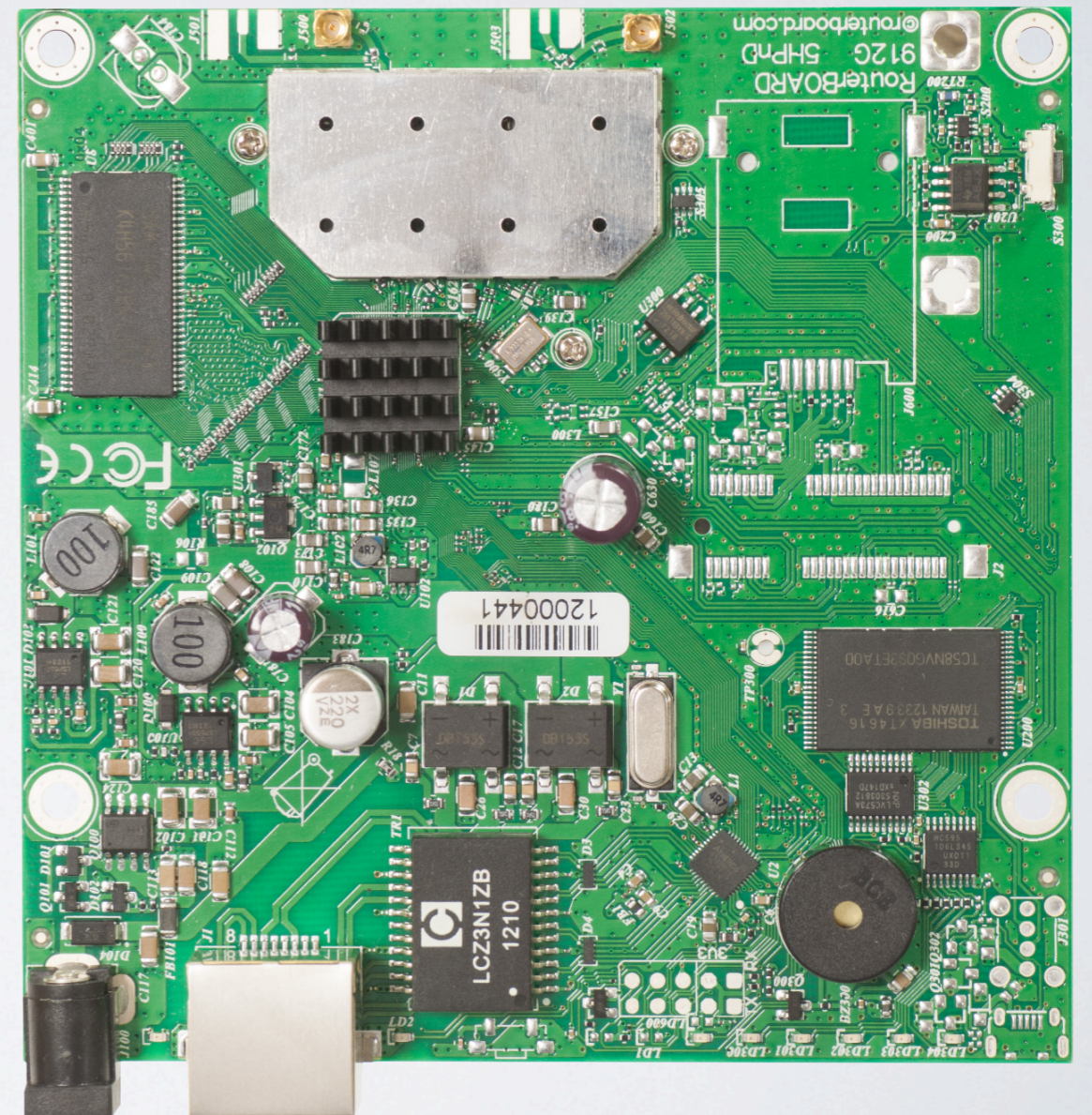
- Both have new generation CPU

SXT 2GHZ

- High power Gigabit (32dBm, G-2HnD)

- "Lite" model (27dBm, Lite2)

