



VOLKSWAGEN

T···Systems···

rvsMVS

rvsMVS Release 04.06.00

Addendum XOT

This documentation is valid for rvsMVS release 4.

For rvsMVS the following documentations are provided:

rvsMVS Installation Manual (english)
Installation of rvs. Usefull for System Programmers

rvsMVS Benutzer Handbuch (german)
Manual for rvs Users

rvsMVS Operator Handbuch (german)
Manual for rvs Operator

rvsMVS Operation Manual (english)
Manual for rvs Operator

rvsMVS Messages and Codes (english)
Overview about rvs messages and abend codes

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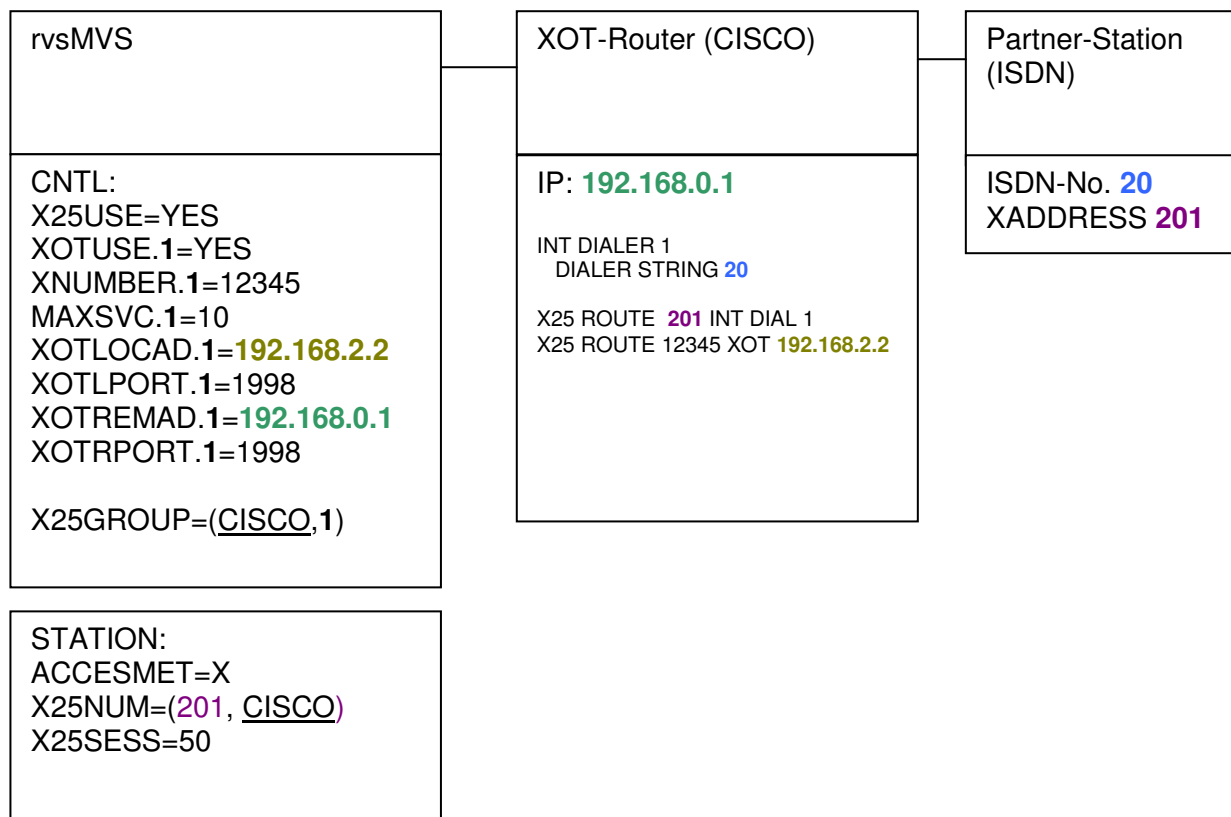
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1. Introduction

In this document we will give some recommendations for the configuration of XOT routers.

XOT (X.25 over TCP/IP) routers are able to route X.25 packets between a TCP/IP network on one side and an X.25 or ISDN network on the other side. Please read the Installation Manual for details how to configure rvs[®] for XOT.

