

*Mikro***Tik**

 MUM UK 



What do we do?

We create networks



- Established 1996
- RouterOS created in 1997
- RouterBOARD created in 2002
- First MUM event in Prague 2006
- MUM in Indonesia had over 3100 people
- 25 events in 2017



Iceland

Finland

Sweden

Russia

Norway

Estonia

Denmark

Lithuania

Belarus

Kazakhstan

Ireland

United Kingdom

Netherlands

Poland

Belgium

Germany

Ukraine

Luxembourg

Czech Republic

Slovakia

France

Switzerland

Liecht

Austria

Hungary

Moldova

Romania

Georgia

Azerbaijan

Slovenia

Croatia

Armenia

Monaco

Bosnia and Herzegovina

Serbia

Bulgaria

Iran

Portugal

Andorra

San Marino

Montenegro

Italy

Albania

Macedonia

Turkey

Spain

Vatican City

Greece

Syria

Iraq

Our products include

RouterOS

built and advanced for more than 20 years

RouterBOARD

Wireless outdoor, indoor, Ethernet routers

CRS

Switches with RouterOS

CSS

Switches with SwOS

no matter where you are

# More than 180 MUM events around the world





**STAFF**

Look for MikroTik staff in the red t-shirts

Karlis (sales)  
Viesturs (support)  
Kaspars (training)

10:00

Presentations

13:00

Lunch (with vouchers)

14:30

Presentations

16:45

Lottery

17:15

Drinks and socializing

# WiFi

**SSID: MUM**

**Password: mikrotik**

# MUM Live

[www.youtube.com/mikrotik](http://www.youtube.com/mikrotik)

