



## **XSLAN+ SHDSL switch**

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**User's guide**  
Document reference : 9018609-01

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The XSLAN+ SHDSL switch is manufactured by

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Appendix 1 : Data rate versus distance and cable quality  
 Appendix 2 : Html server description

## 1 Products identification

Switch SHDSL XSLAN+							
	1400	1220	1230	2400	2220	2230	4400
Min supply V. VDC	10	10	10	10	10	10	10
Max supply V. VDC	60	30	60	60	30	60	60
SHDSL ports	1	1	1	2	2	2	4
Max data rate * (Mb/s)	5.6	5.6	5.6	11.2	11.2	11.2	22.4
Ethernet ports 10-100 Mb/s	4	2	2	4	2	2	4
RS232	0	1	2	0	1	2	0
RS485 2 wires	0	1	0	0	1	0	0
VLAN,	Y	Y	Y	Y	Y	Y	Y
SNMP	Y	Y	Y	Y	Y	Y	Y
QoS DiffServ	Y	Y	Y	Y	Y	Y	Y
Html Configuration	Y	Y	Y	Y	Y	Y	Y
Serial gateway RAW TCP&UDP telnet, modbus, unitelway	0	2	2	0	2	2	0

2 Product overview

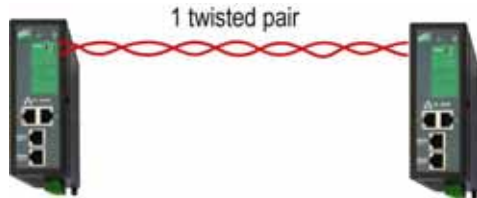
2.1 Function

The XSLAN+ Ethernet extender family includes

**The products which can be connected to only one twisted pair.**

They provide only one SHDSL interface.

The references of that products are XSLAN+1400 or XSLAN+1220 or XSLAN+1230.



**The products which can be connected to two twisted pair.**

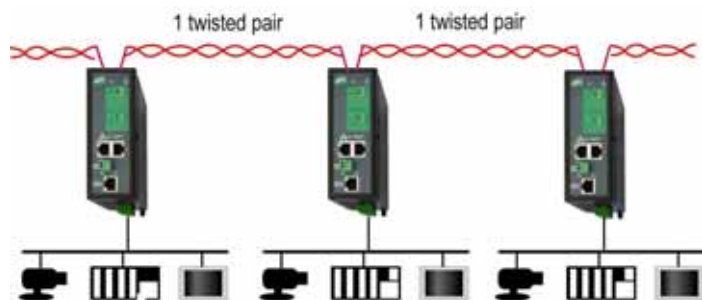
They provide two SHDSL interfaces.

They extend Ethernet over one twisted pair or two twisted pairs to increase the data rate and provide a backup path.

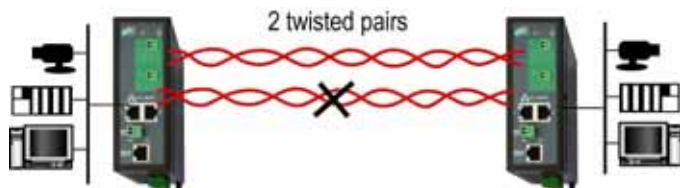
They make possible to build a daisy chain network.

The references of that products are XSLAN+2400 or XSLAN+2220 or XSLAN+2230.

Daisy chain



Data rate multiplication and backup



### The product which can be connected to four twisted pairs.

It provides four SHDSL interfaces.

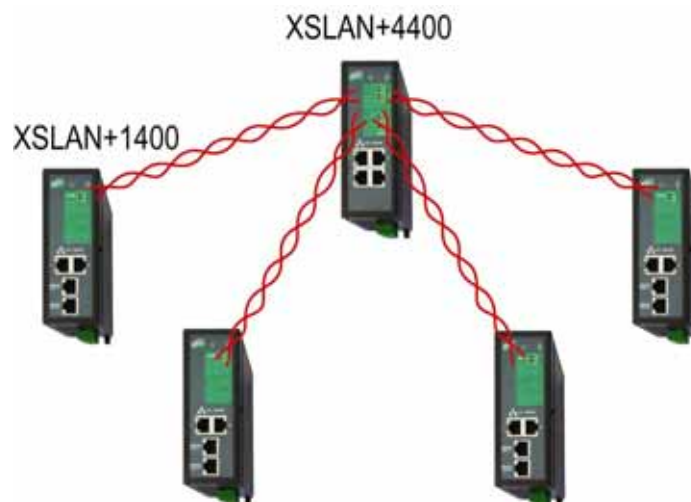
It extends Ethernet over one or two or three or four twisted pairs to increase the data rate and provide a backup path.

it makes possible to build a daisy chain network.

