

Software Package Management

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General Information

Summary

The MikroTik RouterOS is distributed in the form of software packages. The basic functionality of the router and the operating system itself is provided by the **system** software package. Other packages contain

additional software features as well as support to various network interface cards.

Specifications

License required: *level1*

Home menu level: */system package*

Standards and Technologies: *FTP*

Hardware usage: *Not significant*

Related Documents

- [Basic Setup Guide](#)
- [Driver Management](#)
- [Software Version Management](#)
- [License Management](#)
- [Installing RouterOS with NetInstall](#)
- [Installing RouterOS with CD-Install](#)
- [Installing RouterOS with Floppies](#)

Description

Features

The modular software package system of MikroTik RouterOS has the following features:

- Ability to extend RouterOS functions by installing additional software packages
- Optimal usage of the storage space by employing modular/compressed system
- Unused software packages can be uninstalled
- The RouterOS functions and the system itself can be easily upgraded
- Multiple packages can be installed at once
- The package dependency is checked before installing a software package. The package will not be installed, if the required software package is missing
- The version of the feature package should be the same as that of the **system** package
- The packages can be uploaded on the router using ftp and installed only when the router is going for shutdown during the reboot process
- If the software package file can be uploaded to the router, then the disk space is sufficient for the installation of the package
- The system can be downgraded to an older version by uploading the needed packages to router via FTP binary mode. After that, execute command **/system package downgrade**

Installation (Upgrade)

Description

Installation or upgrade of the MikroTik RouterOS software packages can be done by uploading the newer version of the software package to the router and rebooting it.

The software package files are compressed binary files, which can be downloaded from the MikroTik's web page download section. The full name of the software package consists of a descriptive name, version number and extension **.npk**, *exempli gratia* **system-2.9.11.npk**, **routerboard-2.9.11.npk**. Package **routeros-x86** contains all necessary packages for RouterOS installation and upgrading for RouterBOARD 200 and PC. Package **routeros-rb500** contains all necessary packages for RouterOS installation and upgrading for RouterBOARD 500. These packages are preferred installation and upgrading method.

You should check the available hard disk space prior to downloading the package file by issuing **/system resource print** command. If there is not enough free disk space for storing the upgrade packages, it can be freed up by uninstalling some software packages, which provide functionality not required for your needs. If you have a sufficient amount of free space for storing the upgrade packages, connect to the router using ftp. Use user name and password of a user with full access privileges.

Step-by-Step

- Connect to the router using ftp client
- Select the BINARY mode file transfer
- Upload the software package files to the router
- Check the information about the uploaded software packages using the **/file print** command
- Reboot the router by issuing the **/system reboot** command or by pressing **Ctrl+Alt+Del** keys at the router's console
- After reboot, verify that the packages were installed correctly by issuing **/system package print** command

Notes

The packages uploaded to the router should retain the original name and also be in lowercase.

The installation/upgrade process is shown on the console screen (monitor) attached to the router.

The Free Demo License do not allow software upgrades using ftp. You should do a complete reinstall from floppies, or purchase the license.

Before upgrading the router, please check the current version of the system package and the additional software packages. The versions of additional packages should match the version number of the system software package. The version of the MikroTik RouterOS system software (and the build number) are shown before the console login prompt. Information about the version numbers and build time of the installed MikroTik RouterOS software packages can be obtained using the **/system package print** command.

Do not use **routeros-x86** and **routeros-rb500** packages to upgrade from version 2.8 or older. To upgrade use regular packages.

Packages **wireless-test**, **rstp-bridge-test**, **routing-test** are included in **routeros-x86** and **routeros-rb500** packages, but disabled by default.

Uninstallation

Command name: */system package uninstall*

Description

Usually, you do not need to uninstall software packages. However, if you have installed a wrong package, or you need additional free space to install a new one, you have to uninstall some unused packages.

Notes

If a package is marked for uninstallation, but it is required for another (dependent) package, then the marked package cannot be uninstalled. You should uninstall the dependent package too. For the list of package dependencies see the 'Software Package List; section below. The system package will not be uninstalled even if marked for uninstallation.

Example

Suppose we need to uninstall **security** package from the router:

```
[admin@MikroTik] system package> print
# NAME          VERSION          SCHEDULED
0 system        2.9.11
1 routing       2.9.11
2 dhcp          2.9.11
3 hotspot       2.9.11
4 wireless      2.9.11
5 web-proxy     2.9.11
6 advanced-tools 2.9.11
7 security      2.9.11
8 ppp           2.9.11
9 routerboard   2.9.11
[admin@MikroTik] system package> uninstall security
[admin@MikroTik] > .. reboot
```

Downgrading

Command name: */system package downgrade*

Description

Downgrade option allows you to downgrade the software via FTP without losing your license key or reinstalling the router.