# Special thanks



Some of our latest products

1Gbit  
over wireless

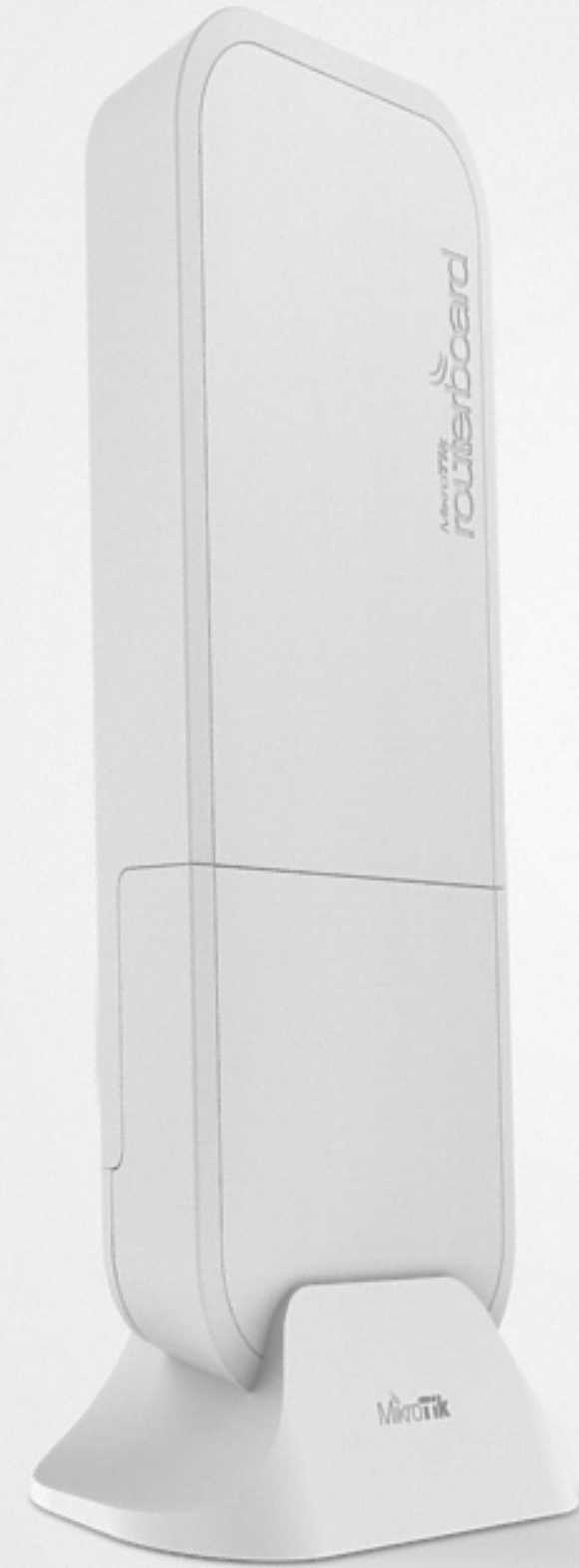
100m+  
range

60GHz  
radio

Gigabit  
Ethernet

Paired  
Secure Link  
preconfigured

Powered by  
AF/AT/Passive  
PoE, DC jack



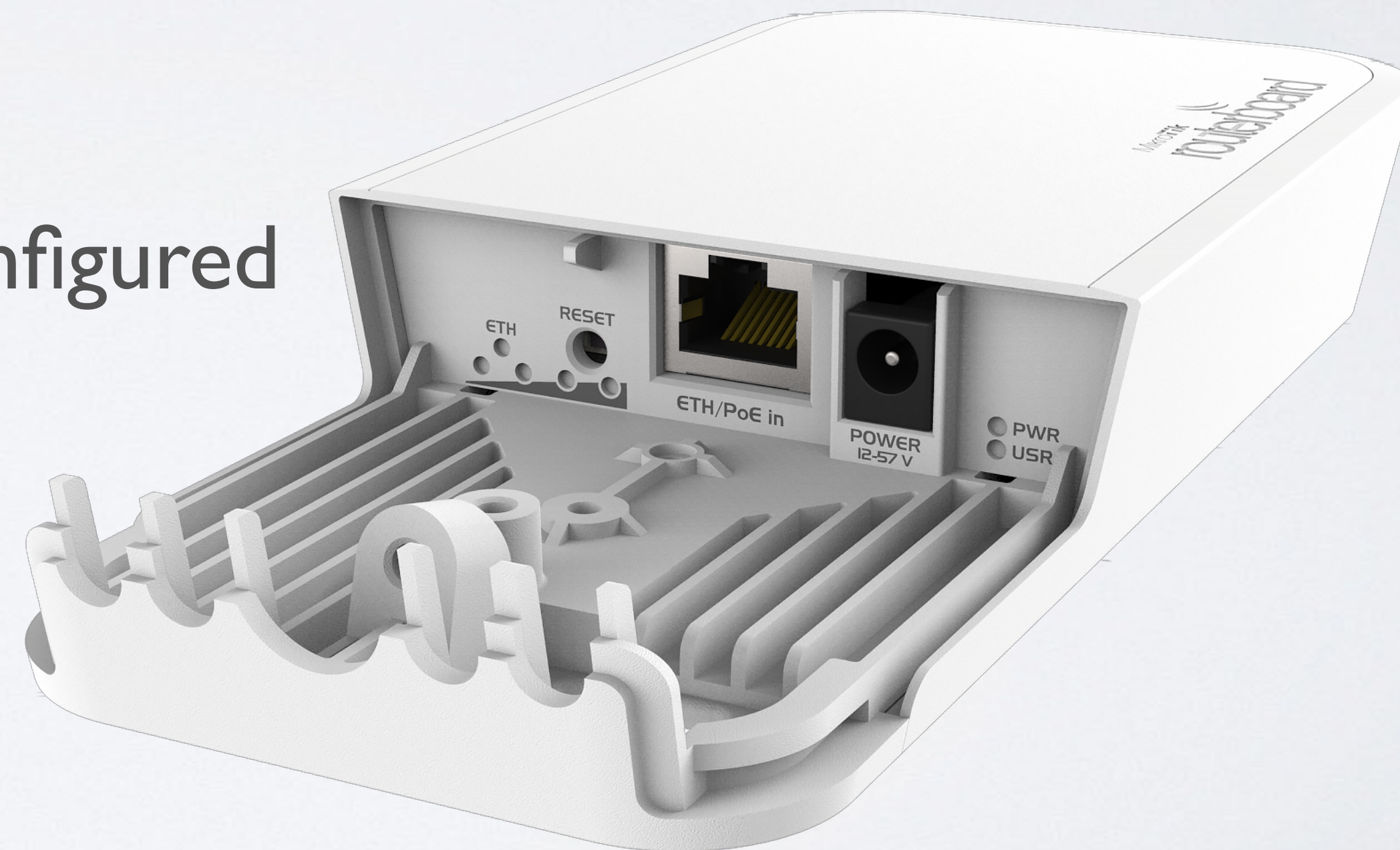
MikroTik

Wireless Wire

# Wireless Wire



- 1 Gbps full duplex without wires
- For distance 200 meters +
- 60 GHz beam-forming
- Paired secure link preconfigured
- IPsec encryption
- \$198 kit





# Wireless Wire Dish

Two LHG60G devices for long range | Gbit

# LHG 60G

NOW

- 1 Gbit full duplex (wire speed)
- Works in 60 GHz spectrum
- Familiar LHG design
- Quad-core ARM CPU
- Targeted for 1.5 km and more!
- IPsec encryption
- Kit price \$298



# SXTsq Lite60

NOW

- 100 Mbps
- SXTsq design
- For distance 200 meters +
- Low cost and low weight
- Unit price \$69



# MikroTik 60GHz Products

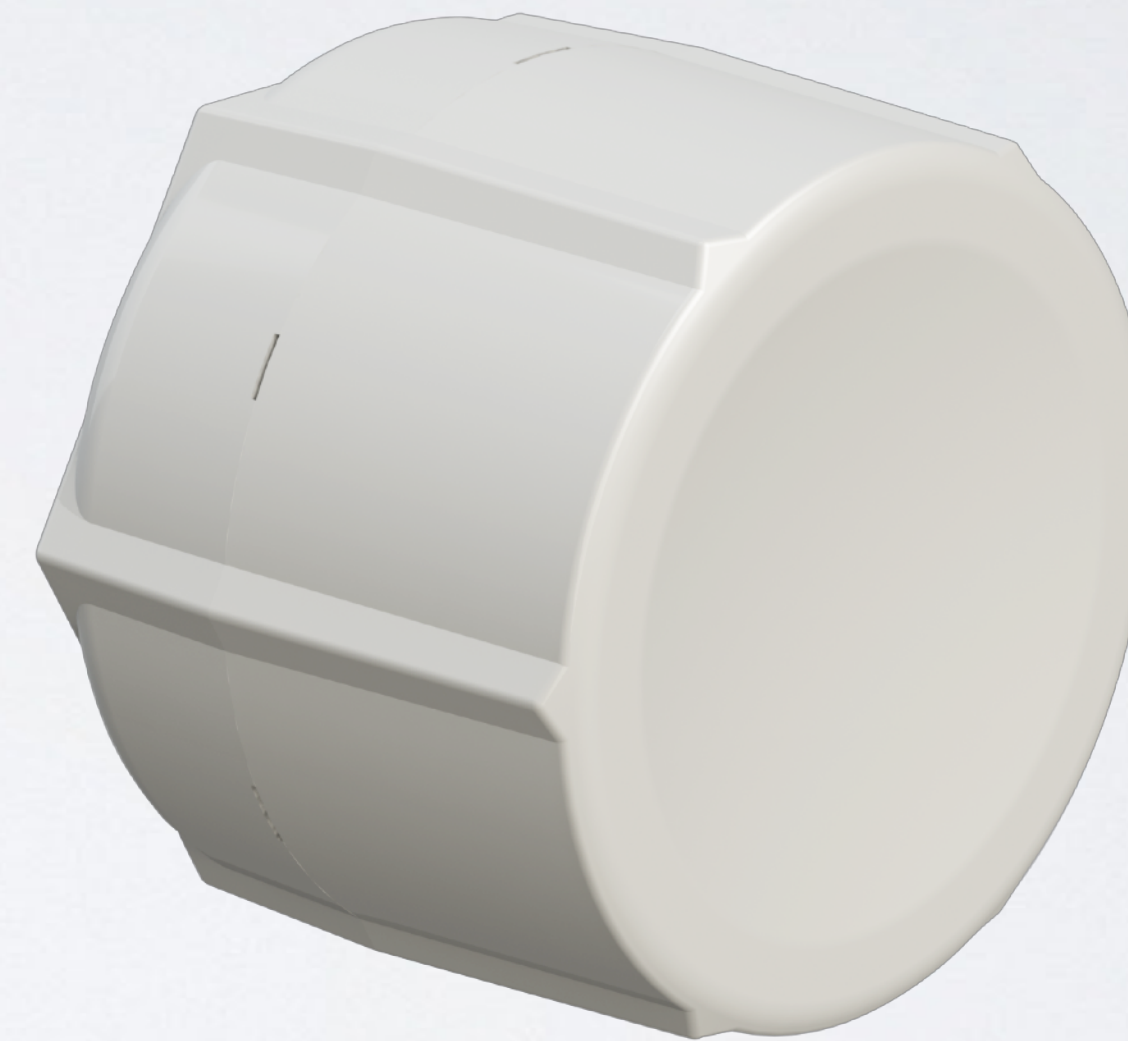
Max distance at full speed

<b>LHG 60G</b>	<b>1500+ meters</b>	<b>LHG 60G</b>
<b>wAP 60G</b>	<b>200+ meters</b>	<b>wAP 60G (AP)</b>
<b>LHG 60G</b>	<b>800+ meters</b>	<b>wAP 60G AP</b>
<b>LHG Lite60</b>	<b>800+ meters</b>	<b>wAP 60G AP</b>
<b>SXTsq Lite60</b>	<b>200+ meters</b>	<b>wAP 60G AP</b>

# SXT LTE kit



- Dual SIM
- LTE card built in
- 2x Ethernet
- PoE output on ether2
- International LTE bands 1,2,3,7,8,20,38 and 40
- US bands 2,4,5 and 12
- Kit price \$129



# LtAP mini

NOW

- 2.4 GHz AP in a rugged case
- miniPCIe for LTE
- Built-in GPS
- Optional external antennas for GPS and LTE
- Serial port
- Perfect for outdoor and mobile applications