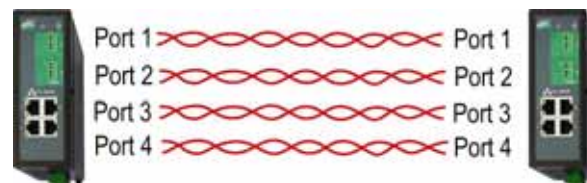
It is the suitable product to centralise four remote Ethernet networks.

The reference of that product is XSLAN+4400

Lines concentration



Data rate multiplication and backup



## 2.2 Data rate versus distance

Each interface features an adaptive data rate from 128 Kb/s up to 5,7 Mb/s.

The data rate is a function of the cable quality and the distance with the next SHDSL switch. For instance, the maximum distance between 2 switches through a line is 13 Km (8 miles) with a 0.9 mm wire diameter cable.

The table in appendix 1 gives the data rate which can be expected over a line versus the length of the line.

## 2.3 Ethernet ports

The XSLAN provides 2 or 4 Ethernet RJ45 interfaces (depending on the product reference).

## 2.4 VLANs

The XSLAN features VLAN per port :

Each Ethernet port can be assigned to a particular VLAN. A device connected to an Ethernet port belonging to a particular VLAN can communicate only with devices connected to Ethernet ports belonging to the same one.

## 2.5 Quality of service

The product provides "DiffServ" quality of service functionality to give transmission priority to critical applications.

Devices TCP ports and IP addresses are classified in 4 priority classes.  
A minimum and a maximum bandwidth is allocated to each class.

## **2.6 Serial gateway**

The XSLAN –1220, -1230, -2220 or –2230 feature a 2 ports serial gateway.  
The gateway features raw TCP client and server, raw UDP, modbus client and server, telnet and multicast.

## **2.7 Diagnostic functions**

The XSLAN html server provides diagnostic pages giving the guarantee the transmission quality is what it has to be.

## **2.8 Html configuration**

The XSLAN can be configured either with an html browser if advanced functions are necessary (QoS, RS gateway, diagnostic ...).  
It can be configured with a few DIP switches for simple unmanaged applications.



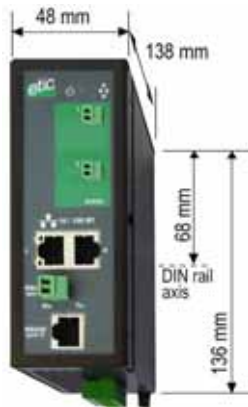
### 3 Data-sheet

Dimensions	137 x 48 x 116 mm (h, l, d)
C.E.M	EN50082-2
Electrical safety	EN 60950
Lightning	EN61000-4 et -5
Supply voltage	XSLAN+1400 or +2400 or +4400 or +1230 or +2230 or +4230: 10 à 60 VDC XSLAN+1220 or +2220 or +4220 : 10 à 30 VDC
Consumption	XSLAN+1400 or +1220 or +1230 : 4W XSLAN+2400 or +2220 or +2230 : 6W XSLAN+4400 or +4220 or +4230 : 9W
Operating T°	-20°/ + 70°C non condensing
SHDSL	ITU-T G.991.2, 802.3ah : 2BaseTL (EFM) Data rate : 128 kb/s to 2.3 Mb/s with 2 wires Latency : 4 ms
Ethernet	10/100 Mb/s Half / Full duplex Auto MDI/MDIX
Switch	Store and forward – 1024 MAC @
IP Routing	Static routes RIP V2
QoS	DiffServ compliant with RFC 2474, 2475, 2597, 2598 4 priority levels (premium, gold, silver, bronze)
SNMP	SNMP V2 – MIBII and traps
VLAN	Per port
RS232-RS485	1200 to 115200 kb/s parity E/O/N Raw TCP client and server Raw UDP Multicast Modbus client and server Unitelway Telnet
Logs	300 events (date & time)
Configuration	Managed mode : HTML browser



