MikroTik

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hEX lite (RB750r2)

The familiar and popular RB750 just got a whole lot better, bringing improved design, more RAM, faster CPU and better throughput at the same affordable price and a new name - hEX lite!

Its price is lower than the RouterOS license alone - there simply is no choice when it comes to managing your wired home network, the hEX lite has it all.

Not only it's affordable, small, good looking and easy to use - It's probably the most affordable MPLS capable router on the market! Combined with our latest RouterOS version it will provide unprecedented 850MHz CPU with ability to overclock it up to 1GHz. No more compromise between price and features - hEX lite has both. With its compact design and clean looks, it will fit perfectly into any SOHO environment.

Box contains: hEX lite in a plastic case and power supply.

View product online

12V 0.5A
power adapter
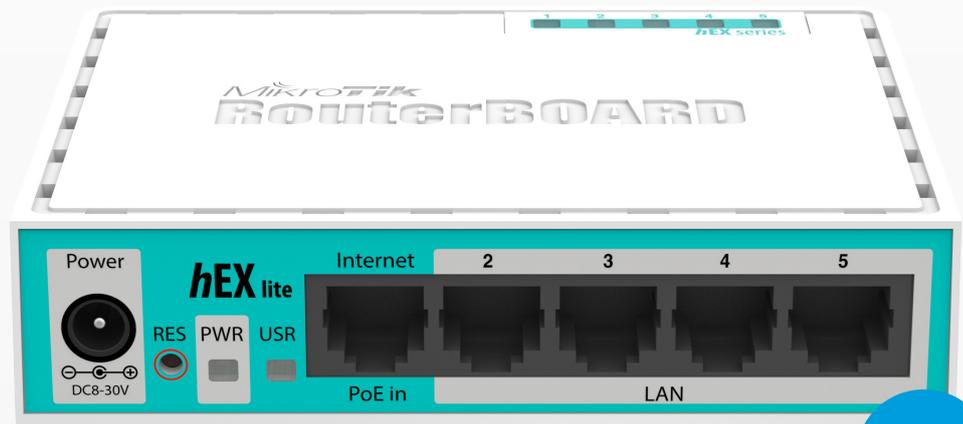
$39.95

WPS button

Starting from RouterOS v6.25 you can now use WPS (WiFi protected setup) in your RouterBOARD device for convenient guest access. The next time your guests attempt to connect to your AP, just ask them to select the WPS option, and click "WPS accept" in Quickset, or push the Reset button on the device.

Since RouterOS only supports the WPS "button mode", this is a secure and simple way to allow any wireless device to connect, without the need to type anything. Just push the button and the client will be granted access.

WPS is supported by most operating systems, including Android on your phone. The wireless-cm2 package is required for the WPS mode functionality.

RoMON

RoMON, or Router Management Overlay Network, is a new feature that we have added to RouterOS v6.xx. This feature allows to discover devices over multiple hops, similar to how MikroTik Neighbor Discovery works.

The RoMON network operates independent from L2 or L3 forwarding configuration, so you can discover what RouterOS devices are located inside networks that previously were not directly accessible. By enabling RoMON on all your RouterOS devices, you can manage devices no matter what the routing configuration is in your network.

You can not only discover these devices, you can also ping them, SSH to them, and connect to them with Winbox - without the need for tunnels, NAT or special routing rules.

RoMON uses a MikroTik Proprietary protocol and supports only Wireless and Ethernet like interfaces.

RoMON enabled devices establishes a independent MAC layer peer discovery and data forwarding protocol. Communication is based on the RoMON ID which is taken from the first MAC address of the board, this ID can also be changed. For security, a special "secret" can be set.