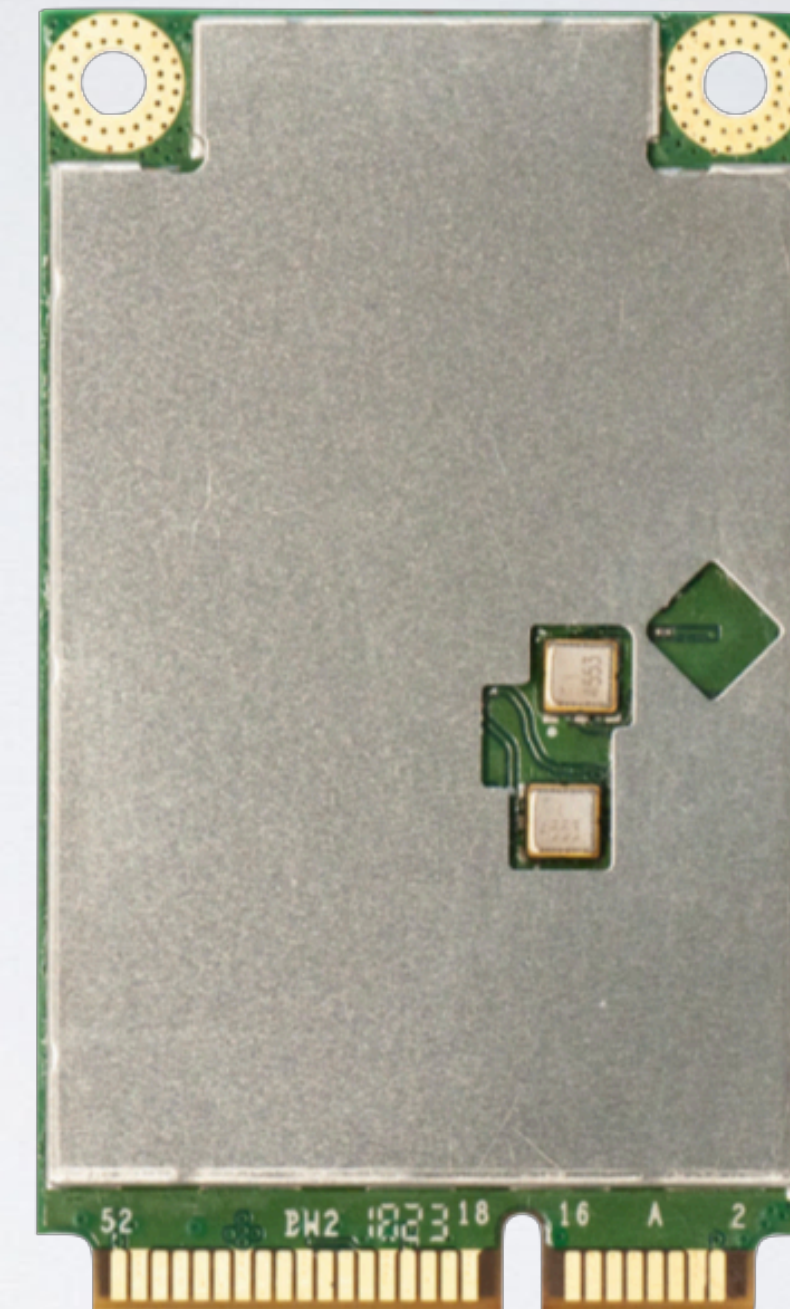
# Available now

- 89\$ without the LTE module
- 129\$ with the LTE (US version available) module

# R11e-4G



- 4G modem
- Category 4 (150Mbps/50Mbps)
- 3,7,20,31 FDD bands
- 41n,42,43 TDD bands





# hAP ac<sup>2</sup>

NOW

- Gigabit ports
- Dual chain, dual band
- Wall mount or stand
- Same small size as "lite" model
- Kit price \$69



# cAP ac

NOW

- Dual band, dual chain
- Gigabit port for 802.11ac speeds
- Two Ethernet ports
- PoE out
- Two cases included
- IPsec encryption
- Kit price \$69







# RouterBOARD 4011

NOW



# RouterBOARD 4011

NOW

- 4 core Cortex A15 CPU
- 10x Gigabit ethernet ports and 1x SFP+ (10 Gpbs)
- IPsec hardware encryption
- 1GB RAM
- PoE out
- Price \$199



# RouterBOARD 4011

NOW



# RouterBOARD 4011

NOW

- 2GHz 2 chains, 802.11 b/g/n
- 5GHz 4 chains, 802.11 ac
- 1733 Mbps + 300 Mbps
- 160 MHz channel width
- 360 omni directional antennas
- Price \$249





# hEX S

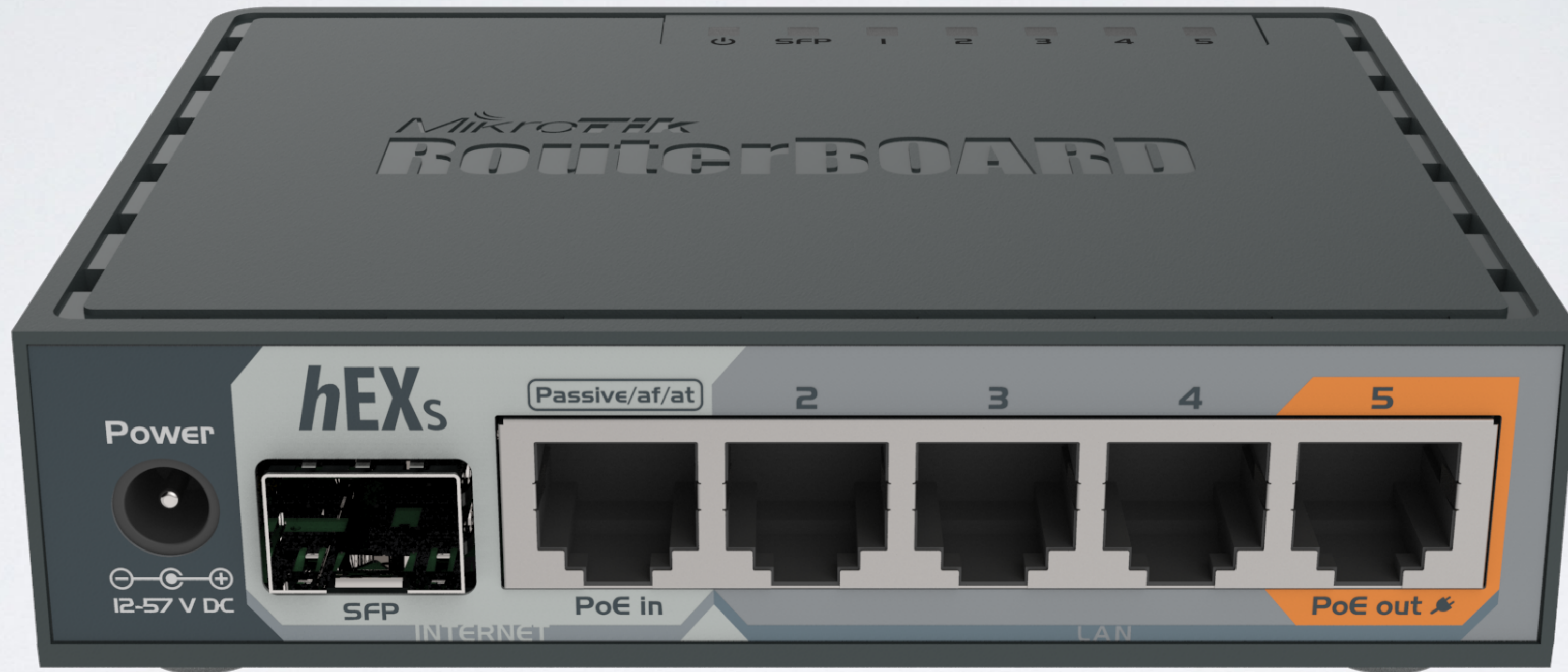


- Dual-core 880 MHz
- 256 MB of RAM
- Full size USB
- 1.25 Gbps SFP
- 10 V - 57 V input and PoE
- IPsec encryption
- Kit price \$69



# hEX S

NOW



# SXTsq Lite 2



- 2 GHz CPE
- Slim design
- Low price
- Kit price \$39



# LDF 2

NOW

- 2 GHz CPE
- Mounts in regular satellite dish
- Ultra long range
- Kit price \$39

