

MOXA C502 Dual-port Synchronous Interface

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This document applies to V3.0

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General Information

Summary

The MikroTik RouterOS supports the MOXA C502 PCI Dual-port Synchronous 8Mb/s Adapter hardware. The V.35 synchronous interface is the standard for VSAT and other satellite modems. However, you must check with the satellite system supplier for the modem interface type.

Specifications

Packages required: *synchronous*

License required: *level4*

Home menu level: */interface moxa-c502*

Standards and Technologies: [Cisco/HDLC-X.25 \(RFC 1356\)](#), [Frame Relay \(RFC1490\)](#), [PPP \(RFC-1661\)](#), [PPP \(RFC-1662\)](#)

Hardware usage: *Not significant*

Description

You can install up to four MOXA C502 synchronous cards in one PC box, if you have so many PCI slots available. Assuming you have all necessary packages and licences installed, in most cases it should be done nothing at that point (all drivers are loaded automatically).

Additional Documents

For more information about the MOXA C502 Dual-port Synchronous 8Mb/s Adapter hardware please see:

- <http://www.moxa.com/product/sync/C502.htm> - the product on-line documentation
- [C502 Dual Port Sync Board User's Manual](#) the user's manual in PDF format

Synchronous Interface Configuration

Home menu level: */interface moxa-c502*

Description

Moxa c502 synchronous interface is shown under the interfaces list with the name moxa-c502-N

Property Description

cisco-hdlc-keepalive-interval (*time*; default: **10s**) - keepalive period in seconds

clock-rate (*integer*; default: **64000**) - speed of internal clock

clock-source (*external | internal | tx-from-rx | tx-internal*; default: **external**) - clock source

frame-relay-dce (*yes | no*; default: **no**) - operate or not in DCE mode

frame-relay-lmi-type (*ansi | ccitt*; default: **ansi**) - Frame-relay Local Management Interface type:

- **ansi** - set LMI type to ANSI-617d (also known as Annex A)
- **ccitt** - set LMI type to CCITT Q933a (also known as Annex A)

ignore-dcd (*yes | no*; default: **no**) - ignore or not DCD

line-protocol (*cisco-hdlc | frame-relay | sync-ppp*; default: **sync-ppp**) - line protocol name

mtu (*integer*; default: **1500**) - Maximum Transmit Unit

name (*name*; default: **moxa-c502-N**) - interface name

Notes

There will be TWO interfaces for each MOXA C502 card since the card has TWO ports.

The MikroTik driver for the MOXA C502 Dual Synchronous adapter allows you to unplug the V.35 cable from one modem and plug it into another modem with a different clock speed, and you do not need to restart the interface or router.

Example

```
[admin@MikroTik] interface> moxa-c502
[admin@MikroTik] interface moxa-c502> print
Flags: X - disabled, R - running
 0 R name="moxa-c502-1" mtu=1500 line-protocol=sync-ppp clock-rate=64000
    clock-source=external frame-relay-lmi-type=ansi frame-relay-dce=no
    cisco-hdlc-keepalive-interval=10s
 1 R name="moxa-c502-2" mtu=1500 line-protocol=sync-ppp clock-rate=64000
    clock-source=external frame-relay-lmi-type=ansi frame-relay-dce=no
    cisco-hdlc-keepalive-interval=10s
```

```
[admin@MikroTik] interface moxa-c502>
```

You can monitor the status of the synchronous interface:

```
[admin@MikroTik] interface moxa-c502> monitor 0
dtr: yes
rts: yes
cts: no
dsr: no
dcd: no
[admin@MikroTik] interface moxa-c502>
```

Connect a communication device, e.g., a baseband modem, to the V.35 port and turn it on. If the link is working properly the status of the interface is:

```
[admin@MikroTik] interface moxa-c502> monitor 0
dtr: yes
rts: yes
cts: yes
dsr: yes
dcd: yes
[admin@MikroTik] interface moxa-c502>
```

