

# RouterOS and USB Devices



Arnis Riekstins  
MikroTik

# Supported USB Devices

- USB Peripheral Devices:
  - UPS
  - Ethernet Controllers
  - Flash Disks / Hard Disk Drives
  - HSDPA/EDGE/GPRS (3G) Modems
- USB 2.0 Hosts running RouterOS:
  - Any x86 hardware (PC)
  - RouterBoard 230 (USB 1.1)
  - RouterBoard 433U – new!

# UPS Control

- Similar to the “old” style over serial port
- Requires the ups-3.x.npk or ups-2.9.x.npk software package installed



# UPS Configuration

The screenshot displays the Mikrotik WinBox UPS configuration interface. At the top, there is a toolbar with icons for adding (+), deleting (-), checking (✓), and unchecking (✗), along with a 'Beep' button and a search field labeled 'Find'. Below this is a table listing the configured UPS units.

| Name | Port | Model                                | Offline After | Load (%) |
|------|------|--------------------------------------|---------------|----------|
| ups1 | usb1 | Back-UPS BR 800 FW:9.o2 .1 USB FW:o2 |               | 33       |

Below the table, a detailed configuration window for the selected 'ups1' is open. It has tabs for 'General', 'Model', and 'Status'. The 'General' tab is active, showing the following fields:

- Name: ups1
- Port: usb1
- Off Line Time: 00:05:00
- Min Run Time: 00:05:00
- Alarm Setting: immediate

On the right side of the configuration window, there are several buttons: OK, Cancel, Apply, Disable, Copy, Remove, and Beep.

# UPS Status

The screenshot shows the WinBox interface for the UPS status of a device named 'ups1'. The main window has a title bar 'UPS' and a toolbar with icons for adding, deleting, and refreshing, along with a 'Beep' button and a search field. Below the toolbar is a table listing the UPS details:

| Name | Port | Model                               | Offline After | Load (%) | On Li... |
|------|------|-------------------------------------|---------------|----------|----------|
| ups1 | usb1 | Back-UPS BR 800 FW:9.o2.1 USB FW:o2 |               | 33       | yes      |

An inset window titled 'UPS <ups1>' provides a detailed view of the status. It has tabs for 'General', 'Model', and 'Status'. The 'Status' tab is active, showing various parameters in a list format:

- Transfer Cause: (empty)
- Run Time Left: 00:15:19
- Offline After: (empty)
- Battery Charge: 100 %
- Battery Voltage: 27 V
- Line Voltage: 27 V
- Output Voltage: 230 V
- Load: 33 %
- Temperature: 29 C
- Frequency: 50 Hz

At the bottom of the status window, there are several checkboxes:

- On Line
- On Battery
- Replace Battery
- Smart Boost
- Smart Trim
- Overload
- Low Battery

On the right side of the inset window, there is a vertical stack of buttons: OK, Cancel, Apply, Disable, Copy, Remove, and Beep.

# USB Ethernet

- RouterOS Supports:
  - Planet 10/100Base-TX USB Ethernet Adapter UE-9500
  - Linksys Instant EtherFast 10/100 USB Network Adapter USB100TX
- See the Device Driver List in the RouterOS Manual