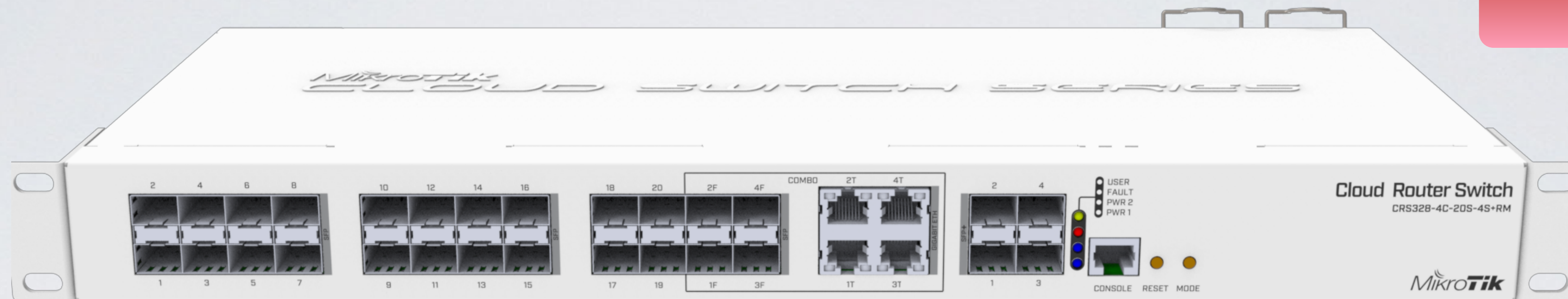


# mANTBox2 12s

- 2 GHz sector antenna
- 12 dBi
- RouterBOARD built-in



NOW



# CRS328-4C-20S-4S+RM

- 20x SFP ports
- 4x ETH/SFP combo ports
- 4x SFP+ ports
- Dual PSU
- Price \$369

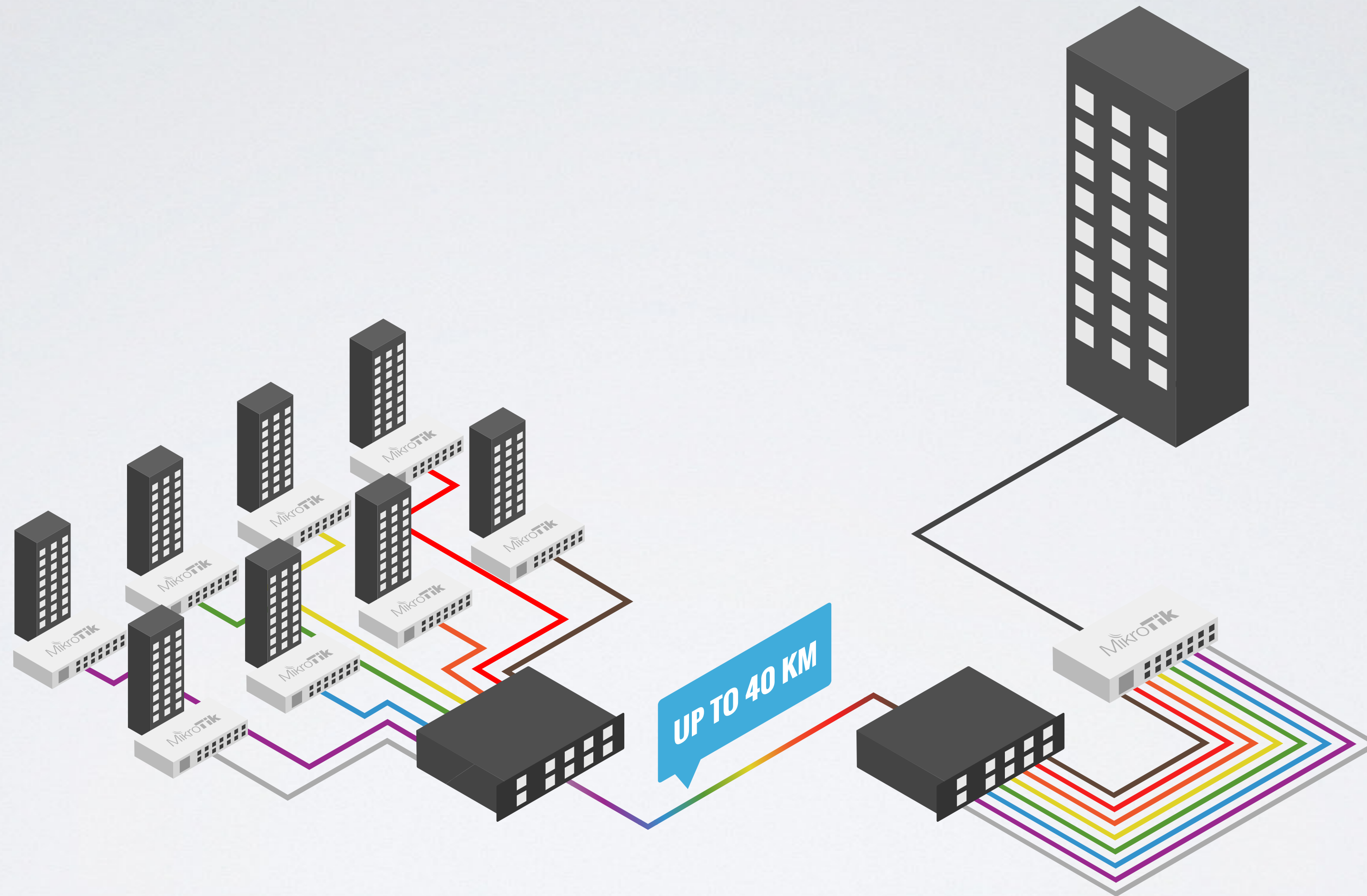
# CWDM

NOW

- Passive MUX/DEMUX unit
- Combine up to eight Fiber links into one
- Supports both SFP and SFP+
- Price \$359