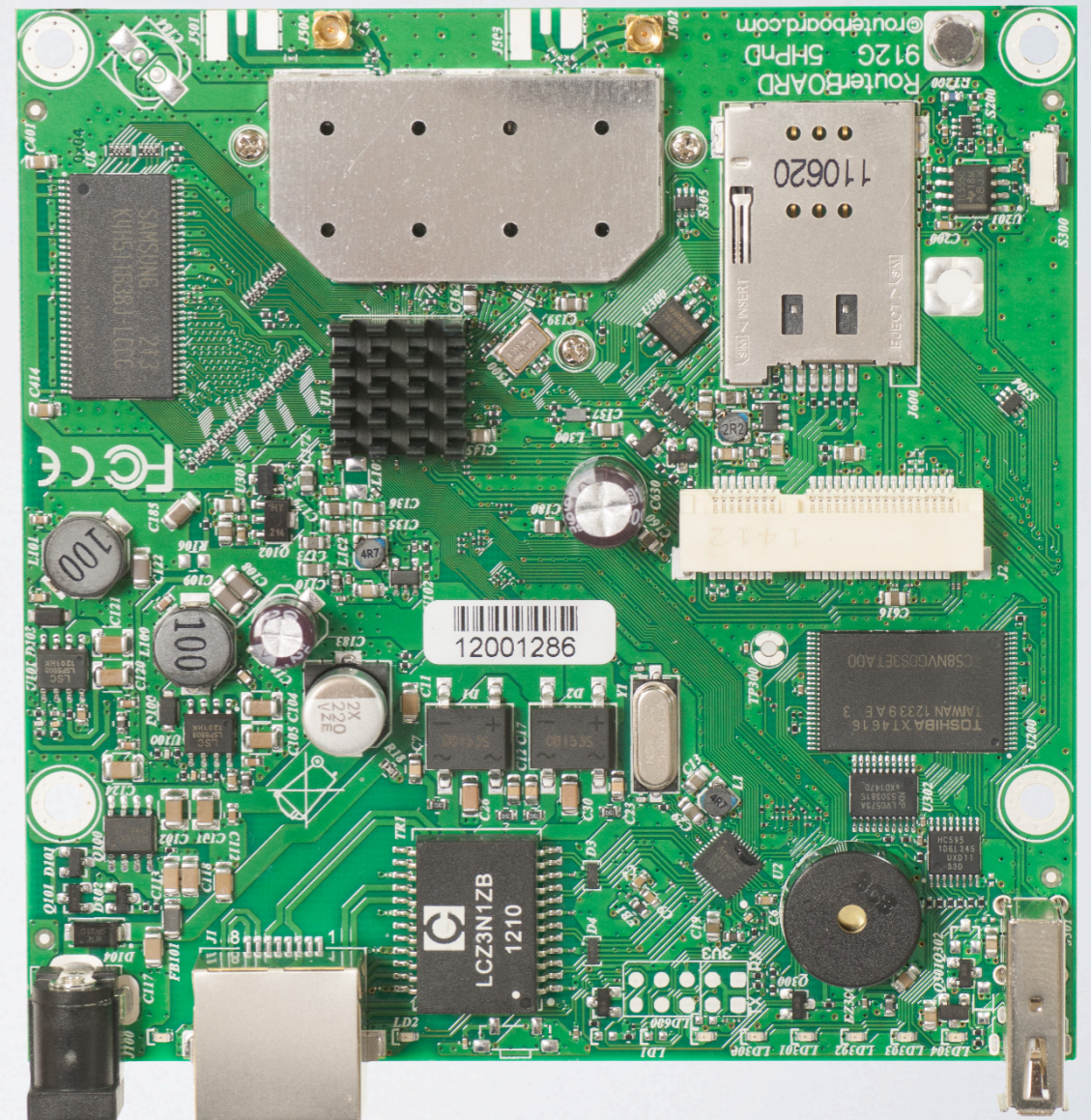- Both have new generation CPU

RB911G

- AR9xxx series CPU

- 2 or 5GHz models

- Gigabit ports, Dual Chain

- 30dBm (1000mW)

