MikroTik

MUM Saudi Arabia

October 2017

More than 160 MUM events around the world

MikroTik

- Established 1996
- RouterOS created in 1997
- RouterBOARD created in 2002
- First MUM event in Prague 2006
- MUM in Indonesia had 2500 people
- 34 events in 2016

MikroTik
LATVIA
Iceland
Finland
Sweden
Norway
Russia
Estonia
Lithuania
Denmark
Ireland
United Kingdom
Belarus
Netherlands
Poland
Belgium
Germany
Ukraine
Luxembourg
Czech Republic
Slovakia
Moldova
France
Switzerland
Liecht.
Austria
Hungary
Romania
Georgia
Slovenia
Croatia
Armenia
Monaco
San Marino
Bosnia and Herzegovina
Serbia
Andorra
Montenegro
Bulgaria
Portugal
Italy
Spain
Vatican City
Macedonia
Albania
Turkey
Greece
Syria

Antons Belajevs (support)
Edmunds Aperans (sales, training)
Martins Strods (support)

STAFF

Agenda

09:45	Presentations
12:15	Prayer and lunch break
14:00	Presentations
16:15	Lottery and closing of MUM
16:30	Soft drinks and snacks

mum.mikrotik.com

WiFi

SSID: MUM_RIYADH

Password: mikrotik

MUM Live

www.youtube.com/mikrotik

Special Thanks

Future Legend Est.
and
Electron Tech Est.

New products

1Gbit
over wireless
100m+
range
60GHz
radio
Gigabit
Ethernet
Paired
Secure Link
pre-configured
Powered by
AP/AU/Passive
PoE, DC jack
MikroTik
Wireless Wire

now

Wireless Wire

- 1 Gbps full duplex without wires
- 100 meters +
- 60 GHz beam-forming
- Paired Secure Link Preconfigured
- $198 kit

now

Wireless Wire Demo

Q4

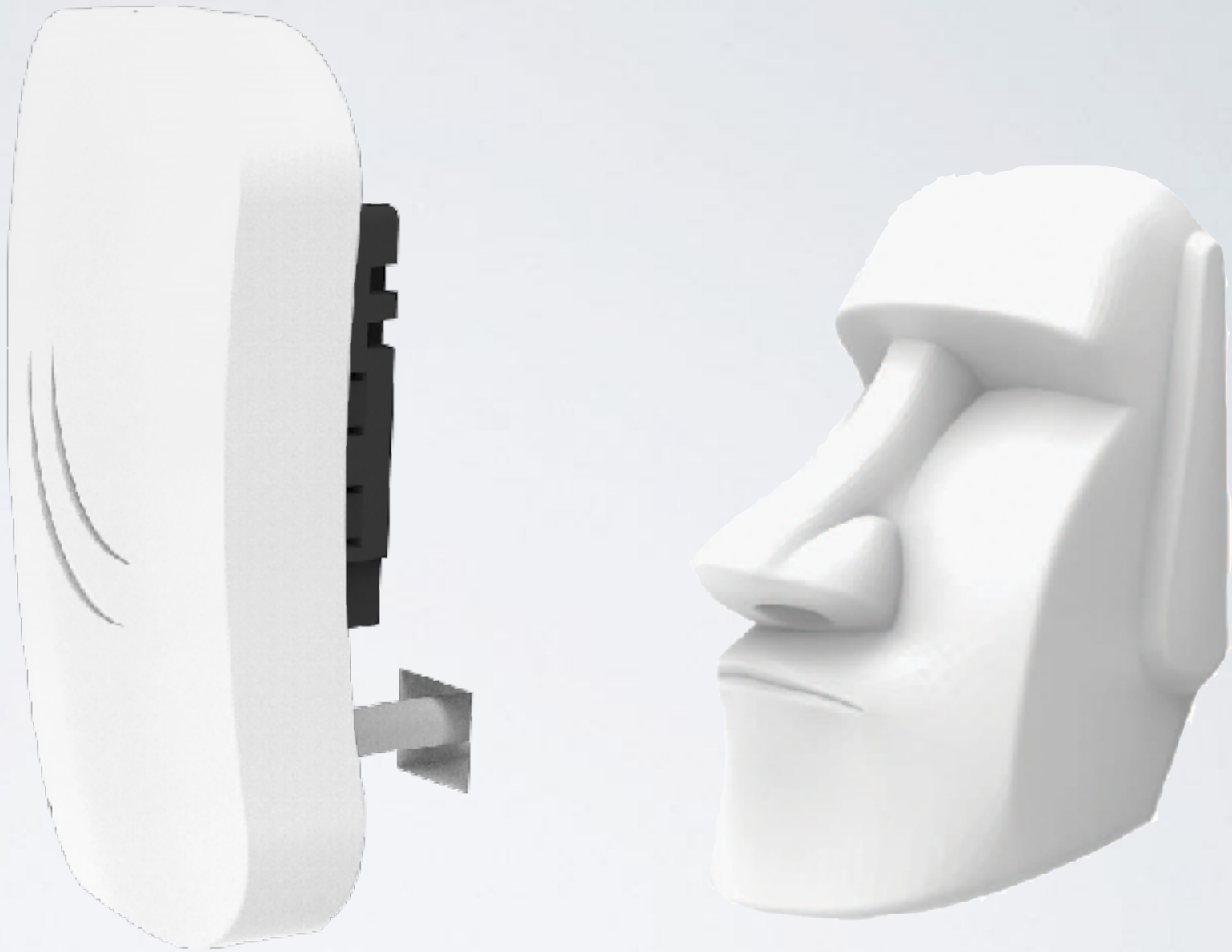
LHG 60G

- 1 Gbit full duplex (wire speed)
- Works in 60 GHz spectrum
- Familiar LHG design
- Quad-core ARM CPU
- Low cost and low weight
- Targeted for longer distances than 100 m

now

cAP lite

- Small and light 2.4 GHz AP
- Case can be changed
- Print your own case
- Designed for hotels and other public places for Internet access
- $29 kit