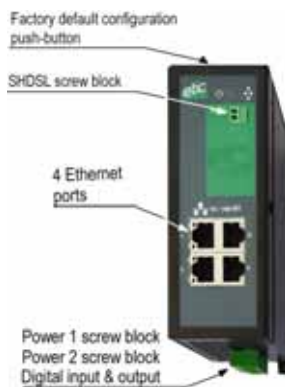
## 1 Dimensions

All models XSLAN+1XXX or XSLAN+2XXX or XSLAN+4XXX

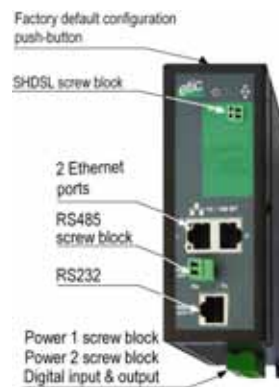


## 4 Connectors

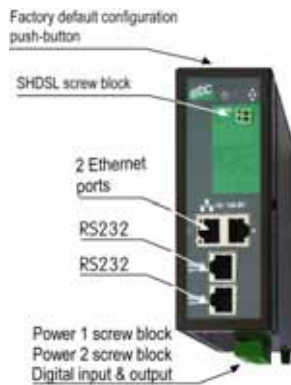
### XSLAN+1400



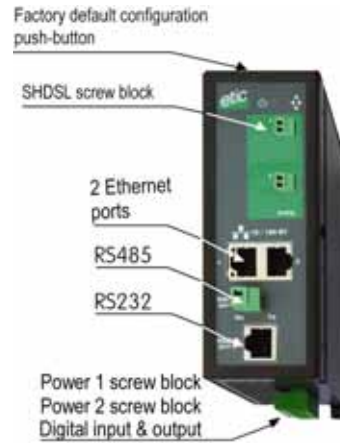
### XSLAN+1220



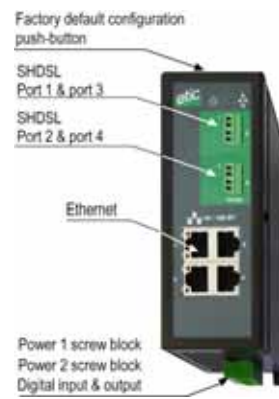
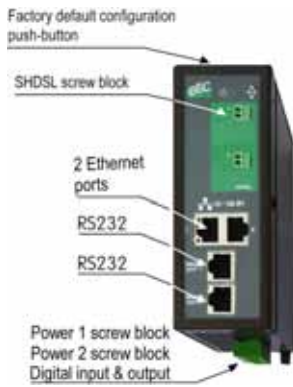
### XSLAN+1230



XSLAN+2400	XSLAN+2220
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XSLAN+2230	XSLAN+4400
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**Push-button :**

A push-button is located close to the DIP switches.

It enables to restore the factory profile.

To restore the factory profile, switch the power on while pressing the push-button until the OPERATION led turns green.

**Attention :** Once the factory profile has been restored, the stored configuration is lost.

2 positions screw terminal : Supply voltage 1 Protected against reverse polarity		
Position	Signal	Function
1	Power 1 +	<u>10-30 VDC :</u> XSLAN+1220 XSLAN+2220  <u>10-60 VDC :</u> XSLAN+1400 XSLAN+2400 XSLAN+4400 XSLAN+1230 XSLAN+2230
2	Power 1 -	0V isolated from the enclosure





2 positions screw terminal : Supply voltage 2 Protected against reverse polarity		
Position	Signal	Function
1	Power 2 +	<u>10-30 VDC :</u> XSLAN+1220 XSLAN+2220  <u>10-60 VDC :</u> XSLAN+1400 XSLAN+2400 XSLAN+4400 XSLAN+1230 XSLAN+2230
2	Power 2 -	0V isolated from the enclosure

4 positions screw terminal :Digital input and output		
Position	Signal	Function
1	3V3	3 V DC provided by the XS+
2	In	Digital input
3	F +	Digital output + (max 50Vdc - 0,6A)
4	F -	Digital output -

2 positions screw terminal : Shdsl 1, 2, 3, 4		
Broche	Signal	Fonction
1	Line	SHDSL line conductor (the two wires can be inverted)
2	Line	SHDSL line conductor (the two wires can be inverted)

RJ45 connector : Ethernet		
Position	Signal	Function
1	Tx +	Emission polarity +
2	Tx -	Emission polarity -
3	Rx +	Reception polarity +
4	N.C	-
5	N.C	-
6	Rx -	Reception polarity -
7	N.C.	-
8	N.C.	-

2 positions screw terminal : RS485		
Position	Signal	Function
1	A	RS485 polarity A
2	B	RS485 polarity B