RB912G

- miniPCI-e slot

- USB, more RAM

- 2 or 5GHz models

- Can be used for Multiband AP

RB912G OUTDOOR

- SMA connectors

- Cable hood with rain protection

- Multiple mounting options

- 5GHz available

- 2GHz, August 2013

RB951UI

- SOHO AP

- 2.4 GHz, 1000mW

- 600MHz CPU, USB

- 5 port supports PoE-out

GROOVE 52

- Both bands built in

- Select 2 or 5Ghz

- AR9xxx CPU

- CPE or AP models available

NEW PRODUCTS

R11E-2HND

- miniPCI-e to fit RB912

- 2GHz model

- 800mW power

- New AR9580 chipset

- uFl connectors

R11E-HPND
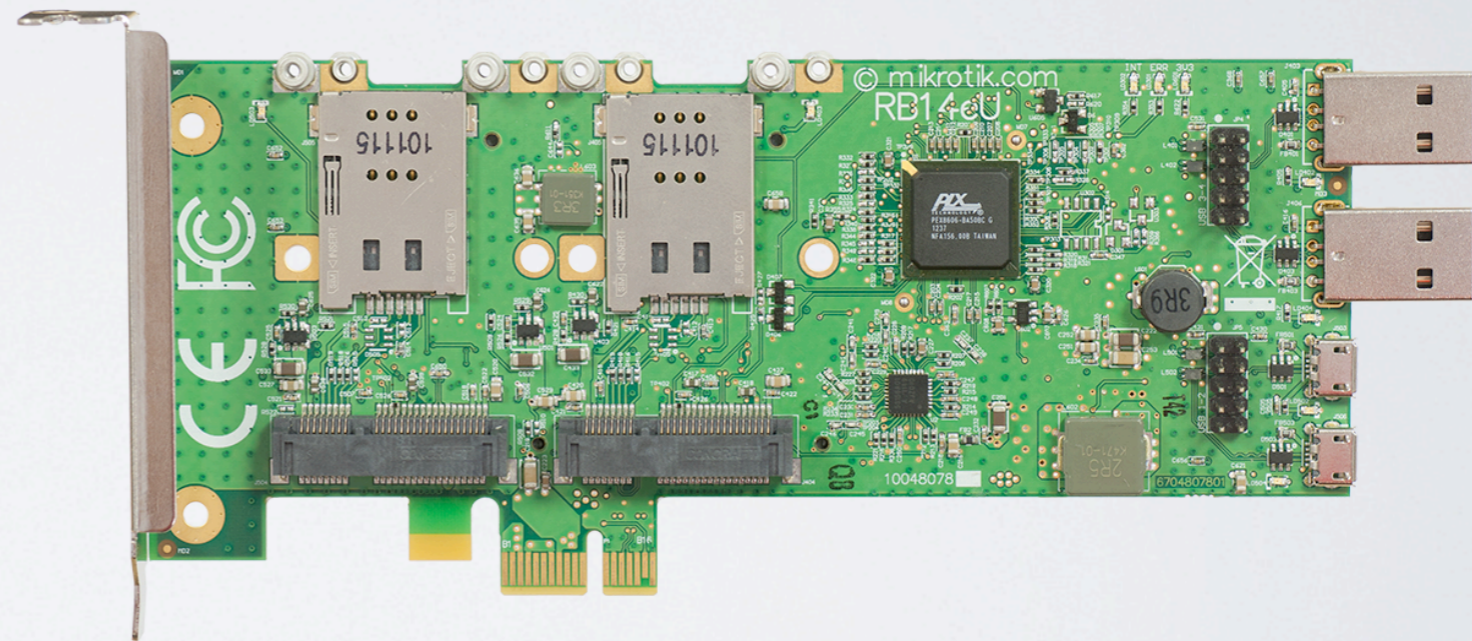
- miniPCI-e to fit RB912

- 2GHz and 5GHz models
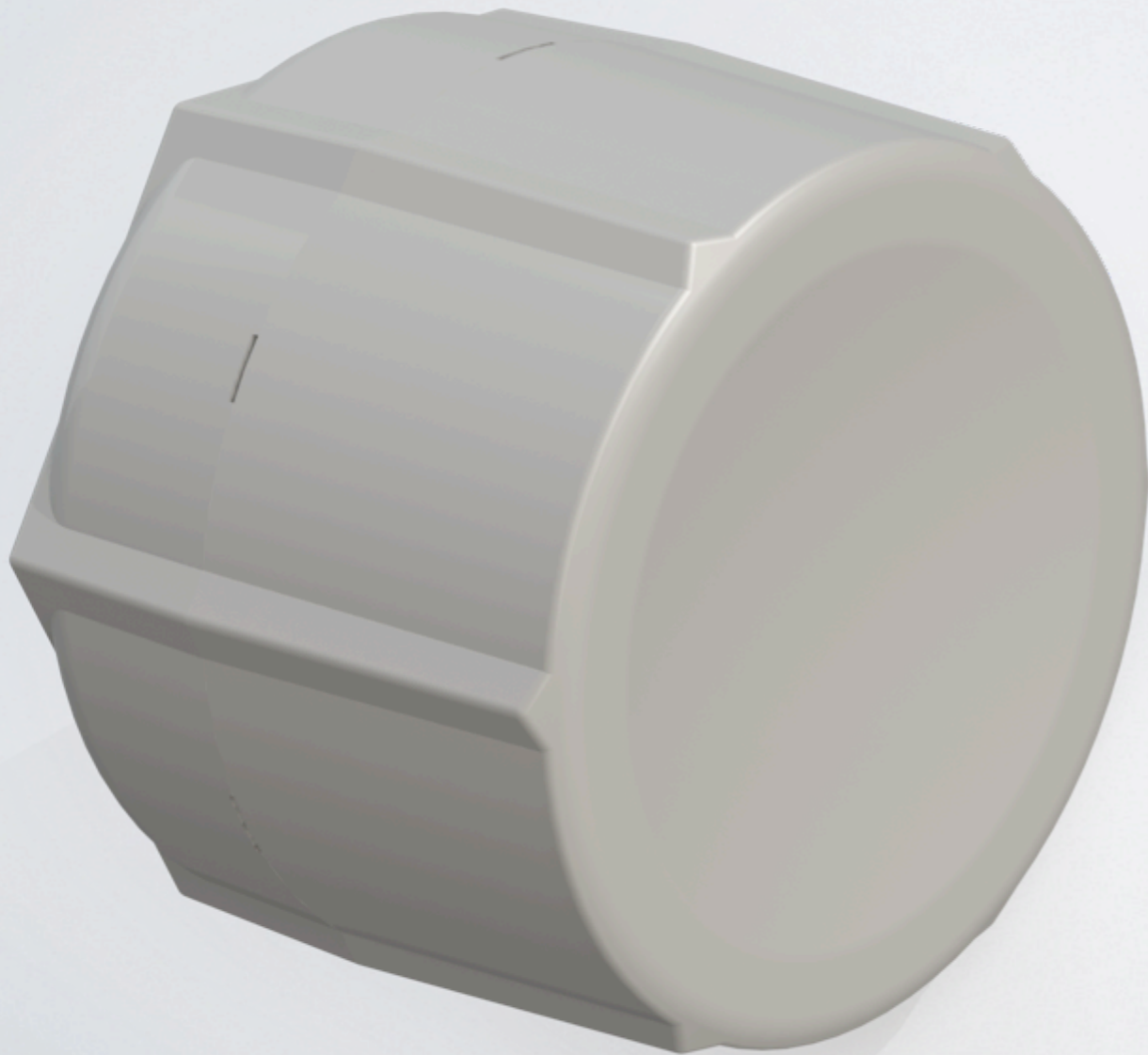
- 1000mW power

- New AR9580 chipset

- MMCX

RB14EU

- 4 miniPCIe card adapter
