



1 Introduction

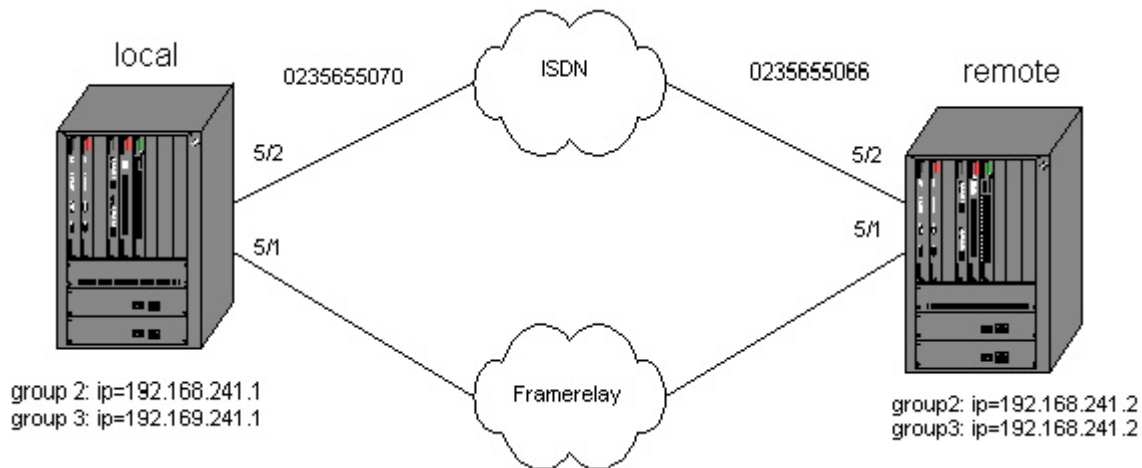
The purpose of this document is to provide a step by step description how to configure frame-relay routing, ISDN dial on demand and ISDN-backup for Framereley. Framereley-routing and ISDN dial on demand are described separate, so their setup can be configured and tested independent of the backup-configuration.

RIP is used to dynamically learn routes across ISDN in case of Framereley 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) : Framereley net 192.169.241.0
Enable WAN Routing? (n): y
Enable IP (y) : y
  IP Address                : 192.169.241.1
  IP Subnet Mask             (0xffffffff00) :
  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.

- 1) Speed in BPS = 2048000
{9600, 19200, 56000, 64000, 128000, 256000, 512000, 768000}
{1024000, 1544000 2048000}
- 2) Clocking = Split
{(I)nternal, (E)xternal, (S)plit}
- 3) DLCMI Type = LMI Rev 1.0
{(L)MI Rev. 1.0, T1.617 Annex (D), Q.933 Annex (A), (N)one }
- 4) Polling Interval T391/nT1 in seconds = 10
{1 through 255 seconds}
- 5) Full Status Interval N391/nN1 = 6
{1 through 10}
- 6) Error Threshold N392/nN2 = 3
{1 through 10}
- 7) Monitored Events Counter N393/nN3 = 4
{1 through 10}
- 8) Administrative Status = UP
{(U)p, (D)own}
- 9) Default Bridging Group = 1
{1-65535}
- 10) Default Frame-Relay Bridging Mode = Bridge All
{Bridge (A)ll, (E)thernet only}
- 11) Default Routing Group = 0
{1-65535}
- 12) Default Compression Admin Status = Enabled
{(E)nabled, (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.

- 1) Administrative State = UP
{(U)p, (D)own}
- 2) Committed Information Rate (CIR) in BPS = 0
{0 through line speed in BPS}
- 3) Committed Burst Rate (Bc) in Bits = 0
{0 through positive number in Bits}
- 4) Excess Burst Rate (Be) in Bits = 0
{0 through positive number in Bits}
- 5) Compression Administrative Status = Enabled
{(E)nabled, (D)isable}
- 6) Compression PRetry Time = 3
{1..10}
- 7) Compression PRetry Count = 10
{3..255}

(save/quit/cancel)

: save

Saving configurationDone.