Troubleshooting

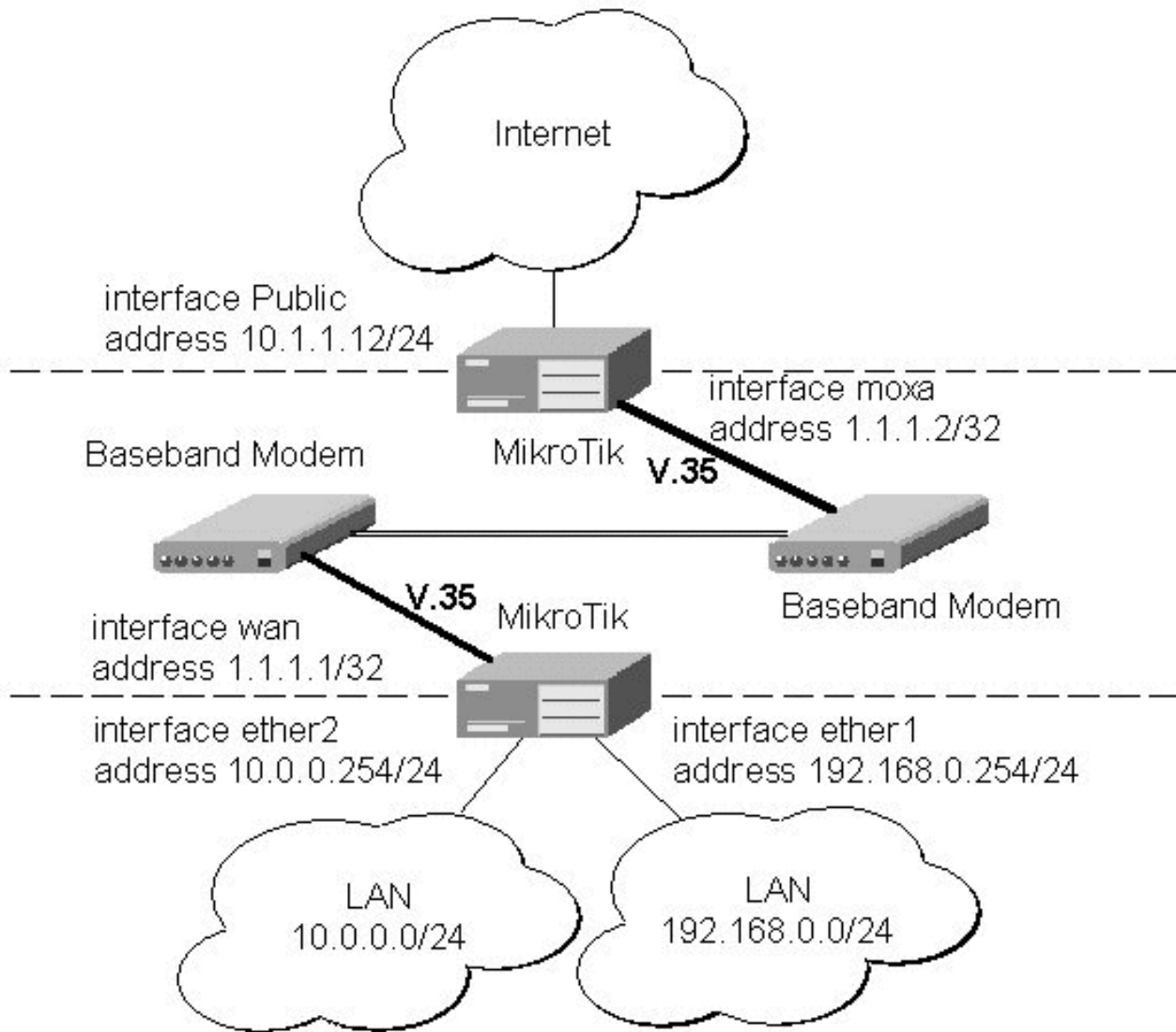
Description

- **The synchronous interface does not show up under the interfaces list**
Obtain the required license for synchronous feature
- **The synchronous link does not work**
Check the V.35 cabling and the line between the modems. Read the modem manual

Synchronous Link Application Examples

MikroTik Router to MikroTik Router

Let us consider the following network setup with two MikroTik Routers connected to a leased line with baseband modems:



The driver for MOXA C502 card should be loaded and the interface should be enabled according to the instructions given above. The IP addresses assigned to the synchronous interface should be as follows:

```
[admin@MikroTik] ip address> add address=1.1.1.1/32 interface=wan \
...\ network=1.1.1.2 broadcast=255.255.255.255
[admin@MikroTik] ip address> print
Flags: X - disabled, I - invalid, D - dynamic
# ADDRESS NETWORK BROADCAST INTERFACE
0 10.0.0.254/24 10.0.0.254 10.0.0.255 ether2
1 192.168.0.254/24 192.168.0.254 192.168.0.255 ether1
2 1.1.1.1/32 1.1.1.2 255.255.255.255 wan
[admin@MikroTik] ip address> /ping 1.1.1.2
1.1.1.2 64 byte ping: ttl=255 time=31 ms
1.1.1.2 64 byte ping: ttl=255 time=26 ms
1.1.1.2 64 byte ping: ttl=255 time=26 ms
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 26/27.6/31 ms
[admin@MikroTik] ip address>
```