Overview of XOT and rvsMVS:



2. System requirements

To use the XOT functionality in rvs[®] you need an IP connection to the XOT-capable router (e.g. CISCO 801, CISCO 2600 or BINTEC X4300).

XOT as a new network type in rvs[®] is at the moment available for the following platforms:

- z/OS
- LINUX
- Windows XP.

We tested rvs[®] and XOT with the following routers:

- CISCO 801
- CISCO 2600 and
- BINTEC X4300.

3. CISCO Configuration

In the following chapter we will describe our test scenario and give some examples for CISCO router configuration.

To configure one single BRI interface for incoming and outgoing direction we use dialer interfaces. There is at least one dialer for the direction „send“ and at least another dialer for the direction „receive“. Before we tested the CISCO router with rvs[®] and XOT, we checked the X.25 function with PAD commands directly on CISCO-IOS.

3.1. CISCO 801

We used firmware 12.3. We had some trouble with firmware 12.2.

3.2. CISCO 2600

We used firmware 12.2. We had some trouble with firmware 12.0.

3.3. Links for more information

For further information about XOT and CISCO see CISCO manuals. Here some interesting links:

http://www.cisco.com/en/US/tech/tk713/tk730/tech_digests_list.html

http://www.cisco.com/en/US/products/sw/iosswrel/ps1818/products_configuration_guide_chapter09186a0080087858.html

http://www.cisco.com/en/US/tech/tk713/tk730/technologies_q_and_a_item09186a00800a3c0b.shtml

http://www.cisco.com/en/US/products/hw/routers/ps380/tsd_products_support_series_home.html

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/800/rn800xi.htm#1075191>

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios123/123relnt/800/rn800xa.htm>

3.4. Example of CISCO Router Configuration (ISDN)

In this chapter we'll give some advices for configuration of CISCO router:

- You have to configure the outgoing dialer interface with **encapsulation x25 DTE**.
- The incoming dialer interface has to be configured with **encapsulation x25 DCE**.
- There is an idle-Timer for incoming ISDN-connections. This timer does not recognize x25 packets over ISDN, so it is possible that the connection will hang up during transmission. You should set this timer in the incoming dialer interface to a big value, e.g. **dialer idle-timeout 700000**.
- You have to configure the routing for both directions.
Every outgoing dialer represents a partner station with its own ISDN number. (dialer string <ISDN-No>)
The incoming dialer listens to the own ISDN numbers. (dialer called <ISDN-No>)
- You can route incoming XOT calls with the following routing-entry:
x25 route [called x25-Address in the XOT-packet] interface DIALER[number] .
- You can route incoming ISDN/X.25 calls with the following routing-entry:
x25 route [called x25-Address in the x25-packet] XOT [IP of the XOT-station] .

Here are some configuration examples for CISCO routers:

3.4.1. Example: CISCO

```

version 12.3
service pad to-xot
service pad from-xot
service tcp-keepalives-in
service tcp-keepalives-out
!
hostname Receiver
!
isdn switch-type basic-net3
x25 routing
!
interface Ethernet0
 ip address [IP-ADDRESS]
 no cdp enable
!
interface BRI0
 no ip address
 encapsulation hdlc
 no ip mroute-cache
 dialer pool-member 1
 dialer idle-timeout 1
 isdn switch-type basic-net3
 isdn point-to-point-setup
 no fair-queue
 no cdp enable
!

interface Dialer1
 description outgoing ISDN calls
 no ip address
 encapsulation x25
 no ip mroute-cache
 dialer pool 1
 dialer idle-timeout 1
 dialer string <partner-ISDN-number 1>
 dialer max-call 1
 dialer-group 1
 x25 htc 1
 x25 win 7

```

```

x25 wout 7
no cdp enable

interface Dialer10
description incoming ISDN calls
no ip address
encapsulation x25 dce
no ip mroute-cache
dialer pool 1
dialer idle-timeout 700000
dialer called <own ISDN number 1>
dialer called <own ISDN number 2>
dialer max-call 1
dialer-group 1
x25 htc 1
x25 win 7
x25 wout 7
no cdp enable

x25 route [X.25-ADDRESS-1] xot [IP-ADDRESS-RVS]
x25 route [X.25-ADDRESS-2] xot [IP-ADDRESS-RVS]
x25 route [X.25-ADDRESS-1] interface Dialer1

x25 host name [X.25-ADDRESS-ROUTER]