now

DynaDish 6 and SXT 6

- Great for use in less used 6 GHz spectrum
- Same familiar designs

$99

$179

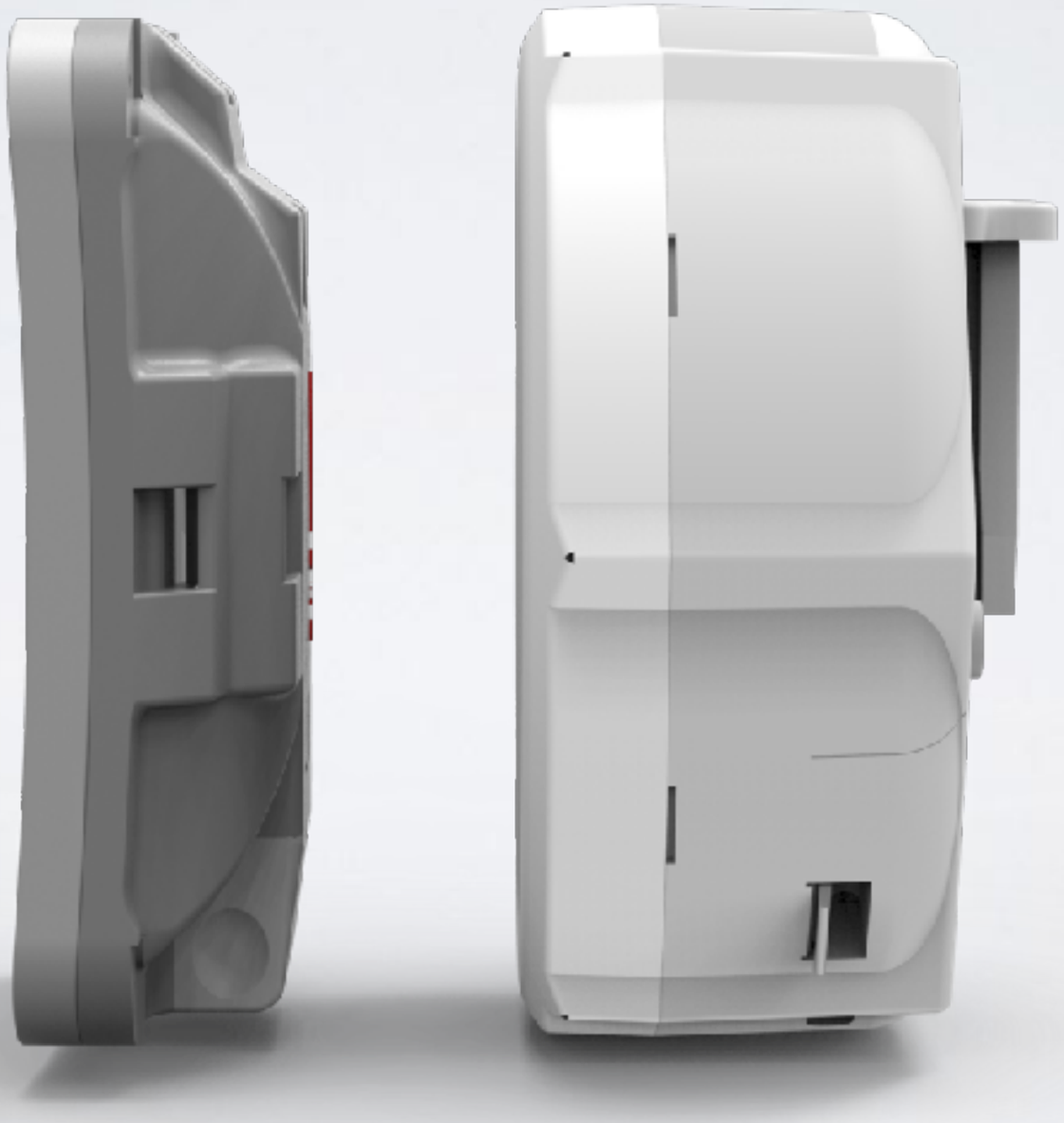
now

SXTsq Lite5

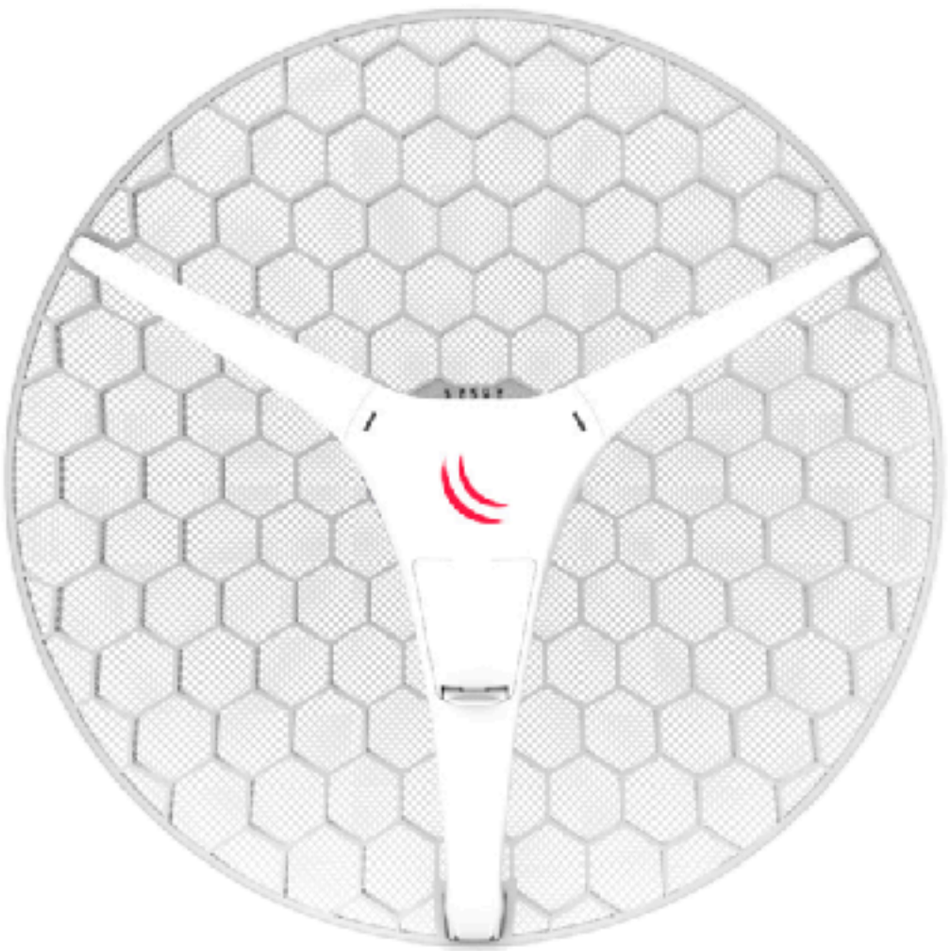
- Compact and lightweight
- Two times thinner!
- 16 dBi antenna
- 12 km wireless link
- Low cost and low weight
- Kit price $46

now

SXTsq Lite5



New LHG!



LHG XL HP5

LHG HP5

LHG 5

now

LHG HP5

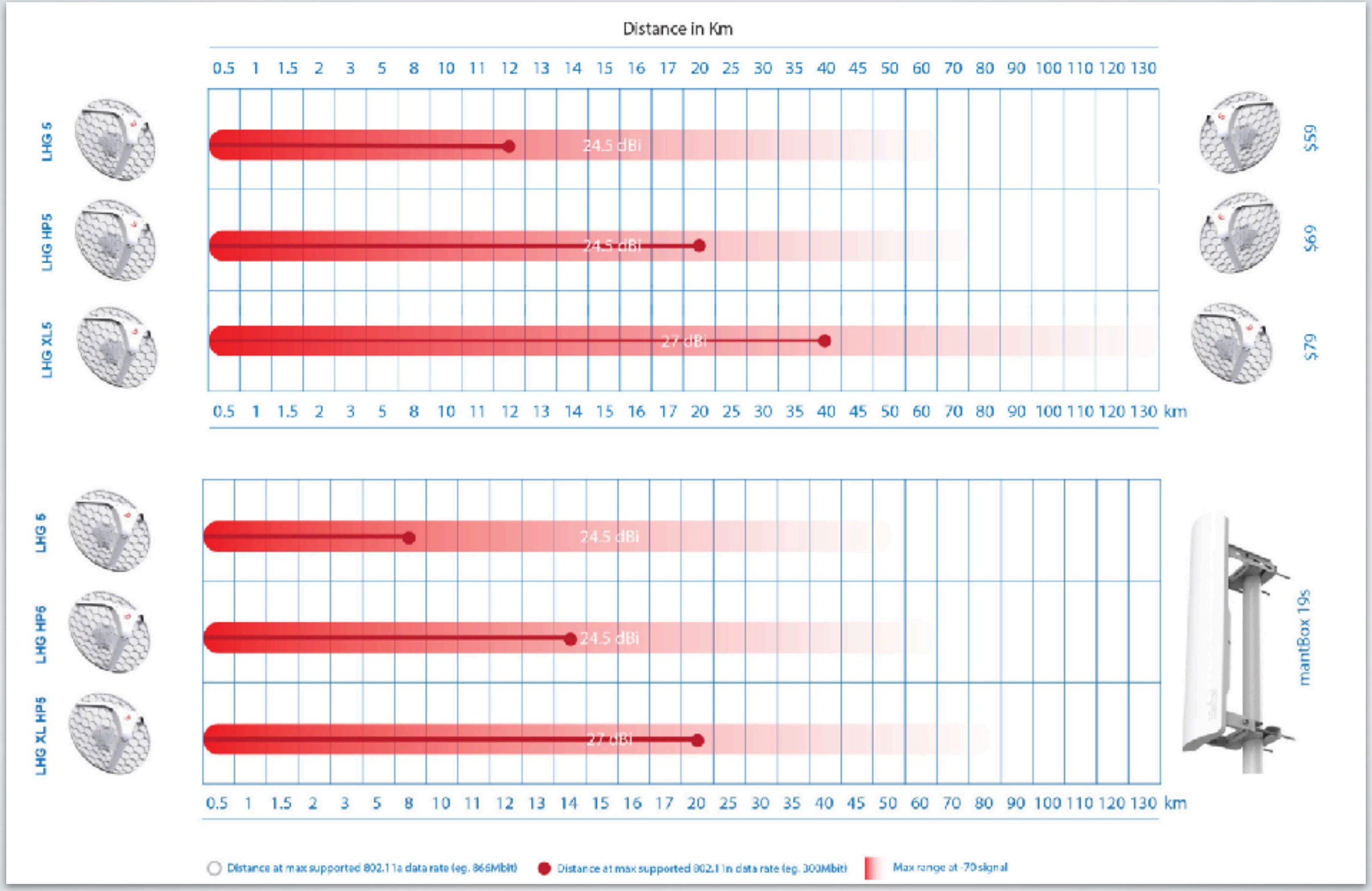
- 630 mW
- 20 km full speed link
- Familiar LHG design
- Low cost and low weight
- Kit price $69

