FarSync X.21 Interface

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This document applies to V2.9

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General Information

Summary

The MikroTik RouterOS supports FarSync T-Series X.21 synchronous adapter hardware. These cards provide versatile high performance connectivity to the Internet or to corporate networks over leased lines.

Specifications

Packages required: ***synchronous***
License required: ***level4***
Home menu level: ***/interface farsync***
Standards and Technologies: ***X.21, Frame Relay, PPP***
Hardware usage: ***Not significant***

Related Documents

- Package Management
- Device Driver List
- IP Addresses and ARP
- Log Management

Additional Documents

- http://www.farsite.co.uk/

Synchronous Interface Configuration

Home menu level: ***/interface farsync***

Description

You can change the interface name to a more descriptive one using the **set** command. To enable the interface, use the **enable** command.

Property Description

hdlc-keepalive (*time*; default: **10s**) - Cisco HDLC keepalive period in seconds
clock-rate (*integer*; default: **64000**) - the speed of internal clock
clock-source (*external* | *internal*; default: **external**) - clock source
disabled (*yes* | *no*; default: **yes**) - shows whether the interface is disabled
frame-relay-dce (*yes* | *no*; default: **no**) - operate in Data Communications Equipment mode
frame-relay-lmi-type (*ansi* | *ccitt*; default: **ansi**) - Frame Relay Local Management Interface type
line-protocol (*cisco-hdlc* | *frame-relay* | *sync-ppp*; default: **sync-ppp**) - line protocol
media-type (*V24* | *V35* | *X21*; default: **V35**) - type of the media
mtu (*integer*; default: **1500**) - Maximum Transmit Unit
name (*name*; default: **farsyncN**) - assigned interface name

Example

```
[admin@MikroTik] > interface print
Flags: X - disabled, D - dynamic, R - running
  #    NAME                TYPE            MTU
  0  R ether1               ether           1500
  1 X  farsync1            farsync         1500
  2 X  farsync2            farsync         1500
[admin@MikroTik] interface>
[admin@MikroTik] interface> enable 1
[admin@MikroTik] interface> enable farsync2
[admin@MikroTik] > interface print
Flags: X - disabled, D - dynamic, R - running
  #    NAME                TYPE            MTU
  0  R ether1               ether           1500
  1    farsync1            farsync         1500
  2    farsync2            farsync         1500
[admin@MikroTik] interface>farsync
[admin@MikroTik] interface farsync> print
Flags: X - disabled, R - running
  0    name="farsync1" mtu=1500 line-protocol=sync-ppp media-type=V35
       clock-rate=64000 clock-source=external chdlc-keepalive=10s
       frame-relay-lmi-type=ansi frame-relay-dce=no

  1    name="farsync2" mtu=1500 line-protocol=sync-ppp media-type=V35
       clock-rate=64000 clock-source=external chdlc-keepalive=10s
       frame-relay-lmi-type=ansi frame-relay-dce=no
```

```
[admin@MikroTik] interface farsync>
```

You can monitor the status of the synchronous interface:

```
[admin@MikroTik] interface farsync> monitor 0
           card-type: T2P FarSync T-Series
               state: running
         firmware-id: 2
    firmware-version: 0.7.0
      physical-media: V35
               cable: detected
               clock: not-detected
       input-signals: CTS
      output-signals: RTS DTR

[admin@MikroTik] interface farsync>
```

