# Netinstall

- Introduction
- Instructions for Windows
- Instructions for Linux
- Etherboot
  - O Reset button
  - O RouterOS
  - Serial console

# Introduction

Netinstall is a tool for installing and reinstalling MikroTik devices running RouterOS. Always try using Netinstall if you suspect that your device is not working properly. The tool is available for Windows (with a graphical interface) and for Linux (as a command line tool).

In short, the Netinstall procedure goes like this: Connect your PC directly to the **boot** port (Usually Ether1, the port labeled BOOT or as otherwise indicated in the product manual) of the device you will be reinstalling. Turn on the device while holding the **reset** button until it shows up in the Netinstall tool.

Careful. Netinstall re-formats the system's drive, all configuration and saved files will be lost. Netinstall does not erase the RouterOS license key, nor does it reset RouterBOOT related settings, for example, CPU frequency is not changed after reinstalling the device.

## Instructions for Windows

- Download the Stable or Testing version of the Netinstall utility from the downloads page;
- Download the RouterOS Main package from the downloads page;

You need to select a RouterOS version, preferably one marked as Stable. Additionally, choose the appropriate architecture (ARM, MIPS, SMIPS, TILE, etc.). If unsure, you can download the RouterOS package for all architectures, and Netinstall will determine the correct one for your device.

- Disable all computer network interfaces (WiFi, Ethernet, LTE, or any other type of connection) except for the one to be used for installation. Netinstall will only function with one active interface on your computer. It's strongly recommended to deactivate any other network interfaces to ensure Netinstall selects the correct one.
- Configure a static IP address for your Ethernet interface, open Start, and select Settings:

	÷	Microsoft Store
		Mikrotik ~
	ß	Mixed Reality Portal
	$\bigcirc$	Mixed Reality Viewer
	.ı∰	Mobile Plans
	<b>****</b>	Movies & TV
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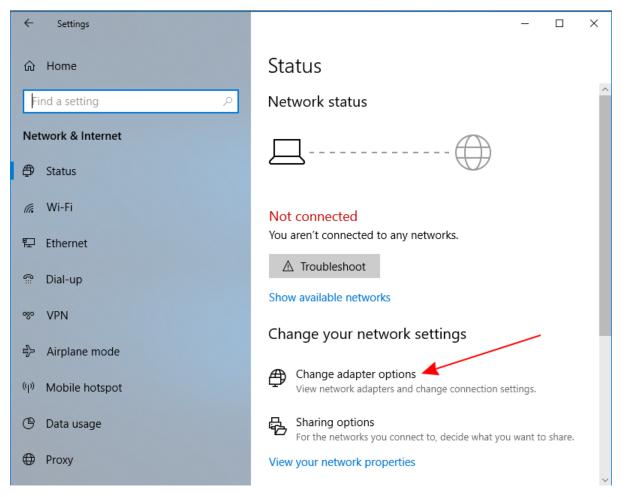
Netinstall can run also on a local network, in such case you could skip setting a static IP address, but it is highly recommended that you set a static IP address if you are not familiar with Netinstall.

• Open Network & Internet and select Change adapter options

# Windows Settings

work, family

	Find a setting		
旦	<b>System</b> Display, sound, notifications, power		Devices Bluetooth, printers, mouse
	<b>Phone</b> Link your Android, iPhone		Network & Internet Wi-Fi, airplane mode, VPN
¥	Personalization Background, lock screen, colors		Apps Uninstall, defaults, optional features
8	Accounts Your accounts, email, sync,	Q. A₹	Time & Language Speech, region, date



• Right-click on your Ethernet interface and select Properties

👰 Network Con	inections	— C	x נ
$\leftarrow \rightarrow \cdot \cdot \uparrow$	🔮 🔋 Control Panel 🔸 All C	ontrol Panel Items > Network Connections v o Search Network Connection	ons 🔎
Organize 🔻	Disable this network device	Diagnose this connection Rename this connection »	
20	Bluetooth Network Connection Not connected 1. (right click)	Ethernet       Wi-Fi         Not connected       Not connected         Realtek       Disable         Status       Diagnose         Bridge Connections       Create Shortcut         Create Shortcut       Delete         Rename       Properties	
3 items 1 iter	m selected		: <b>E</b>