now

LHG XL HP5

- 630 mW
- 40 km full speed link
- 27 dBi antenna
- Familiar LHG design
- Low cost and low weight
- Kit price $79

New LHG!


Distance in Km
0.5 1 1.5 2 3 5 8 10 11 12 13 14 15 16 17 20 25 30 35 40 45 50 60 70 80 90 100 110 120 130
LHG 5
24.5 dBi
$59
LHG HP5
24.5 dBi
$69
LHG XL5
27 dBi
$79
0.5 1 1.5 2 3 5 8 10 11 12 13 14 15 16 17 20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 km
LHG 6
24.5 dBi
LHG HP6
24.5 dBi
LHG XL HP5
27 dBi
mantBox 19s
0.5 1 1.5 2 3 5 8 10 11 12 13 14 15 16 17 20 25 30 35 40 45 50 60 70 80 90 100 110 120 130 km
Distance at max supported 802.11a data rate (eg. 866Mbit)
Distance at max supported 802.11n data rate (eg. 300Mbit)
Max range at -70 signal

now

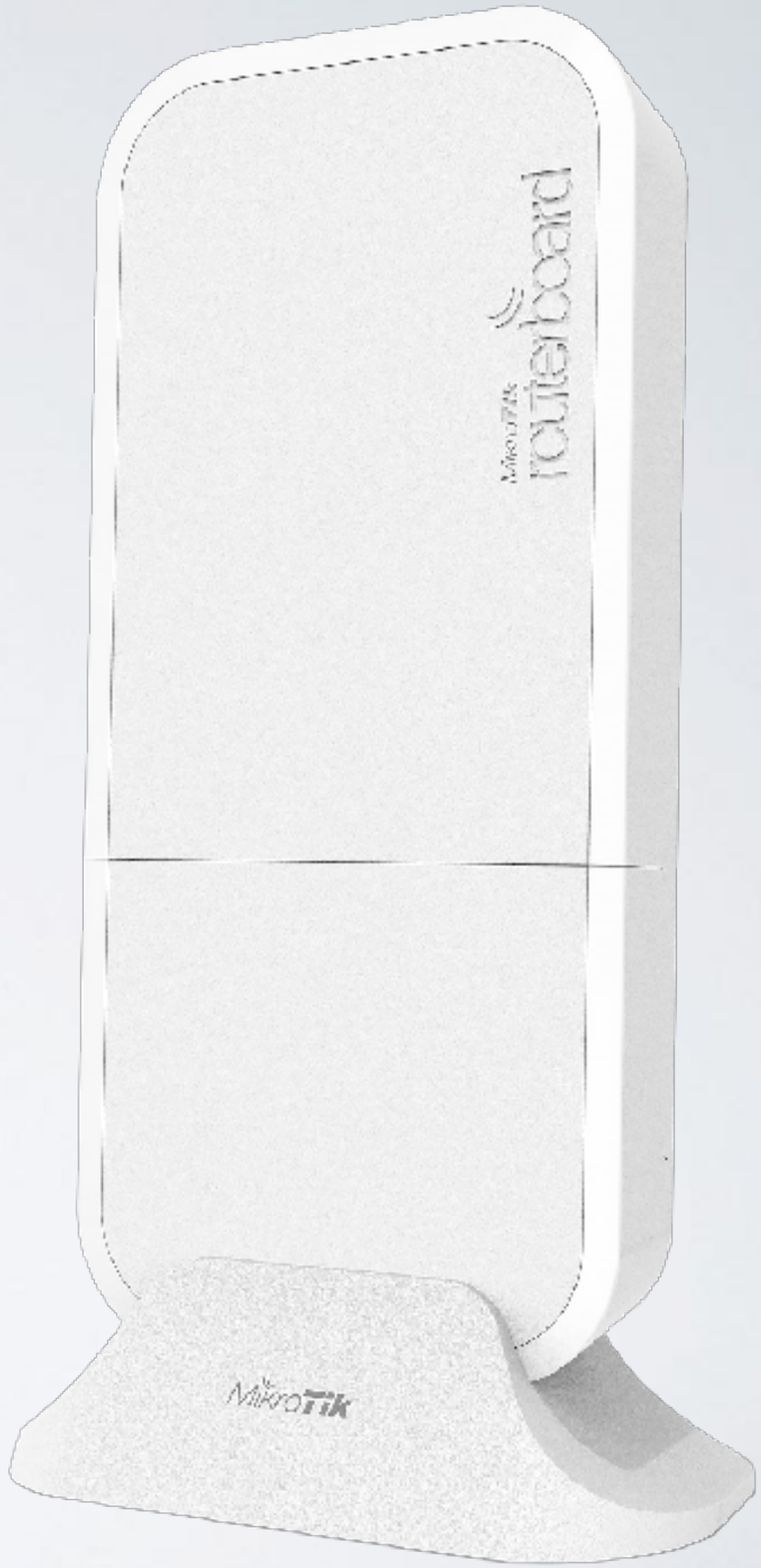
wAP R

- 2.4 GHz AP
- miniPCI-e slot for 3G/4G
- PoE, power jack, automotive connector
- Kit price $79

now

wAP LTE KIT

- Wireless AP for LTE
- EU/Int. version supports LTE bands 1, 2, 3, 7, 8, 20, 38, 40
- 2G, 3G, LTE supported
- Optional external antennas
- Comes with a stand mount
- Kit price $119



2018

LtAP mini

- 2.4 GHz AP in a rugged case
- miniPCIe for LTE
- Built-in GPS
- Serial port
- Ethernet port
- Perfect for cars or outdoor mobile applications

2018

2018

LtAP

- 2x miniPCIe
- Built-in 2.4 GHz AP
- MMIPS Mediatek CPU 880MHz
- 2x MMCX connectors
- 1 Gbps ethernet port
- Built-in GPS