```

3.5. Example of CISCO Router Configuration (serial)

```

service pad to-xot
service pad from-xot
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname C2600
!
!
ip subnet-zero
isdn switch-type basic-net3
x25 routing
!
!
!
!
interface Ethernet0/0
ip address 192.168.2.4 255.255.252.0
no ip directed-broadcast
no cdp enable
!
interface Serial0/0
no ip address
no ip directed-broadcast
shutdown
!
ip classless
!
no cdp run
!
x25 route input-interface Serial0 xot 192.168.2.10
x25 route ^. interface Serial0/0
x25 host Router name1
!
line con 0
line aux 0
line vty 0 4

```



```
login  
!  
end
```

4. BINTEC X4300 Configuration

In this chapter we will give an example for the BINTEC X4300 router configuration.

In our tests we used BINTEC X4300 with firmware version 7.1 Rev. 1.

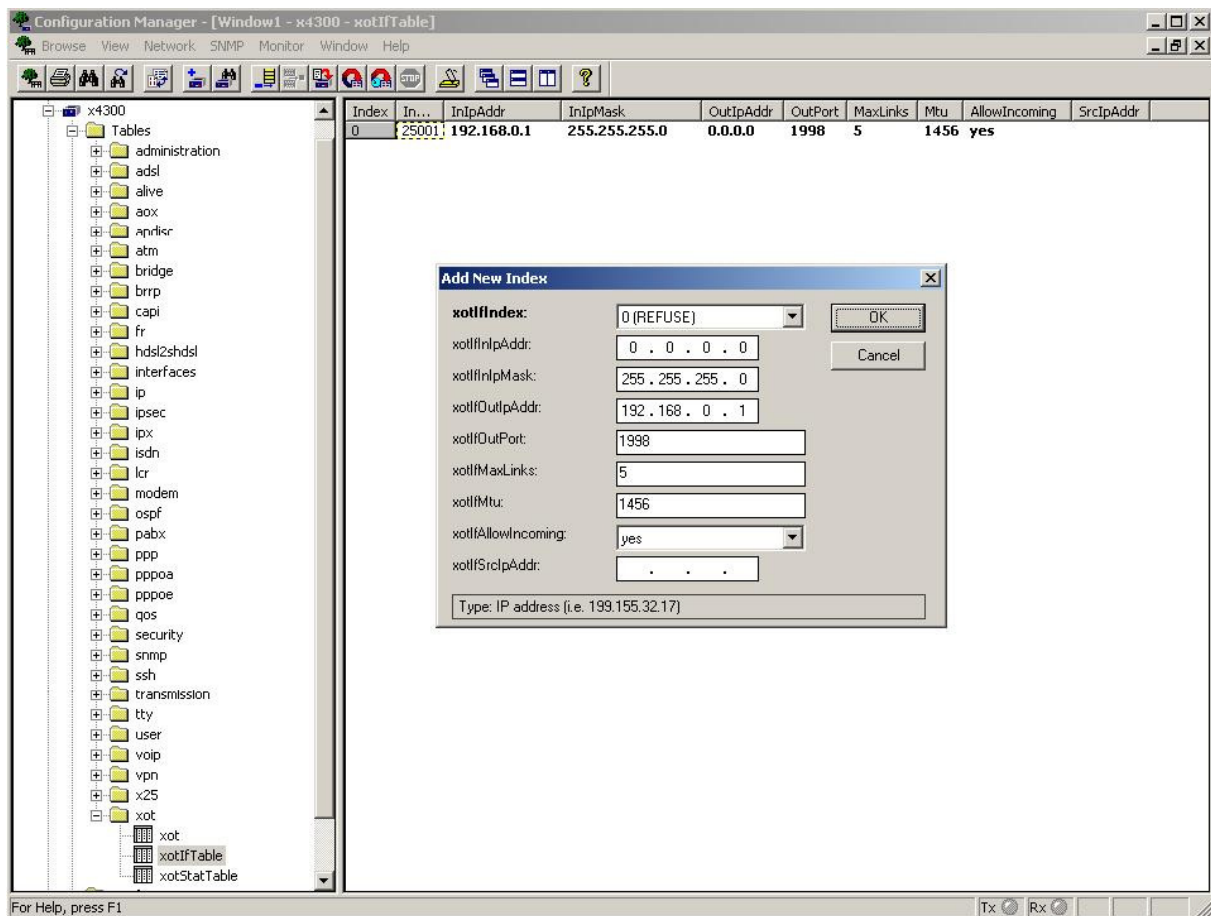
More information about the BINTEC X4300 you can find here:

http://www.funkwerk-ec.com/dl_bintec_x4x00_family_en,17190,837.html

4.1. Configuration of the BINTEC router X4300 for XOT and XOI

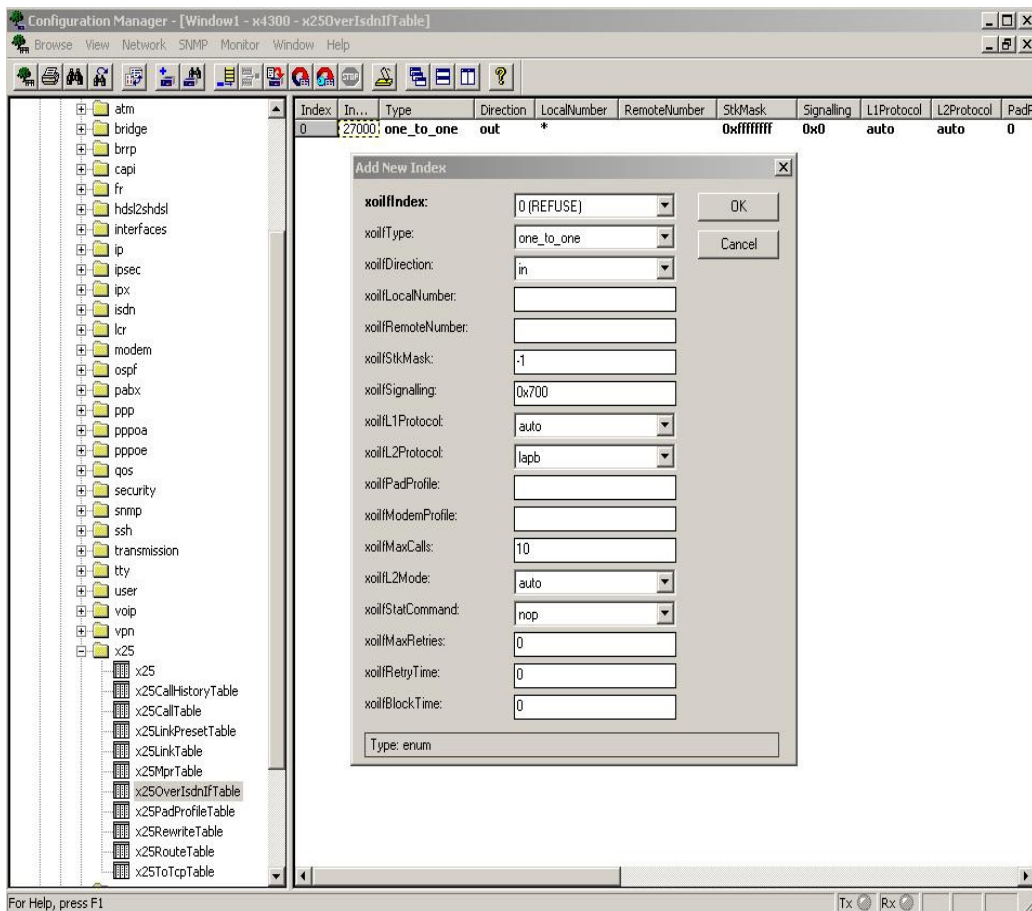
4.1.1. Define an XOT Interface (*xotIfTable*)

- You have to specify one interface for every communication-partner and direction (incoming/outgoing)
- For an incoming XOT connection you have to set the parameter `xotIfOutIpAddr` to 0.0.0.0 and the parameter `xotIfInIpAddr` to the IP address of the partner station.
- For an outgoing XOT connection you have to set the parameter `xotIfInIpAddr` to 0.0.0.0 and the parameter `xotIfOutIpAddr` to the IP address of the partner station.