• Select Internet Protocol Version 4 (TCP/IPv4) and click Properties

Ethernet Properties	Х
Networking Sharing	
Connect using:	
Realtek PCIe GBE Family Controller	
Configure	
This connection uses the following items:	
<ul> <li>Client for Microsoft Networks</li> <li>File and Printer Sharing for Microsoft Networks</li> <li>QoS Packet Scheduler</li> <li>Internet Protocol Version 4 (TCP/IPv4)</li> <li>Microsoft Network Adapter Multiplexor Protocol</li> <li>Microsoft LLDP Protocol Driver</li> <li>Internet Protocol Version 6 (TCP/IPv6)</li> </ul>	lect)
Install Uninstall Properties	
Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
2.	
OK Cance	

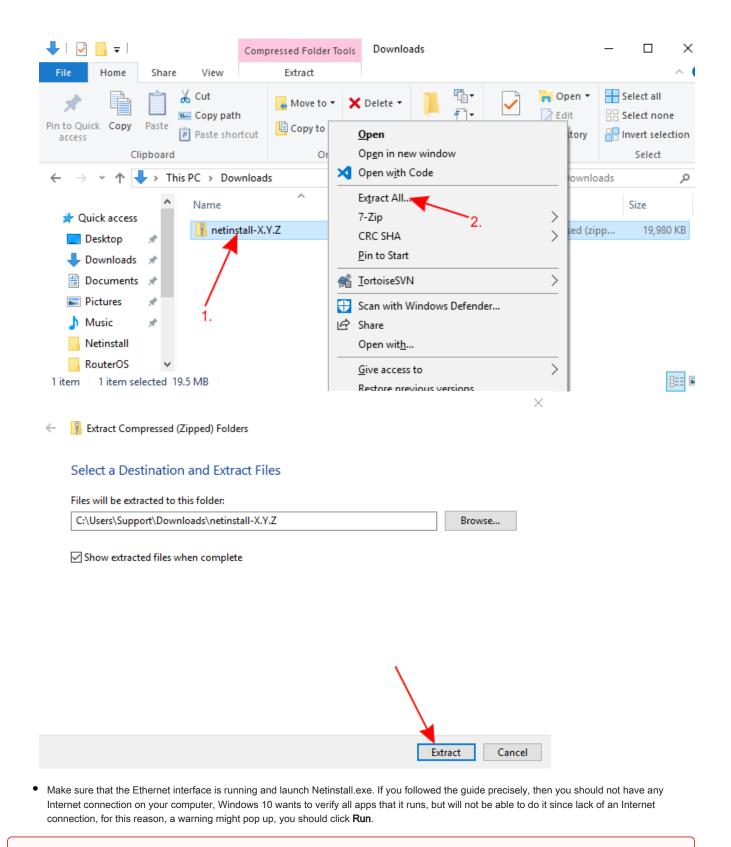
• Check Use the following IP address and fill out the fields as shown in the image below

Internet Protocol Version 4 (TCP/IPv4) Properties

General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings. Obtain an IP address automatically Outer the following IP address:
IP address: 192 . 168 . 88 . 2
2. Subnet mask: 255 . 255 . 255 . 0
Default gateway: 3. 192 . 168 . 88 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 88 . 1
Alternate DNS server:
Validate settings upon exit 6.
OK Cancel

• Open your Downloads folder (or wherever you saved the downloaded files) and extract the Netinstall \*.zip file to a convenient place

 $\times$ 

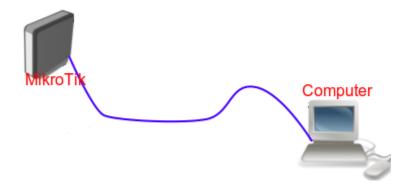


Netinstall requires administrator rights, there should be a window asking for permissions to run Netinstall, you must accept these permissions in order for Netinstall to work properly.