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)ll, (E)thernet only}

(save/quit/cancel)
: 2=r      ( use frame-relay routing )
: 4=40     ( use dlci 40 )
: 5=3     ( use 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)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	VCs	Groups	Service Number	Vport	Service Description	Service Type
5/1	UP	40	3	1	13	Frame-Relay-Routing	Routing

4.1.2 Configure Remote Omni

```
remote / >crgp
GROUP Number ( 2 ) : 3
Description (no quotes) : fr-group
Enable WAN Routing? (n): y
Enable IP (y) : y
  IP Address ..... : 192.169.241.2
  IP Subnet Mask (0xfffff00) :
  IP Broadcast Address (192.169.241.255 ) :
  Description (30 chars max) :
  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.
remote / >frm 5/1
Modify Frame Relay port for Slot: 5, Port: 1.
```

```
1) Speed in BPS ..... = 0
   {9600, 19200, 56000, 64000, 128000, 256000, 512000, 768000}
   {1024000, 1544000 2048000}
```



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```
2) Clocking ..... = External
   {(I)nternal, (E)xternal, (S)plit}
3) DLCMI Type ..... = ANSI T1.617 Annex D
   {(L)MI Rev. 1.0, T1.617 Annex (D), Q.933 Annex (A), (N)one }
4) Polling Interval T391/nT1 in seconds ..... = 10
   {1 through 255 seconds}
5) Full Status Interval N391/nN1 ..... = 6
   {1 through 10}
6) Error Threshold N392/nN2 ..... = 3
   {1 through 10}
7) Monitored Events Counter N393/nN3 ..... = 4
   {1 through 10}
8) Administrative Status ..... = UP
   {(U)p, (D)own}
9) Default Bridging Group ..... = 1
   {1-65535}
10) Default Frame-Relay Bridging Mode ..... = Bridge All
   {Bridge (A)ll, (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.
```

```
1) Administrative State ..... = UP
   {(U)p, (D)own}
2) Committed Information Rate (CIR) in BPS ..... = 0
   {0 through line speed in BPS}
3) Committed Burst Rate (Bc) in Bits ..... = 0
   {0 through positive number in Bits}
4) Excess Burst Rate (Be) in Bits ..... = 0
   {0 through positive number in Bits}
5) Compression Administrative Status ..... = Enabled
   {(E)nabled, (D)isable}
6) Compression PRetry Time ..... = 3
   {1..10}
7) Compression PRetry Count ..... = 10
   {3..255}
```

```
(save/quit/cancel)
: save
Saving configuration ....Done.
```

```
remote / >cas 5/1
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)ll, (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)ll, (E)thernet only}

: save
Saving configuration now....Please wait...
```

```
remote / >vas
ATM driver code NOT loaded.
```

```
FDDI Services do not exist!
```

Slot	Oper	Port Sta.	VCs	Groups	Service Number	Vport	Description	Service Type
5/1	UP	40	3	1	17	17	Frame-Relay-Routing	Routing

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 / >crgrp
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
IP Subnet Mask (0xfffff00) :
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}
```