Troubleshooting

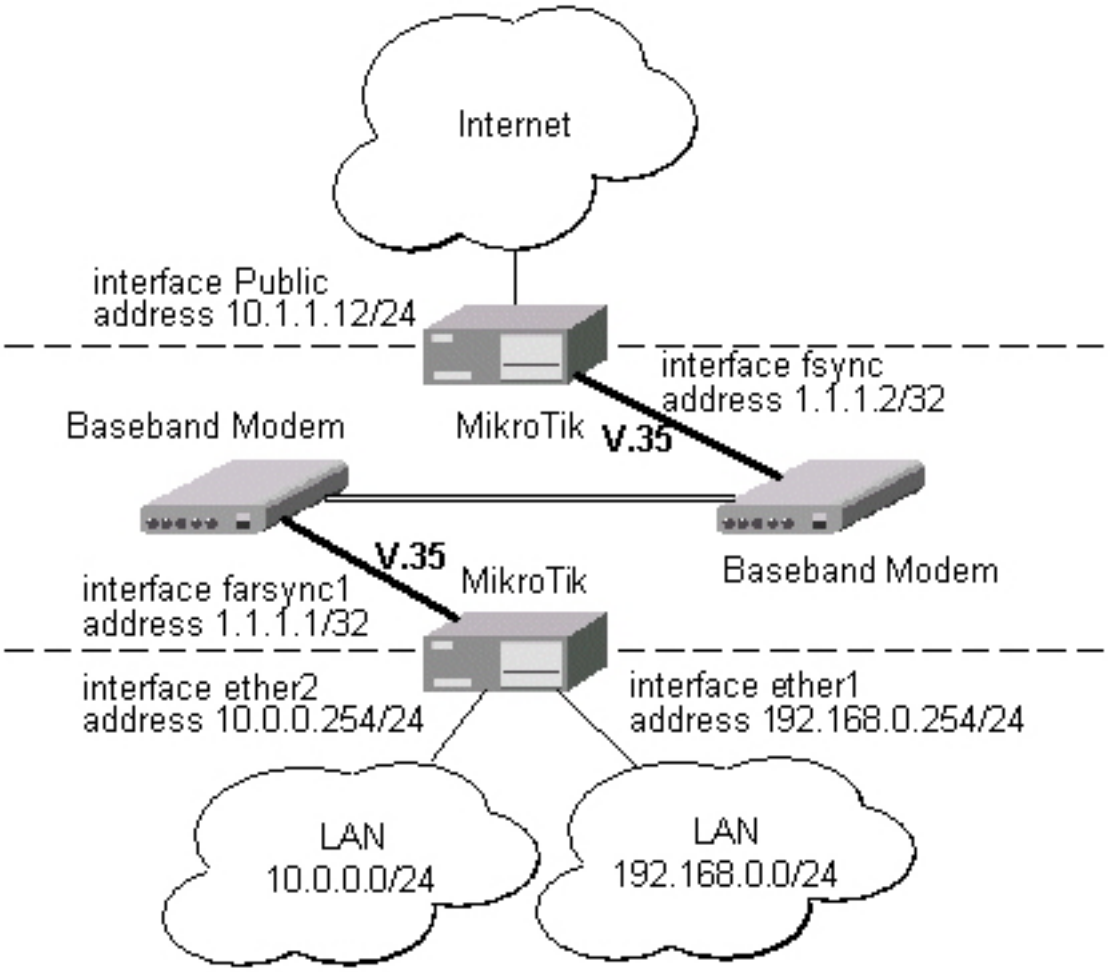
Description

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

Synchronous Link Applications

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 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 farsync1 \
\... 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 farsync1
[admin@MikroTik] ip address> /ping 1.1.1.2
1.1.1.2 64 byte pong: ttl=255 time=31 ms
1.1.1.2 64 byte pong: ttl=255 time=26 ms
1.1.1.2 64 byte pong: 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>
```

Note 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. 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, I - invalid, D - dynamic, J - rejected,
C - connect, S - static, R - rip, O - ospf, B - bgp
    #    DST-ADDRESS        G GATEWAY         DISTANCE INTERFACE
    0  S 0.0.0.0/0          r 1.1.1.2         1        farsync1
```

