

# PPP and Asynchronous Interfaces

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This document applies to MikroTik RouterOS V2.8

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## General Information

### Summary

PPP (Point-to-Point Protocol) provides a method for transmitting datagrams over serial point-to-point links. Physically it relies on **com1** and **com2** ports from standard PC hardware configurations. These appear as **serial0** and **serial1** automatically. You can add more serial ports to use the router for a modem pool using these adapters:

- MOXA (<http://www.moxa.com>) Smartio CP-132 2-port PCI multiport asynchronous board with maximum of 8 ports (4 cards)
- MOXA (<http://www.moxa.com>) Smartio C104H, CP-114 or CT-114 4-port PCI multiport asynchronous board with maximum of 16 ports (4 cards)
- MOXA (<http://www.moxa.com>) Smartio C168H, CP-168H or CP-168U 8-port PCI multiport asynchronous board with maximum of 32 ports (4 cards)
- Cyclades (<http://www.cyclades.com>) Cyclom-Y Series 4 to 32 port PCI multiport asynchronous board with maximum of 128 ports (4 cards)

- Cyclades (<http://www.cyclades.com>) Cyclades-Z Series 16 to 64 port PCI multiport asynchronous board with maximum of 256 ports (4 cards)
- TCL DataBooster 4 or 8 port High Speed Buffered PCI Communication Controllers

## Specifications

Packages required: *ppp*

License required: *level1*

Home menu level: */interface ppp-client, /interface ppp-server*

Standards and Technologies: [PPP \(RFC 1661\)](#)

Hardware usage: *Not significant*

## Related Documents

- [Package Management](#)
- [Device Driver List](#)
- [IP Addresses and ARP](#)
- [Log Management](#)
- [AAA](#)

## Additional Documents

- <http://www.ietf.org/rfc/rfc2138.txt?number=2138>
- <http://www.ietf.org/rfc/rfc2138.txt?number=2139>

## Serial Port Configuration

Home menu level: */port*

### Property Description

**name** (*name*; default: **serialN**) - port name

**used-by** (*read-only: text*) - shows the user of the port. Only free ports can be used in PPP setup

**baud-rate** (*integer*; default: **9600**) - maximal data rate of the port

**data-bits** (7 | 8; default: **8**) - number of bits per character transmitted

**parity** (*none | even | odd*; default: **none**) - character parity check method

**stop-bits** (1 | 2; default: **1**) - number of stop bits after each character transmitted

**flow-control** (*none | hardware | xon-xoff*; default: **hardware**) - flow control method

### Notes

Keep in mind that **baud-rate**, **data-bits**, **parity**, **stop-bits** and **flow control** parameters must be the same for both communicating sides.

## Example

```
[admin@MikroTik] > /port print
# NAME                               USED-BY                               BAUD-RATE
0 serial0                             Serial Console                         9600
1 databooster1                         9600
2 databooster2                         9600
3 databooster3                         9600
4 databooster4                         9600
5 databooster5                         9600
6 databooster6                         9600
7 databooster7                         9600
8 databooster8                         9600
9 cycladesA1                           9600
10 cycladesA2                          9600
11 cycladesA3                          9600
12 cycladesA4                          9600
13 cycladesA5                          9600
14 cycladesA6                          9600
15 cycladesA7                          9600
16 cycladesA8                          9600
[admin@MikroTik] > set 9 baud-rate=38400
[admin@MikroTik] >
```

## PPP Server Setup

Home menu level: */interface ppp-server*

### Description

PPP server provides a remote connection service for users. When dialing in, the users can be authenticated locally using the local user database in the */user* menu, or at the RADIUS server specified in the */ip ppp* settings.

### Property Description

**port** (*name*; default: **(unknown)**) - serial port

**authentication** (*multiple choice: mschap2, mschap1, chap, pap*; default: **mschap2, mschap1, chap, pap**) - authentication protocol

**profile** (*name*; default: **default**) - profile name used for the link

**mtu** (*integer*; default: **1500**) - Maximum Transmission Unit. Maximum packet size to be transmitted

**mru** (*integer*; default: **1500**) - Maximum Receive Unit

**null-modem** (*no | yes*; default: **no**) - enable/disable null-modem mode (when enabled, no modem initialization strings are sent)

**modem-init** (*text*; default: **""**) - modem initialization string. You may use "s11=40" to improve dialing speed

**ring-count** (*integer*; default: **1**) - number of rings to wait before answering phone

**name** (*name*; default: **ppp-inN**) - interface name for reference

## Example

You can add a PPP server using the **add** command:

```

[admin@MikroTik] interface ppp-server> add name=test port=serial1
[admin@MikroTik] interface ppp-server> print
Flags: X - disabled, R - running
 0 X  name="test" mtu=1500 mru=1500 port=serial1
      authentication=mschap2,chap,pap profile=default modem-init=""
      ring-count=1 null-modem=no

[admin@MikroTik] interface ppp-server> enable 0
[admin@MikroTik] interface ppp-server> monitor test
      status: "waiting for call..."

[admin@MikroTik] interface ppp-server>

```

## PPP Client Setup

Home menu level: */interface ppp-client*

### Description

The section describes PPP clients configuration routines.