5 Led indicators		
Led	Status	Description
 1	ON green	The supply voltage 1 is present
 2	ON green	The supply voltage 2 is present
	ON green	The unit is ready
	ON red	At power on : The product is starting Otherwise : Product failure
		Not used
Shdsl 1 Shdsl 2 Shdsl 3 Shdsl 4	Flashing slowly	SHDSL connection
	ON	SHDSL connection established
	Flashing quickly	SHDSL connection established ; traffic across the line
RS23 2 *	RX	Flashing quickly Bytes received from the RS232
RS23 2 *	TX	Flashing quickly Bytes transmitted to the RS232
RS48 5 **	RX	Flashing quickly Bytes received from the RS485
RS48 5 **	TX	Flashing quickly Bytes received to the RS485

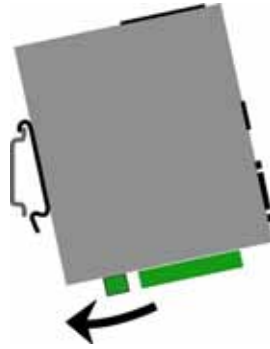
\* XSLAN+1220, XSLAN+2220, XSLAN+1230, XSLAN+2230

\*\* XSLAN+1220, XSLAN+2220

## 6 DIN rail mounting

Mounting the unit on the DIN rail

**This unit should be mounted on 35 mm DIN-rail, horizontally mounted.**



Removing the unit from the DIN rail



## 7 Cooling

To avoid obstructing the airflow around the unit, the spacing must be at least 25 mm above and below, and 10 mm left and right.

## 8 Supply voltage

**XSLAN+1400, XSLAN+2400, XSLAN+4400 : 10 to 60 VDC**

**XSLAN+1230, XSLAN+2230 : 10 to 60 VDC**

**XSLAN+1220, XSLAN+2220 : 10 to 30 VDC**

The consumption is as follows :

4 W for the models providing one shdsl interfaces.

6 W for the models providing two shdsl interfaces.

9 W for the models providing four shdsl interfaces.

The product is protected against the inversion of polarity.

## 9 Enclosure grounding

The enclosure of the product is metallic; It must be grounded.

## 10 RS232 interface

The RS232 data rate can be tuned from 1200 to 115200 b/s with parity (even / odd) or no parity.

The data terminal must be less than 10 meters far from the modem.

Cables can be provided to connect the product to DTE and DCE as follows :

<b>RS232 cables (L=1m)</b>		
<b>Code</b>	<b>User connector</b>	<b>Cable function</b>
CAB592	SubD 9 male	To connect a DCE to the XSLAN+
CAB593	SubD 9 female	To connect a DTE to the XSLAN+
CAB609	Wires	To connect a device providing a specific connector

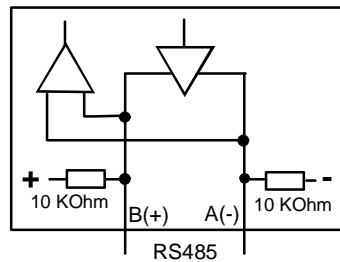


## 11 RS485 interface

The RS485 serial interface is provided on the front panel 2 pins screw-block.

### Polarisation resistors

Two 10 Kohm bus polarisation resistors are included inside the product.



### Remark :

The RS485 interface of the XSLAN+-1220 or 2220 is made for connecting a device at short distance ; inside the same cabinet for instance.

If the RS485 line has to be longer, one of the devices connected to the RS485 line must provide standard polarisation resistors, and a 150 Ohm termination resistor must be connected at each end of the line.

## 12 Digital input and output

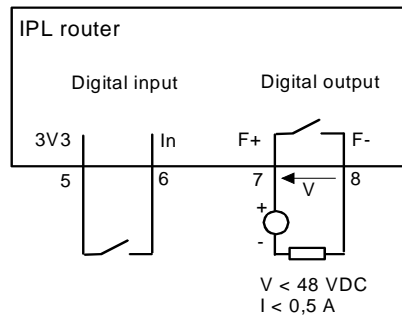
### Digital output :

Max. voltage : 48 VDC

Max. current : 500 mA

### Digital input :

Maximum voltage : 20 VDC



## 13 Line cable

### Twisted pair

The XSLAN+ shdsl switch is designed to be connected to one or several telephone grade twisted pairs.

The conductor diameter must be included between 0.4 mm and 1 mm.

### Shielded cable

It is better to use a shielded cable.

The shield must be connected to the earth at one of its ends.

The shield decreases the influence of the electromagnetic ambient noise on the shdsl signal.