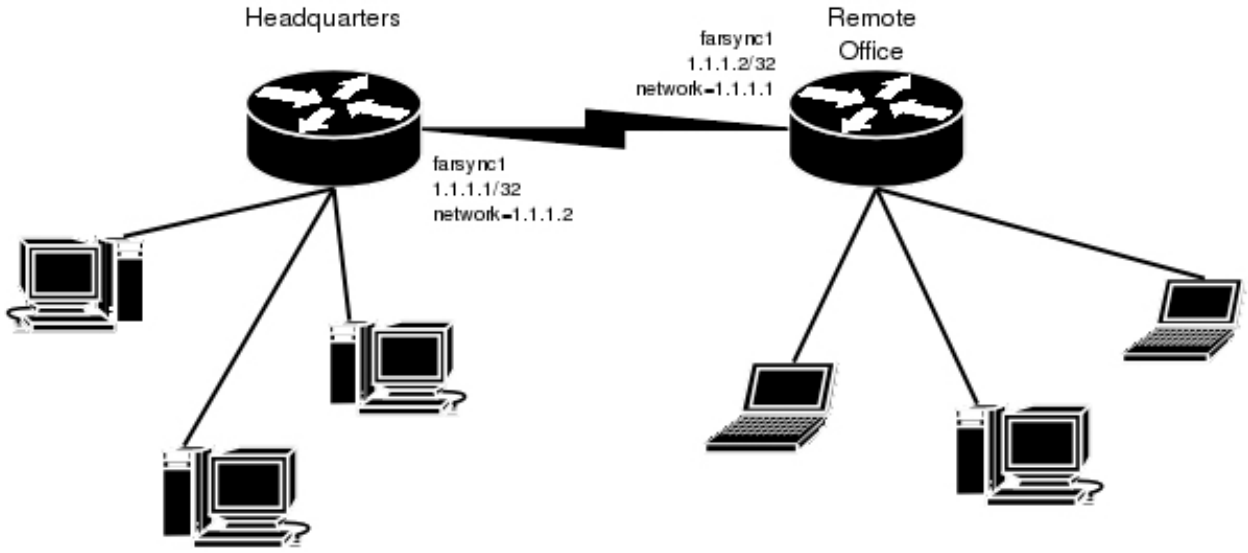
```
    1 DC 10.0.0.0/24        r 10.0.0.254      1        ether2
    2 DC 192.168.0.0/24     r 192.168.0.254   0        ether1
    3 DC 1.1.1.2/32         r 0.0.0.0         0        farsync1

[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 fsync \
\... 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 fsync
[admin@MikroTik] ip address> /ping 1.1.1.1
1.1.1.1 64 byte pong: ttl=255 time=31 ms
1.1.1.1 64 byte pong: ttl=255 time=26 ms
1.1.1.1 64 byte pong: 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 MikroTik router P2P using X.21 line

Consider the following example:



The default value of the property **clock-source** must be changed to **internal** for one of the cards. Both cards must have **media-type** property set to **X21**.

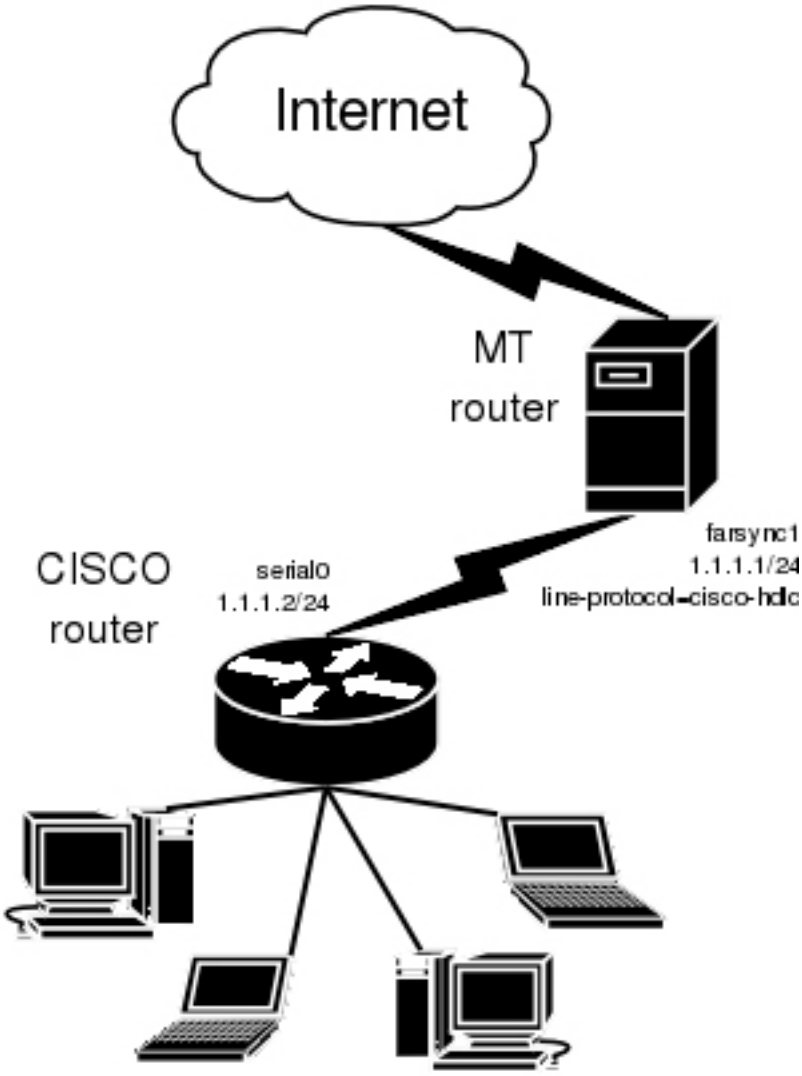
IP address configuration on both routers is as follows (by convention, the routers are named **hq** and **office** respectively):