• Allow access for Netinstall in Public networks and configure Net booting settings and fill out the required fields as shown in the image below

etworks.		Firewall has blo	ocked some features of netinstall on all public and private	
Name:			netinstall	
		Publisher:	Unknown	
		Path:	$\label{eq:c:users} C: \label{eq:c:users} on the constant of $	æ
low netir	nstall to co	ommunicate on	these networks:	
Priv	ate netwo	orks, such as m	ny home or work network	
hat are	the risks o	<u>if allowing an a</u>	app through a firewall? Allow access	ancel
			Allow access	ancer
		II for RouterOS	—	
outers/Driv .abel		ddress / Media	Status Software ID:	Help
∎D:\	Hard d		Ready Key:	Browse
		6	Wetwork Booting Settings	:
	1.		There you can set parameters for PXE (Pre-boot eXecution Envi	ronment)
-	1.		There you can set parameters for PXE (Pre-boot eXecution Envi and Etherboot server that can boot your router over netwo	
		hating   In		
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1ake flopp ackages ets:	y Net B Jsers\Supp	ort\Downloads\n	and Etherboot server that can boot your router over netwo Boot Server enabled Client IP address: 192.168.88.3 OK	rk 3.

- () The Client IP address must be unique! Don't use an existing IP address in your network, this also means that you should not use the computer's IP address as well. Use a completely different IP address from the same subnet.
  - Connect your device to your computer using an ethernet cable directly (without any other devices in-between), plug the Ethernet cable into your device's Etherboot port.
  - MikroTik devices are able to use Netinstall from their first port (Ether1), or from the port marked with "BOOT".



Some computers have a network interface (especially USB Ethernet adapters) that tend to create an extra link flap, which is enough for Netinstall to fail to detect a device that is in Etherboot mode. In such a case you can use a switch between your device and your computer or a router in bridge mode to prevent this issue.

Netinstall uses bootp packets, which are using the same port numbers as DHCP packets. If you're using a switch between your PC and the device to be Netinstalled, ensure that the ports in the bridge are not blocked by other network devices.

If you have dhcp-snooping enabled, make sure to enable "trusted" on the bridge ports facing the Netinstall PC.

• Power up your device and put it into etherboot mode

There are multiple ways how to put your device into Etherboot mode. Make sure you read the Etherboot manual before trying to put the device into this mode. Methods vary between different MikroTik devices.

• Wait for the device to show up in Netinstall, then select it and click **Browse**. Navigate to your **Downloads** folder (or wherever you saved your RouterOS packages) and press **OK**.

MikroTik Netinstall for RouterOS v7.15beta9	—	×
Routers/Drives		
Label MAC address / Status	Software ID: L9VN-CY39	Help
RBwA 7 4D:28.8E:86.74 Ready	Key: <u key="" previous="" se=""> (hDFES</u>	Browse
1. Select	Keep old configuration	Get key
	IP address: /	
Selected 0 package(s)	Gateway: 📃 Keep bra	anding
	Baud rate: 📃 🔽 Apply de	fault config
Net booting Install Cancel	Configure script:	
Packages		
Sets: Save set Delete	set	
From: C:\Users\User\Documents Brow	se Select all S	Select none
Name Version Description		
	2.	
No packages in this directory		
Browse for Folder		
Select package directory:		
There are 2 package(s) in this directory		
Vser ^		
3D Objects		
Desktop 3. Select		
Desktop 3. Select		
- Downloads		
net istall-X.Y.Z		
> 📙 Favorites		
Links		
Music 🗸		
OK Cancel		

• Select your desired RouterOS packages and press **Install.** Wait for the installation to finish and press "**Reboot**" (Devices without serial console have to be rebooted manually).

/ If you have downloaded RouterOS packages for multiple architectures, Netinstall will only display the appropriate architecture packages for your device after you have selected it. Unsupported packages will not appear in this window once a device is selected.

