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## **1** Introduction

The purpose of this document is to provide a step by step description how to configure frame-relay routing, ISDN dial on demand and ISDN-backup for Framerelay. Framerelay-routing and ISDN dial on demand are described separate, so their setup can be configured and tested independent of the backup-configuration.

RIP is used to dynamically learn routes across ISDN in case of Framerelay failure.

## 2 Hardware/Software

- 2 \* XYLAN Omniswitch 5X, MPM-II, WSM-BRI-SC and software 3.2.6
- DTE + DCE X21 cable

## 3 Test setup



note : The WSM-modules are connected back to back with a DTE and DCE X21 cable.

# 4 Installation

#### 4.1 Configure Frame relay routing

#### 4.1.1 Configure Local Omni

```
local / >crgp
GROUP Number ( 2) : 3
Description (no quotes) : Framerelay net 192.169.241.0
Enable WAN Routing? (n): y
Enable IP (y) : y
IP Address : 192.169.241.1
IP Subnet Mask (0xfffff00) :
IP Broadcast Address (192.169.241.255 ) :
Description (30 chars max) :
```

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Disable routing? (n) : Enable NHRP? (n) : IP RIP mode {Deaf(d), Silent(s), Active(a) Inactive(i) } (a) : Enable IPX? (y): n GROUP 3 has been added to the system. local / >frm 5/1 Modify Frame Relay port for Slot: 5, Port: 1. Speed in BPS ..... = 2048000 {9600, 19200, 56000, 64000, 128000, 256000, 512000, 768000} 1)  $\{1024000, 1544000 2048000\}$ ..... = Split 2) Clocking ... {(I)nternal, (E)xternal, (S)plit} DLCMI Type ..... = LMI Rev 1.0 {(L)MI Rev. 1.0, T1.617 Annex (D), Q.933 Annex (A), (N)one } 3) Polling Interval T391/nT1 in seconds ..... = 10 4) {1 through 255 seconds} 5) Full Status Interval N391/nN1 ..... = 6 {1 through 10} Error Threshold N392/nN2 ..... = 3 6) {1 through 10} 7) Monitored Events Counter N393/nN3 ..... = 4 {1 through 10} Administrative Status ..... = UP 8)  $\{(U)p, (D)own\}$ Default Bridging Group ..... = 1 9) {1-65535} 10) Default Frame-Relay Bridging Mode ..... = Bridge All {Bridge (A)11, (E)thernet only} 11) Default Routing Group ..... = 0  $\{1-65535\}$ 12) Default Compression Admin Status ..... = Enabled {(E)nable, (D)isable} 13) Default Compression PRetry Time ..... = 3  $\{1-10\}$ 14) Default Compression PRetry Count ..... = 10  $\{3-255\}$ 15) Description .. = {Enter up to 30 characters} (save/quit/cancel) : 3=n ( disable ILM, since the WSM-boards are connected back to back. In a Framerelay environment you want to leave this enabled ) : 9=0 ( no automatic configuration of bridge-services ) : 11=0 ( no automatic configuration of routing-services ) : save Saving the configuration now....Please wait ... Done. local / >fradd 5/1/40 ( we use dlci 40 for framerelay-routing ) Modify Frame Relay port for Slot: 5, Port: 1 DLCI: 40. Administrative State ..... = UP 1)  $\{(U)p, (D)own\}$ Committed Information Rate (CIR) in BPS ..... = 0 2) {0 through line speed in BPS} Committed Burst Rate (Bc) in Bits 3) .... = 0 {0 through positive number in Bits} 4) Excess Burst Rate (Be) in Bits ..... = 0 {0 through positive number in Bits} Compression Adminstrative Status ..... = Enabled 5) {(E)nabled, (D)isabled} Compression PRetry Time ..... = 3 6)  $\{1..10\}$ 7) Compression PRetry Count ..... = 10  $\{3..255\}$ (save/quit/cancel) : save Saving configuration .... Done. local / >cas 5/1