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Xylan OmniSwitch ISDN Configurations



```
5) B2 Service Profile Identifier (SPID) .....
   {9-20 Numeric character}

(save/quit/cancel)
  : 1=et      ( European standard )
  : 2=235655070 ( area code =23, 0 is stripped by the PTT )
: save
.
local / >pppglobal
PPP Global Configuration:
1) Default Authentication Type ..... PAP
   {(N)one, (P)AP, (C)HAP}
2) Global User ID sent to remote for Authentication .....
   {16 characters userid}
3) Global Password sent to remote for Authentication .....
   {16 characters password}
4) Default Compression Type ..... STAC-LZS
   {(N)one, STAC-(L)ZS}
5) Default Bridge Config Admin Status ..... Disabled
   {(E)nable, (D)isable}
6) Default IP Config Admin Status ..... Enabled
   {(E)nable, (D)isable}
7) Default IPX Config Admin Status ..... Disabled
   {(E)nable, (D)isable}

(save/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
local / >ppppadd
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:

1) Description: Entry PeerID 1
   {Enter text up to 30 characters}
2) Administrative Status ..... Enabled
   {(E)nable, (D)isable}
3) PPP Mode ..... Normal
   {(N)ormal, (M)ultilink}
4) Compression Type ..... None
   {(N)one, STAC-(L)ZS}
5) Bridging Group ..... 1
   {1-65535 or 0 for no Bridging}
   50) Bridge Config Admin Status ..... Enabled
       {(E)nable, (D)isable}
   51) PPP Bridging Mode ..... Ethernet Only
       {Bridge (A)ll, (E)thernet Only}
6) Routing Group ..... 0
   {1-65535 or 0 for no Routing}
7) Authentication Type ..... NONE
   {(N)one, (P)AP, (C)HAP}
   70) User ID received from remote for Authentication .
       {16 characters userid}
   71) Password rcvd from remote for Authentication ....
       {16 characters password}
   72) User ID sent to remote for Authentication .....
       {16 characters userid}
   73) Password sent to remote for Authentication .....
       {16 characters password}
8) Max Failure Counter ..... 3
   {Max Failure Counter 1..65535}
9) Max Configure Counter ..... 3
   {Max Configure Counter 1..65535}
10) Max Terminate Counter ..... 3
    {Max Terminate Counter 1..65535}
11) Retry Timeout Value ..... 10
    {Retry Timeout in Second(s) 1..65535}
```



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```
(save/quit/cancel)
: 5=0      ( no bridging over ISDN )
: 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}
2) Administrative Status ..... Enabled
   {(E)nable, (D)isable}
3) Link Type ..... ISDN call
   {(W)SM Port, (I)SDN call}
4) Link Slot ..... 0
   {Slot number}
5) Link Port ..... 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

```
1) Link Description: Link Entry: 1, Peer ID: 1
   {Enter text up to 30 characters}
2) Link Administrative Status ..... Enabled
   {(E)nable, (D)isable}
3) Inactivity Timer ..... 30
   {1-9999 seconds or 0 if disabled}
4) Minimum call duration ..... 0
   {1-9999 seconds or 0 if disabled}
5) Maximum call duration ..... 0
   {1-9999 seconds or 0 if disabled}
6) Outgoing Calls ..... Enabled
   {(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 ..... 3
       {Seconds between retry attempts, 0 = retry immediately}
   64) Failure Delay ..... 0
       {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}
7) Incoming Calls ..... Disabled
   {(E)nable, (D)isable}
(save/quit/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
```

Xylan OmniSwitch ISDN Configurations



```
Enable IP (y) : y
  IP Address          : 192.168.241.2
  IP Subnet Mask      (0xffffffff) :
  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)

```
: 1=et      ( European standard )
: 2=235655066 ( area code =23, 0 is stripped by the PTT )
: ?
```

- 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}
- 5) 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}
- 2) Global User ID sent to remote for Authentication
{16 characters userid}
- 3) Global Password sent to remote for Authentication
{16 characters password}
- 4) Default Compression Type STAC-LZS
{(N)one, STAC-(L)ZS}
- 5) Default Bridge Config Admin Status Disabled
{(E)nable, (D)isable}
- 6) Default IP Config Admin Status Enabled
{(E)nable, (D)isable}
- 7) Default IPX Config Admin Status Disabled
{(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

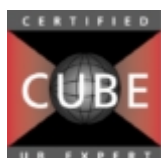
Add PPP configuration record. Please specify a unique ID number to identify this record and the remote Peer to communicate with.

Peer ID (1) :

Adding PPP configuration record for Peer ID: 1

Enter PPP parameters:

- 1) Description: Entry PeerID 1



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Xylan OmniSwitch ISDN Configurations