4.1.2. Define an XOI interface (x25OverIsdnIfTable)

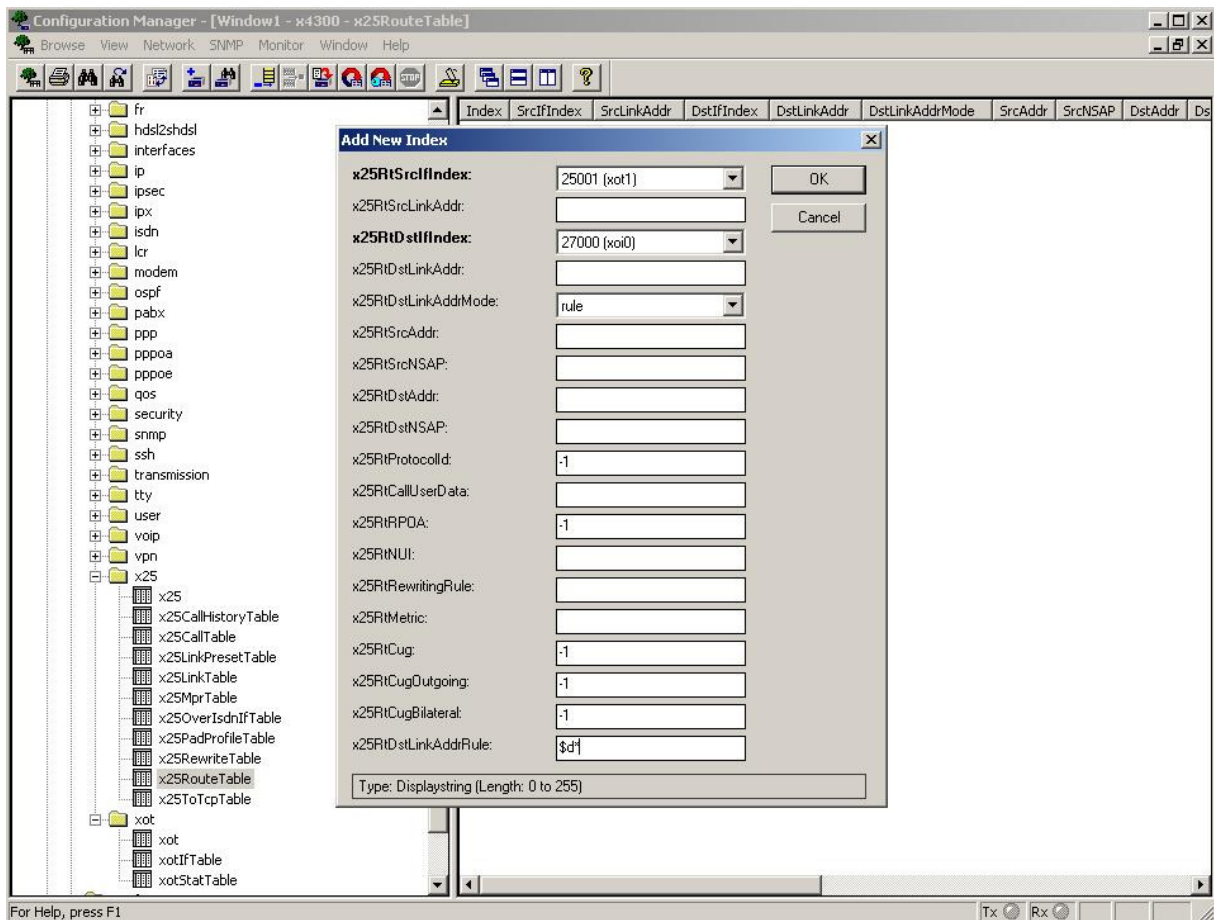
- You have to specify one interface for every communication-direction
- For an incoming ISDN connection you have to set the parameter `xoiIfDirection` to in, the parameter `xoiIfSignalling` to 0x700 and the parameter `xoiIfL2Protocol` to LAPB.
- For an outgoing ISDN connection you have to set the parameter `xoiIfRemoteNumber` to * and the parameter `xoiIfDirection` to out.
- For the values of the other parameters you can use the defaults.



After these configuration steps you should save the configuration and restart the configuration manager.