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Slot 5 Port 1 Service 1 Configuration 1) Description ..... = Frame-Relay-Bridging {Enter up to 30 characters} 2) Service Type ..... = Bridging {(T)runking, (R)outing, (B)ridging} 3) Administrative Status ..... = Enabled {(E)nable, (D)isable} 4) VC(s) ..... = 5) Group(s) ..... . . . . . . . . = 6) Frame-Relay Bridging Mode (Applies to Bridging Only) ..... = Bridge All {Bridge (a)11, (E)thernet only} (save/quit/cancel) ( use frame-relay routing ) ( use dlci 40 ) : 2=r : 4=40 ( use WAN group 3 ) : 5=3 Slot 5 Port 1 Service 1 Configuration 1) Description ..... = Frame-Relay-Routing {Enter up to 30 characters} 2) Šervice Type ..... ..... = Routing {(T)runking, (R)outing, (B)ridging} 3) Administrative Status ..... = Enabled  $\{(E)nable, (D)isable\}$ 4) VC(s) ..... = 40 5) Group(s) ..... = 3
6) Frame-Relay Bridging Mode (Applies to Bridging Only) .... = Bridge All {Bridge (a)ll, (E)thernet only} : save Saving configuration now....Please wait... local / >vas ATM driver code NOT loaded. FDDI Services do not exist! Services Slot Oper Service Service Port Sta. VCs Groups Number Vport Description Type 

1 13 Frame-Relay-Routing

#### 4.1.2 Configure Remote Omni

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5/1 UP



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Routing

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Clocking ..... 2) ..... = External {(I)nternal, (E)xternal, (S)plit} LCMI Type ..... = ANSI T1.617
{(L)MI Rev. 1.0, T1.617 Annex (D), Q.933 Annex (A), (N)one } 3) ..... = ANSI T1.617 Annex D Polling Interval T391/nT1 in seconds ..... = 10 4) {1 through 255 seconds} Full Status Interval N391/nN1 ..... = 6 5) {1 through 10} 6) Error Threshold N392/nN2 ..... = 3 {1 through 10} Monitored Events Counter N393/nN3 ..... = 4 7) {1 through 10} Administrative Status ..... = UP 8) {(U)p, (D)own} Default Bridging Group ..... = 1 9)  $\{1-65535\}$ 10) Default Frame-Relay Bridging Mode ..... = Bridge All {Bridge (A)11, (E)thernet only} 11) Default Routing Group ..... = 0 {1-65535} 12) Default Compression Admin Status ..... = Enabled {(E)nable, (D)isable} 13) Default Compression PRetry Time ..... = 3  $\{1-10\}$ 14) Default Compression PRetry Count ..... = 10  $\{3-255\}$ 15) Description . {Enter up to 30 characters} (save/quit/cancel) : 3=n ( no ILM ) : 9=0 ( no automatic configuration of bridge-services ) : 11=0 ( no automatic configuration of routing-services ) : save Saving the configuration now....Please wait... Done. remote / >fradd 5/1/40 ( we use dlci 40 for framerelay-routing ) Modify Frame Relay port for Slot: 5, Port: 1 DLCI: 40. Administrative State ..... = UP 1)  $\{(U)p, (D)own\}$ 2) Committed Information Rate (CIR) in BPS ..... = 0  $\{0 \text{ through line speed in BPS}\}$ Committed Burst Rate (Bc) in Bits . {0 through positive number in Bits} 3) Excess Burst Rate (Be) in Bits .... 4) {0 through positive number in Bits} Compression Administrative Status ..... = Enabled 5) {(E)nabled, (D)isabled} 6) Compression PRetry Time ..... = 3  $\{1..10\}$ Compression PRetry Count ..... = 10 7) {3..255} (save/quit/cancel) : save Saving configuration .... Done. remote / >cas 5/1 Slot 5 Port 1 Service 1 Configuration 1) Description ..... = Frame-Relay-Brid ging {Enter up to 30 characters} 2) Service Type ..... ..... = Bridging {(T)runking, (R)outing, (B)ridging} Administrative Status ..... = Enabled {(E)nable, (D)isable} 4) VC(s) ..... = 5) Group(s) . . . . . . . . . . . . . . . 6) Frame-Relay Bridging Mode (Applies to Bridging Only) ..... = Bridge All {Bridge (a)11, (E)thernet only}