The default route should be set to the gateway router 1.1.1.2:

```
[admin@MikroTik] ip route> add gateway=1.1.1.2 interface=wan
[admin@MikroTik] ip route> print
Flags: X - disabled, A - active, D - dynamic,
```

```

C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
#      DST-ADDRESS      PREF-SRC      G GATEWAY      DISTANCE INTER...
0 A S  0.0.0.0/0          r 1.1.1.2      1          wan
1 ADC  10.0.0.0/24       10.0.0.254   r          0          ether2
2 ADC  192.168.0.0/24    192.168.0.254 r          0          ether1
3 ADC  1.1.1.2/32        1.1.1.1     r          0          wan
[admin@MikroTik] ip route>

```

The configuration of the MikroTik router at the other end is similar:

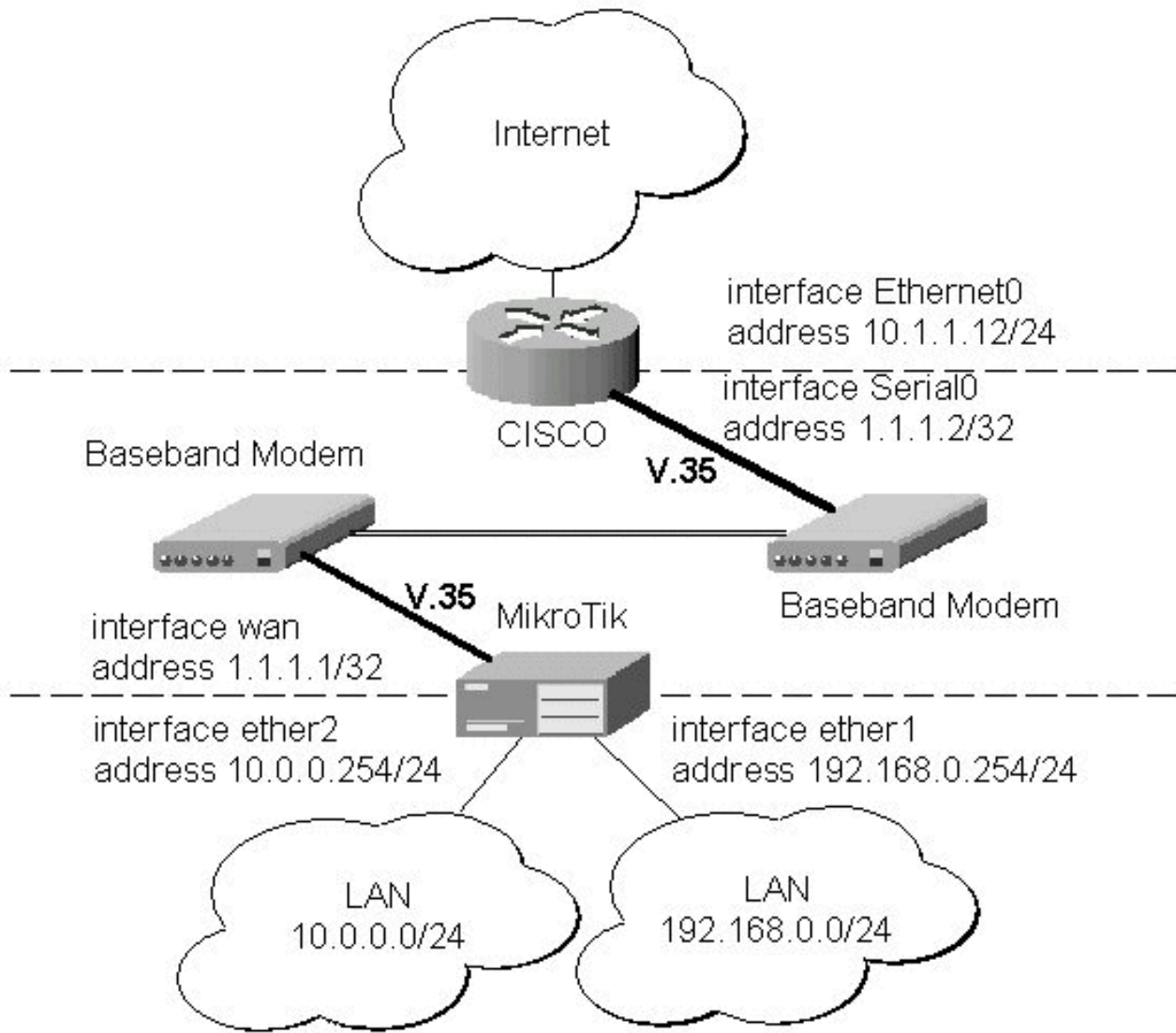
```

[admin@MikroTik] ip address> add address=1.1.1.2/32 interface=moxa \
\... network=1.1.1.1 broadcast=255.255.255.255
[admin@MikroTik] ip address> print
Flags: X - disabled, I - invalid, D - dynamic
#      ADDRESS      NETWORK      BROADCAST      INTERFACE
0      10.1.1.12/24    10.1.1.12    10.1.1.255     Public
1      1.1.1.2/32      1.1.1.1     255.255.255.255 moxa
[admin@MikroTik] ip address> /ping 1.1.1.1
1.1.1.1 64 byte ping: ttl=255 time=31 ms
1.1.1.1 64 byte ping: ttl=255 time=26 ms
1.1.1.1 64 byte ping: ttl=255 time=26 ms
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 26/27.6/31 ms
[admin@MikroTik] ip address>