To start discovering RouterOS devices beyond your network, simply enable RoMON in all RouterOS devices - this is done in the "tool romon" menu. Then, use Winbox v3 to connect to your nearest RoMON router and start discovering.
Read more: http://wiki.mikrotik.com/wiki/Manual:RoMON
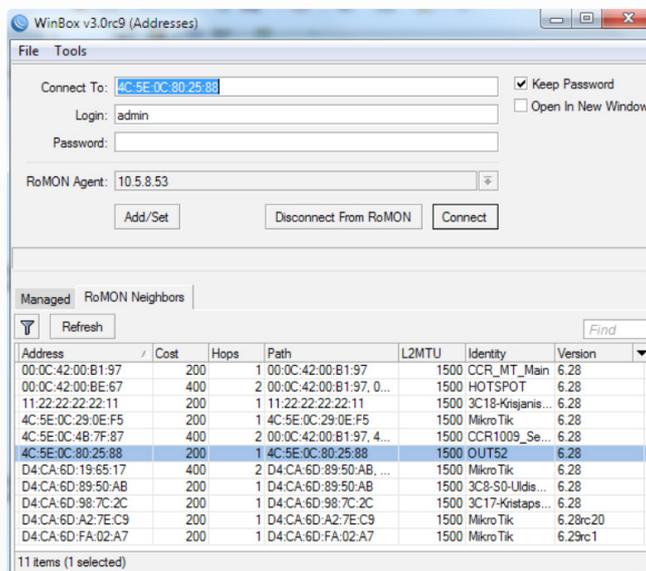
EoIP 15th anniversary and a new encryption feature

One of the most popular protocols made by Mikrotik - EoIP (Ethernet over IP) was created by Mikrotik fifteen years ago this year. First publicly released in September 2000 with RouterOS v2.1 beta, this protocol was created to simplify bridging of Ethernet networks and connecting remote locations into a single network, by creating a tunnel on top of an IP connection.

When the bridging function of the router is enabled, all Ethernet frames (all Ethernet protocols) will be bridged just as if there were a physical Ethernet interface and cable between the two routers (with bridging enabled). This protocol makes multiple network schemes possible.

The EoIP protocol encapsulates Ethernet frames in GRE (IP protocol number 47) packets (just like PPTP) and sends them to the remote side of the EoIP tunnel.

The first EoIP documentation page was created a little later in January, 2000. EoIP is still very popular today, and is supported by all RouterBOARD devices by default.

To celebrate the 15th anniversary of EoIP, Mikrotik is adding keyphrase encryption support. Simply add a keyphrase to the configuration of each EoIP interface and all traffic over the tunnel will be encrypted using IPsec. With the addition of encryption, the protocol is still simple, robust, and easy to use.

Links and history EoIP type protocols

A Linux version of this protocol
https://code.google.com/p/linux-eoip/

Current Mikrotik wiki page about EoIP
http://wiki.mikrotik.com/wiki/Manual:Interface/EoIP

An RFC about a similar protocol made two years after Mikrotik released EoIP.
https://tools.ietf.org/html/rfc3378

Discussion on a list about a kind of Ethernet over IP made by Xerox in the early 1990s (XET -- Xerox Ethernet Tunnel)
http://marc.info/?l=linux-netdev&m=110605301018013&w=2

FastTrack – Up to 890Mb/s NAT on RB2011 WAN

New fasttrack feature supports single stream tcp up to 900Mb/s NAT/mangle on WAN port

Connection Tracking support

FastTrack is implemented as a new action for firewall filter/mangle - "fasttrack-connection". This provides the flexibility necessary for users to combine any existing firewall implementation with the new FastTrack feature.

FastPath + Conntrack = FastTrack

The "action=fasttrack-connection" works similar to "action=mark-connection" - it flags connection tracking entries so that following packets from these entries can be "FastTracked".

In current implementation FastTrack can work with IPv4/TCP and IPv4/UDP connection tracking entries.