4.1.3. Define a route from an XOT interface to an XOI interface (x25RouteTable)

- For every route you have to specify a separate entry. You can also enter a substitution rule for the ISDN number (this will replace the target ISDN number with the X.25 address of the X.25 packet)
- Set the parameter `x25RtDstLinkAddrRule` to `$d*` (this will replace the ISDN number with the X25 address)
- Set the parameter `x25RtDstLinkAddrMode` to `rule` (this will activate the substitution rule)
- You have to set `x25RtSrcIfIndex` to the incoming XOT interface and `x25RtDstIfIndex` to an outgoing XOI interface



4.1.4. Define an route from an XOI interface to an XOT interface (x25RouteTable)

- You have to specify for every route a separate entry.
- For an incoming XOI connection you have to enter the X.25 address of the target station (parameter `x25RtDstAddr`). The BINTEC router uses this address for routing incoming X.25 packets to the right destination.
- You have to set the parameter `x25RtDstLinkAddrMode` to default.
- You have to set `x25RtSrcIfIndex` to the incoming XOI interface and `x25RtDstIfIndex` to an outgoing XOT interface.

Add New Index

`x25RtSrcIfIndex:` 27001 (incoming XOI)

`x25RtSrcLinkAddr:`

`x25RtDstIfIndex:` 25012 (xot12)

`x25RtDstLinkAddr:`

`x25RtDstLinkAddrMode:` default

`x25RtSrcAddr:`

`x25RtSrcNSAP:`

`x25RtDstAddr:` 888

`x25RtDstNSAP:`

`x25RtProtocolId:` -1

`x25RtCallUserData:`

`x25RtRPOA:` -1

`x25RtNUI:`

`x25RtRewritingRule:`

`x25RtMetric:`

`x25RtCug:` -1

`x25RtCugOutgoing:` -1

`x25RtCugBilateral:` -1

`x25RtDstLinkAddrRule:`

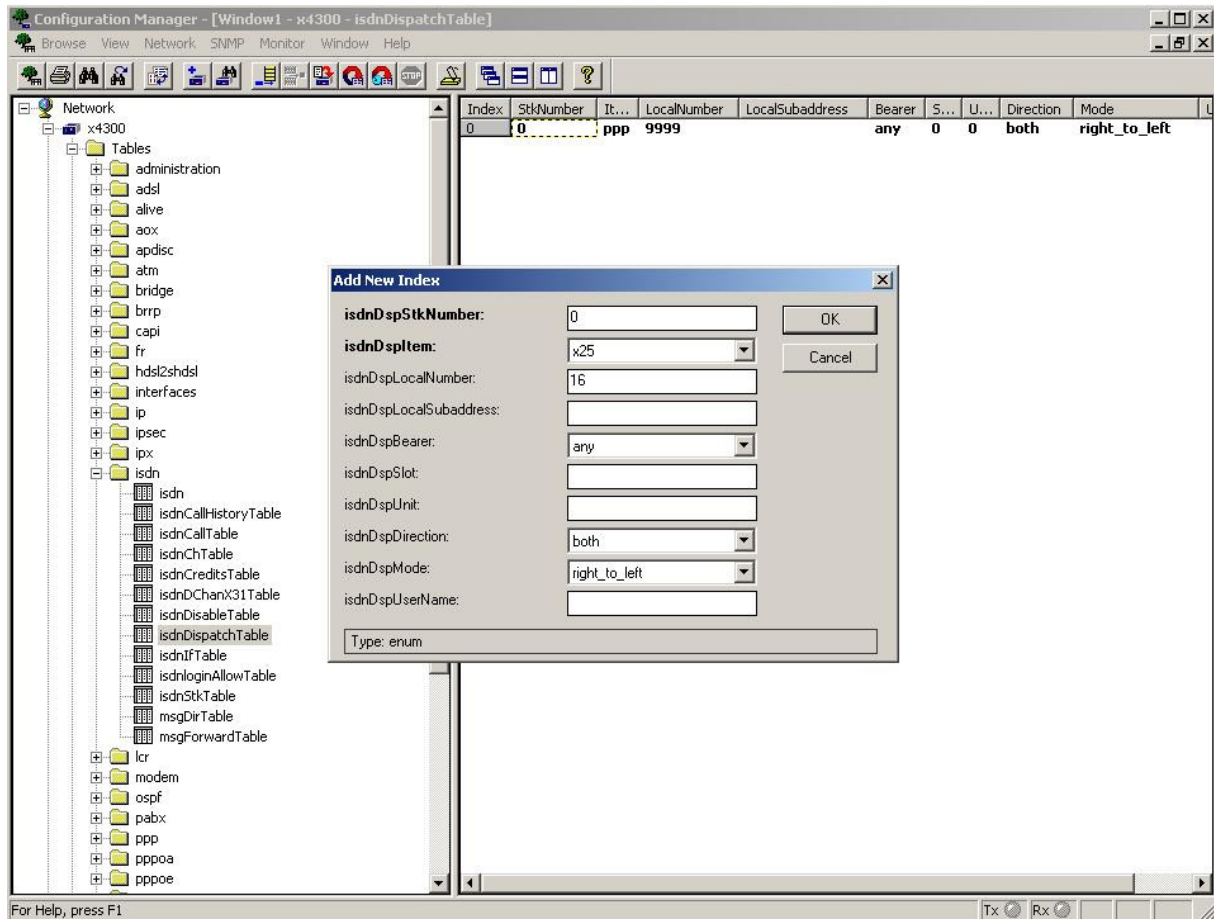
Type: Displaystring (Length: 0 to 255)