```

MikroTik Router to Cisco Router

Let us consider the following network setup with MikroTik Router connected to a leased line with baseband modems and a CISCO router at the other end:



The driver for MOXA C502 card should be loaded and the interface should be enabled according to the instructions given above. The IP addresses assigned to the synchronous interface should be as follows:

```
[admin@MikroTik] ip address> add address=1.1.1.1/32 interface=wan \
...\ network=1.1.1.2 broadcast=255.255.255.255
[admin@MikroTik] ip address> print
Flags: X - disabled, I - invalid, D - dynamic
#  ADDRESS          NETWORK          BROADCAST        INTERFACE
0  10.0.0.254/24    10.0.0.254      10.0.0.255       ether2
1  192.168.0.254/24 192.168.0.254  192.168.0.255   ether1
2  1.1.1.1/32       1.1.1.2         255.255.255.255 wan
[admin@MikroTik] ip address> /ping 1.1.1.2
1.1.1.2 64 byte ping: ttl=255 time=31 ms
1.1.1.2 64 byte ping: ttl=255 time=26 ms
1.1.1.2 64 byte ping: ttl=255 time=26 ms
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 26/27.6/31 ms
[admin@MikroTik] ip address>
```

The default route should be set to the gateway router 1.1.1.2:

```
[admin@MikroTik] ip route> add gateway 1.1.1.2
[admin@MikroTik] ip route> print
Flags: X - disabled, A - active, D - dynamic,
```

```

C - connect, S - static, r - rip, b - bgp, o - ospf, m - mme,
B - blackhole, U - unreachable, P - prohibit
#      DST-ADDRESS      PREF-SRC      G  GATEWAY      DISTANCE  INTER...
0 A S  0.0.0.0/0
1 ADC  10.0.0.0/24      10.0.0.254   r  1.1.1.2      1         wan
2 ADC  192.168.0.0/24    192.168.0.254 r  0            0         ether2
3 ADC  1.1.1.2/32         1.1.1.1     r  0            0         wan
[admin@MikroTik] ip route>

```

The configuration of the Cisco router at the other end (part of the configuration) is:

```

CISCO#show running-config
Building configuration...

Current configuration:
...
!
interface Ethernet0
description connected to EthernetLAN
ip address 10.1.1.12 255.255.255.0
!
interface Serial0
description connected to MikroTik
ip address 1.1.1.2 255.255.255.252
serial restart-delay 1
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.1.1.254
!
...
end

CISCO#

```

Send ping packets to the MikroTik router:

```

CISCO#ping 1.1.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1.1.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 28/32/40 ms
CISCO#

```

Note! Keep in mind that for the point-to-point link the network mask is set to **32** bits, the argument **network** is set to the IP address of the other end, and the broadcast address is set to **255.255.255.255**.