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(save/quit/cancel) : 2=r ( framerelay routing 0 : 4=40 (dlci 40) : 5=3 ( WAN group 3 ) Slot 5 Port 1 Service 1 Configuration 1) Description .. . . . . . . . . . . . . ..... = Frame-Relay-Routing {Enter up to 30 characters} 2) Service Type ..... ..... = Routing {(T)runking, (R)outing, (B)ridging} 3) Administrative Status ..... = Enabled {(E)nable, (D)isable} 4) VC(s) ..... = 40 5) Group(s) ..... = 3 6) Frame-Relay Bridging Mode (Applies to Bridging Only) ..... = Bridge All {Bridge (a)11, (E)thernet only} : save Saving configuration now....Please wait... remote / >vas ATM driver code NOT loaded. FDDI Services do not exist! Services Service Slot Oper Service Port Sta. VCs Groups Number Vport Description Type 5/1 UP 40 3 1 17 Frame-Relay-Routing Routing remote / >

#### 4.2 Configure ISDN dial on demand

Before you configure ISDN, make sure the strapping is set correct on the BRI. For Europe, you need to configure the interface to ST. In the States, you configure the interface as U-interface. Check the User manual for the correct strapping. The local Omni initiated the call to the remote Omni. Therefore we enable outgoing calls from the Local Omni, and only incoming calls on the Remote Omni

#### 4.2.1 Configure local Omni

```
local / >crgp
   GROUP Number (2):
Description (no quotes) : PPP dialup net 192.168.241.0
   Enable WAN Routing? (n): y
   Enable IP (y) : y
      IP Address
                                           : 192.168.241.1
                               (0xffffff00) :
      IP Subnet Mask
      IP Broadcast Address (192.168.241.255 ) :
      Description (30 chars max)
      Disable routing?
                                       (n) :
      Enable NHRP?
                                       (n) :
      IP RIP mode {Deaf(d),
             Silent(s),
             Active(a)
             Inactive(i) }
                                       (a) : I ( don't want RIP updates cause ISDN-calls )
   Enable IPX? (y): n
GROUP 2 has been added to the system.
local / >isdnm 5/2
1) Switch Type
                                 ..... Other
   {5(ES)S, (D)MS100, (NI)1, (ET)SI
2) B1 Signaling Calling Address .....
   {Phone Number}
3) B1 Service Profile Identifier (SPID) .....
  {9-20 Numeric character}
4) B2 Signaling Calling Address .....
   {Phone Number}
                                                                            Page 5 of 12
```

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5) E {	32 Service Profile Identifier (SPID)	
(sav :	ve/quit/cancel) : 1=et ( European standard ) : 2=235655070 ( area code =23, 0 is stripped by the PTT )	
: sa	ave	
loca PPP	al / >pppglobal Global Configuration:	
1)	Default Authentication Type PAP {(N)one, (P)AP, (C)HAP} Clobal User ID cont to remote for Authentication	
2) 3)	{16 characters userid} Global Password sent to remote for Authentication	
4)	<pre>[16 characters password] Default Compression Type STAC-LZS</pre>	
5)	{(N)one, STAC-(L)ZS} Default Bridge Config Admin Status Disabled	
6)	{(E)nable, (D)isable} Default IP Config Admin Status Enabled	
7)	{(E)nable, (D)isable} Default IPX Config Admin Status Disabled {(E)nable, (D)isable}	
(sav : :	<pre>ve/quit/cancel) : 1=c ( CHAP Authentication ) : 2=local ( needs to match ppp-peer item 72 on Remote switch ) : 3=local ( needs to match ppp-peer item 73 on Remote switch ) : save</pre>	
loca Add ID r comm Peer	al / >pppadd PPP configuration record. Please specify a unique number to identify this record and the remote Peer to municate with. r ID (1) :	
Addi Ente	ing PPP configuration record for Peer ID: 1 er PPP parameters:	
1)	Description: Entry PeerID 1	
2)	Adminstrative Status	
3)	<pre>PPP Mode Normal {(N)ormal, (M)ultilink}</pre>	
4)	Compression Type None {(N)one, STAC-(L)ZS}	
5)	Bridging Group 1 {1-65535 or 0 for no Bridging}	
	{(E)nable, (D)isable} 51) PPP Bridging Mode Ethernet	Onlv
6)	{Bridge (A)11, (E)thernet Only} Routing Group0	1
7)	{1-65535 or 0 for no Routing} Authentication Type NONE	
	<pre>{(N)one, (P)AP, (C)HAP} 70) User ID received from remote for Authentication .</pre>	
	<pre>{16 characters user1d} 71) Password rcvd from remote for Authentication [16 characters pageword]</pre>	
	<ul> <li>(16 characters password)</li> <li>72) User ID sent to remote for Authentication</li> <li>{16 characters userid}</li> </ul>	
	73) Password sent to remote for Authentication {16 characters password}	
8)	Max Failure Counter	
9)	Max Configure Counter	
10)	Max Terminate Counter 165535}	
11)	Retry Timeout Value 10 {Retry Timeout in Second(s) 165535}	

