MIKROTIK

Are you ready for
RouterOS v7?

RouterOS - the beating heart of MikroTik that rewards curiosity and sparks creativity. No matter how many Ethernet ports you have, what CPU you are running.. Even the smallest of routers can achieve greatness with this software. With any MikroTik device, you are getting full features. No paywalls. And now - RouterOS is more powerful than ever, **because v7 is finally here!**

In this article we will look at some of the most important changes and updates.

KERNEL

First things first. What made RouterOS v7 finally possible — the Linux kernel update 5.6. So many new features and hardware support, as well as new network drivers. For example, the highly anticipated WireGuard support became possible. This new Kernel opens many doors for producing new and exciting types of hardware. You can expect really impressive v7-only products soon enough.

ROUTING

RouterOS v7 redefines routing. With a new IPv6 stack and a new routing engine, you can expect the best performance to date.

The new features include:

- IPv6 Policy routing
- Separate processes for each routing protocol
- Fully functional IPv6 recursive routing
- ECMP and VRF Support for IPv6. We have added proper VRF-lite support. And you can now use interface lists.

AFFINITY CONTROL

And here comes the game-changer. Massive BGP performance boost. Now each BGP peer can be processed by up to 2 cores. One for the input, one for the output.

And if we talk about performance, there is another change that we must mention. Remember how you sometimes needed 10 – 15 minutes for the print command to handle your largest routing tables? Well, in v7 we managed to optimize this process. Seconds, not minutes. That's right. 10 seconds and you're good to go.

We have added global routing IDs. When you are running a set of routing protocols in one instance, they will have the same routing ID. Previously, you had to change it separately for OSPF and BGP. But not anymore! Now the ID is located in one place and can be easily modified.

BGP

Now let's look at some more BGP changes. We decided to rewrite BGP from scratch.

The new BGP features:

- the aforementioned affinity control
- reduced memory consumption - 3.5 million routes using only 250 MB of RAM!
- significantly improved performance
- dynamic peer support (Templates!)
- ability to see received routes before filtering
- and address list support.

One last thing here. We have also redesigned the routing filters.

The new routing filters include:

- introduction of output selection. Users can define rules for how BGP and OSPF will select output routes.
- added large community and extended community filtering
- introduction of community lists
- destination can now be matched with address list
- RPKI support
- script-like rule syntax, allowing advanced filtering and assignment of values, based on other protocol parameters. For example, you could adjust BGP local preference from the OSPF constant.

OSPF

OSPF is now a separate process. This change alone fixes many issues when OSFP could previously lose connection when used together with other CPU-intensive routing protocols. We have also merged OSPF v2 and v3 configuration. And introduced interface templates – for more control over interface/network matching. Also, OSPF now supports address and interface lists.

MPLS

MPLS now supports interface lists. It also features multipath support now, LDPv6 support and some other features that we will discuss in-depth some other time. Please note that multicast and MPLS are now included in the system package, instead of being separate packages.

Regarding the memory usage and performance. We took an old RB450 with 250 MB of RAM. With RouterOS v6 it couldn't load a single BGP feed. The router would just struggle for 9 minutes and then reboot, as it ran out of memory. With v7 it managed to load the whole BGP feed in just 2 minutes. And it still had 120 MB of RAM left! So RouterOS v7 is amazing not only for new, exciting products, but also for everyone out there with older devices.
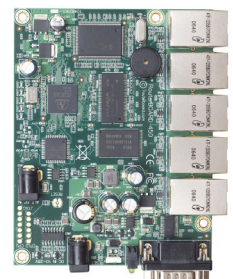
User Manager

The classic User Manager has been removed from RouterOS. However, we've made a new one. And you can configure it from the WinBox interface. The new User Manager features many new options. For example, you can create custom parameters to send to your client. The new User Manager is completely different than the previous version, but we promise – you will get used to it quickly and enjoy it a lot.

ZeroTier support

Another cool addition is ZeroTier support. ZeroTier combines the capabilities of VPN and SD-WAN. It provides advanced network virtualization and management capabilities. Basically, you can have all the benefits of a personal cloud without complicated configuration, setting up a domain name, or having a public IP.


```
[normis@Home] /zerotier/interface> add network=fffffff instance=t
[normis@Home] /zerotier>enable zt1
```

For example, install the iPhone ZeroTier client and join your home LAN without a hitch. But that's not all. ZeroTier allows your devices to communicate directly, despite having different environments. Since communication is not going though one specific server, as in the case of VPN, you won't be losing too much speed. Any two devices in the world should be able to locate each other and communicate through the most optimal path, almost instantly. With almost zero configuration. Obviously, this communication is end-to-end encrypted — don't you worry!

ZeroTier emulates a true Ethernet switch. You can have L2 bridges with other Ethernet networks — wired, wireless, even virtual. The best part? This open-source service offers enterprise-level subscriptions, as well as several free plans for home labs, remote access, tunneling, and so on.

Some other changes

There's so much more to discuss: new queue types, MLAG and Layer 3 hardware acceleration on all CRS3xx devices, HW vlan-filtering on RTL8367 and MT7621 switches, IPv6 NAT, new packages for IoT, MQTT support, REST API, L2TPv3, Let's Encrypt support, VXLAN, new VRPP features.. The list goes on and on, we can't fit everything in a single newsletter. We will have the opportunity to explore all the changes in our RouterOS Deep-dive videos, so don't forget to check out our YouTube channel!

There will be more news and updates, as we are always working on new features. As well as digging through all your feature requests. One thing is for sure - the new Kernel changes everything. And yes - proper Wave 2 wireless drivers are coming soon! So stay tuned - we have many surprises yet to be revealed.