RBwA 74:4D:28:8E:86:74 Ready 5. Install lected 2 package(s)	e Select all Select none
IRBwA       74:4D:28:8E:86:74       Ready         Iected 2 package(s)       5. Install         Vet booting       Install       Cancel         ckages       seve set       Delete se         pm:       C:\Users\User\Downloads       Browse         ame       Version       Description         routeros       7.14.2       Main package with most of services and of services	Key: <use key="" previous=""> (hDFES       Browse         Keep old configuration       Get key         IP address:       /         Gateway:       Keep branding         Baud rate:       Apply default config         Configure script:          et       Select all       Select none</use>
IRBwA       74:4D:28:8E:86:74       Ready         Iected 2 package(s)       5. Install         Vet booting       Install       Cancel         ckages       seve set       Delete se         pm:       C:\Users\User\Downloads       Browse         ame       Version       Description         routeros       7.14.2       Main package with most of services and of services	Key: <use key="" previous=""> (hDFES       Browse         Keep old configuration       Get key         IP address:       /         Gateway:       Keep branding         Baud rate:       Apply default config         Configure script:          et       Select all       Select none</use>
Iected 2 package(s)         Net booting         Install         Cancel         ckages         ets:       Previous Install         Tom:       C:\Users\User\Downloads         ame       Version         routeros       7.14.2	Keep old configuration       Get key         IP address:       /         Gateway:       Keep branding         Baud rate:       Image: Configure script         Configure script:       Image: Configure script         et       Select all       Select none
Sected 2 package(s)         Net booting         Install         Cancel         ckages         ets:         Previous Install         Save set         Delete set         om:         C:\Users\User\Downloads         ame         Version         Description         routeros         7.14.2	IP address: / / Gateway: Configure script / Apply default config et s Select all Select none
lected 2 package(s) Net booting Install Cancel ckages ots: Previous Install ▼ Save set Delete set om: C:\Users\User\Downloads Browse ame Version Description routeros 7.14.2 Main package with most of services and d	Gateway: Configure script: Apply default config
lected 2 package(s)  Net booting Install Cancel  ckages  ckages ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckages  ckage	Baud rate: Apply default config Configure script: et s Select all Select none
Net booting Install Cancel ckages ets: Previous Install Save set Delete set om: C:\Users\User\Downloads Browse ame Version Description routeros 7.14.2 Main package with most of services and of	etSelect allSelect none
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ame Version Description routeros 7.14.2 Main package with most of services and d	
routeros 7.14.2 Main package with most of services and (	drivere
······································	drivers
vreiess 7.14.2 Provides support for wireless station and	
	AP.
· ·	
<ol> <li>Select the required packages</li> </ol>	
less depends on system (7.14.2)	
MikroTik Netinstall for RouterOS v7.15beta9	- 🗆 X
uters/Drives	Software ID: L9VN-CY39 Help
MAC address /         Status         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         ::         :         :         :         :	
	Key: <use key="" previous=""> (hDFES Browse</use>
	☐ Keep old configuration Get key
	IP address: /
	Gateway:
tallation finished successfully	
	Baud rate: Apply default config
ckages	· · · · · · · · · · · · · · · · · · ·
ts: Previous Install 💽 Save set Delete se	et
om: C:\Users\User\Downloads Browse	Select all Select none
ame Version Description	
routeros 7.14.2 Main package with most of services and o	drivers
TO ACTOR THE MAIN PACKAGE WITHOUT DEPAILES AND I	
wireless 7.14.2 Provides support for wireless station and.	

If the installation does not start (progress bar is not moving or no status is shown), then you can try closing the Netinstall application and opening it up again or try to put the device into Etherboot mode again. If you are still unable to get Netinstall working, then you should try using it on a different computer since there might be an operating system's issue that is preventing Netinstall from working properly. The "Keep old configuration" process involves downloading the configuration database from the router, reinstalling the router (including disk formatting), and uploading the configuration files back to it. However, it's important to note that this process solely applies to the configuration itself and does not impact the files, including databases like the User Manager database, Dude database, and others.