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(save/quit/cancel) ( no bridging over ISDN ) : 5=0 : 6=2 ( routing group 2 used ) : 61=192.168.241.2 ( IP address remote WAN-group ) : 7=c ( CHAP authentication ) : 70=remote ( needs to match PPP peer item 72 on Remote ) : 71=remote ( needs to match PPP peer item 73 on Remote ) : 72=local ( needs to match PPP peer item 70 on Remote ) : 73=local ( needs to match PPP peer item 71 on Remote ) : save Normal (non-multilink) PPP configuration record created. Do you wish to define the link at this time y/n(y): y Adding Link for Peer ID 1, Link Index: 1: 1) Description: Link Entry: 1, Peer ID: 1 {Enter text up to 30 characters} Adminstrative Status ..... Enabled 2) {(E)nable, (D)isable} 3) Link Type ..... .... ISDN call {(W)SM Port, (I)SDN call} 4) Link Slot ..... 0 {Slot number} Link Port ... 5) .....0 {Port number] (save/quit/cancel) : 4=5 ( slot 5 ) : 5=2 ( port 2 ) : save Modify ISDN call record configuration. Peer ID: 1 Link Index: 1 Type: Slot: 5, Port: 2 Link Description: Link Entry: 1, Peer ID: 1 1) {Enter text up to 30 characters} Link Adminstrative Status ..... Enabled 2) {(E)nable, (D)isable} Inactivity Timer .... 3) {1-9999 seconds or 0 if disabled} Mininum call duration ..... 4) {1-9999 seconds or 0 if disabled} Maximum call duration ..... .....0 5) {1-9999 seconds or 0 if disabled} ..... Enabled 6) Outgoing Calls ... {(E)nable, (D)isable} 60) Call Originate Mode ..... On-Demand {On-(D)emand, (B)ackup}
61) Carrier Delay Timeout .. . . . . . . . . . . . . . . 0 {Call completion timeout 1-999 seconds} 62) Maximum Call Retries ..... 1 {Retry call count, 0 if infinite} 63) Retry Delay ..... {Seconds between retry attempts, 0 = retry imediately} 64) Failure Delay ..... {Secs after max calls failed to retry,} 0 = don't retry after max calls failed.} 65) Remote Phone Number ..... {digits 0 through 9} 66) Desired Calling Speed ..... 64000 {56000, 64000} Incoming Calls ..... ..... Disabled {(E)nable, (D)isable} (save/guit/cancel) : 3=300 ( set the inactivity time to 3 minutes ) : 65=0235655066 ( ISDN-number of remote ) : save

# 4.2.2 Configure remote OmniSwitch

remote / >crgp GROUP Number ( 2) : Description (no quotes) : PPP dialup net 192.168.241.0 Enable WAN Routing? (n): y