Step-by-Step

- Connect to the router using ftp client
- Select the BINARY mode file transfer
- Upload the software package files to the router

- Check the information about the uploaded software packages using the **/file print** command
- Execute command **/system package downgrade**. The router will downgrade and reboot.
- After reboot, verify that the packages were installed correctly by issuing **/system package print** command

Command Description

downgrade - this command asks your confirmation and reboots the router. After reboot the software is downgraded (if all needed packages were uploaded to the router)

Example

To downgrade the RouterOS (assuming that all needed packages are already uploaded):

```
[admin@MikroTik] system package> downgrade
Router will be rebooted. Continue? [y/N]: y
system will reboot shortly
```

Disabling and Enabling

Command name: */system package disable, /system package enable*

Description

You can disable packages making them invisible for the system and later enable them, bringing the system back to the previous state. It is useful if you don't want to uninstall a package, but just turn off its functionality.

Notes

If a package is marked for disabling, but it is required for another (dependent) package, then the marked package cannot be disabled. You should disable or uninstall the dependent package too. For the list of package dependencies see the 'Software Package List; section below.

If any of the test packages will be enabled (for example wireless-test and routing-test packages, that are included in routeros-x86.npk and routeros-rb500.npk) system automatically will disable regular packages that conflict with them.

Example

Suppose we need to test **wireless-test** package features:

```
[admin@MikroTik] system package> print
[admin@MikroTik] > system package pr
Flags: X - disabled
#  NAME                VERSION                SCHEDULED
0  system                2.9.11
1  routerboard           2.9.11
2  X wireless-test       2.9.11
3  ntp                   2.9.11
4  routeros-rb500        2.9.11
```

```

5 X rstp-bridge-test      2.9.11
6 wireless                2.9.11
7 webproxy-test          2.9.11
8 routing                 2.9.11
9 X routing-test          2.9.11
10 ppp                    2.9.11
11 dhcp                   2.9.11
12 hotspot                2.9.11
13 security               2.9.11
14 advanced-tools        2.9.11
[admin@MikroTik] system package> enable wireless-test
[admin@MikroTik] system package> .. reboot

```

Uncheduling

Command name: */system package unchedule*

Description

Unschedule option allows to cancel pending uninstall, disable or enable actions for listed packages.

Notes

packages marked for uninstallation, disabling or enabling on reboot in column "schedule" will have a note, warning about changes.

Example

Suppose we need to cancel **wireless-test** package uninstallation action scheduled on reboot:

```

[admin@MikroTik] system package> print
[admin@MikroTik] > system package pr
Flags: X - disabled
#  NAME                VERSION                SCHEDULED
0  system                2.9.11
1  routerboard           2.9.11
2  wireless-test         2.9.11                scheduled for uninstall
3  ntp                   2.9.11
4  routeros-rb500        2.9.11
5 X rstp-bridge-test     2.9.11
6  wireless              2.9.11
7  webproxy-test         2.9.11
8  routing               2.9.11
9 X routing-test         2.9.11
10 ppp                   2.9.11
11 dhcp                 2.9.11
12 hotspot              2.9.11
13 security             2.9.11
14 advanced-tools       2.9.11
[admin@MikroTik] system package> unschedule wireless-test
[admin@MikroTik] system package>

```

System Upgrade

Home menu level: */system upgrade*

Description

This submenu gives you the ability to download RouterOS software packages from a remote RouterOS

router.

Step-by-Step

- Upload desired RouterOS packages to a router (not the one that you will upgrade)
- Add this router's IP address, user name and password to **/system upgrade upgrade-package-source**
- Refresh available software package list **/system upgrade refresh**
- See available packages, using **/system upgrade print** command
- Download selected or all packages from the remote router, using the **download** or **download-all** command

Property Description

download - download packages from list by specifying their numbers

download-all - download all packages that are needed for the upgrade (packages which are available in '/system package print' list)

name (*read-only: name*) - package name

refresh - updates currently available package list

source (*read-only: IP address*) - source IP address of the router from which the package list entry is retrieved

status (*read-only: available | scheduled | downloading | downloaded | installed*) - package status

version (*read-only: text*) - version of the package

Example

See the available packages:

```
[admin@MikroTik] system upgrade> print
# SOURCE          NAME             VERSION         STATUS          COMPLETED
0 192.168.25.8    advanced-tools  2.9.11         available
1 192.168.25.8    dhcp            2.9.11         available
2 192.168.25.8    hotspot        2.9.11         available
3 192.168.25.8    isdn           2.9.11         available
4 192.168.25.8    ntp            2.9.11         available
5 192.168.25.8    ppp            2.9.11         available
6 192.168.25.8    routerboard    2.9.11         available
7 192.168.25.8    routing       2.9.11         available
8 192.168.25.8    security      2.9.11         available
9 192.168.25.8    synchronous    2.9.11         available
10 192.168.25.8   system        2.9.11         available
11 192.168.25.8   telephony     2.9.11         available
12 192.168.25.8   ups           2.9.11         available
13 192.168.25.8   web-proxy     2.9.11         available
14 192.168.25.8   wireless     2.9.11         available
[admin@MikroTik] system upgrade>
```