Moreover, the shield protects the XSLAN+ shdsl switch against lightning.

### Electrical power cable

Two power conductors can be used instead of a twisted pair to set an shdsl connection.

However, because the two wires are not twisted, the ambient electrical noise may disturb the transmission.

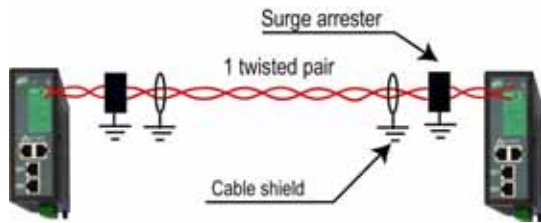
Compared to the transmission over a twisted pair, the maximum distance between two SHDSL switches is decreased.

### Cross talk

If the cable is made of several pairs, each pair can be used to transmit a particular shdsl connection ; however the shdsl signal transmitted in one pair may disturb the shdsl signal transmitted in another one, and, in some cases, may decrease the effective data rate of both shdsl connections.

## 14 Protecting the shdsl switch from lightning

if the line is exposed to lightning, we advise to use an surge arrester at each end of the line and to connect the shield of the cable to the earth.



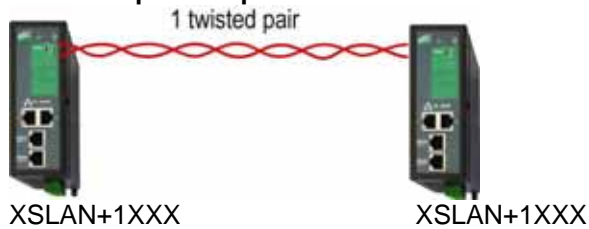
## 15 Connecting the shdsl switch to the line

The SHDSL signal is not polarised ; it is why the two conductors of the line can be inverted.

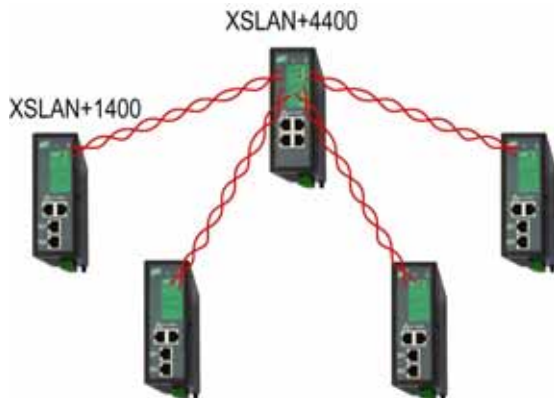
### 15.1 Case of a connection using one twisted pair

Connect the line to the surge arrester, if there is one and then to the 2 positions SHDSL screw terminal on the front of the product.

#### Case of a point to point connection



Case of point to point connections using an XSLAN-4400 line concentrator



## 15.2 Case of a connection using two, three or four twisted pairs

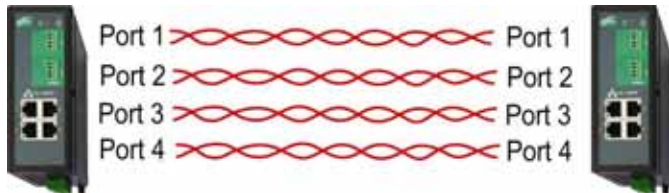
The XSLAN+2XXX provides two SHDSL interfaces.

Two twisted pairs can be used to set a connection between two SHDSL switches. In that case, the effective data rate will be the double compared to a connection using only one pair.

The XSLAN+4400 provides four SHDSL interfaces.

Up to four twisted pairs can be used to set a connection between two SHDSL XSLAN+4400 switches. When using four pairs, the effective data rate will be up to four times greater compared to a connection using only one pair.

We recommend to wire the line as shown below in order to make the configuration and the diagnostic easier.



XSLAN+4XXX

XSLAN+4XXX

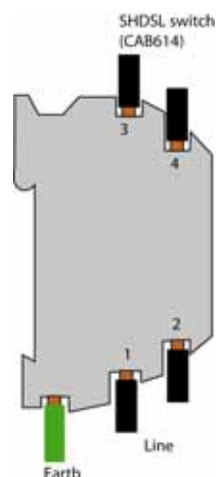
## 15.3 Case of a multidrop connection

If the SHDSL switches are connected to shape a multidrop network, we recommend to connect the lines as shown below .

In that way, the configuration of each SHDSL switch will be similar.