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Enable IP (y) : y IP Address : 192.168.241.2 IP Subnet Mask (Oxffffff00) : IP Broadcast Address (192.168.241.255 ) Description (30 chars max) Disable routing? (n) : Enable NHRP? (n) : IP RIP mode {Deaf(d), Silent(s), Active(a) Inactive(i) } (a) : I ( RIP inactive ) Enable IPX? (y): n GROUP 2 has been added to the system. remote / >isdnm 5/2 1) Switch Type .. ..... Other {5(ES)S, (D)MS100, (NI)1, (ET)SI 2) B1 Signaling Calling Address ..... {Phone Number} 3) B1 Service Profile Identifier (SPID) ..... {9-20 Numeric character} 4) B2 Signaling Calling Address ..... {Phone Number} 5) B2 Service Profile Identifier (SPID) ..... {9-20 Numeric character} (save/quit/cancel) ( European standard ) : 1=et : 2=235655066 ( area code =23, 0 is stripped by the PTT ) · 2 1) Switch Type ..... ETSI . . . {5(ES)S, (D)MS100, (NI)1, (ET)SI 2) B1 Signaling Calling Address ..... 235655066 {Phone Number} 3) B1 Service Profile Identifier (SPID) ..... {9-20 Numeric character} 4) B2 Signaling Calling Address ..... {Phone Number} B2 Service Profile Identifier (SPID) ..... {9-20 Numeric character} save remote / >pppglobal PPP Global Configuration: 1) Default Authentication Type ..... PAP  $\{(N)one, (P)AP, (C)HAP\}$ Global User ID sent to remote for Authentication ...... 2) {16 characters userid} Global Password sent to remote for Authentication ..... 3) {16 characters password} 4) Default Compression Type ..... STAC-LZS {(N)one, STAC-(L)ZS} Default Bridge Config Admin Status ..... Disabled 5) {(E)nable, (D)isable} Default IP Config Admin Status ..... Enabled 6) {(E)nable, (D)isable} Default IPX Config Admin Status ..... Disabled 7) {(E)nable, (D)isable} (save/quit/cancel) : 1=c ( CHAP Authentication ) : 2=remote ( needs to match ppp-peer item 72 on Local switch ) : 3=remote ( needs to match ppp-peer item 73 on Local switch ) : save remote / >pppa Add PPP configuration record. Please specify a unique ID number to identify this record and the remote Peer to communicate with. Peer ID (1) : Adding PPP configuration record for Peer ID: 1 Enter PPP parameters:

Description: Entry PeerID 1 1)