```
{Enter text up to 30 characters}
2) Adminstrative Status ..... Enabled
   {(E)nable, (D)isable}
3) PPP Mode ..... Normal
   {(N)ormal, (M)ultilink}
4) Compression Type ..... None
   {(N)one, STAC-(L)ZS}
5) Bridging Group ..... 1
   {1-65535 or 0 for no Bridging}
   50) Bridge Config Admin Status ..... Enabled
       {(E)nable, (D)isable}
   51) PPP Bridging Mode ..... Ethernet Only
       {Bridge (A)ll, (E)thernet Only}
6) Routing Group ..... 0
   {1-65535 or 0 for no Routing}
7) Authentication Type ..... NONE
   {(N)one, (P)AP, (C)HAP}
   70) User ID received from remote for Authentication .
       {16 characters userid}
   71) Password rcvd from remote for Authentication ....
       {16 characters password}
   72) User ID sent to remote for Authentication .....
       {16 characters userid}
   73) Password sent to remote for Authentication .....
       {16 characters password}
8) Max Failure Counter ..... 3
   {Max Failure Counter 1..65535}
9) Max Configure Counter ..... 3
   {Max Configure Counter 1..65535}
10) Max Terminate Counter ..... 3
    {Max Terminate Counter 1..65535}
11) Retry Timeout Value ..... 10
    {Retry Timeout in Second(s) 1..65535}
```

```
(save/quit/cancel)
: 5=0      ( disable bridging )
: 6=2      ( routing group 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 )
: ?
```

Enter PPP parameters:

```
1) Description: Entry PeerID 1
   {Enter text up to 30 characters}
2) Adminstrative Status ..... Enabled
   {(E)nable, (D)isable}
3) PPP Mode ..... Normal
   {(N)ormal, (M)ultilink}
4) Compression Type ..... None
   {(N)one, STAC-(L)ZS}
5) Bridging Group ..... 0
   {1-65535 or 0 for no Bridging}
6) Routing Group ..... 2
   {1-65535 or 0 for no Routing}
   60) IP Config Admin Status ..... Enabled
       {(E)nable, (D)isable}
   61) Remote IP Address (Only valid if IP is enabled) . 192.168.241.1
       {Valid IP address notation e.g., x.x.x.x}
   62) IPX Config Admin Status ..... Disabled
       {(E)nable, (D)isable}
7) Authentication Type ..... CHAP
   {(N)one, (P)AP, (C)HAP}
   70) User ID received from remote for Authentication . local
       {16 characters userid}
   71) Password rcvd from remote for Authentication .... local
       {16 characters password}
   72) User ID sent to remote for Authentication ..... remote
       {16 characters userid}
   73) Password sent to remote for Authentication ..... remote
       {16 characters password}
```



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- 8) Max Failure Counter 3
{Max Failure Counter 1..65535}
- 9) Max Configure Counter 3
{Max Configure Counter 1..65535}
- 10) Max Terminate Counter 3
{Max Terminate Counter 1..65535}
- 11) Retry Timeout Value 10
{Retry Timeout in Second(s) 1..65535}

: 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}
 - 2) Administrative Status Enabled
{(E)nable, (D)isable}
 - 3) Link Type ISDN call
{(W)SM Port, (I)SDN call}
 - 4) Link Slot 0
{Slot number}
 - 5) Link Port 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

- 1) Link Description: Link Entry: 1, Peer ID: 1
{Enter text up to 30 characters}
- 2) Link Administrative Status Enabled
{(E)nable, (D)isable}
- 3) Inactivity Timer 30
{1-9999 seconds or 0 if disabled}
- 4) Minimum call duration 0
{1-9999 seconds or 0 if disabled}
- 5) Maximum call duration 0
{1-9999 seconds or 0 if disabled}
- 6) Outgoing Calls Enabled
{(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 3
{Seconds between retry attempts, 0 = retry immediately}
 - 64) Failure Delay 0
{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}
- 7) Incoming Calls Disabled
{(E)nable, (D)isable}

(save/quit/cancel)
: 3=300 (Inactivity set to 5 minutes)
: 6=d (calls are setup from Local switch, Remote stays waiting)

- 1) Link Description: Link Entry: 1, Peer ID: 1
{Enter text up to 30 characters}
- 2) Link Administrative Status Enabled
{(E)nable, (D)isable}
- 3) Inactivity Timer 300
{1-9999 seconds or 0 if disabled}
- 4) Minimum call duration 0
{1-9999 seconds or 0 if disabled}
- 5) Maximum call duration 0
{1-9999 seconds or 0 if disabled}
- 6) Outgoing Calls Disabled
{(E)nable, (D)isable}



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```

7) Incoming Calls ..... Enabled
   {(E)nable, (D)isable}
     70) Remote Phone Number (Caller ID) .....
        {digits 0 through 9}
       : 70=235655070
: save
    
```