Even in the "FastTracked" connections some packets will still go the regular path to maintain connection tracking table integrity (to refresh timeouts, update connection states and more), but as you can see in the picture on the right - it is only a few percent of total number of packets
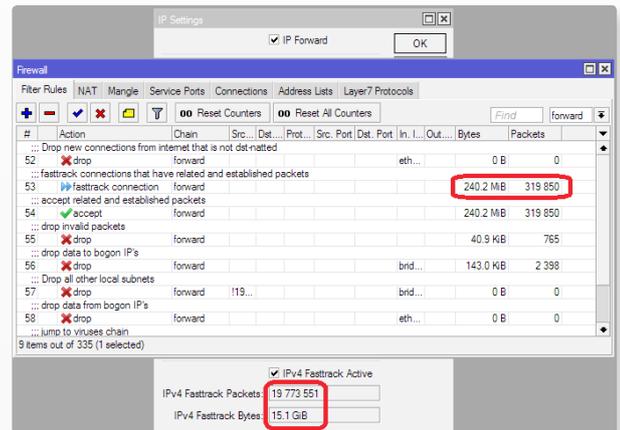
Real-life example

Board: RB2011UiAS-2HnD
Configuration: factory default (Home AP mode in QuickSet with firewall and masquerade)
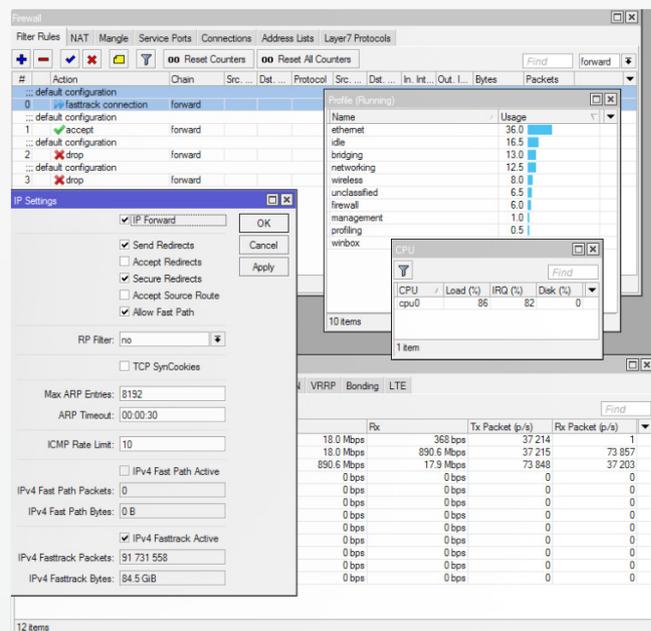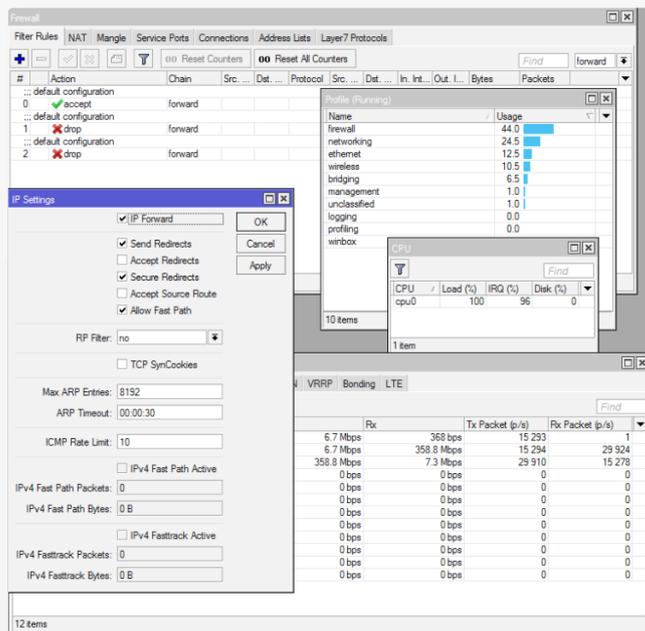**Traffic:** With any TCP/UDP traffic (test below performed with single TCP stream)

Before FastTrack

- **360Mbps** throughput and CPU @**100%**
- **44%** of CPU time was taken by firewall

After FastTrack

- **890Mbps** throughput and CPU @**86%**
- **6%** of CPU time was taken by firewall

In this example FastTrack allows us to use all firewall features, but at ~1/20 of CPU resource cost, leaving you with free CPU resources to get more throughput or use elsewhere in configuration.

We do plan to add FastTrack to factory-default configuration for devices that come with NAT and firewall.