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	{Enter text up to 30 characters}
2)	Adminstrative Status Enabled
3)	{(E)nable, (D)1sable}
57	{(N)ormal, (M)ultilink}
4)	Compression Type None
5)	{(N)one, STAC-(L)ZS} Bridging Group
	<pre>{1-65535 or 0 for no Bridging} 50) Bridge Config Admin Status</pre>
	{(E)nable, (D)isable}
	51) PPP Bridging Mode Ethernet Only
6)	{Bridge (A)II, (E)thernet Only} Routing Group 0
	{1-65535 or 0 for no Routing}
7)	Authentication Type
	70) User ID received from remote for Authentication .
	{16 characters userid}
	71) Password rcvd from remote for Authentication
	72) User ID sent to remote for Authentication
	{16 characters userid}
	(3) Password sent to remote for Authentication {16 characters password}
8)	Max Failure Counter
9)	{Max Failure Counter 165535}
21	{Max Configure Counter 165535}
10)	Max Terminate Counter
11)	{Max Terminate Counter 165535} Retry Timeout Value
,	<pre>{Retry Timeout in Second(s) 165535}</pre>
(	compute (concol)
(54)	5=0 ( disable bridging )
:	6=2 (routing group 2)
	61=192.168.241.1 ( IP address of WAN group 2 on Local switch )
:	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch )
:	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch )
:	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch )
:	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 7
: : : : Ente	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters:
: : : : : : : : : : : : : : : : : : :	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1
: : : : Ente 1)	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters}
: : : : Ente 1) 2)	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status Enabled {(E)nable. (D)isable}
: : : : : : : : : : : : : : : : : : :	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status
: : : : : : : : : : : : : : : : : : :	61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 76=remote ( needs to match PPP peer item 71 on Local switch ) 77=remote ( needs to match PPP peer item 71 on Local switch ) 78=remote ( needs to match PPP peer item 71 on Local switch ) 78=remote ( needs to match PPP peer item 71 on Local switch ) 78=remote ( needs to match PPP peer item 71 on Local switch ) 79=remote ( needs to match PPP peer item 71 on Local switch ) 79=remote ( needs to match PPP peer item 71 on Local switch ) 70=remote ( needs to match PPP peer item 71 on Local switch ) 70=remote ( needs to match PPP peer item 71 on Local switch ) 70=remote ( needs to match PPP peer item 71 on Local switch ) 71=remote ( needs to match PPP peer item 71 on Local switch ) 71=remote
: : : : : : : : : : : : : : : : : : :	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status</pre>
: : : Ente 1) 2) 3) 4) 5)	61=192.168.241.1       (IP address of WAN group 2 on Local switch )         7=c       (enable CHAP)         70=local       (needs to match PPP peer item 72 on Local switch )         71=local       (needs to match PPP peer item 73 on Local switch )         72=remote       (needs to match PPP peer item 70 on Local switch )         73=remote       (needs to match PPP peer item 71 on Local switch )         73=remote       (needs to match PPP peer item 71 on Local switch )         ?       ?         r PPP parameters:       Description: Entry PeerID 1         [Enter text up to 30 characters]       Adminstrative Status
: : : Ente 1) 2) 3) 4) 5) 6)	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status Enabled {(E)nable, (D)isable} PPP Mode Normal {(N)ormal, (M)ultilink} Compression Type Normal {(N)one, STAC-(L)ZS} Bridging Group 0 {1-65535 or 0 for no Bridging} Bouting Group</pre>
: : : : : : : : : : : : : : : : : : :	61=192.168.241.1       ( IP address of WAN group 2 on Local switch )         7=c       ( enable CHAP )         70=local       ( needs to match PPP peer item 72 on Local switch )         71=local       ( needs to match PPP peer item 73 on Local switch )         72=remote       ( needs to match PPP peer item 70 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         ?       r PPP parameters:         Description:       Entry PeerID 1         {Enter text up to 30 characters}         Adminstrative Status       Enabled         ((E)nable, (D)isable}       PPP Mode         PPP Mode       Normal         {(N)ormal, (M)ultilink}       None         Compression Type       0         {1-65535 or 0 for no Bridging}       0         Routing Group       2         {1-65535 or 0 for no Routing}       2
: : : : : : : : : : : : : : : : : : :	61=192.168.241.1       ( IP address of WAN group 2 on Local switch )         7=c       ( enable CHAP )         70=local       ( needs to match PPP peer item 72 on Local switch )         71=local       ( needs to match PPP peer item 73 on Local switch )         72=remote       ( needs to match PPP peer item 70 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         73=remote       ( needs to match PPP peer item 71 on Local switch )         7       ?       r PPP parameters:         Description:       Entry PeerID 1       {         {Enter text up to 30 characters}       Adminstrative Status       Enabled         {(E)nable, (D)isable}       PPP Mode
: : : : : : : : : : : : : : : : : : :	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status</pre>
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:: :: :: :: :: :: :: :: :: :: :: :: ::	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( None, (P)AP, (C)HAP = needs to match PPP peer item 71 on Local switch  74=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote remote for Authentication . local {16=remeter remoted} </pre>
:: :: :: :: :: :: :: :: :: :: :: :: ::	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status Enabled {(E)nable, (D)isable} PPP Mode Normal {(N)ormal, (M)ultilink} Compression Type 0 {1-65535 or 0 for no Bridging} Routing Group 2 {1-65535 or 0 for no Routing}     60) IP Config Admin Status Enabled     {(E)nable, (D)isable}     fl Remote IP Address (Only valid if IP is enabled) . 192.168.241.1     {Valid IP address notation e.g., x.x.x.x}     fl PA Config Admin Status CHAP {(N)one, (P)AP, (C)HAP}     70) User ID received from remote for Authentication local</pre>
: : : : : : : : : : : : : : : : : : :	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 73 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 73 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 73 on Local switch ) 73=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 74=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match PPP peer item 71 on Local switch ) 75=remote ( needs to match peer item 71 on Local switch ) 75=remote ( needs to memote for Authentication local { 16 characters password } 71 Password rod from</pre>
: : : : : : : : : : : : : : : : : : :	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 72=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 72 on Local switch ) 73=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) 74 constant is the provide state of the peer item 71 on Local switch ) 74 config Admin Status</pre>
: : : : : : : : : : : : : : : : : : :	<pre>61=192.168.241.1 ( IP address of WAN group 2 on Local switch ) 7=c ( enable CHAP ) 7=c ( enable CHAP ) 70=local ( needs to match PPP peer item 72 on Local switch ) 71=local ( needs to match PPP peer item 73 on Local switch ) 73=remote ( needs to match PPP peer item 70 on Local switch ) 73=remote ( needs to match PPP peer item 71 on Local switch ) ? r PPP parameters: Description: Entry PeerID 1 {Enter text up to 30 characters} Adminstrative Status</pre>