After using Netinstall the device will be reset to defaults (unless you specified not to apply default configuration). Some devices are not accessible through **e** ther1 port with the default configuration for security reasons. Read more about Default configuration.

Option "Keep branding" allows you to retain the device's already installed branding package without reinstalling it using Netinstall.

WikroTik Netinstall for RouterOS v7.15beta9	—			
Routers/Drives				
Label MAC address / Status Software ID: L9VN-CY39		Help		
RBwA 74:4D:28:8E:86:74 Ready Key: <ul> <li>Key:</li> </ul>	hDFES	Browse		
Keep old configuration		Get key		
IP address:	/ 📃 🛛			
Gateway: 🔽 Keep branding				
Selected 2 package(s) Baud rate:		default config		
Net booting Install Cancel Configure script.				
Packages				
Sets: Previous Install  Save set Delete set				
From: C:\Users\User\Downloads Browse Select all Select none				
Name Version Description				
<ul> <li>✓ routeros</li> <li>7.14.2</li> <li>Main package with most of services and drivers</li> <li>✓ wireless</li> <li>7.14.2</li> <li>Provides support for wireless station and AP.</li> </ul>				
wireless depends on system (7.14.2)		1		

When using the Configure script option, it is suggested to introduce a delay before configuration execution.

You're all set! Configure your device and reconnect it to your network. Your device should now be functioning correctly!

### Instructions for Linux

The Linux version is a command line tool, which offers nearly the same parameters as the Windows counterpart.

Download the tool from our download page (links not literal):

wget https://download.mikrotik.com/routeros/[VERSION]/netinstall-[VERSION].tar.gz

#### Extract it:

tar -xzf netinstall-[VERSION].tar.gz

#### Run the tool:

./netinstall-cli -a 192.168.0.1 routeros-arm64-[VERSION].npk

The tool requires privileged access and must be run as root, use sudo.

#### The available parameters are as follows:

Parameter	Meaning
-r	When the reinstallation process is performed, the current configuration will be reset, and for devices that have it, the default configuration will be applied (optional).
-е	Performing the reinstallation process will reset the device to an empty configuration.
-b	Option to discard the currently installed branding package from the device, otherwise it will be reinstalled together with RouterOS.
-k keyfile	Provides the device with a license key in .KEY format (optional).
-s userscript	Pre-configures the device with the provided configuration (text file in .RSC format). This configuration also takes place of the default configuration. The script can access factory passwords with read-only variables \$defconfPassword and \$defconfWifiPassword (starting from RouterOS 7.10beta8) (optional).
-a IP	Uses a specific IP address that the Netinstall server will assign to the device. Mandatory, but can be auto-assigned if interface parameter used.
PACKAGE	Specify a list of RouterOS.NPK format packages that Netinstall will try to install on the device (mandatory). The system package must be listed first.
-i	Allows you to specify an interface (optional).

If the "-r" or "e-" parameter is not specified, *netinstall-cli* will reinstall RouterOS and will keep the current configuration by downloading current configuration database from the router, reinstalling the router (including disk formatting), and uploading the configuration back to it, the same as Netinstall **"Keep old configuration"** option. However, it's important to note that this process solely applies to the configuration itself and does not impact the files, including databases like the User Manager database, Dude database, and others.