```
[admin@hq] ip address> pri
Flags: X - disabled, I - invalid, D - dynamic
  #   ADDRESS            NETWORK         BROADCAST       INTERFACE
  0   192.168.0.1/24     192.168.0.0     192.168.0.255   ether1
  1   1.1.1.1/32         1.1.1.2         1.1.1.2         farsync1

[admin@hq] ip address>

[admin@office] ip address>
Flags: X - disabled, I - invalid, D - dynamic
  #   ADDRESS            NETWORK         BROADCAST       INTERFACE
```

```
  0   10.0.0.112/24      10.0.0.0        10.0.0.255      ether1
  1   1.1.1.2/32         1.1.1.1         1.1.1.1         farsync1

[admin@office] ip address>
```

MikroTik router to Cisco router using X.21 line

Assume we have the following configuration:



The configuration of MT router is as follows:

```
[admin@MikroTik] interface farsync> set farsync1 line-protocol=cisco-hdlc \
\... media-type=X21 clock-source=internal
[admin@MikroTik] interface farsync> enable farsync1
[admin@MikroTik] interface farsync> print
Flags: X - disabled, R - running
  0  R name="farsync1" mtu=1500 line-protocol=cisco-hdlc media-type=X21
       clock-rate=64000 clock-source=internal chdlc-keepalive=10s
       frame-relay-lmi-type=ansi frame-relay-dce=no

  1 X  name="farsync2" mtu=1500 line-protocol=sync-ppp media-type=V35
       clock-rate=64000 clock-source=external chdlc-keepalive=10s
       frame-relay-lmi-type=ansi frame-relay-dce=no
```

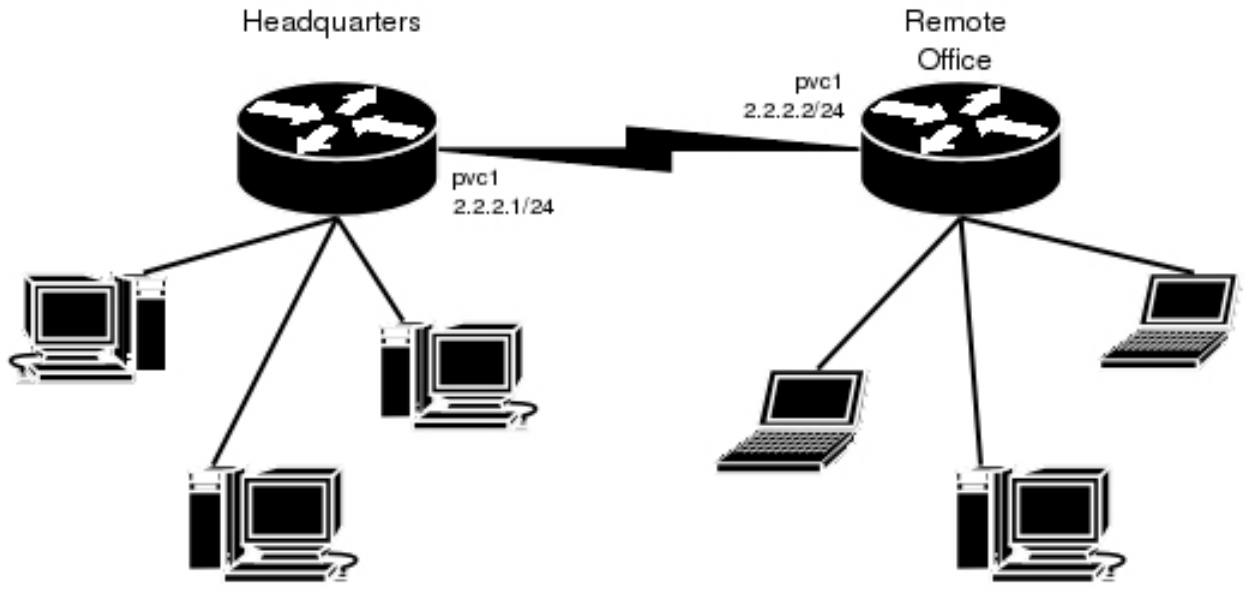
```
[admin@MikroTik] interface farsync>
[admin@MikroTik] interface farsync> /ip address add address=1.1.1.1/24 \
\... interface=farsync1
```

The essential part of the configuration of Cisco router is provided below:

```
interface Serial0
 ip address 1.1.1.2 255.255.255.0
 no ip route-cache
 no ip mroute-cache
 no fair-queue
!
ip classless
ip route 0.0.0.0 0.0.0.0 1.1.1.1
```

MikroTik router to MikroTik router using Frame Relay

Consider the following example:



The default value of the property **clock-source** must be changed to **internal** for one of the cards. This card also requires the property **frame-relay-dce** set to **yes**. Both cards must have **media-type** property set to **X21** and the **line-protocol** set to **frame-relay**.

Now we need to add **pvc** interfaces:

```
[admin@hq] interface pvc> add dlci=42 interface=farsync1
[admin@hq] interface pvc> print
Flags: X - disabled, R - running
  #    NAME                                                MTU  DLCI INTERFACE
  0 X  pvc1                                                1500 42   farsync1

[admin@hq] interface pvc>
```

Similar routine has to be done also on **office** router:

```
[admin@office] interface pvc> add dlci=42 interface=farsync1
[admin@office] interface pvc> print
Flags: X - disabled, R - running
  #    NAME                                                MTU  DLCI INTERFACE
  0 X  pvc1                                                1500 42   farsync1

[admin@office] interface pvc>
```

Finally we need to add **IP addresses** to **pvc** interfaces and enable them.

On the **hq** router:

```
[admin@hq] interface pvc> /ip addr add address 2.2.2.1/24 interface pvc1
[admin@hq] interface pvc> /ip addr print
Flags: X - disabled, I - invalid, D - dynamic
  #   ADDRESS            NETWORK         BROADCAST       INTERFACE
  0   10.0.0.112/24      10.0.0.0        10.0.0.255      ether1
  1   192.168.0.1/24     192.168.0.0     192.168.0.255   ether2
  2   2.2.2.1/24         2.2.2.0         2.2.2.255       pvc1

[admin@hq] interface pvc> enable 0
[admin@hq] interface pvc>
```

and on the **office** router:

```
[admin@office] interface pvc> /ip addr add address 2.2.2.2/24 interface pvc1
[admin@office] interface pvc> /ip addr print
Flags: X - disabled, I - invalid, D - dynamic
  #   ADDRESS            NETWORK         BROADCAST       INTERFACE
  0   10.0.0.112/24      10.0.0.0        10.0.0.255      ether1
  1   2.2.2.2/24         2.2.2.0         2.2.2.255       pvc1

[admin@office] interface pvc> enable 0
[admin@office] interface pvc>
```

Now we can monitor the synchronous link status:

```
[admin@hq] interface pvc> /ping 2.2.2.2
2.2.2.2 64 byte ping: ttl=64 time=20 ms
2.2.2.2 64 byte ping: ttl=64 time=20 ms
2.2.2.2 64 byte ping: ttl=64 time=21 ms
2.2.2.2 64 byte ping: ttl=64 time=21 ms
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 20/20.5/21 ms
[admin@hq] interface pvc> /interface farsync monitor 0
           card-type: T2P FarSync T-Series
               state: running-normally
         firmware-id: 2
    firmware-version: 1.0.1
            physical: X.21
               cable: detected
               clock: detected
       input-signals: CTS
      output-signals: RTS,DTR

[admin@hq] interface pvc>
```