

Xpeed SDSL Interface

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This document applies to V3.0

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General Information

Summary

The MikroTik RouterOS supports the Xpeed 300 SDSL PCI Adapter hardware with speeds up to 2.32Mbps. This device can operate either using Frame Relay or PPP type of connection. SDSL (Single-line Digital Subscriber Line or Symmetric Digital Subscriber Line) stands for the type of DSL that uses only one of the two cable pairs for transmission. SDSL allows residential or small office users to share the same telephone for data transmission and voice or fax telephony.

Specifications

Packages required: *synchronous*

License required: *level4*

Home menu level: */interface xpeed*

Standards and Technologies: [PPP \(RFC 1661\)](#), [Frame Relay \(RFC 1490\)](#)

Hardware usage: *Not significant*

Additional Documents

- [Xpeed homepage](#)

Xpeed Interface Configuration

Home menu level: */interface xpeed*

Property Description

arp (*disabled | enabled | proxy-arp | reply-only*; default: **enabled**) - Address Resolution Protocol

- **disabled** - the interface will not use ARP protocol
- **enabled** - the interface will use ARP protocol
- **proxy-arp** - the interface will be an ARP proxy
- **reply-only** - the interface will only reply to the requests originated to its own IP addresses, but neighbor MAC addresses will be gathered from /ip arp statically set table only

bridged-ethernet (*yes | no*; default: **yes**) - if the adapter operates in bridged Ethernet mode

cr (*0 | 2*; default: **0**) - a special mask value to be used when speaking with certain buggy vendor equipment. Can be 0 or 2

dlsi (*integer*; default: **16**) - defines the DLCI to be used for the local interface. The DLCI field identifies which logical circuit the data travels over

lmi-mode (*off | line-termination | network-termination | network-termination-bidirectional*; default: **off**) - defines how the card will perform LMI protocol negotiation

- **off** - no LMI will be used
- **line-termination** - LMI will operate in LT (Line Termination) mode
- **network-termination** - LMI will operate in NT (Network Termination) mode
- **network-termination-bidirectional** - LMI will operate in bidirectional NT mode

mac-address (*MAC address*) - MAC address of the card

mode (*network-termination | line-termination*; default: **line-termination**) - interface mode, either line termination (LT) or network termination (NT)

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

name (*name*) - interface name

sdsl-invert (*yes | no*; default: **no**) - whether the clock is phase inverted with respect to the Transmitted Data interchange circuit. This configuration option is useful when long cable lengths between the Termination Unit and the DTE are causing data errors

sdsl-speed (*integer*; default: **2320**) - SDSL connection speed

sdsl-swap (*yes | no*; default: **no**) - whether or not the Xpeed 300 SDSL Adapter performs bit swapping. Bit swapping can maximize error performance by attempting to maintain an acceptable margin for each bin by equalizing the margin across all bins through bit reallocation

Example

To enable interface:

```
[admin@r1] interface> print
Flags: X - disabled, R - running, D - dynamic, S - slave
#   NAME           TYPE           MTU
0 R  outer           ether          1500
1 R  inner           ether          1500
2 X  xpeed1         xpeed         1500
[admin@r1] interface> enable 2
[admin@r1] interface> print
Flags: X - disabled, R - running, D - dynamic, S - slave
#   NAME           TYPE           MTU
0 R  outer           ether          1500
1 R  inner           ether          1500
2 R  xpeed1         xpeed         1500
[admin@r1] interface>
```

Frame Relay Configuration Examples

MikroTik Router to MikroTik Router

Consider the following network setup with MikroTik router connected via SDSL line using Xpeed interface to another MikroTik router with Xpeed 300 SDSL adapter. SDSL line can refer a common patch cable included with the Xpeed 300 SDSL adapter (such a connection is called Back-to-Back). Lets name the first router **r1** and the second **r2**.

Router **r1** setup

The following setup is identical to one in the first example:

```
[admin@r1] ip address> add inter=xpeed1 address 1.1.1.1/24
[admin@r1] ip address> print
Flags: X - disabled, I - invalid, D - dynamic
#   ADDRESS          NETWORK          BROADCAST        INTERFACE
0   1.1.1.1/24        1.1.1.0          1.1.1.255        xpeed1

[admin@r1] interface xpeed> print
Flags: X - disabled
0   name="xpeed1" mtu=1500 mac-address=00:05:7A:00:00:08 arp=enabled
    mode=network-termination sdsl-speed=2320 sdsl-invert=no sdsl-swap=no
    bridged-ethernet=yes dlci=16 lmi-mode=off cr=0
[admin@r1] interface xpeed>
```

Router **r2** setup

First, we need to add a suitable IP address:

```
[admin@r2] ip address> add inter=xpeed1 address 1.1.1.2/24
[admin@r2] ip address> pri
Flags: X - disabled, I - invalid, D - dynamic
#   ADDRESS          NETWORK          BROADCAST        INTERFACE
0   1.1.1.2/24        1.1.1.0          1.1.1.255        xpeed1
```

Then, some changes in **xpeed** interface configuration should be done:

```
[admin@r2] interface xpeed> print
Flags: X - disabled
0   name="xpeed1" mtu=1500 mac-address=00:05:7A:00:00:08 arp=enabled
    mode=network-termination sdsl-speed=2320 sdsl-invert=no sdsl-swap=no
    bridged-ethernet=yes dlci=16 lmi-mode=off cr=0
[admin@r2] interface xpeed> set 0 mode=line-termination
[admin@r2] interface xpeed>
```

Now **r1** and **r2** can ping each other.

MikroTik Router to Cisco Router

Let us consider the following network setup with MikroTik Router with Xpeed interface connected to a leased line with a CISCO router at the other end.

MikroTik router setup:

```
[admin@r1] ip address> add inter=xpeed1 address 1.1.1.1/24
[admin@r1] ip address> print
Flags: X - disabled, I - invalid, D - dynamic
#   ADDRESS          NETWORK          BROADCAST        INTERFACE
0   1.1.1.1/24        1.1.1.0          1.1.1.255        xpeed1
```

```
[admin@r1] interface xpeed> print
Flags: X - disabled
 0 name="xpeed1" mtu=1500 mac-address=00:05:7A:00:00:08 arp=enabled
  mode=network-termination sdsl-speed=2320 sdsl-invert=no sdsl-swap=no
  bridged-ethernet=yes dlci=42 lmi-mode=off cr=0
[admin@r1] interface xpeed>
```

Cisco router setup

```
CISCO# show running-config
Building configuration...
Current configuration...

...
!
ip subnet-zero
no ip domain-lookup
frame-relay switching
!
interface Ethernet0
 description connected to EthernetLAN
 ip address 10.0.0.254 255.255.255.0
!
interface Serial0
 description connected to Internet
 no ip address
 encapsulation frame-relay IETF
 serial restart-delay 1
 frame-relay lmi-type ansi
 frame-relay intf-type dce
!
interface Serial0.1 point-to-point
 ip address 1.1.1.2 255.255.255.0
 no arp frame-relay
 frame-relay interface-dlci 42
!
...
end.

Send ping to 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 = 28/31/32 ms
CISCO#
```

Troubleshooting

Description

- **I tried to connect two routers as shown in MT-to-MT, but nothing happens**
The link indicators on both cards must be on. If it's not, check the cable or interface configuration. One adapter should use LT mode and the other NT mode. You can also change **sdsl-swap** and **sdsl-invert** parameters on the router running LT mode if you have a very long line