2018

now

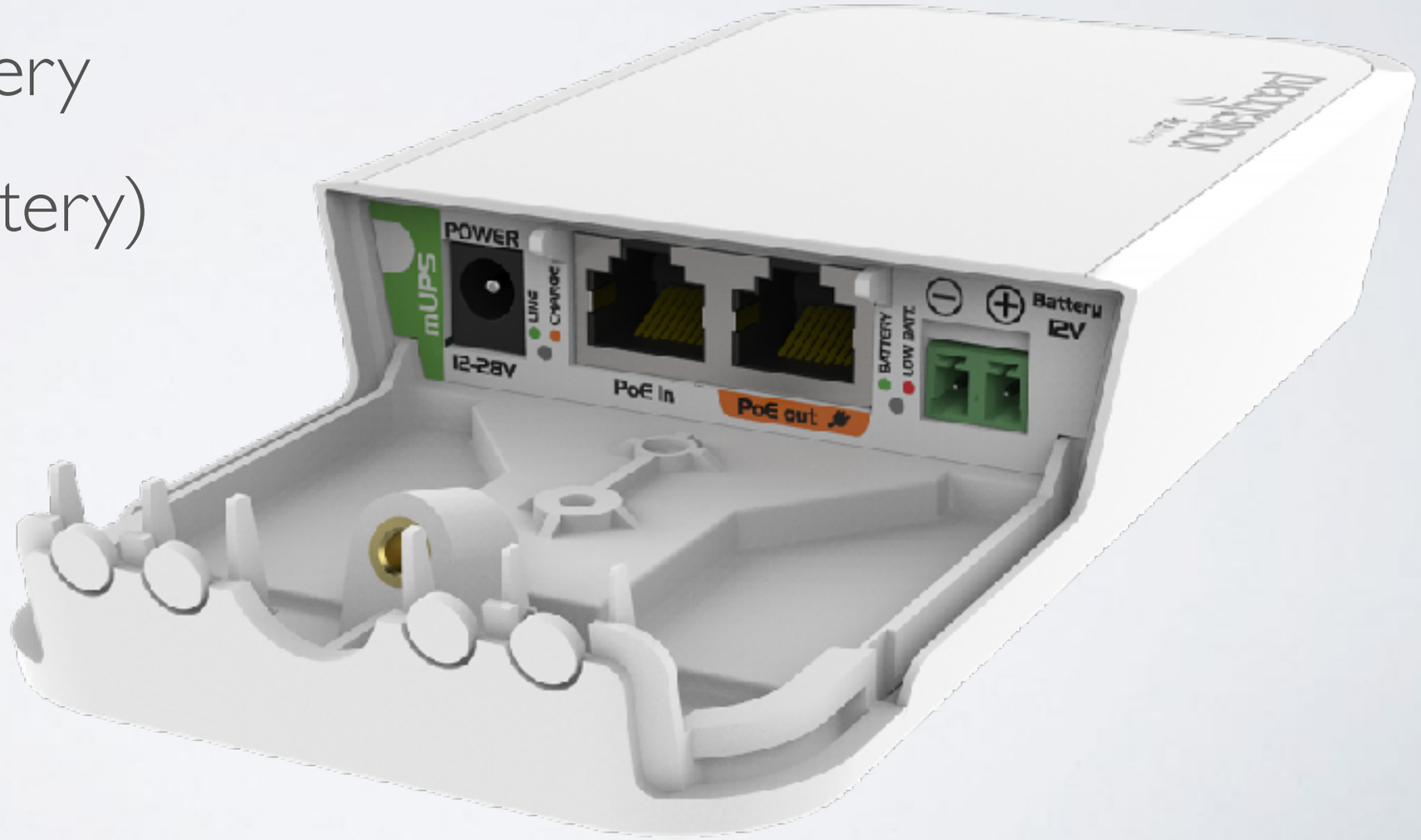
Woobm

- Wireless out of band management
- Connect to your device and get serial access over wireless
- Price $16

now

mUPS

- Gigabit PoE injector
- Power supplied by PoE or jack
- RouterBOARD could be powered by battery
- $29 (without battery)



Q4

wsAP ac lite

- Mount into standard EU or US electrical sockets
- Dual band ac (2.4 and 5 GHz)
- Phone jack passthrough
- Two LAN ports
- One of them is PoE out port
- USB port