# CWDM

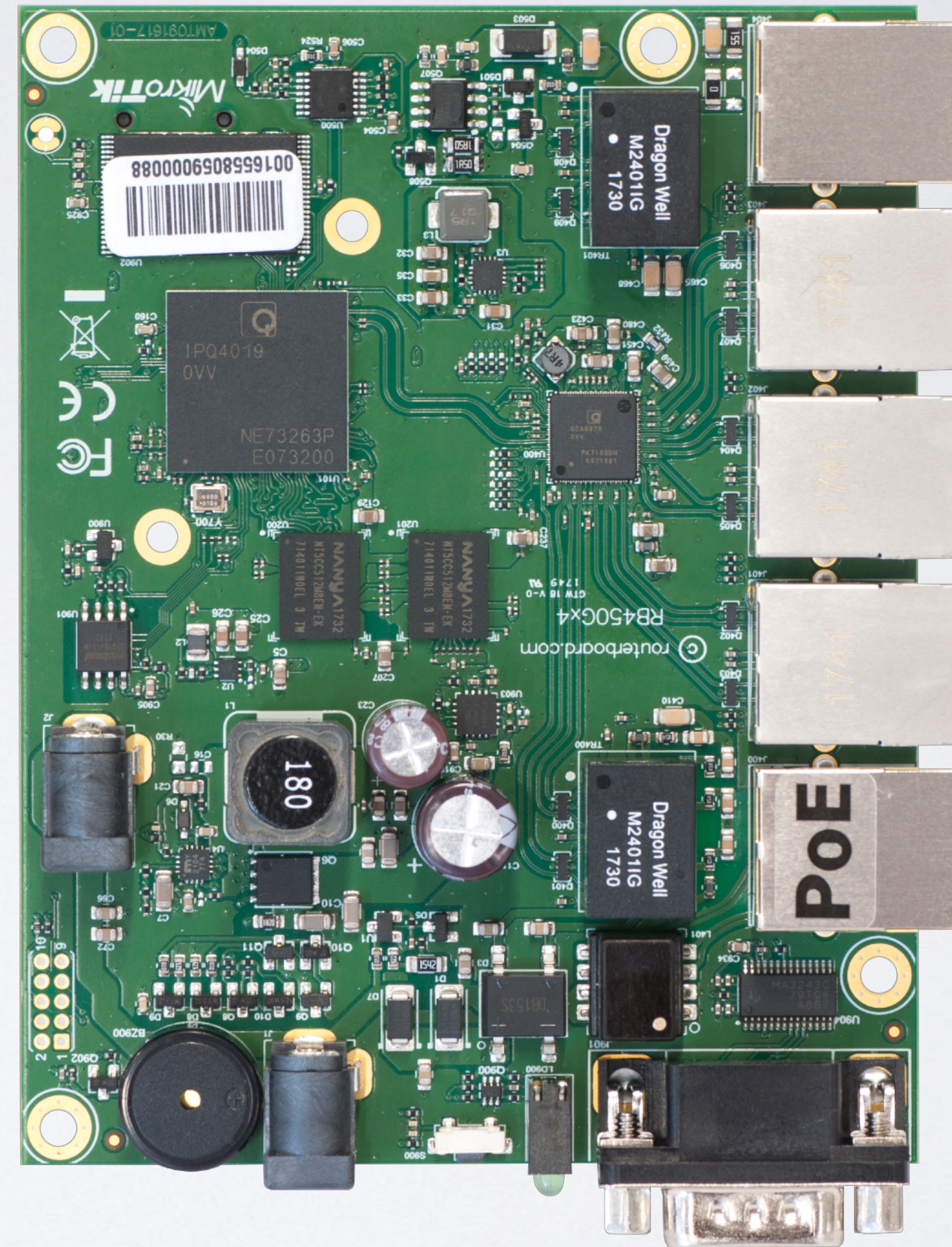




# 450Gx4

NOW

- Quad core 716 MHz
- 1 GB of RAM
- IPsec encryption
- PoE out on ether5
- microSD
- 10V - 57V input by two power jacks
- Price \$99



Some of our upcoming products

# LHG LTE kit



- LTE card built in
- 17 dBi, 25° beam width
- Category 4 LTE modem (150Mbps/50Mbps)
- 3G - R7/R8
- For extremely remote locations

# LHG LTE kit



# LHG LTE kit

spx@172.20.110.39 (220saulkrasti) - WinBox v6.42.6 on RBSXTR (mipsbe)

Session Settings Dashboard

Safe Mode Session: 172.20.110.39

Interface <lte1>

General Status Traffic

Last Link Down Time: Sep/14/2018 11:56:28

Last Link Up Time: Sep/14/2018 11:57:07

Link Downs: 7

PIN Status: no password required

Functionality: full

Manufacturer: "MikroTik"

Model: "R11e-LTE"

Revision: "MikroTik\_CP\_2.160.000\_v008"

Current Operator: 24701

Current Cell ID: 515100

Access Technology: Evolved 3G (LTE)

EARFCN: 6300 (band 20, bandwidth 10Mhz)

IMEI: 355654090046983

Session Uptime: 4d 05:22:02

RSRP: -95 dBm

RSRQ: -16 dB

SINR: -1 dB

CQI: 4

RouterOS WinBox

admin@10.7.80.200 (lhg-lte-test-spx) - WinBox v6.42.6 on LHG R (mipsbe)

Session Settings Dashboard

Safe Mode Session: 10.7.80.200

Interface <lte1>

General Status Traffic

Last Link Down Time: Sep/13/2018 18:51:26

Last Link Up Time: Sep/13/2018 18:52:17

Link Downs: 6

PIN Status: no password required

Functionality: full

Manufacturer: "MikroTik"

Model: "R11e-LTE"

Revision: "MikroTik\_CP\_2.160.000\_v008"

Current Operator: 24701

Current Cell ID: 515104

Access Technology: Evolved 3G (LTE)

EARFCN: 150 (band 1, bandwidth 10Mhz)