4.3 Configure Framrelay backup over ISDN

Only on the Local switch a backup-service needs to be defined. Backup is configured for DLCI 40. RIP needs to be turned on 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
  1) Description :
  2) Admin Status {(E)nable, (D)isable}      : Enabled
  3) Primary Type { Physical Port (1),
                  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
  5) Startup Timer Value { Time in Seconds
  6) after
                               System Startup to wait
                               for Primary to come up
                               before activating
                               Backup }      : 300
  6) Activate Timer Value { Time in Seconds after
                             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
  Index      : 1
  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
  4) Backup Type { PPP Peer ID (1) }         : PPP Peer ID
     40) Peer ID   : 0
  5) Startup Timer Value { Time in Seconds after
  6) after
                               System Startup to wait
                               for Primary to come up
                               before activating
                               Backup }      : 300
  6) Activate Timer Value { Time in Seconds after
                             Primary Failure to
                             activate Backup } : 10
  7) Restore Timer Value { Time in Seconds after
                             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
  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      : 5
     31) Port      : 1
    
```



```
32) DLCI : 40
4) Backup Type { PPP Peer ID (1) } : PPP Peer ID
40) Peer ID : 1
5) Startup Timer Value { Time in Seconds after
    System Startup to wait
    for Primary to come up
    before activating
    Backup } : 300
6) Activate Timer Value { Time in Seconds after
    Primary Failure to
    activate Backup } : 10
7) Restore Timer Value { Time in Seconds after
    Primary restoral to
    disable Backup } : 10

: save
Backup Service Index 1 created.
```

```
Local > pppm p1 ( modify ppp-peer p1 )
```

```
Modify ISDN call record configuration. Peer ID: 1 Link Index: 1
Type: Slot: 5, Port: 2
1) Link Description: Link Entry: 1, Peer ID: 1
   {Enter text up to 30 characters}
2) Link Administrative Status ..... Enabled
   {(E)nable, (D)isable}
3) Inactivity Timer ..... 300
   {1-9999 seconds or 0 if disabled}
4) Minimum call duration ..... 0
   {1-9999 seconds or 0 if disabled}
5) Maximum call duration ..... 0
   {1-9999 seconds or 0 if disabled}
6) Outgoing Calls ..... Enabled
   {(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 ..... 3
      {Seconds between retry attempts, 0 = retry immediately}
   64) Failure Delay ..... 0
      {Secs after max calls failed to retry,}
      0 = don't retry after max calls failed.}
   65) Remote Phone Number ..... 0235655066
      {digits 0 through 9}
   66) Desired Calling Speed ..... 64000
      {56000, 64000}
7) Incoming Calls ..... Disabled
   {(E)nable, (D)isable}
(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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