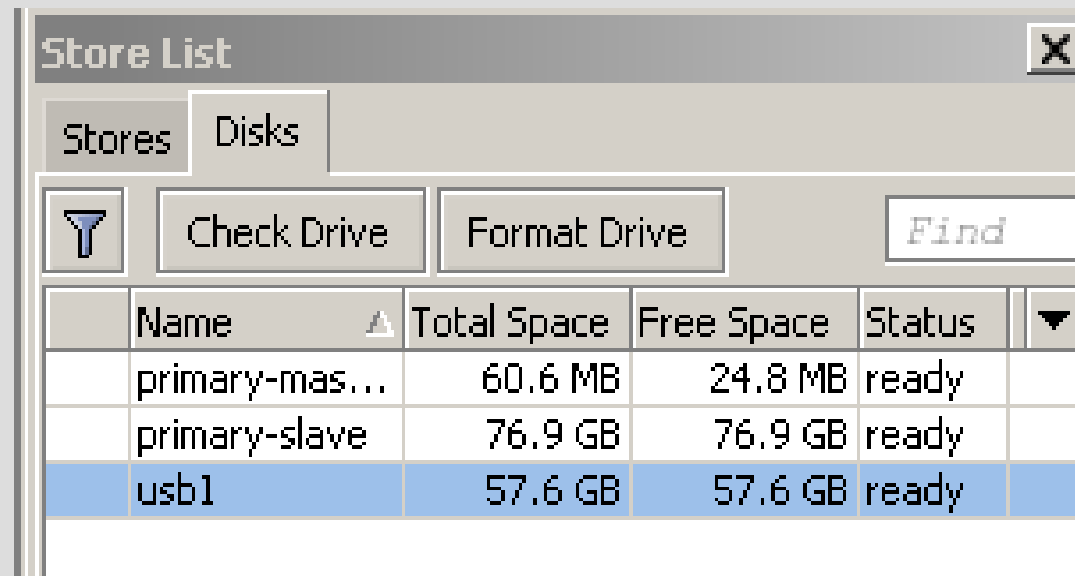


# USB Flash Disk

- Booting from Flash, if the hardware supports it
- Storage for proxy cache
- USB storage shows up under the new **/store disk** menu (since ROS V3.15)



# Store Menu

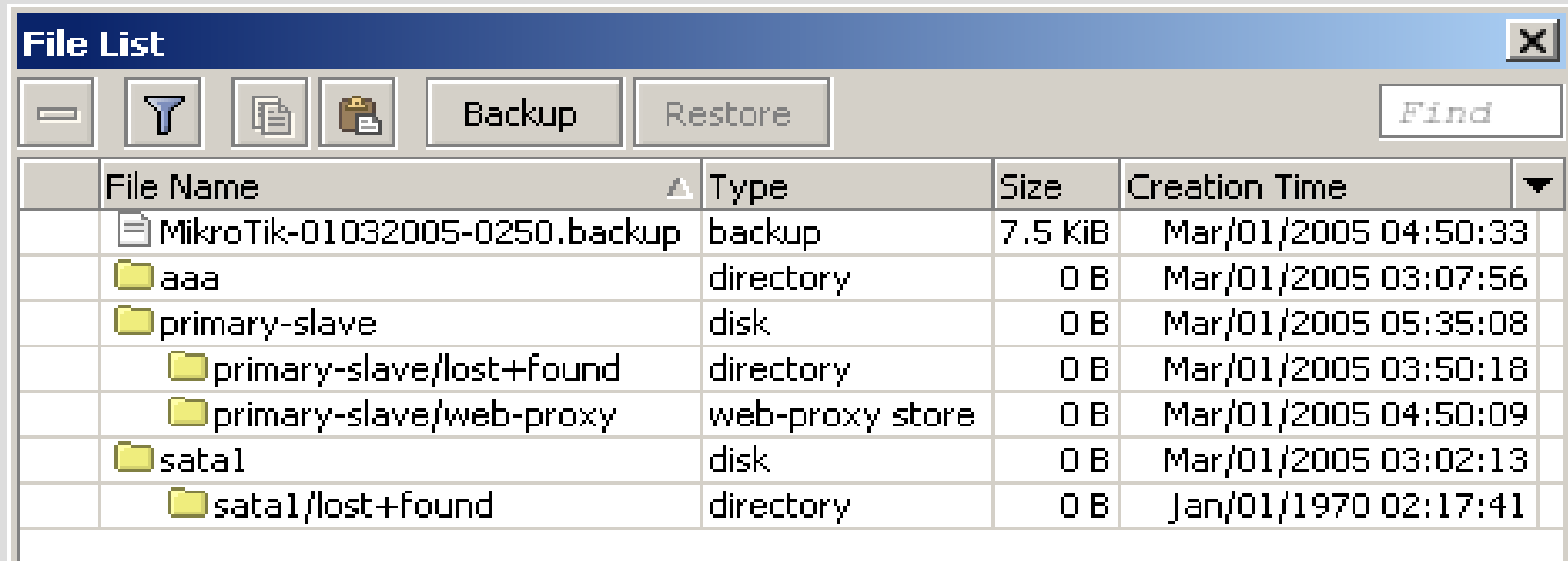


| Name           | Total Space | Free Space | Status |
|----------------|-------------|------------|--------|
| primary-mas... | 60.6 MB     | 24.8 MB    | ready  |
| primary-slave  | 76.9 GB     | 76.9 GB    | ready  |
| usb1           | 57.6 GB     | 57.6 GB    | ready  |