IMEI: 355654090599130

Session Uptime: 4d 22:28:37

RSRP: -104 dBm

RSRQ: -12 dB

SINR: 10 dB

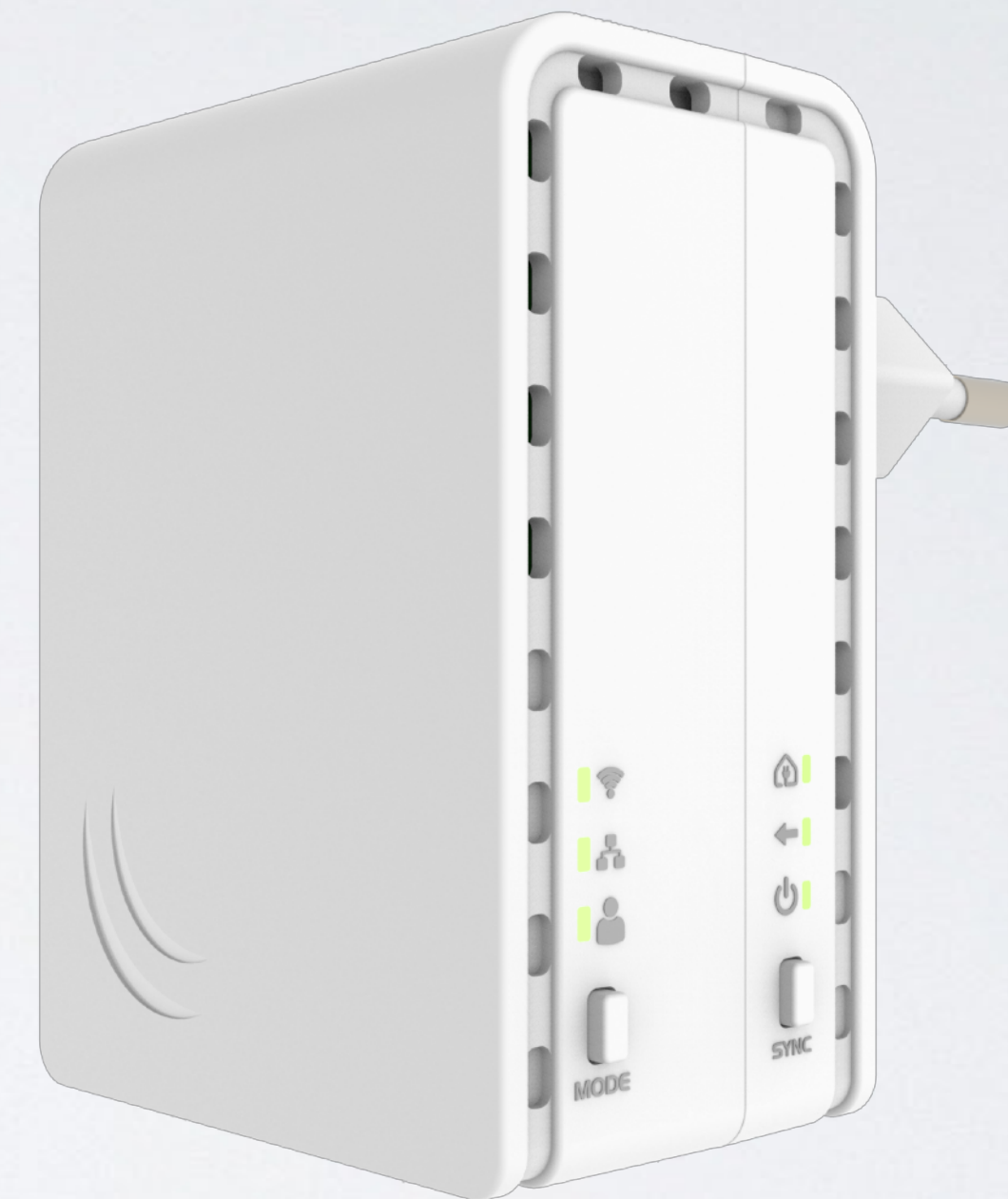
CQI: 11

enabled running slave

RouterOS WinBox

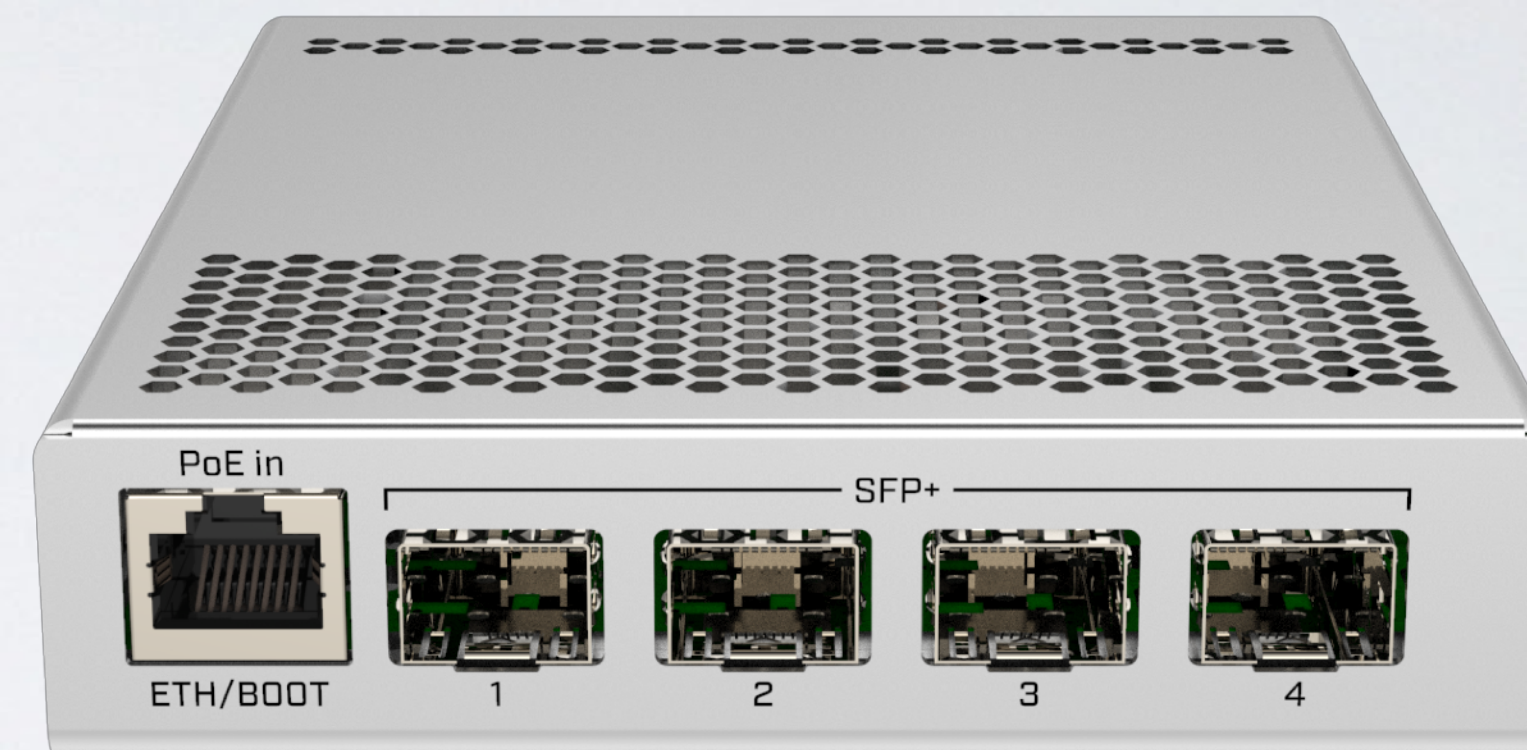
# PWR-Line AP

- Small AP that directly plugs into socket
- Makes 100 Mbps links with others like it
- Build WiFi network without special cabling
- Automatically pairs with new devices



# CRS305-1G-4S+IN

- 4x SFP+ ports
- 1x Gigabit Ethernet
- Metallic enclosure
- Dual DC jacks

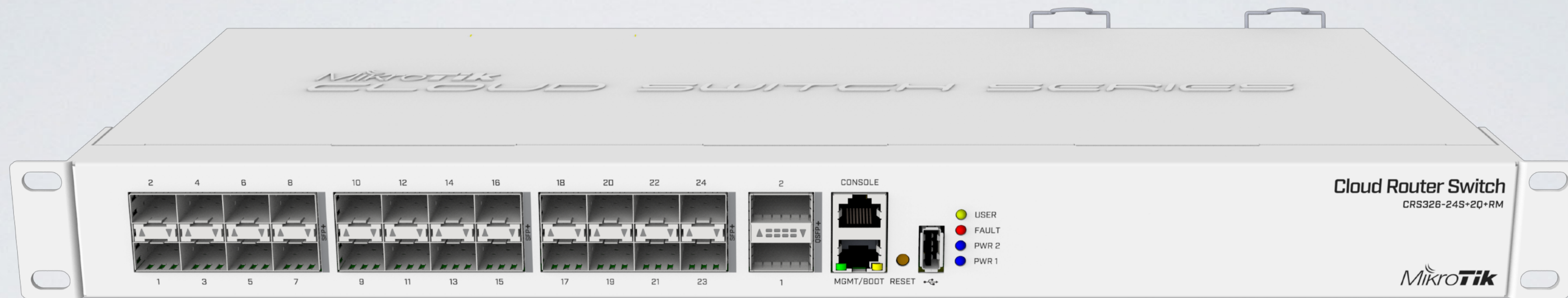


# CRS309-1G-8S+PC

- 8x SFP+ ports
- 1x Gigabit Ethernet
- Passive cooling (and silent) case

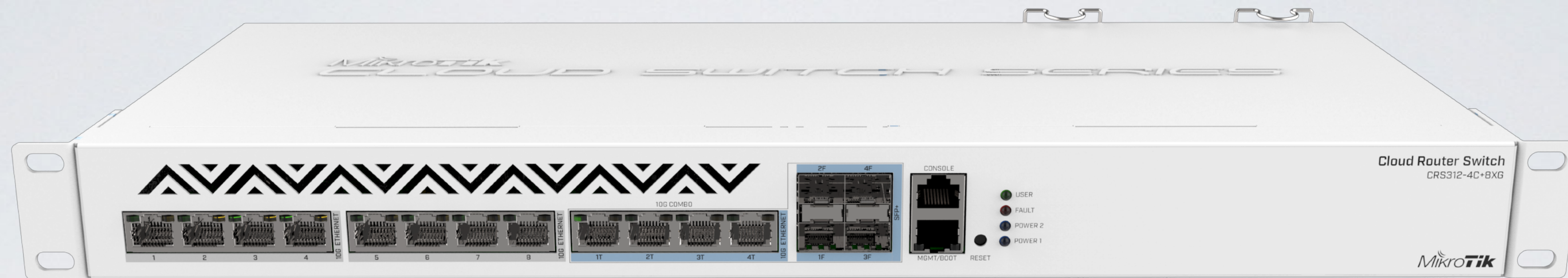






# CRS326-24S+2Q+RM

- 24x SFP+ for 10 Gbit connections
- 2x QSFP+ ports for 40 Gbit connections
- RJ45 console and ETH management
- USB port, Dual PSU