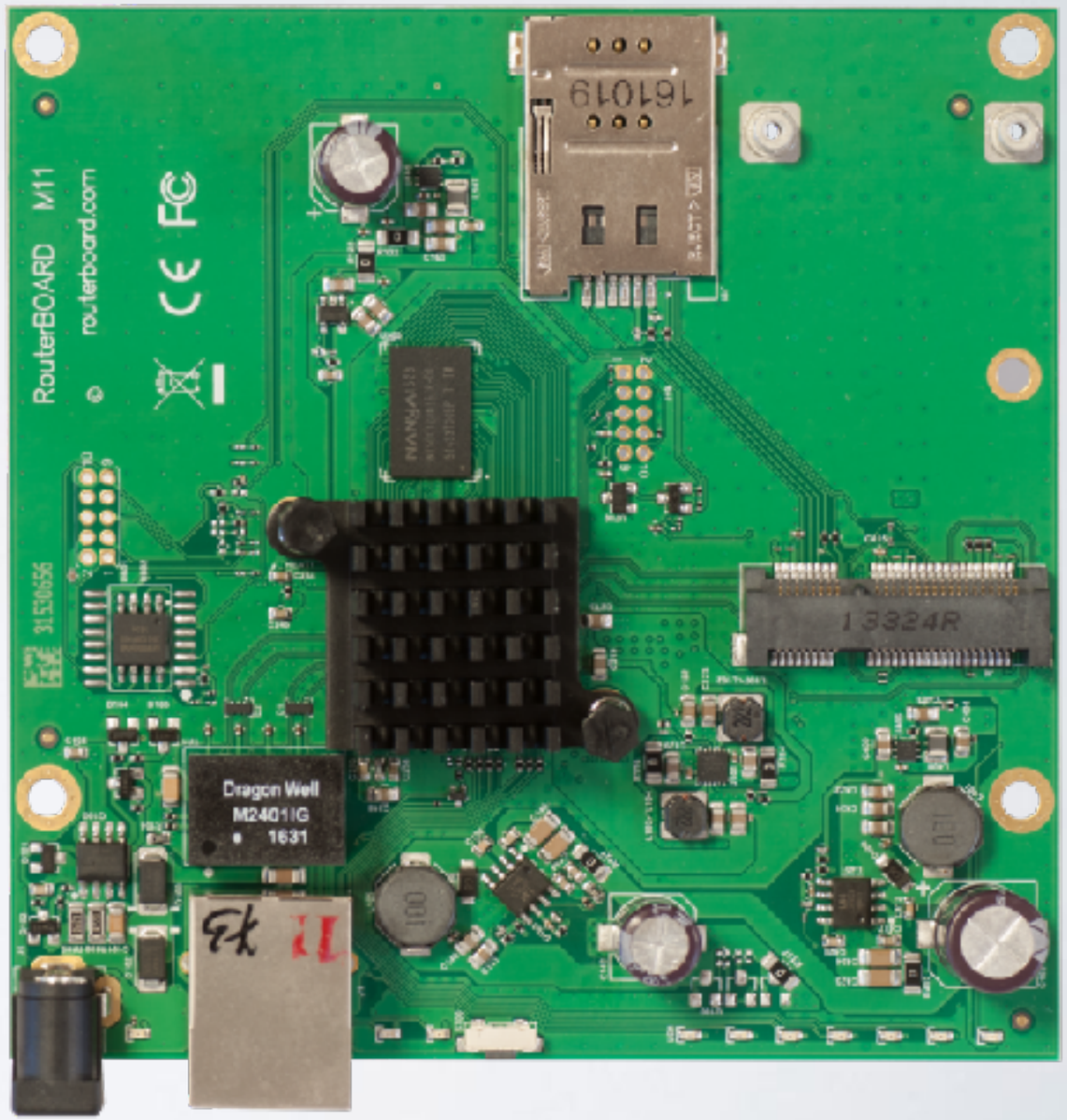
Q4

MikroTik

now

M11G

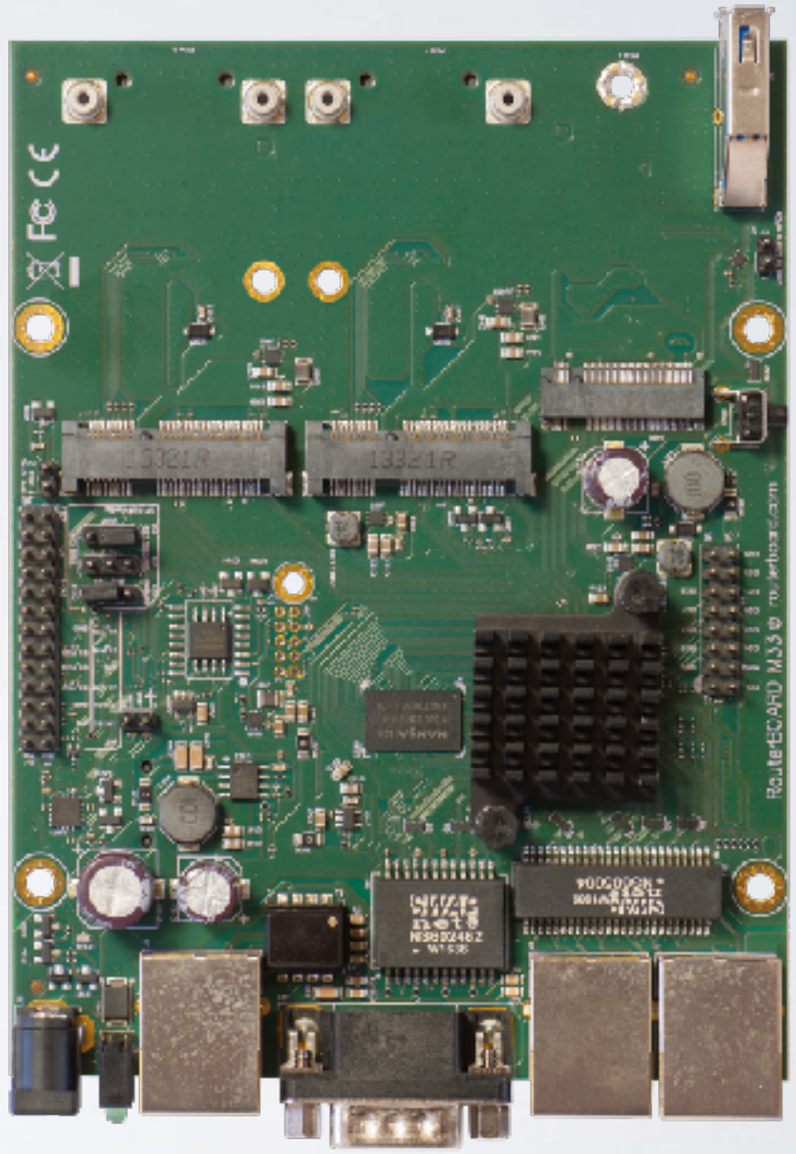
- Four core 880 MHz CPU
- 1 miniPCIe slot
- 1 Gigabit Ethernet
- Upgrade for RB411
- $39



Q4

M33G

- Four core 880 MHz CPU
- 3 Gigabit Ethernets
- 2 miniPCIe slots
- 1 M.2 slot
- USB 3.0 and serial port
- Upgrade for RB433



now

S+RJ10

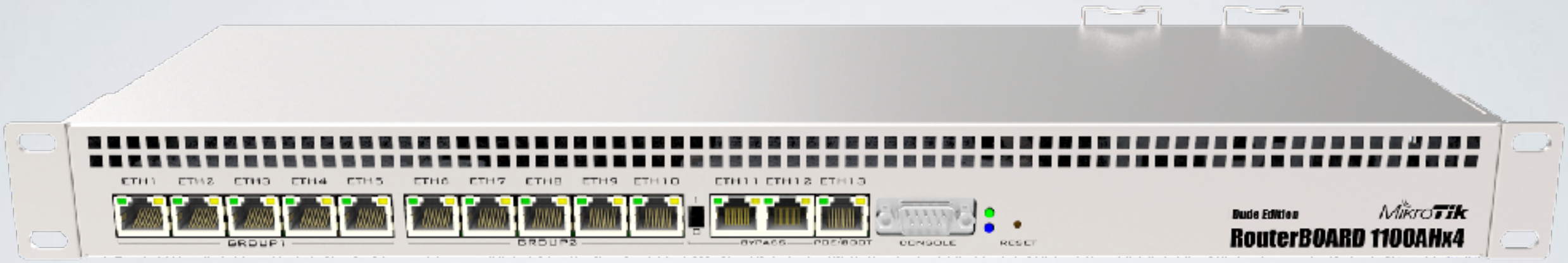
- SFP+ to Ethernet
- 6-speeds (10/100/1G/2.5G/5G/10G)
- 2.4 W
- Works with all MikroTik SFP+
- $65

now

PW48V

- Hot Swap -48 and +48 V DC telecom power supply
- For CCR1072
- $100

now



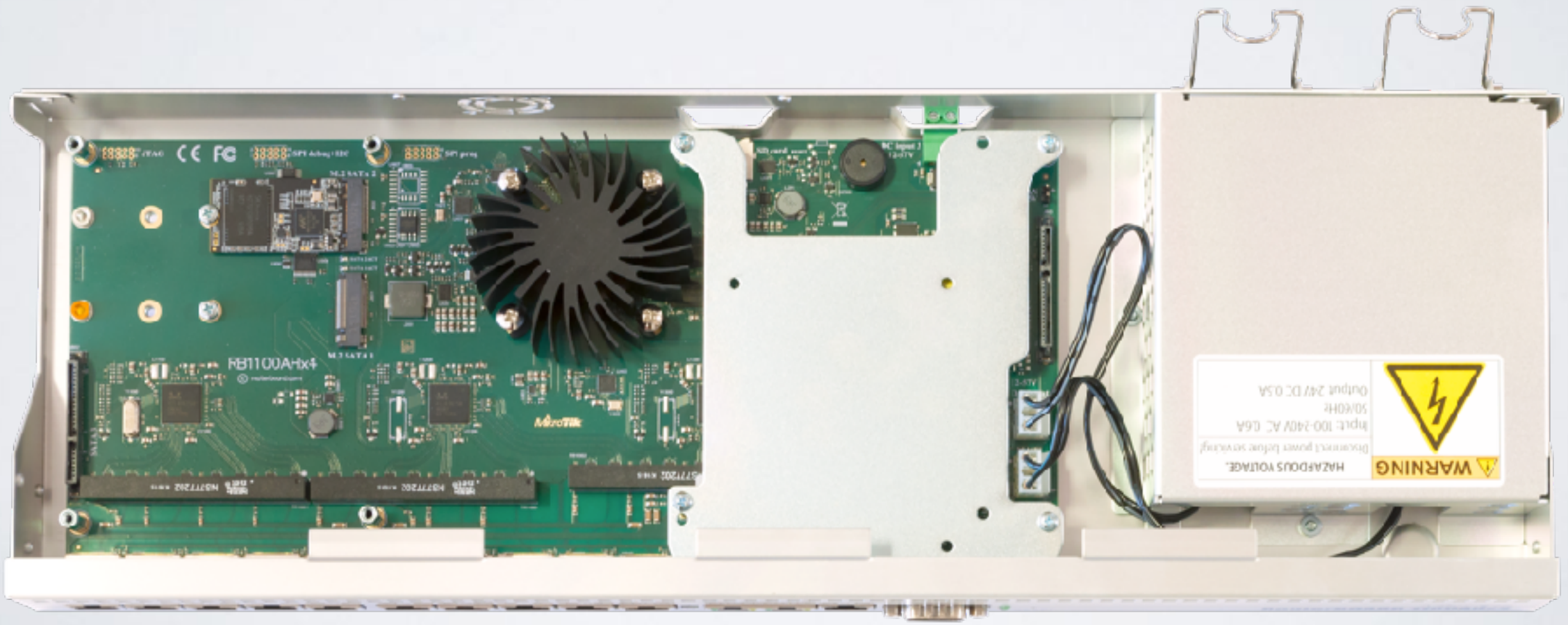
RB1100AHx4

The timeless classic upgraded with a new quad core CPU and more

now

Annapurna Alpine AL21400 CPU with four Cortex AI5 cores clocked at 1.4 GHz

- Two SATA3 ports
- Two M.2 ports
- 60 GB SSD included
- Hardware accelerated IPSec
- -48 V DC telecom power
- Dual PSU