Configuration Manager - [Window1 - x4300 - x25RouteTable]

Description	6	11
SrcIfIndex	25011 (xot11)	27001 (incoming XOI)
SrcLinkAddr		
DstIfIndex	27000 (outgoing XOI)	25012 (xot12)
DstLinkAddr		
DstLinkAddrMode	rule	default
SrcAddr		
SrcNSAP		
DstAddr		888
DstNSAP		
ProtocolId	-1	-1
CallUserData		
RPOA	-1	-1
NUI		
RewritingRule	0	0
Metric	0	0
Cug	-1	-1
CugOutgoing	-1	-1
CugBilateral	-1	-1
DstLinkAddrRule	\$d*	

4.1.5. Define the incoming call answering (isdnDispatchTable)

- Set the parameter `isdnDspStkNumber` to 0 and the parameter `isdnDspItem` to x25 (this will dispatch the call to the x25-interface).
- Set the parameter `isdnDspLocalNumber` to the local number which handles the incoming call (MSN).



4.1.6. Define for every interface default X.25 parameters (x25LinkPresetTable)

- For every XOI- Interface you have to set the parameter `x25LkPrMode` to DTE
- For every XOT- Interface you have to set the parameter `x25LkPrMode` to DCE
- Set the parameter `x25LkPrModulo` to `mod8`
- You can change packet size and windows size according national configurations

The screenshot shows the Configuration Manager interface for a window titled "x2100 - x25LinkPresetTable". The left pane shows a tree view of configuration folders, with "x25LinkPresetTable" selected under the "x25" folder. The right pane displays a table of configuration parameters for four interfaces (0, 1, 2, 3).

Description	0	1	2	3
IfIndex	25001 (from_pc_gmi)	25002 (to_pc_gmi)	27000 (xoi_out)	27001 (xoi_in)
Addr				
Mode	dce	dce	dte	dte
Modulo	mod8	mod8	mod8	mod8
LIC	-1	-1	-1	-1
HIC	-1	-1	-1	-1
LTC	1	1	1	1
HTC	1	1	1	1
LOC	-1	-1	-1	-1
HOC	-1	-1	-1	-1
DefPktSize	p128	p128	p128	p128
DefWinSize	7	7	7	7
MaxPktSize	p128	p128	p128	p128
MaxWinSize	7	7	7	7
L2WinSize	7	7	7	7
L2RetrTimer	1000	1000	1000	1000
L2RetrCounter	10	10	10	10
L2SupervTimer	10000	10000	10000	10000
L2IdleTimer	0	0	0	0
Negotiation	when_necessary	when_necessary	when_necessary	when_necessary
RestDelayTimer	0	0	0	0
VCO	disable	disable	disable	disable
RewritingRule	0	0	0	0

4.2. Example of BINTEC X4300 Configuration

Please see the text file `BINTEC_X4300.txt` (our current configuration) as an example. This textfile is to be found on the distribution CD, in the directory `_doc/ROUTER_CONF_EXAMPLES`.

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