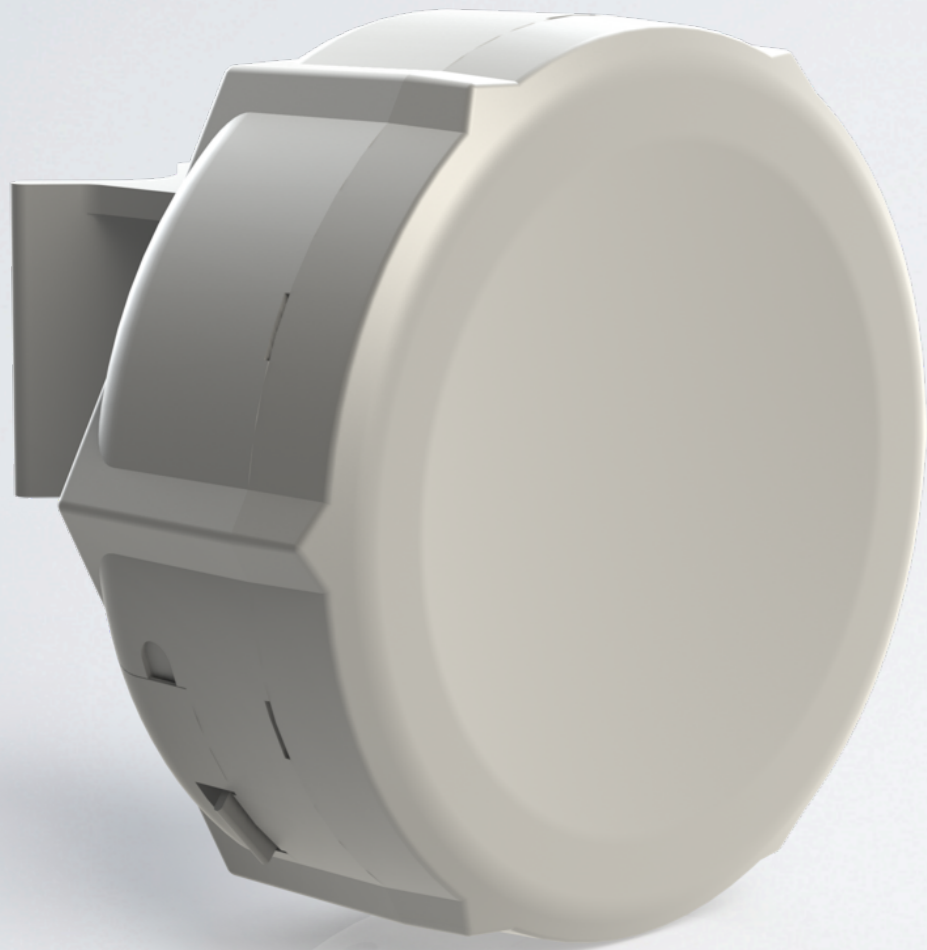
- RB14E for wireless

- RB14EU also for 3G

SXT HG

- Improved 17 dBi antenna

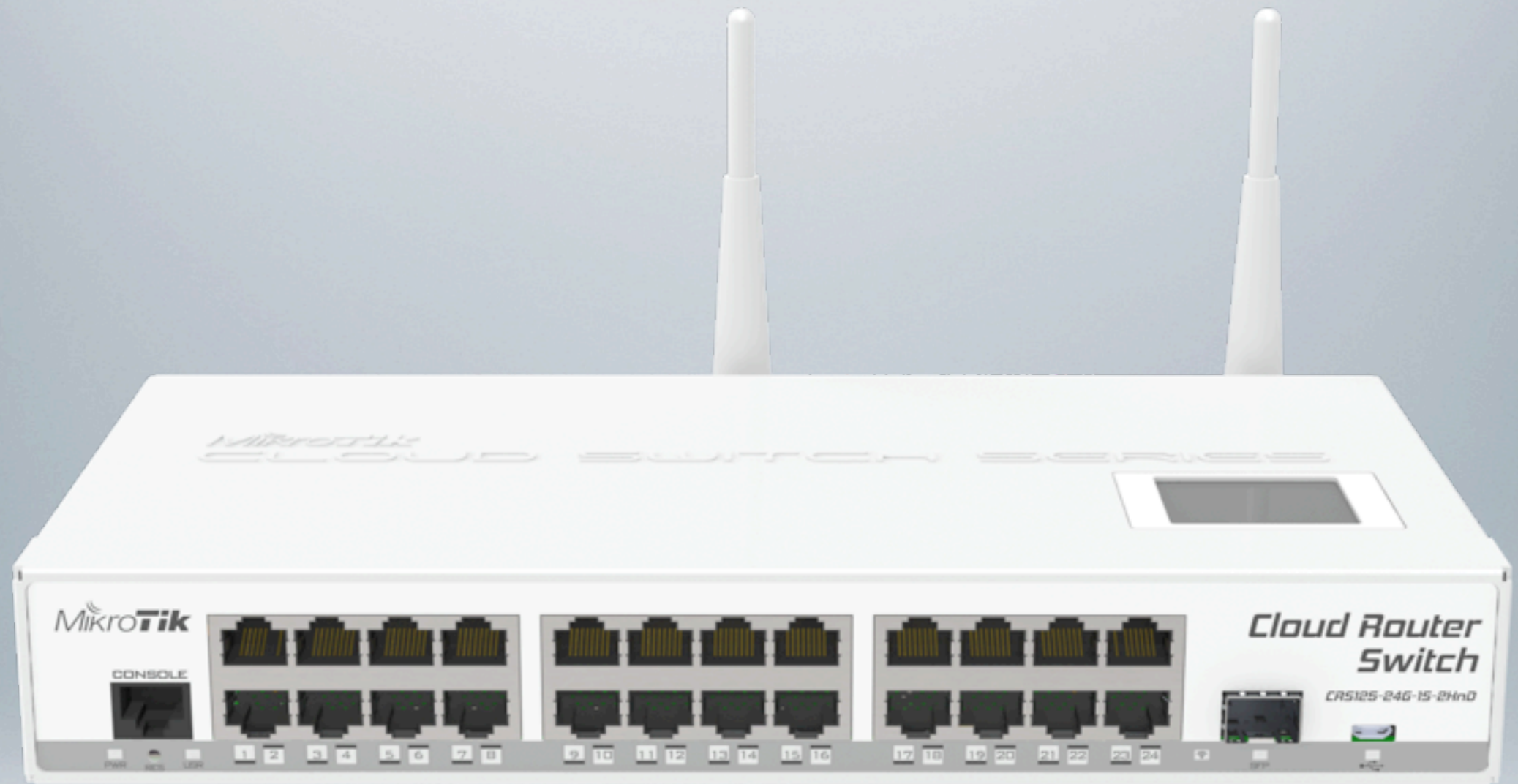- New design

- 1000mW power

- Gigabit port

- 5GHz

SXT SA

- Wide beamwidth, 90 degrees

- Can be used as Sector

- 1000mW power

- Gigabit port

- 5GHz

CLOUD ROUTER SWITCH

CRS

CRS

- 24 Switched Gigabit ports

- Powered by RouterOS

- SFP port

- Touchscreen LCD

- Wireless model available

- Comes in desktop or rackmount case

- Fully manageable smart switch

CRS125-24G IS-2HnD-IN	CRS125-24G IS-IN	CRS125-24G IS-RM
2Ghz wireless	-	-
Desktop case	Desktop case	Rackmount
SFP	SFP	SFP
24 Gigabit ports	24 Gigabit ports	24 Gigabit ports
RouterOS	RouterOS	RouterOS