- 5.5 million PPS
- 7.5 Gbps
- IPSec up to 2.2 Gbps with AES128
- Overclock up to 2 GHz

now

Two editions

- **RB1100AHx4 - $299**

- **RB1100AHx4 Dude edition**

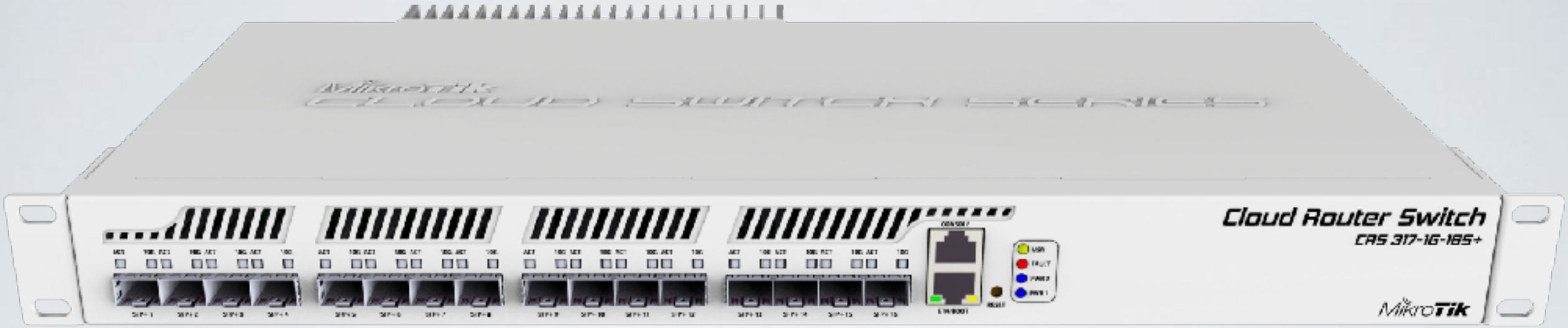
  2x M.2, 2x SATA3 and 60 GB SSD disk - **$349**

now

FiberBox

- Weatherproof case
- 5 SFP ports
- RJ45 SFP (S-RJ01) included
- $79

now



CRS317-1G-16S+

High performance SFP+ switch

now

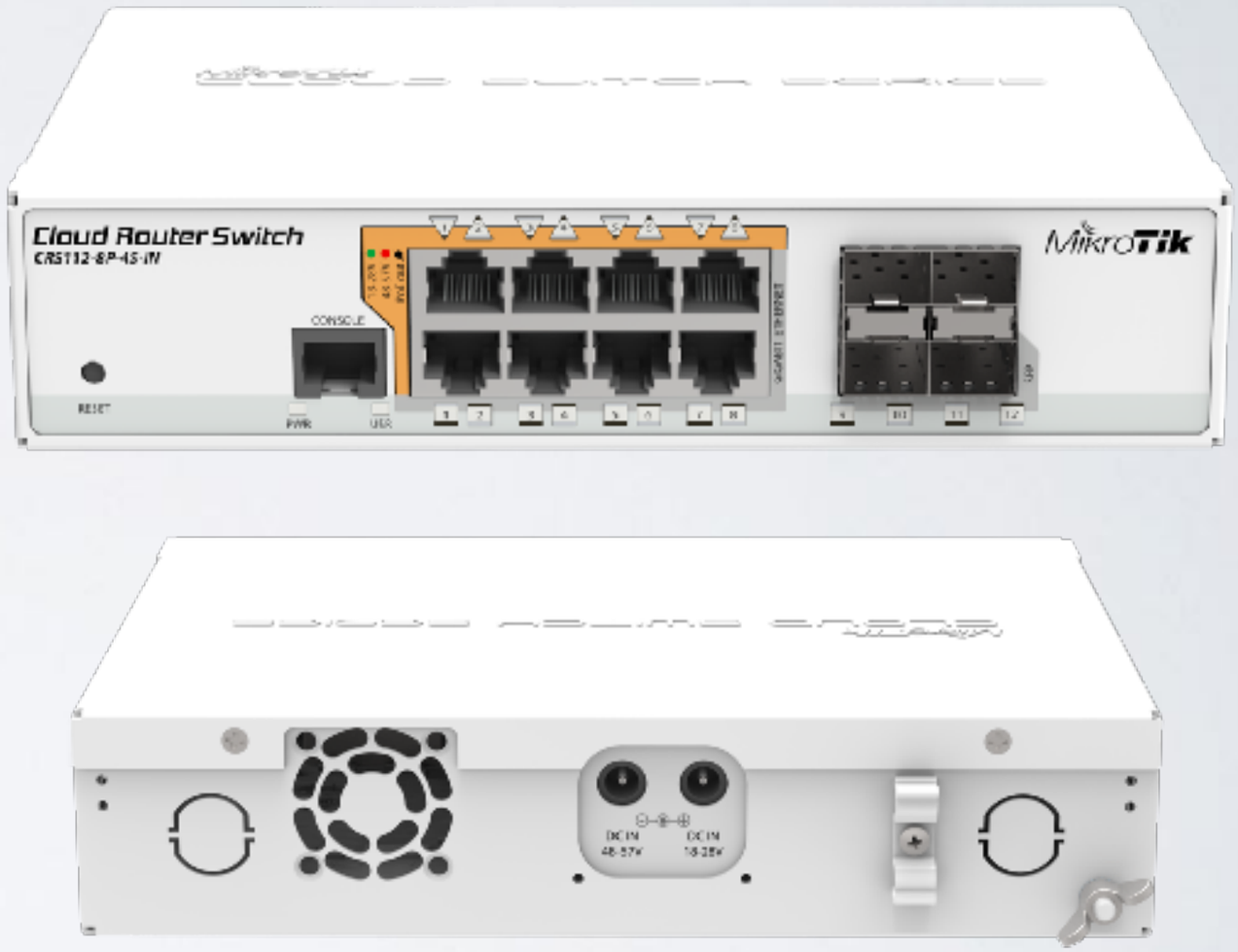
CRS317-1G-16S+

- 16 SFP+ ports
- Next generation switching chip
- Hardware-based Spanning Tree Protocol
- Dual boot - SwOS or RouterOS
- $399

Q4

CRS112-8P-4S

- PoE out 802.3af/at
- Eight Gigabit Ethernet ports
- 4 SFP ports
- Separate PSU for passive or 802.3af/at PoE out
- Low voltage PSU included
- Per port auto detection of PoE standard



CRS328-24P-4S+RM

Smart PoE out switch

Q4

CRS328-24P-4S+RM

- Dual boot - SwOS or RouterOS
- 24 port with PoE out function
- Supports 802.3af/at and passive output
- Per port auto detection of PoE standard
- Four SFP+ ports for 10 GbE
- One 100-240 V IEC connector

All products

- Included free software upgrades for life
- Run the same RouterOS or SwOS software
- For more information see: https://mikrotik.com/products

NEWS IN ROUTEROS

CHR

Cloud Hosted Router

- RouterOS version tailored for running in virtual environments
- Runs on VMware, Workstation, VirtualBox, ESXi, HyperV, KVM, XenServer, etc.
- Cloud services - Amazon, Azure and others
- CHR available as OVA (Open Virtual Appliance)

CHR

Use cases

- Firewall for your could services
- VPN server in the cloud
- The Dude monitoring server
- Simulate networks for learning or training purposes
- And many more