# CRS312-4C+8XG

- 8x 10G Ethernet ports
- 4x 10G Ethernet / 10G SFP+ combo ports
- Console and management ports
- Dual PSU



# CRS354-48G-4S+2Q+

- 48x Gigabit ports
- 4x SFP+ for 10 Gbit connections
- 2x QSFP+ ports for 40 Gbit connections



# CRS354-48P-4S+2Q+

- 48x Gigabit ports with PoE out
- 4x SFP+ for 10 Gbit connections
- 2x QSFP+ ports for 40 Gbit connections

# MikroTik App iOS

- Public beta version coming soon
- Auto-configuration
- Simplified initial setup of the router
- Feedback: [support@mikrotik.com](mailto:support@mikrotik.com)

Tele2 15:21 74%

**MikroTik**  
Tik-App iOS 0.16

LOG IN SAVED DISCOVERED

192.168.88.1

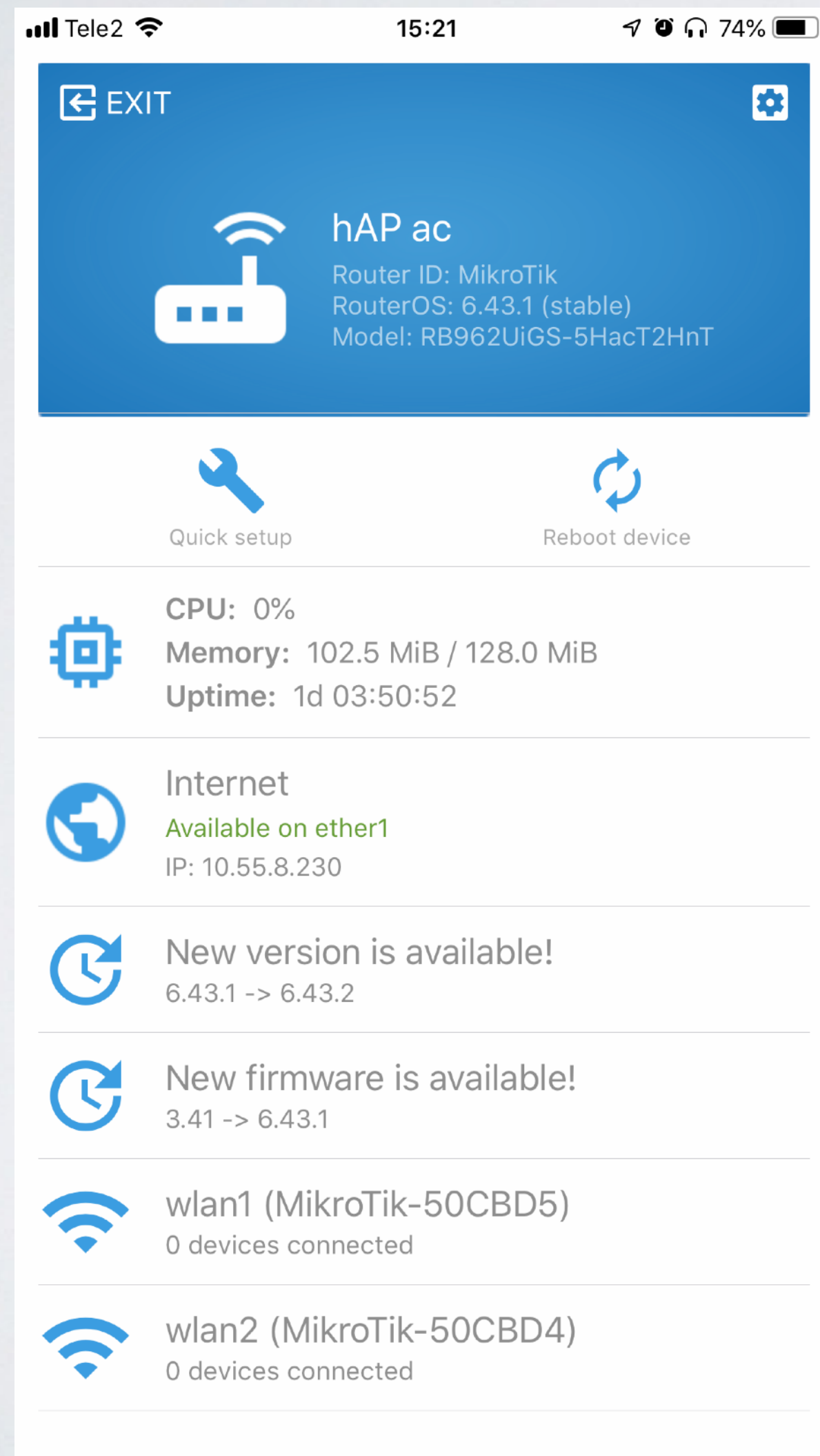
admin

Password

Keep password

SAVE CONNECT

# MikroTik App iOS



Tele2 15:21 74%

EXIT

**hAP ac**  
Router ID: MikroTik  
RouterOS: 6.43.1 (stable)  
Model: RB962UiGS-5HacT2HnT

Quick setup Reboot device

CPU: 0%  
Memory: 102.5 MiB / 128.0 MiB  
Uptime: 1d 03:50:52

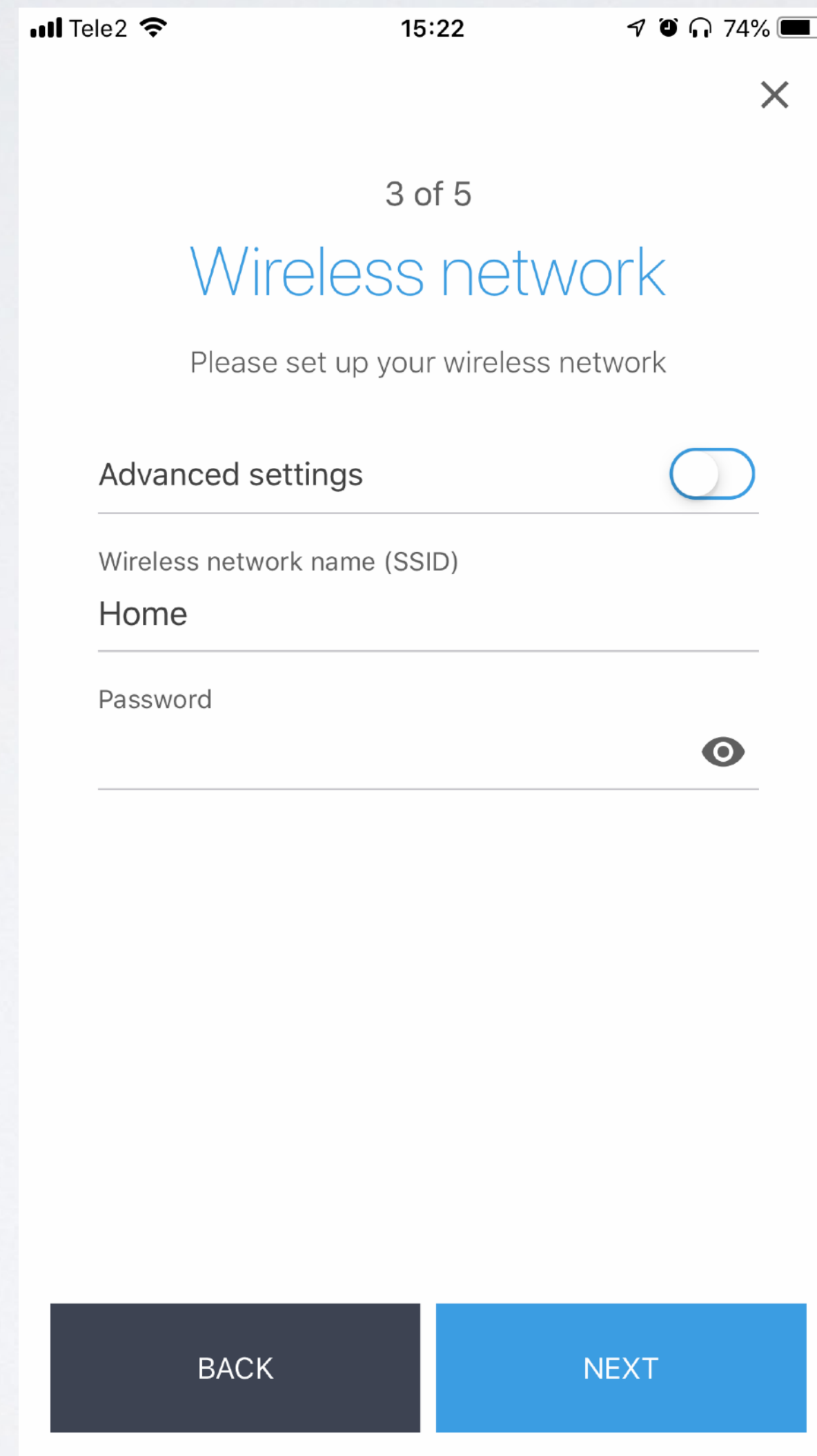
Internet  
Available on ether1  
IP: 10.55.8.230

