

PPP and Asynchronous Interfaces

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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 (<http://www.thetcl.com>) 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*

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

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

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

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

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

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

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

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

Notes

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

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

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

max-mru (*integer*; default: **1500**) - maximum value of MRU (Maximum Receive Unit) allowed on this link. Largest packet that can be received

max-mtu (*integer*; default: **1500**) - maximum value of MTU (Maximum Transmission Unit) allowed on this link. Maximum packet size to be transmitted

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

mrru (*integer*) - maximum packet size that can be received on the link. If packet is bigger than tunnel MTU, it will be split into multiple packets. That way it is possible to send full size (1500 or even 1514) packets over PPTP or L2TP tunnels.

- **disabled** - disable MRRU on this link

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

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

port (*name*) - serial port name

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

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

Notes

Specifying MRRU means enabling MP (Multilink PPP) over single link. This protocol is used to split big packets into smaller ones. Under Windows it can be enabled in Networking tag, Settings button, "Negotiate multi-link for single link connections". Their MRRU is hardcoded to 1614. This setting is useful to overcome PathMTU

discovery failures. The MP should be enabled on both peers.

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" max-mtu=1500 max-mru=1500 mrru=disabled port=serial1
    authentication=pap,chap,mschap1,mschap2 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

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

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

dial-command (*text*; default: **"ATDT"**) - AT dial command to use. The default one sets tone dialing mode

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

max-mru (*integer*; default: **1500**) - maximum value of MRU (Maximum Receive Unit) allowed on this link. Largest packet that can be received

max-mtu (*integer*; default: **1500**) - maximum value of MTU (Maximum Transmission Unit) allowed on this link. Maximum packet size to be transmitted

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

mrru (*integer*) - maximum packet size that can be received on the link. If packet is bigger than tunnel MTU, it will be split into multiple packets. That way it is possible to send full size (1500 or even 1514) packets over PPTP or L2TP tunnels.

- **disabled** - disable MRRU on this link

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

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

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

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

port (*name*) - serial port

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

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

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

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

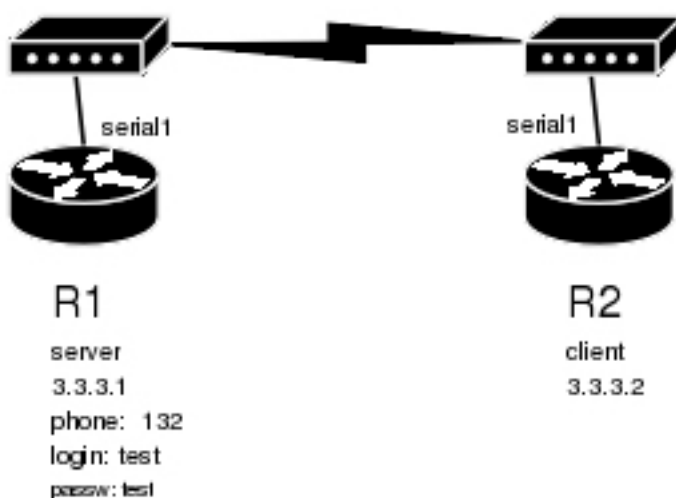
You can add a PPP client using the **add** command:

```
[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>
```