- USB storage shows up under the new **/store disk** menu (since ROS V3.15)



# Accessing External Storage



The screenshot shows a 'File List' window with a toolbar containing icons for home, filter, print, save, Backup, and Restore, along with a 'Find' search box. The main area is a table with the following data:

| File Name                     | Type            | Size    | Creation Time        |
|-------------------------------|-----------------|---------|----------------------|
| MikroTik-01032005-0250.backup | backup          | 7.5 KiB | Mar/01/2005 04:50:33 |
| aaa                           | directory       | 0 B     | Mar/01/2005 03:07:56 |
| primary-slave                 | disk            | 0 B     | Mar/01/2005 05:35:08 |
| primary-slave/lost+found      | directory       | 0 B     | Mar/01/2005 03:50:18 |
| primary-slave/web-proxy       | web-proxy store | 0 B     | Mar/01/2005 04:50:09 |
| sata1                         | disk            | 0 B     | Mar/01/2005 03:02:13 |
| sata1/lost+found              | directory       | 0 B     | Jan/01/1970 02:17:41 |

- USB storage can be accessed through the **/file** menu, where it shows up as a folder
- USB storage can be accessed by ftp

# HSDPA/EDGE/GPRS Modems

- HUAWEI E220
- TELTONIKA



# GSM Modem Applications

- Main link to the Internet
- Backup link
- Sending SMS from the router (V3.0rc11)
- Receiving SMS on the router and executing scripts (to be implemented)



# Main Link over GSM

- Suitable for locations where WiFi or DSL cannot be used:
  - rural areas
  - public transport
  - in your car
  - on your yacht
  - in a hotel with overpriced Internet access



# Backup Link over GSM

- In case the main link goes down router can be configured to use data connection over GSM network

# Sending SMS over GSM Modem

- Signaling the network status by sending SMS text directly through the GSM network (not to a SMS-to-email gateway)



# GSM Modem Applications



# Configuring the PPP

**Interface <ppp-lmt>**

General | **PPP** | Status | Traffic

Name:

Type:

Max MTU:

Max MRU:

MRRU:

---

Port:

Modem Init:

Null Modem

OK  
Cancel  
Apply  
Enable  
Comment  
Copy  
Remove  
Torch



# Configuring the PPP (2)

The screenshot shows the 'Interface <ppp-lmt>' configuration window in Mikrotik WinBox. The 'PPP' tab is selected. The configuration fields are as follows:

- Phone: \*99\*\*\*1#
- Dial Command: ATDT
- User: (empty)
- Password: (empty)
- Profile: ppp-LMT
- Dial On Demand
- Add Default Route
- Use Peer DNS

On the right side of the window, there are several action buttons: OK, Cancel, Apply, Enable, Comment, Copy, Remove, and Torch.

# Sending SMS from Router

- Command line example to send an SMS:
  - `/tool sms send usb3 "29111222"`  
`message="Help!"`
- Additional arguments can be specified:
  - `smc=<number>` is number of the SMS service center
  - `type=<value>` is for adjusting SMS properties. Currently only class 0 SMS messages are supported, thus, `type=class-0` by default
- SMS cannot be sent while the port is used by other service (PPP or terminal)

# Troubleshooting GPRS

- Can you talk to the modem at all?
  - Use serial terminal on usb port and try to issue some AT commands (AT, ATI, AT+CPIN=?
- Is the SIM card requiring to enter the PIN?
  - Disable PIN request, or,
  - Include it into the modem initialization string
- Consult
  - Any GPRS AT Command Reference
  - MikroTik WIKI

**Thank you!**