New version is available!  
6.43.1 -> 6.43.2

New firmware is available!  
3.41 -> 6.43.1

wlan1 (MikroTik-50CBD5)  
0 devices connected

wlan2 (MikroTik-50CBD4)  
0 devices connected



Tele2 15:22 74%

3 of 5

## Wireless network

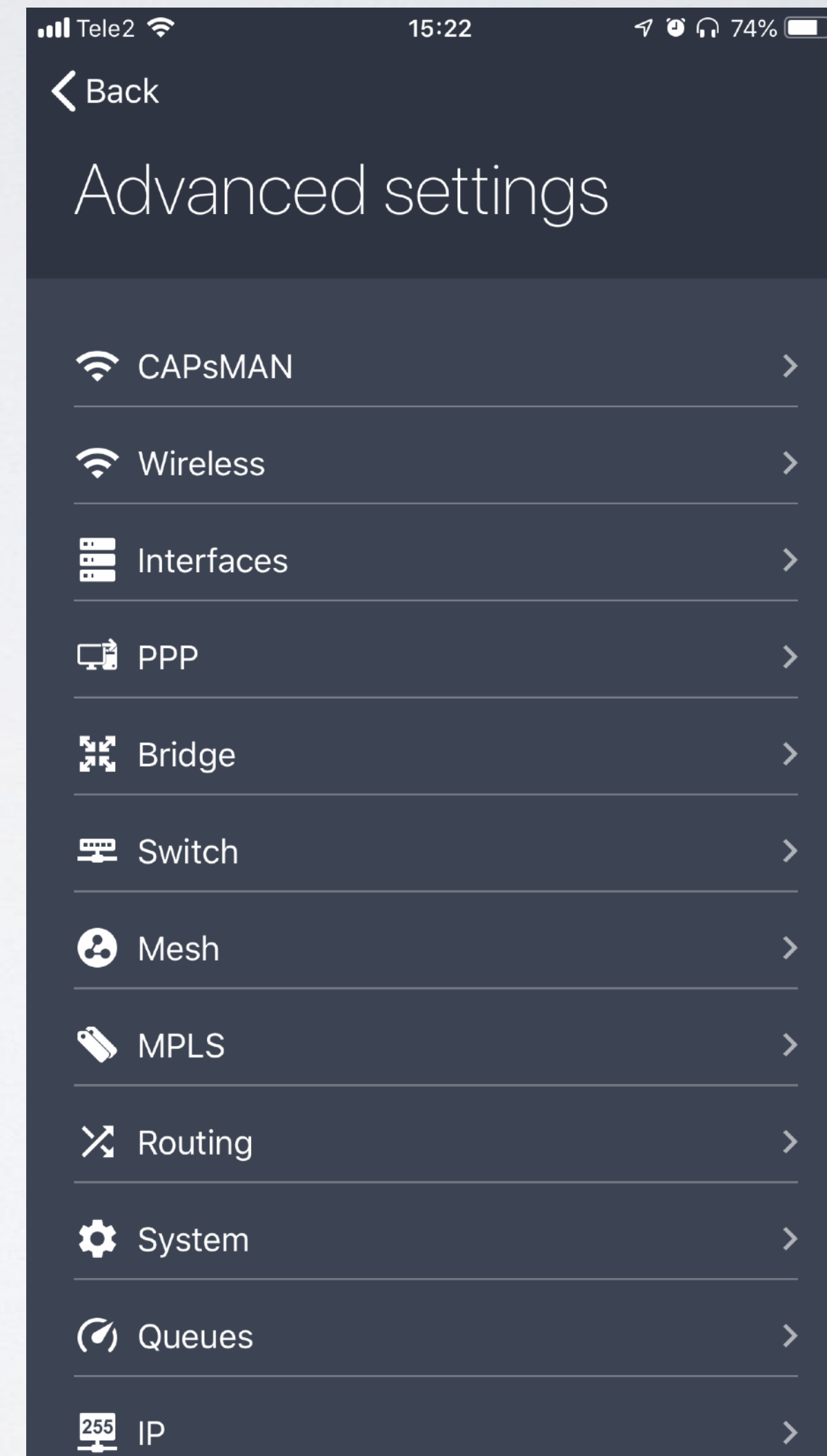
Please set up your wireless network

Advanced settings

Wireless network name (SSID)  
Home

Password

BACK NEXT



Tele2 15:22 74%

Back

## Advanced settings

- CAPsMAN
- Wireless
- Interfaces
- PPP
- Bridge
- Switch
- Mesh
- MPLS
- Routing
- System
- Queues
- IP

# 60GHz Improvements

- Major received signal sensitivity improvements
- Maximum reachable distance improvements (up to 4 KM at full speed)
- Decreased re-connection times on lost connection
- PtMP performance improvements
- Added hardware stats [`/interface w60g print stats`]

# 60GHz Improvements

**== August 10 v6.42.7 ==**

- Stability and rate search improvements
- PtMP improvements

**== June 27 v6.42.5 ==**

- Stability improvements
- w60g SNMP improvements



# 60GHz Improvements

**== September 20 v6.43.2 ==**

- Major received signal sensitivity improvements
- LHG60G can reach up to 4000 m distances (depending on used frequency)
- PtMP improvements

**== September 10 v6.43 ==**

- Added beam forming stats counters

# Need help?

- Ask a local distributor
- Hire MikroTik consultant
- Read the manual [wiki.mikrotik.com](http://wiki.mikrotik.com)
- Email [support@mikrotik.com](mailto:support@mikrotik.com)
- Attend a training class or join an Academy class in a University

# After the MUM

- All presentations - [mum.mikrotik.com](http://mum.mikrotik.com)
- Videos - [youtube.com/mikrotik](http://youtube.com/mikrotik)
- License for paid and voucher registrations will be sent by an e-mail

The logo for MikroTik, featuring the word "MikroTik" in a stylized font. The "Mikro" part is in a regular weight, and the "Tik" part is in a bold, italicized weight. A small, stylized icon of three curved lines is positioned above the "i" in "Mikro". The text is centered and has a reflection effect below it.

*MikroTik*