CHR

Licensing

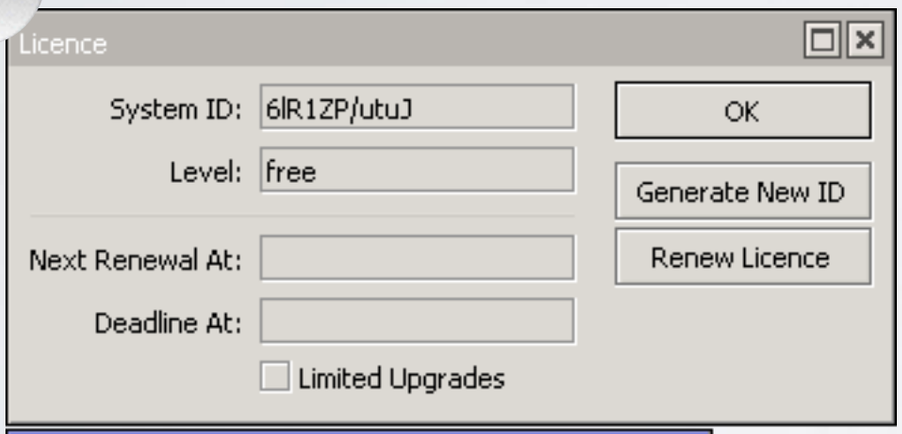
License	Speed limit per	Price
Free	1 Mbit	FREE
P1	1 Gbit	US$45
P10	10 Gbit	US$95
P-Unlimited	Unlimited	US$250

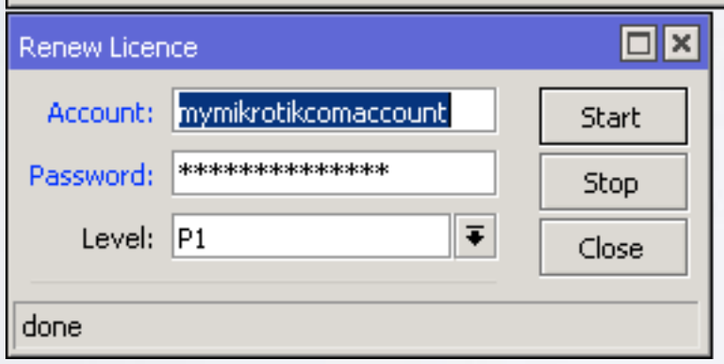
- 60 day trial available
- Purchased license can be transferred

CHR

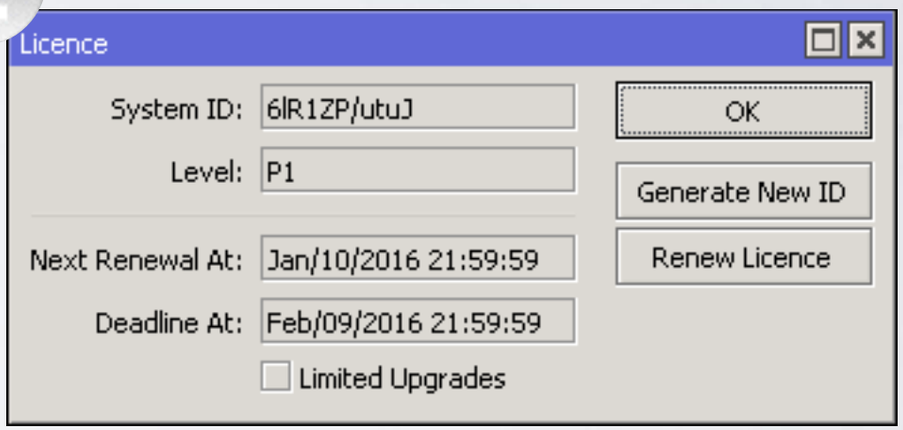
Licensing

1





2

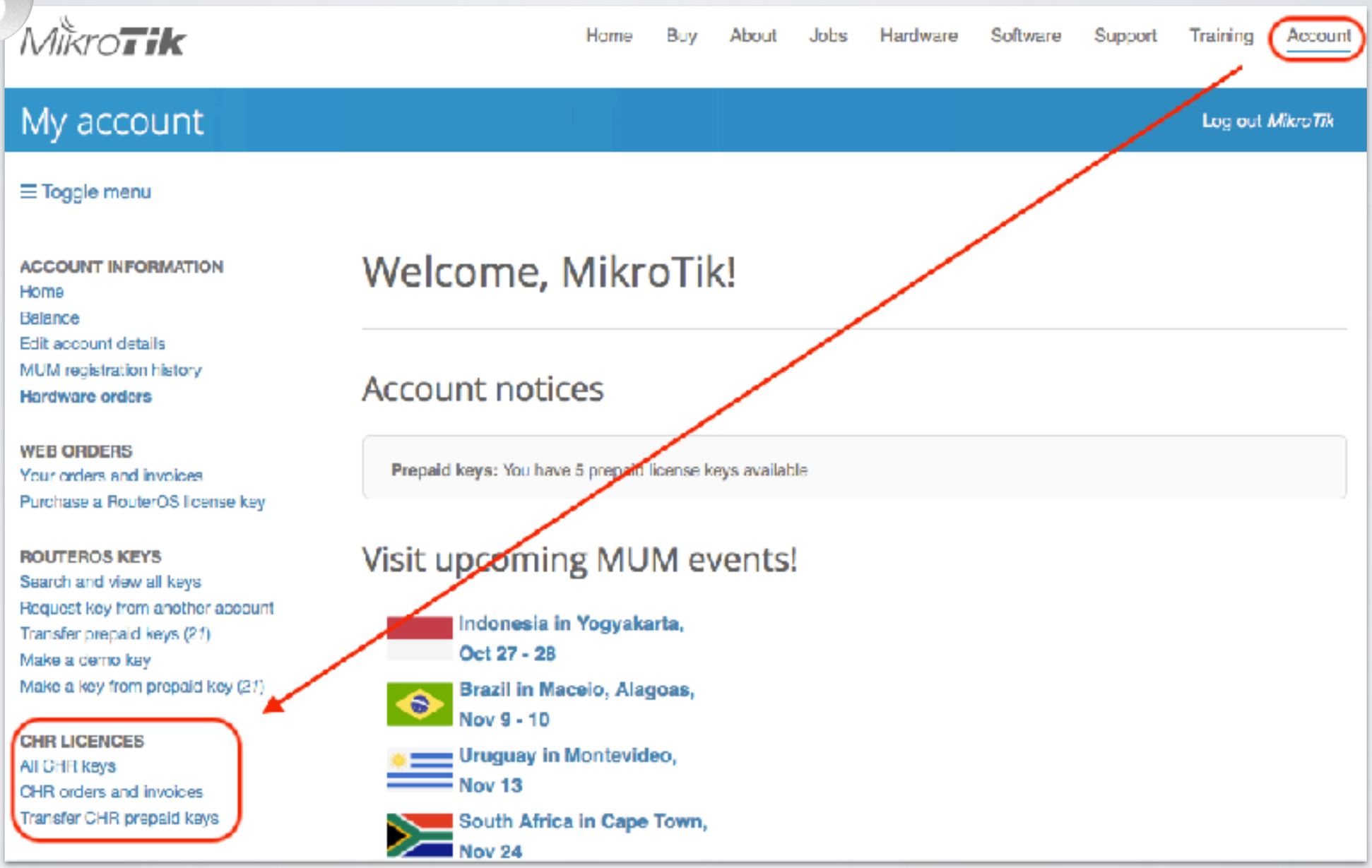


WinBox → System → License

CHR

Licensing

3



mikrotik.com/client

CHR

Licensing

4

User keys

Show entries

10

Search

System ID	Issued	Expires	Level	Transfer	Action	Status	Note
vmxAucZ7VtK	2016-05-31	---	P1-Perpetual	Transfer	Upgrade		
OMaZwuXjj4N	2016-04-04	---	P10-Perpetual	Transfer	Upgrade		
Cm8ATgygn2H	2017-09-13	---	P-Unlimited	Transfer			
+OfzKswA4TC	2017-08-24	---	P10-Perpetual	Transfer	Upgrade		
4Mc+U51oLoN	2016-06-10	---	P1-Perpetual	Transfer	Upgrade		
10971UBiKZK	2015-12-28	---	P1-Perpetual	Transfer	Upgrade		
JPyotBTRsJK	2015-12-09	---	P10-Perpetual	Transfer	Upgrade		

mikrotik.com/client/cloudhosting

CHR

Licensing

5

Upgrade system license

System ID

AuykNnBPF/E

Level

P1-Perpetual ($ 45.00)