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8)	Max Failure Counter 3	
9)	{Max Failure Counter 165535} Max Configure Counter 3	
2,	{Max Configure Counter 165535}	
10)	Max Terminate Counter 1 65535}	
11)	Retry Timeout Value	
	{Retry Timeout in Second(s) 165535}	
:	save	
Norm Do y	ou wish to define the link at this time y/n (y) : y	
Addi	ng Link for Peer ID 1, Link Index: 1:	
1)	{Enter text up to 30 characters}	
2)	Adminstrative Status Enabl	Led
3)	{(E)hable, (D)isable} Link Type ISDN	call
4)	{(W)SM Port, (I)SDN call}	
4)	{Slot number}	
5)	Link Port 0	
(sav	re/quit/cancel)	
:	4=5 (slot 5)	
:	save	
Modi	fy ISDN call record configuration Deer ID: 1 Link Indey: 1	
Туре	Slot: 5, Port: 2	
1)	Link Description: Link Entry: 1, Peer ID: 1	
2)	Link Adminstrative Status	Enabled
3)	{(E)nable, (D)isable} Inactivity Timer	30
	<pre>{1-9999 seconds or 0 if disabled}</pre>	
4)	Mininum call duration	0
5)	Maximum call duration	0
6)	Outgoing Calls	Enabled
	60) Call Originate Mode	On-Demand
	{On-(D)emand, (B)ackup}	0
	{Call completion timeout 1-999 seconds}	0
	62) Maximum Call Retries	1
	63) Retry Delay	3
	<pre>{Seconds between retry attempts, 0 = retry imediately} 64) Failure Delay</pre>	r O
	<pre>{Secs after max calls failed to retry,}</pre>	0
	0 = don't retry after max calls failed.}	
	{digits 0 through 9}	
	66) Desired Calling Speed	64000
7)	Incoming Calls	Disabled
(sav	<pre>(E)nable, (D)1sable} re/quit/cancel)</pre>	
:	3=300 (Inactivity set to 5 minutes )	
1)	Link Description: Link Entry: 1, Peer ID: 1	;ing )
23	{Enter text up to 30 characters}	Tuchlod
2)	{(E)nable, (D)isable}	Ellabieu
3)	<pre>Inactivity Timer</pre>	300
4)	Mininum call duration	0
5)	<pre>{1-9999 seconds or 0 if disabled} Maximum call duration</pre>	0
- ,	<pre>{1-9999 seconds or 0 if disabled}</pre>	_,
6)	<pre>Outgoing Calls {(E)nable, (D)isable}</pre>	Disabled