CLOUD CORE ROUTER

SFP+

CCR1036-8G-2S+

2013 AUG

- 8 Gigabit Ethernet ports, **2 SFP+** ports

- **10G** interfaces now possible

- 16GB RAM model also available

- Highest performance MikroTik device ever

- Port speed no longer bottleneck, speed **2x**

- Total port speed **28Gbit**, which is new bottleneck

- Up to **42** million packets per second

Enjoy the MUM!

RouterOS v6
What is new?

RouterOS v6.x full release is here

available on download page

Support for New Products

- Cloud Core Router, Cloud Router Switch and other new devices supported in RouterOS v6.x

New Linux Kernel

- RouterOS 5.25, Kernel version 2.6.35

- RouterOS 6.x, Kernel version 3.3.5+
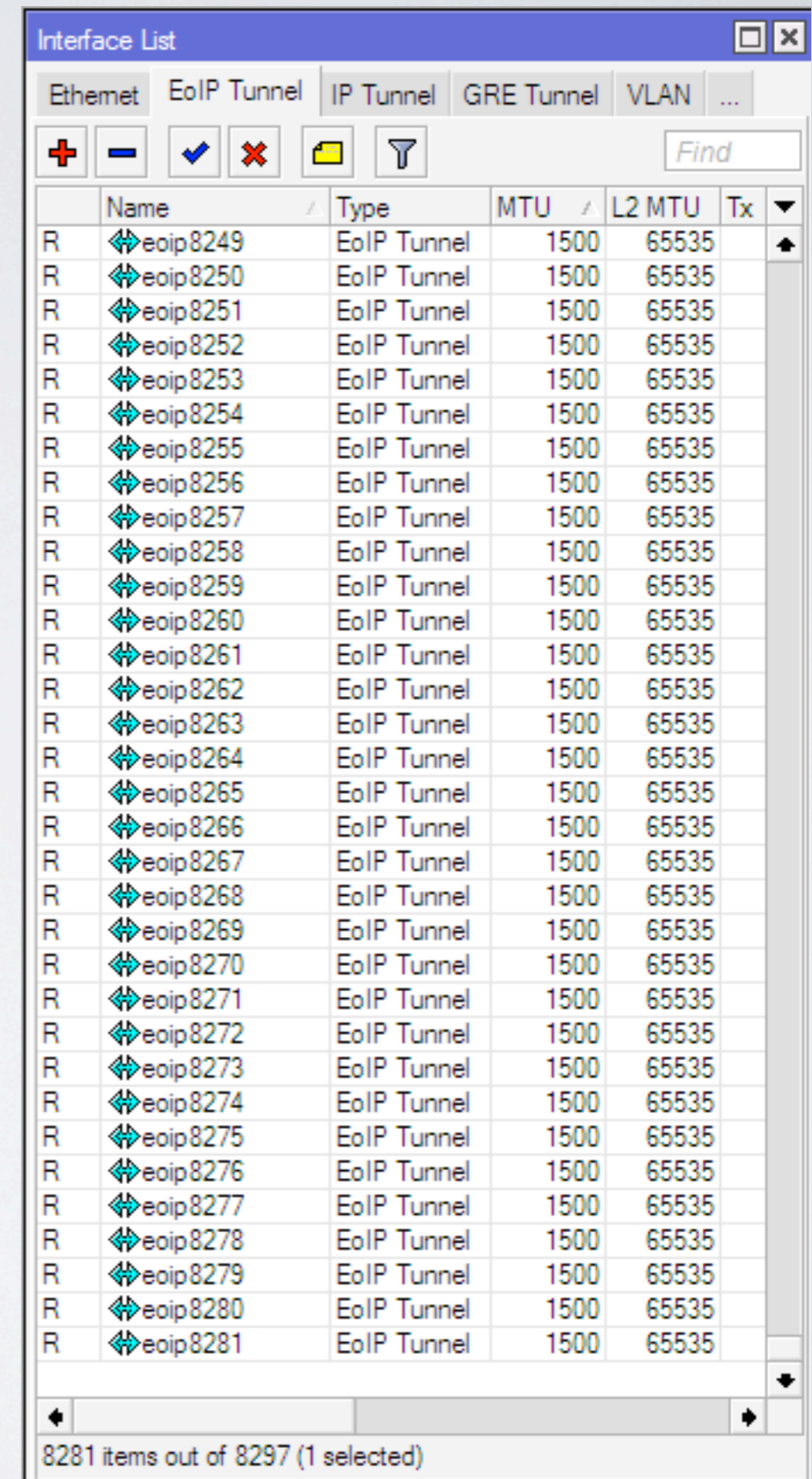
New CPU architecture

- CCR devices

- 64-bit operating system (more RAM)

- Dual memory channel support

- Hardware Accelerated Multi-threading (no need for RPS and IRQ management)

Resources

Uptime:	4d 22:25:40
Free Memory:	9.2 GiB
Total Memory:	15.9 GiB
CPU:	tilegx
CPU Count:	36
CPU Frequency:	1200 MHz
CPU Load:	0 %
Free HDD Space:	902.8 MiB
Total HDD Size:	1024.0 MiB
Architecture Name:	tile
Board Name:	CCR1036-12G-4S
Version:	6.0
Build Time:	May/17/2013 14:04:20