Upgrade key

1Gbit per interface ($45 one time payment)

You have following prepaid balance keys available to purchase a CHR license:

- P1-Perpetual - 5 keys

mikrotik.com/client/cloudhosting

CHR

Licensing

6

Payment

You have selected	System ID
P1-Perpetual	AuykNnBPF/E
	Total price: **$54.45**

Pay using deposit (left: $100) | Pay using CC | Pay using PayPal | Pay using Balance key (5)

Note: Price includes VAT 21% because you have specified EU country as your residence. To avoid this you have to enter your VAT registration number in your account settings.

mikrotik.com/client/cloudhosting

RouterOS changelog

- 6.40 - 161 entries
- 6.40.1 - 14 entries
- 6.40.2 - 10 entries
- 6.40.3 - 28 entries
- 6.40.4 - 33 entries
- 246 entries in total!

LTE passthrough

- Bridge over LTE to the connected device
- IPv4/IPv6 to the connected device
- On LTE device **only modem configuration**
- For one device only
- Specific modems are supported

Bridge functions

- Hardware based MSTP support for CRS3xx devices
- Software based MSTP support for other RouterOS powered devices
- Hardware IGMP snooping for CRS
- Software IGMP snooping for other RouterOS powered devices

TR069 client

- RouterOS data model based TR-181 issue 2 amendment 11
- Works with AVSystem, Axiros, FriendlyTech and GenieACS servers
- Installed as separate package
- Recommended to use with HTTPS

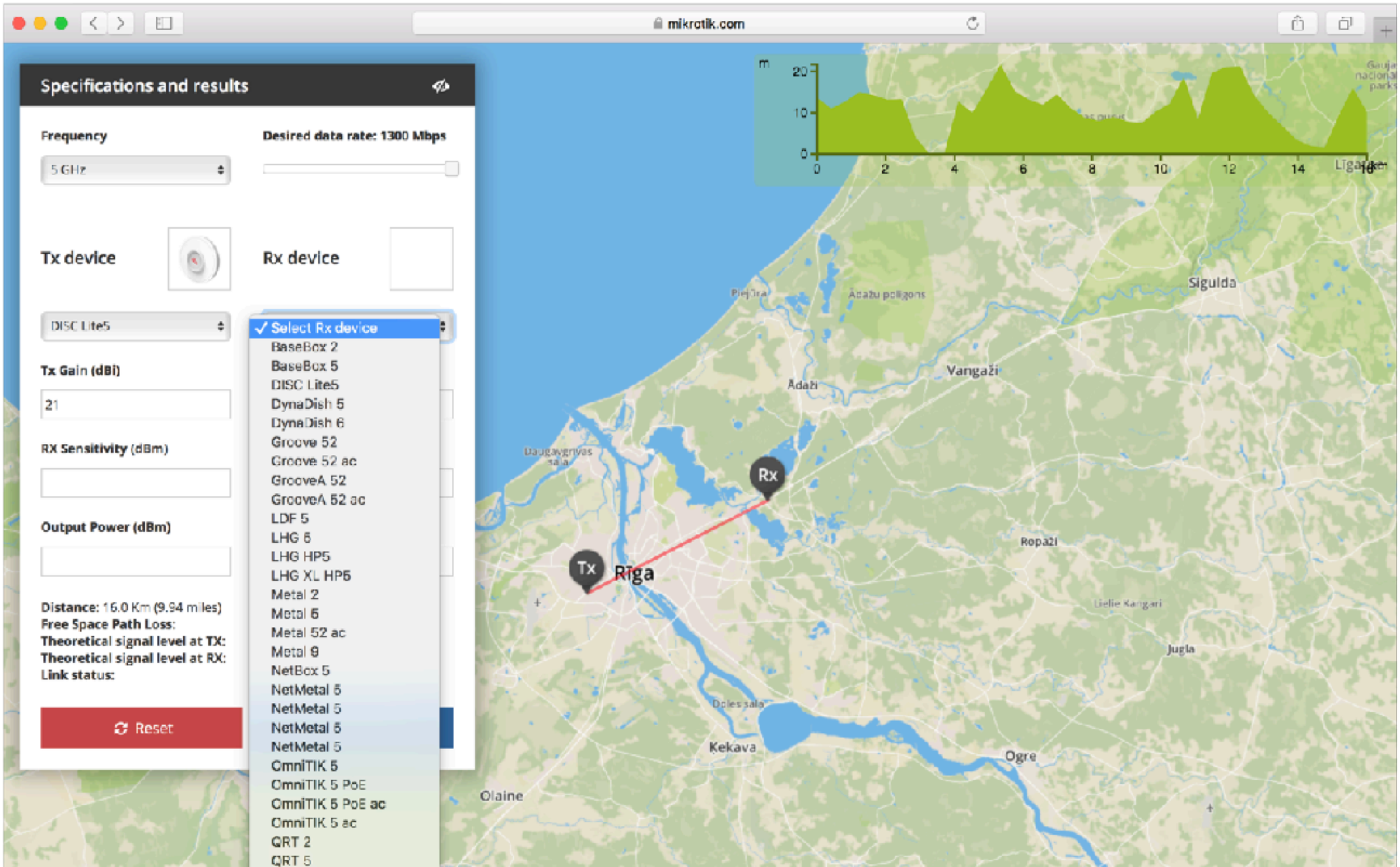
IPSec results

IPsec test results

RB750Gr3		RB750Gr3 IPsec throughput					
Mode	Configuration	1400 byte		512 byte		64 byte	
		kpps	Mbps	kpps	Mbps	kpps	Mbps
Single tunnel	AES-128-CBC + SHA1	42.6	477.1	56.9	233.1	55.2	28.3
256 tunnels	AES-128-CBC + SHA256	42.9	480.5	49.5	202.8	51.3	26.3
256 tunnels	AES-256-CBC + SHA1	32.0	358.4	49.1	201.1	49.2	25.2
256 tunnels	AES-256-CBC + SHA256	32.0	358.4	49.1	201.1	49.2	25.2

1. All tests are done with Xena Networks specialized test equipment (XenaBay),and done according to RFC2544 (Xena2544)
2. Max throughput is determined with 30+ second attempts with 0,1% packet loss tolerance in 64, 512, 1400 byte packet sizes
3. Test results show device maximum performance, and are reached using mentioned hardware and software configuration, different configurations most likely will result in lower results

Wireless link calculator



Detect Internet

- Automatic interface functionality detection

```
[sergejs@3B12_SergejsGW_CCR1036] > interface detect-internet state print
 # NAME                                                                                          STATE
 0 sfp1                                                                                          no-link
 1 ether1                                                                                        no-link
 2 ether2                                                                                        no-link
 3 ether3                                                                                        no-link
 4 ether4                                                                                        no-link
 5 ether5                                                                                        lan
 6 ether6                                                                                        lan
 7 ether7                                                                                        lan
 8 ether8                                                                                        internet
 9 bridge1                                                                                       lan
[sergejs@3B12_SergejsGW_CCR1036] >
```

Need help?

- Ask a local distributor
- Hire MikroTik consultant
- Read the manual **wiki.mikrotik.com**
- Email **support@mikrotik.com**
- Attend a training class or join and Academy class in a University

After the MUM

- All presentations - mum.mikrotik.com
- Videos - youtube.com/mikrotik
- License for paid and voucher registrations will be sent by an e-mail

MikroTik