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```
Xylan OmniSwitch ISDN Configurations
7) Incoming Calls ..... Enabled
{(E)nable, (D)isable}
70) Remote Phone Number (Caller ID) .....
```



{digits 0 through 9}

: 70=235655070

: save

Only on the Local switch a backup-service needs to be defined. Backup is configured for DLCI 40. RIP needs to be turned to active on WAN-group 2 to allow dynamic rerouting. The ppp-peer need to be changed from on-demand dialing to backup dialing

local /Interface/Backup >bsadd Index : 1 Description : 1) Admin Status {(E)nable, (D)isable} Primary Type { Physical Port (1), 2) : Enabled 3) Frame Relay PVC DLCI (2) } : Physical Port 30) Slot : 0 31) Port : 0 4) Backup Type { PPP Peer ID (1) } : PPP Peer ID 40) Peer ID : 0 Startup Timer Value { Time in Seconds 5) 6) after System Startup to wait for Primary to come up before activating Backup } : 300 Activate Timer Value { Time in Seconds after 6) Primary Failure to activate Backup } : 10 7) Restore Timer Value { Time in Seconds after Primary restoral to disable Backup } : 10 (save/quit/cancel) 3=2 : : 1 Index 1) Description : 2) Admin Status {(E)nable, (D)isable} : Enabled 3) Primary Type { Physical Port (1) Frame Relay PVC DLCI (2) } : Frame-Relay PVC DLCI 30) Slot : 0 31) Port : 0 32) DLCI : 0 { PPP Peer ID (1) } 4) Backup Type : PPP Peer ID 40) Peer ID 0 Startup Timer Value 5) { Time in Seconds after System Startup to wait for Primary to come up before activating : 300 Backup } Activate Timer Value { Time in Seconds after 6) Primary Failure to 10 activate Backup } : Restore Timer Value { Time in Seconds after 7) Primary restoral to disable Backup } : 10 : 30=5 ( slot 5 ) : 31=1 ( port 1 ) : 32=40 ( dlci 40 ) 40=1 ( use Peer p1 as backup ) : : ? Index : 1 Description : 1) Admin Status {(E)nable, (D)isable} Primary Type { Physical Port (1), 2) : Enabled 3) Frame Relay PVC DLCI (2) } : Frame-Relay PVC DLCI 30) Slot : 5 31) Port : 1

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4)	32) DLCI Backup Type { PPP Peer ID (1 40) Peer ID	.) }	: 40 : PPP Peer ID : 1	
5)	Startup Timer Value { Time i System for Pr before Backup	n Seconds after Startup to wait imary to come up activating	: 300	
6)	Activate Timer Value { Time i Primar	n Seconds after y Failure to	• 10	
7)	Restore Timer Value { Time i Primar disabl	n Seconds after y restoral to e Backup }	: 10	
:	save	- ,		
Bac	kup Service Index 1 created.			
Loc	al > pppm pl ( modify ppp-pe	er p1 )		
Mod	ify ICDN call record configure	tion Door ID:	1 Tiple Indone 1	
Tvp	e: Slot: 5. Port: 2	cion. Peer iD.	I LINK INGEX. I	
1)	Link Description: Link Entry:	1, Peer ID: 1		
,	{Enter text up to 30 characte	ers}		
2)	Link Adminstrative Status			Enabled
	{(E)nable, (D)isable}			
3)	Inactivity Timer	· · · · · · · · · · · · · · · · · · ·		300
4.)	{1-9999 seconds or 0 if disab	oled }		0
4)	Mininum call duration $\dots$			0
5)	Maximum call duration	fieus		0
5,	{1-9999 seconds or 0 if disab	led}		0
б)	Outgoing Calls			Enabled
	{(E)nable, (D)isable}			
	60) Call Originate Mode .			On-Demand
	{On-(D)emand, (B)acku	.p}		
	61) Carrier Delay Timeout			0
	{Call completion time	out 1-999 second	S}	1
	Retry call count 0	if infinite}		T
	63) Retry Delay			3
	{Seconds between retr	y attempts, 0 =	retry imediately	}
	64) Failure Delay	/		0
	{Secs after max calls	failed to retry	, }	
	0 = don't retry after	max calls faile	d.}	
	65) Remote Phone Number .			0235655066
	{digits 0 through 9}			C1000
	66) Desired Calling Speed	•••••	•••••	64000
7)	[50000, 04000} Incoming Calls			Disabled
, ,	$\{(E)nable, (D)isable\}$			DIBADICU
(save/quit/cancel)				
60=b ( change dialing mode from On Demand to Backup )				
	: save			

# 5 Debugging

isdns [5/2]	: show status of ISDN B-channels, number of calls
links [L1]	: show status of link
ppps [P1]	: show status of PPP peer
ipr	: check if IP-routing uses PPP in case of framerelay backup
frm 5/1/40	: To force a backup call, you can modify the admin-status of the DLCI to "disable"

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