OK PCI USB CPU IRQ

New Features

- Newest interface driver support for x86

- Improved interface management, scales well for up to thousands interfaces

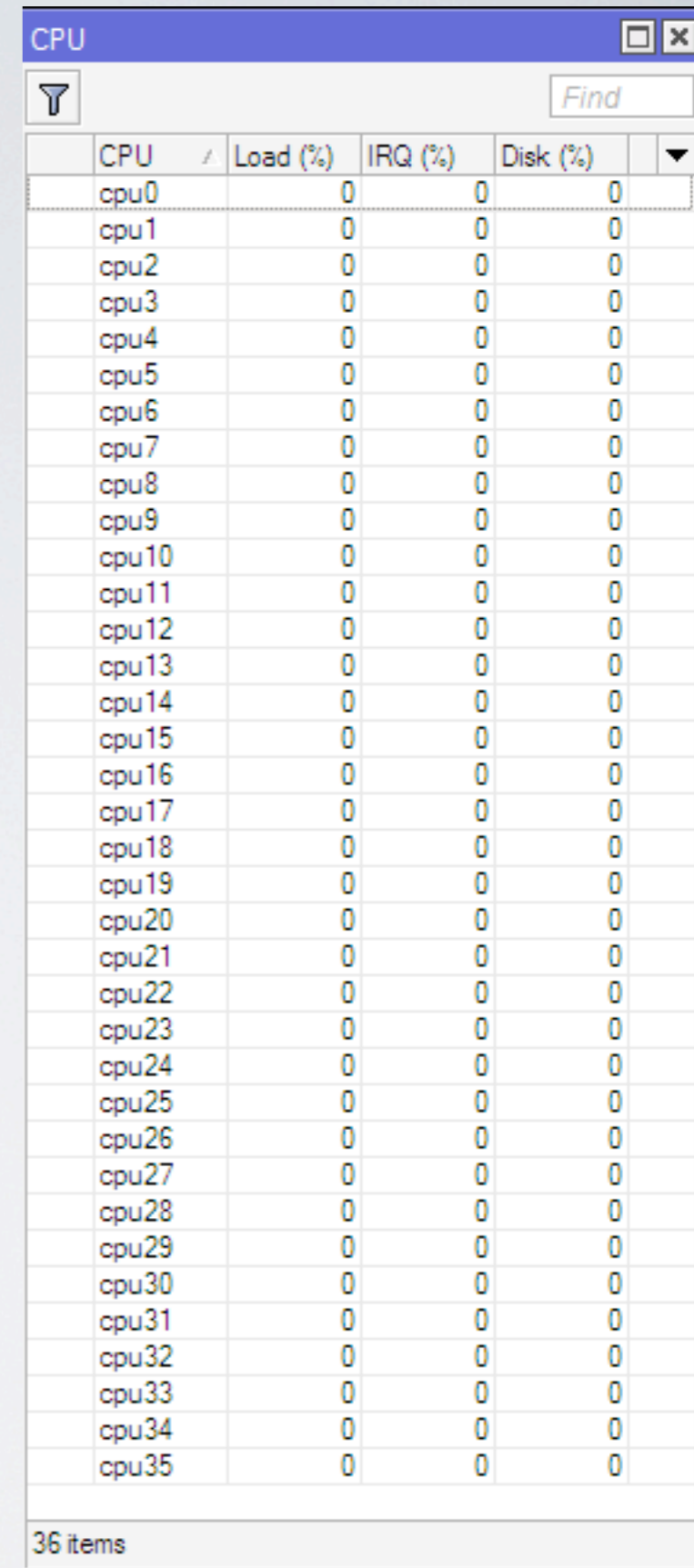- Uses less space on storage - works well with 32MiB flash

What else?

- 64 CPU core support

- Improved RouterOS performance on multi-cpu systems (20%)

- Improved RouterBOARD interface driver performance (30%)

- RouterBOARD package is now merged into system

CPU	Load (%)	IRQ (%)	Disk (%)
cpu0	0	0	0
cpu1	0	0	0
cpu2	0	0	0
cpu3	0	0	0
cpu4	0	0	0
cpu5	0	0	0
cpu6	0	0	0
cpu7	0	0	0
cpu8	0	0	0
cpu9	0	0	0
cpu10	0	0	0
cpu11	0	0	0
cpu12	0	0	0
cpu13	0	0	0
cpu14	0	0	0
cpu15	0	0	0
cpu16	0	0	0
cpu17	0	0	0
cpu18	0	0	0
cpu19	0	0	0
cpu20	0	0	0
cpu21	0	0	0
cpu22	0	0	0
cpu23	0	0	0
cpu24	0	0	0
cpu25	0	0	0
cpu26	0	0	0
cpu27	0	0	0
cpu28	0	0	0
cpu29	0	0	0
cpu30	0	0	0
cpu31	0	0	0
cpu32	0	0	0
cpu33	0	0	0
cpu34	0	0	0
cpu35	0	0	0

36 items

Fast Path

- Forwards packets without additional processing in the Kernel

- Requires allowance in configuration, interface driver support and specific configuration conditions

- Improved RouterBOARD interface driver performance (30%)

- Current handlers, ipv4, traffic generator, mpls, bridge

- More handlers in the future.