To upgrade chosen packages:

```
[admin@MikroTik] system upgrade> download 0,1,2,5,6,7,8,9,10,13,14
[admin@MikroTik] system upgrade> print
# SOURCE          NAME             VERSION         STATUS          COMPLETED
0 192.168.25.8    advanced-tools  2.9.11         downloaded
```

```

1 192.168.25.8   dhcp           2.9.11         downloading 16 %
2 192.168.25.8   hotspot        2.9.11         scheduled
3 192.168.25.8   isdn           2.9.11         available
4 192.168.25.8   ntp            2.9.11         available
5 192.168.25.8   ppp            2.9.11         scheduled
6 192.168.25.8   routerboard    2.9.11         scheduled
7 192.168.25.8   routing        2.9.11         scheduled
8 192.168.25.8   security       2.9.11         scheduled
9 192.168.25.8   synchronous    2.9.11         scheduled
10 192.168.25.8  system         2.9.11         scheduled
11 192.168.25.8  telephony      2.9.11         available
12 192.168.25.8  ups            2.9.11         available
13 192.168.25.8  web-proxy      2.9.11         scheduled
14 192.168.25.8  wireless       2.9.11         scheduled
[admin@MikroTik] system upgrade>

```

Adding Package Source

Home menu level: */system upgrade upgrade-package-source*

Description

In this submenu you can add remote routers from which to download the RouterOS software packages.

Property Description

address (*IP address*) - source IP address of the router from which the package list entry will be retrieved

password (*text*) - password of the remote router

user (*text*) - username of the remote router

Notes

After specifying a remote router in */system upgrade upgrade-package-source*, you can type */system upgrade refresh* to refresh the package list and */system upgrade print* to see all available packages.

Example

To add a router with IP address **192.168.25.8**, username **admin** and no password:

```

/system upgrade upgrade-package-source add address=192.168.25.8 user=admin
[admin@MikroTik] system upgrade upgrade-package-source> print
# ADDRESS      USER
0 192.168.25.8  admin
[admin@MikroTik] system upgrade upgrade-package-source>

```

Software Package List

Description

System Software Package

The **system** software package provides the basic functionality of the MikroTik RouterOS, namely:

- IP address management, ARP, static IP routing, policy routing, firewall (packet filtering, content filtering, masquerading, and static NAT), traffic shaping (queues), IP traffic accounting, MikroTik Neighbour Discovery, IP Packet Packing, DNS client settings, IP service (servers)
- Ethernet interface support
- IP over IP tunnel interface support
- Ethernet over IP tunnel interface support
- driver management for Ethernet ISA cards
- serial port management
- local user management
- export and import of router configuration scripts
- backup and restore of the router's configuration
- undo and redo of configuration changes
- network diagnostics tools (ping, traceroute, bandwidth tester, traffic monitor)
- bridge support
- system resource management
- package management
- telnet client and server
- local and remote logging facility
- winbox server as well as winbox executable with some plugins

After installing the MikroTik RouterOS, a free license should be obtained from MikroTik to enable the basic system functionality.

Additional Software Feature Packages

The table below shows additional software feature packages, extended functionality provided by them, the required prerequisites and additional licenses, if any.

Name	Contents	Prerequisites	Additional License
advanced-tools	email client, pingers, netwatch and other utilities	none	none
arlan	support for DSSS 2.4GHz 2mbps Aironet ISA cards	none	2.4GHz/5GHz Wireless Client
dhcp	DHCP server and client support	none	none
gps	support for GPS devices	none	none
hotspot	HotSpot gateway	none	any additional license

isdn	support for ISDN devices	ppp	none
lcd	support for informational LCD display	none	none
ntp	network time protocol support	none	none
ppp	support for PPP, PPTP, L2TP, PPPoE and ISDN PPP	none	none
radiolan	Provides support for 5.8GHz RadioLAN cards	none	2.4GHz/5GHz Wireless Client
routerboard	support for RouterBoard-specific functions and utilities	none	none
routing	support for RIP, OSPF and BGP4	none	none
security	support for IPSEC, SSH and secure WinBox connections	none	none
synchronous	support for Frame Relay and Moxa C101, Moxa C502, Farsync, Cyclades PC300, LMC SBE and XPeed synchronous cards	none	Synchronous
telephony	IP telephony support (H.323)	none	none
thinrouter-pcipc	forces PCI-to-CardBus Bridge to use IRQ 11 as in ThinRouters	none	none
ups	APC Smart Mode UPS support	none	none
web-proxy	HTTP Web proxy support	none	none
wireless	Provides support for Cisco Aironet cards, PrismII and Atheros wireless stations and APs	none	2.4GHz/5GHz Wireless Client / 2.4GHz/5GHz Wireless Server (optional)