#### First make sure you have set the IP on your computer's interface:

```
admin@ubuntu:~$ sudo ifconfig <interface> 192.168.88.2/24
```

#### Then run the Netinstall version 6 (an example that resets the configuration upon reinstallation procedure):

```
admin@ubuntu:~$ sudo ./netinstall -r -a 192.168.88.3 routeros-mipsbe-6.48.1.npk
Using server IP: 192.168.88.2
Starting PXE server
Waiting for RouterBOARD...
PXE client: 01:23:45:67:89:10
Sending image: mips
Discovered RouterBOARD...
Formatting...
Sending package routeros-mipsbe-6.48.1.npk ...
Ready for reboot...
Sent reboot command
```

Or run the Netinstall version 7 (an example that applies an empty configuration and discards the branding during the reinstallation procedure):

1

```
admin@ubuntu:~$ sudo ./netinstall-cli -e -b -i enx1234567ee890 -a 192.168.88.3 routeros-7.14.2-arm.npk wireless-
7.14.2-arm.npk
Version: 7.15beta9(2024-03-27 20:41:15)
Will apply empty config
Will remove branding
Using Interface: enx1234567ee890
Wait for Link-UP on 'enx1234567ee890'. OK
Using Client IP: 192.168.88.3
Using Server IP: 192.168.88.10
Starting PXE server
Waiting for RouterBOARD...
client: 74:4D:28:8E:86:74
Detected client architecture: arm
Sending and starting Netinstall boot image ...
Installed branding package detected
Discovered RouterBOARD... 74:4D:28:8E:86:74
Formatting...
Sending package routeros-7.14.2-arm.npk ...
Sending package wireless-7.14.2-arm.npk ...
Sending empty config ...
Ready for reboot...
Sent reboot command
```

## Etherboot

Etherboot mode is a special state for a MikroTik device that allows you to reinstall your device using Netinstall. There are two types of booters available for use: the regular booter and the backup booter. It's essential to verify both options.

- To use the Regular booter press Ctrl+E to enter etherboot mode using the serial console or press the Reset button after a 1-2 second delay from when you power it on.
- To employ the backup booter, power OFF the device. Press the Reset button and power on your device (wait until the "USR" led is blinking then stable "On", and when the "USR" led is "Off" - release the Reset button) - the device is booting in bootp mode to reinstall RouterOS using Netinstall.

### Reset button

The **Reset** can be found on all MikroTik devices, this button can be used to put the device into Etherboot mode. An easy way to put a device into Etherboot mode using the **Reset** button is by powering off the device, hold the **Reset** button, power on the device while holding the **Reset** button and keep holding it until the device shows up in your **Netinstall** window.



If you have set up a Protected bootloader, then the reset button's behavior is changed. Make sure you remember the settings you used to set up the Protected bootloader, otherwise you will not be able to use Eterboot mode and will not be able to reset your device.

### RouterOS

If your device is able to boot up and you are able to log in, then you can easily put the device into Etherboot mode. To do so, just connect to your device and execute the following command:

/system routerboard settings set boot-device=try-ethernet-once-then-nand

After that either reboot the device or do a power cycle on the device. Next time the device will boot up, then it will first try going into Etherboot mode. Note that after the first boot up, the device will not try going into Etherboot mode and will boot directly from NAND or from the storage type the device is using.

### Serial console

Some devices come with a serial console that can be used to put the device into Etherboot mode. To do so, make sure you configure your computer's serial console. The required parameters for all MikroTik devices (except for RouterBOARD 230 series) are as following:

115200bit/s, 8 data bits, 1 stop bit, no parity, flow control=none by default.

For RouterBOARD 230 series devices the parameters are as following:

```
9600bit/s, 8 data bits, 1 stop bit, no parity, hardware (RTS/CTS) flow control by default.
```

Make sure you are using a proper null modem cable, you can find the proper pinout here. When the device is booting up, keep pressing **CTRL+E** on your keyboard until the device shows that it is **trying bootp protocol**:

```
RouterBOOT booter 7.14.2

CRS328-4C-20S-4S+

CPU frequency: 800 MHz

Memory size: 512 MiB

Storage size: 16 MiB

Press Ctrl+E to enter etherboot mode

Press any key within 2 seconds to enter setup

trying bootp protocol... OK

Got IP address: 192.168.88.3

resolved mac address 84:69:93:9E:E6:49

transfer started ..... transfer ok, time=2.00s
```

At this point your device is in Etherboot mode, now the device should show up in your Netinstall window.