New Test results

RB951G-2HnD		Gigabit Ethernet test (600Mhz)		RouterOS v6.0rc5			
Mode	Configuration	64 byte		512 byte		1518 byte	
		kpps	Mbps	kpps	Mbps	kpps	Mbps
Bridging	none (fast path)	269.6	176.9	232	983.7	81	995.3
Bridging	25 Bridge filter rules	87.6	57.5	86	364.6	81	995.3
Routing	none (fast path)	226.9	148.8	210	890.4	81	995.3
Routing							
Routing							

RB1100Hx2			RouterOS v6.				
Mode	Configuration	64 byte		512 byte		1518 byte	
		kpps	Mbps	kpps	Mbps	kpps	Mbps
Bridging	none (fast path)	1690	1108.6	704	2985.0	406	4988.9
Bridging	25 Bridge filter rules	412	270.3	396	1679.0	308	3784.7
Routing	none (fast path)	1495	980.7	704	2985.0	345	4239.4

| CCR1036-12G-4S			RouterOS v6.				
Mode	Configuration	64 byte		512 byte		1518 byte	
		kpps	Mbps	kpps	Mbps	kpps	Mbps
Bridging	none (fast path)	23808	15618.0	3759	15938.2	1300	15974.4
Bridging	25 Bridge filter rules	7340	4815.0	3759	15938.2	1300	15974.4
Routing	none (fast path)	23808	15618.0	3759	15938.2	1300	15974.4
Routing	25 Simple Queues	7919	5194.9	3759	15938.2	1300	15974.4
Routing	25 IP filter rules	3127	2051.3	2998	12711.5	1300	15974.4

Test results

QoS changes at v6.x

- Warning!!

Simple queue and Queue Tree in some specific configurations might be inactivated after upgrade from 3.x, 4.x, 5.x to 6.x

Automatic configuration transition is not available, as it might cause inability to access a router.

Changes in Packet Flow

- Queuing in different place caused enormous performance degradation

- At v6.x queueing happens in the same place

- Global-in, global-out and global-total are replaced by global

- It occurs at the very end of packet's "life-cycle" in a router

HTB in RouterOS v5
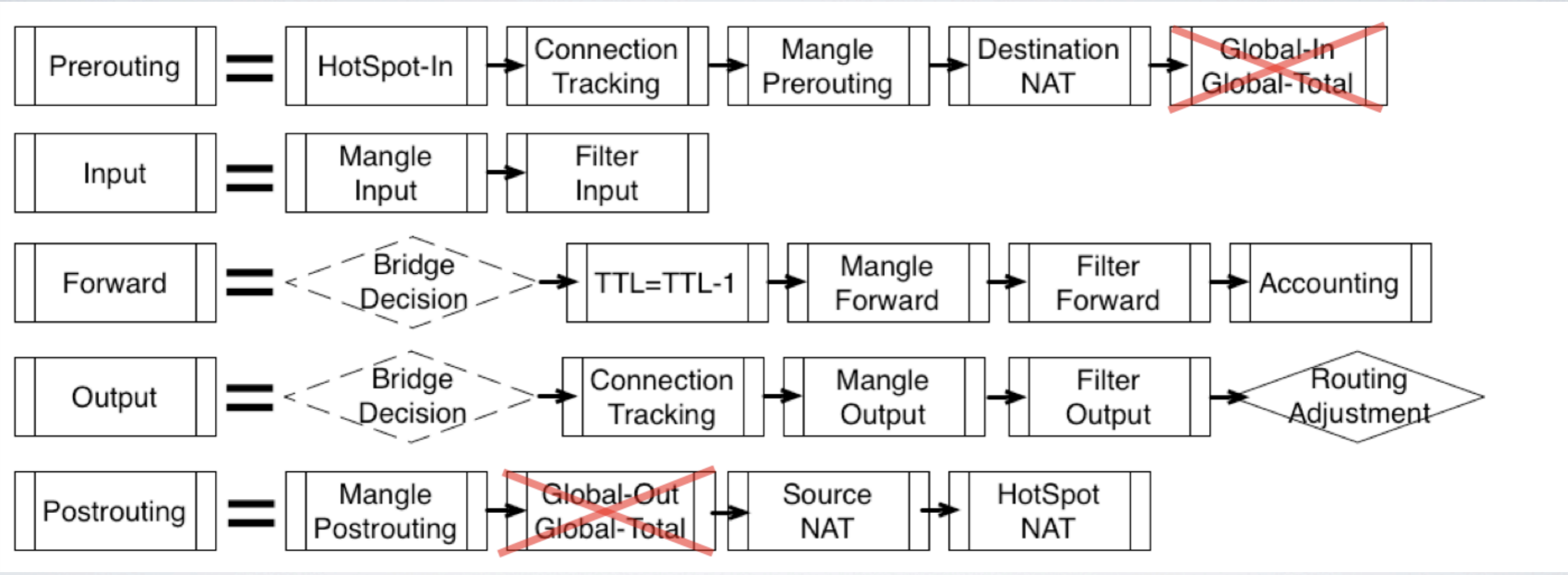
HTB in RouterOS v6
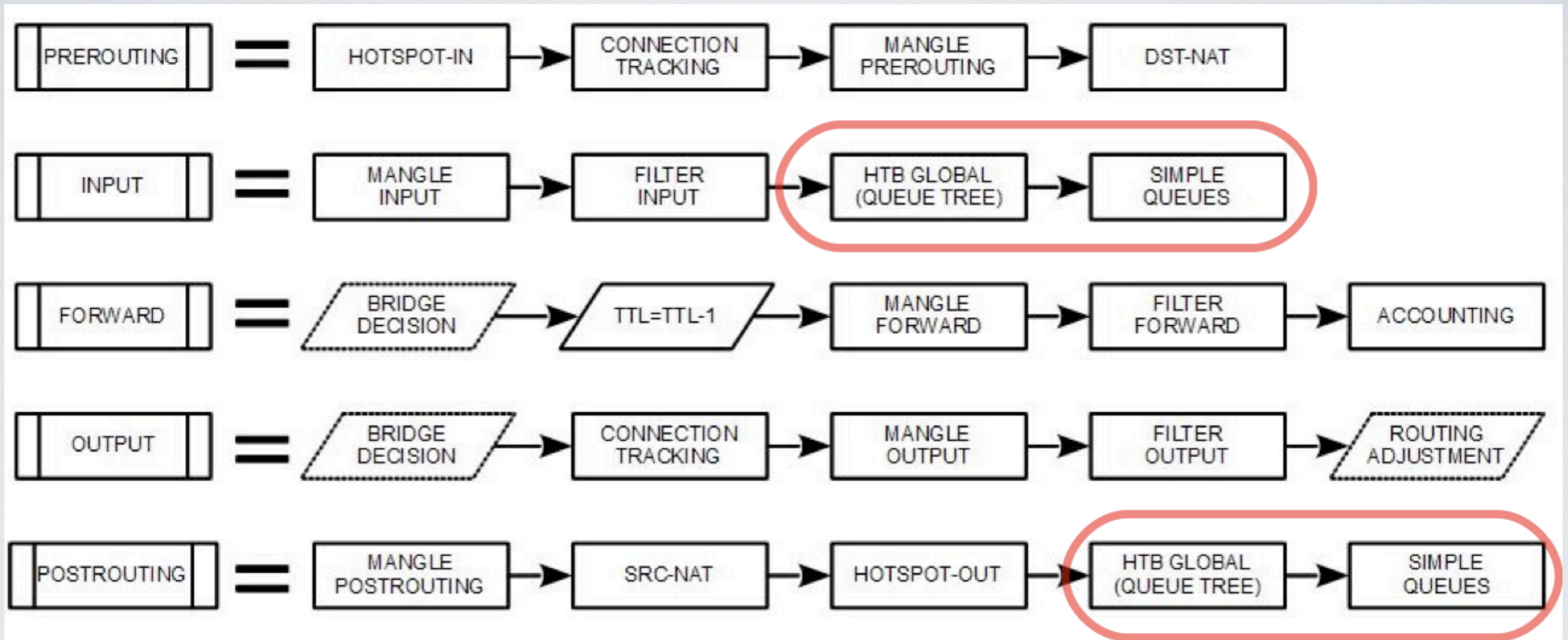
More changes