### Property Description

**port** (*name*; default: **(unknown)**) - serial port

**user** (*text*; default: **''**) - P2P user name on the remote server to use for dialout

**password** (*text*; default: **''**) - P2P user password on the remote server to use for dialout

**profile** (*name*; default: **default**) - local profile to use for dialout

**allow** (*multiple choice: mschap2, mschap1, chap, pap*; default: **mschap2, mschap1, chap, pap**) - the protocol to allow the client to use for authentication

**phone** (*integer*; default: **''**) - phone number for dialout

**tone-dial** (*yes | no*; default: **yes**) - defines whether use tone dial or pulse dial

**mtu** (*integer*; default: **1500**) - Maximum Transmission Unit. Maximum packet size to be transmitted

**mru** (*integer*; default: **1500**) - Maximum Receive Unit

**null-modem** (*no | yes*; default: **no**) - enable/disable null-modem mode (when enabled, no modem initialization strings are sent)

**modem-init** (*text*; default: **''**) - modem initialization strings. You may use "s11=40" to improve dialing speed

**dial-on-demand** (*yes | no*; default: **no**) - enable/disable dial on demand

**add-default-route** (*yes | no*; default: **no**) - add PPP remote address as a default route

**use-peer-dns** (*yes | no*; default: **no**) - use DNS server settings from the remote server

### Notes

- Additional client profiles must be configured on the server side for clients to accomplish logon procedure. For more information see **Related Documents** section.
- PPP client profiles must match at least partially (**local-address** and values related to encryption should match) with corresponding remote server values.

## Example

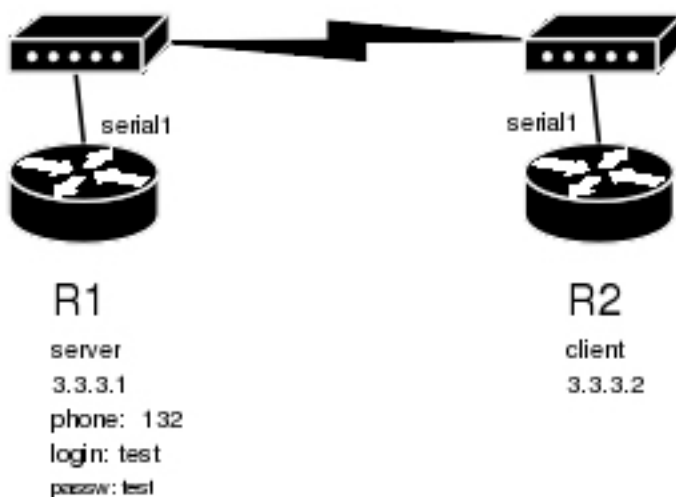
You can add a PPP client using the **add** command:

```
[admin@MikroTik] interface ppp-client> add name=test user=test port=serial1 \  
\... add-default-route=yes  
[admin@MikroTik] interface ppp-client> print  
Flags: X - disabled, R - running  
 0 X name="test" mtu=1500 mru=1500 port=serial1 user="test" password=""  
    profile=default phone="" tone-dial=yes modem-init="" null-modem=no  
    dial-on-demand=no add-default-route=yes use-peer-dns=no  
  
[admin@MikroTik] interface ppp-client> enable 0  
[admin@MikroTik] interface ppp-client> monitor test  
[admin@MikroTik] interface ppp-client> monitor 0  
    status: "dialing out..."  
  
[admin@MikroTik] interface ppp-client>
```

## PPP Application Example

### Client - Server Setup

In this example we will consider the following network setup:



For a typical server setup we need to add one user to the **R1** and configure the PPP server.

```
[admin@MikroTik] ppp secret> add name=test password=test local-address=3.3.3.1 \  
\... remote-address=3.3.3.2  
[admin@MikroTik] ppp secret> print  
Flags: X - disabled  
 0 name="test" service=any caller-id="" password="test" profile=default  
    local-address=3.3.3.1 remote-address=3.3.3.2 routes=""  
  
[admin@MikroTik] ppp secret> /int ppp-server  
[admin@MikroTik] interface ppp-server> add port=serial1 disabled=no  
[admin@MikroTik] interface ppp-server> print  
Flags: X - disabled, R - running  
 0 name="ppp-in1" mtu=1500 mru=1500 port=serial1  
    authentication=mschap2,mschap1,chap,pap profile=default modem-init=""  
    ring-count=1 null-modem=no  
  
[admin@MikroTik] interface ppp-server>
```

Now we need to setup the client to connect to the server:

```
[admin@MikroTik] interface ppp-client> add port=serial1 user=test password=test \  
\... phone=132  
[admin@MikroTik] interface ppp-client> print  
Flags: X - disabled, R - running  
 0 X name="ppp-out1" mtu=1500 mru=1500 port=serial1 user="test"  
    password="test" profile=default phone="132" tone-dial=yes  
    modem-init="" null-modem=no dial-on-demand=no add-default-route=no  
    use-peer-dns=no  
  
[admin@MikroTik] interface ppp-client> enable 0
```

After a short duration of time the routers will be able to ping each other:

```
[admin@MikroTik] interface ppp-client> /ping 3.3.3.1  
3.3.3.1 64 byte ping: ttl=64 time=43 ms  
3.3.3.1 64 byte ping: ttl=64 time=11 ms  
3.3.3.1 64 byte ping: ttl=64 time=12 ms  
3.3.3.1 64 byte ping: ttl=64 time=11 ms  
4 packets transmitted, 4 packets received, 0% packet loss  
round-trip min/avg/max = 11/19.2/43 ms  
[admin@MikroTik] interface ppp-client>
```