- Simple queues are not separated from Queue tree completely

- Queuing happens after SRC-NAT, PCQ queue is now NAT aware

- Multiple packet-marks per single queue

Simple Queues

- Simple queue matching algorithm updated

- Small overhead for packets that miss existing simple queues

- Top level simple queues are now balanced between CPU cores

Queue List

Simple Queues | Interface Queues | Queue Tree | Queue Types

#	Name	Target	Rx Max Limit	Tx Max Limit
24967	queue24968	4.4.100.218	1M	1M
24968	queue24969	4.4.100.219	1M	1M
24969	queue24970	4.4.100.220	1M	1M
24970	queue24971	4.4.100.221	1M	1M
24971	queue24972	4.4.100.222	1M	1M
24972	queue24973	4.4.100.223	1M	1M
24973	queue24974	4.4.100.224	1M	1M
24974	queue24975	4.4.100.225	1M	1M
24975	queue24976	4.4.100.226	1M	1M
24976	queue24977	4.4.100.227	1M	1M
24977	queue24978	4.4.100.228	1M	1M
24978	queue24979	4.4.100.229	1M	1M
24979	queue24980	4.4.100.230	1M	1M
24980	queue24981	4.4.100.231	1M	1M
24981	queue24982	4.4.100.232	1M	1M
24982	queue24983	4.4.100.233	1M	1M
24983	queue24984	4.4.100.234	1M	1M
24984	queue24985	4.4.100.235	1M	1M
24985	queue24986	4.4.100.236	1M	1M
24986	queue24987	4.4.100.237	1M	1M
24987	queue24988	4.4.100.238	1M	1M
24988	queue24989	4.4.100.239	1M	1M
24989	queue24990	4.4.100.240	1M	1M
24990	queue24991	4.4.100.241	1M	1M
24991	queue24992	4.4.100.242	1M	1M
24992	queue24993	4.4.100.243	1M	1M
24993	queue24994	4.4.100.244	1M	1M
24994	queue24995	4.4.100.245	1M	1M
24995	queue24996	4.4.100.246	1M	1M
24996	queue24997	4.4.100.247	1M	1M
24997	queue24998	4.4.100.248	1M	1M
24998	queue24999	4.4.100.249	1M	1M
24999	queue25000	4.4.100.250	1M	1M

25000 items | 0 B queued | 0 packets queued

Simple Queues

- "target-address" and "interface are joined to "target"

- "dst-address" changes to "dst" and supports interfaces

- direction and p2p parameters removed

- "target" must be specified on simple queue

- Separate "priority" for download, upload and total

Simple Queue v5

Simple Queue v6

Firewall changes

- "all-ether", "all-wireless", "all-vlan", "all-ppp" for interface matching

- Priority matcher

- New "change-dscp" options

- Mangle actions to send packet stream to remote sniffer

Tunnel changes

- SSTP can now force AES encryption

- PPP profile has "bridge-past-cost" and "bridge-port-priority"

- PPP secrets shows last-logged-out date and time

- HotSpot and PPP supports multiple address-lists from RADIUS

- Only 2 dynamic "change-mss" are created for "all-ppp" interfaces

DHCP changes

- dhcp-options can be specified by mixing different data types

- dhcp-client have custom dhcp-option feature

- DHCP v4 now have special classless option for add-default-route parameter

- Possibility to add DHCP relay agent information option (Option 82)

- DHCPv6 DNS option support

Other changes

- /export compact is now default for /export

- Connected routes become inactive when interface goes down

- Configurable Kernel options in /ip settings and /ipv6 settings menus

- IPSec road warrior support

- SCEP protocol support

- Initial OpenFlow support

Thank you!