We have selected the Phoenix Contact module TT-2-PE-24D; it must be wired as indicated opposite.



**Line cable shield :**

If the line is shielded, the shield must be connected to the earth; only at one end if it is not interrupted along the line.

## 16 Input and output

### Input

That input is not isolated.

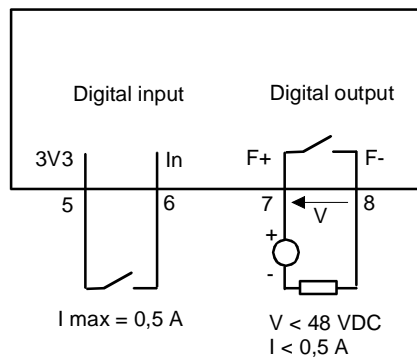
if it is opened, an SNMP trap will be sent to the SNMP server if that function has been enabled.

### Alarm output

1 relay output is provided to indicate an alarm.

The alarm condition can be selected using the html server.

The Output is open when the XSLAN is switched OFF or when the SHDSL line is not connected.





## 1 Set up steps

To configure the XSLAN, we advise to proceed as follows :

- [Connect a PC to the router](#)
- [Set up the LAN interface](#)
- [Set up IP routing and broadcast filtering](#) (option)
- [Set up the SHDSL connection](#)
- [Set up VLAN](#)
- [Set up Quality of service](#)
- [Set up SNMP](#)
- [Set up the serial gateway](#)

## 2 Connecting a PC to the XSLAN for configuration

### 2.1 Overview

#### Administration server address :

The administration html server is located at the LAN IP address of the SHDSL switch (The factory IP address is 192.168.0.128).

#### First set up :

For the first configuration, we advise to connect the PC directly to the LAN interface of the SHDSL switch..

#### Further set up modifications :

Modifications can be carried out from the LAN interface, or remotely.

#### Restoring the factory IP address :

#### Network IP address :

Later in the text, we often speak of "network IP address".

We mean the lowest value of the addresses of the network.

For instance, if the netmask of a network is 255.255.255.0, the network IP address of that network is terminated by a zero (X.Y.Z.0.).

#### Copy and paste :

Parameters must be entered with the keyboard; they cannot be pasted.

However, it can be useful to paste a string when it is long to avoid errors.

In that case, paste the string, delete the last character of the pasted string, and enter it again with the keyboard.

#### Saving and restoring the parameters file (see the maintenance chapter)

A parameters file can only be downloaded to a product with the same firmware version. It is why, we advise to assign a name to a parameter file including the product name and the software version like for instance "my\_XSLAN2400\_file\_V241.bin".

### 2.2 First configuration

#### Step 1 : Create or modify the PC IP connection.

Assign to the PC an IP @ in accordance with the WSRING IP address.

For the first configuration, assign or instance 192.168.0.127 to the PC.

**Step 2 : Connect the PC directly to an XSLAN ethernet interface using any Ethernet cable (straight or cross-wired)**



#### Step 3 : Launch the navigator

Enter the LAN IP @ of the SHDSL switch 192.168.0.128.

The Home page of the administration server is displayed



#### Note :

If the home page cannot be displayed, refer to paragraph 4 below.



## 2.3 Modifying the configuration from the LAN

Launch the html browser and enter the IP address assigned to the router.

Or, launch the ETICFINDER utility to detect the XSLAN IP address.

### Remark :

If the home page cannot be displayed, refer [below](#).

## 3 Rebooting the XSLAN after parameters changes

- After completing a page, click the « Save » button at the bottom of the page.
- After some parameters changes, the XSLAN+ must restart. When the configuration has been completely carried out, click the « Reboot » red button in the green bar, when displayed.
- Once the product has restarted, check the « Reboot » button has disappeared from the green bar.

### To save the configuration file to a hard disk :

- Select the “maintenance” menu and then the “Save / restore” menu.

Click the “Save current configuration to disk” button.

## 4 Recovering the factory configuration

For any reason, it may be necessary to restore the factory configuration of the SHDSL switch.

### Restoring temporarily the factory default configuration

When the push-button, located on the top of the product, is pressed, the default configuration is temporarily restored. The IP address of the html server is 192.168.0.128.

However, the current configuration is not lost. The parameters of the current configuration are displayed as usually.

Make the necessary changes, and Save.

### Deleting the current configuration and restoring the factory default configuration

When the power is switched ON while the push-button is pressed, the current configuration is deleted and the factory default configuration is restored.

## 5 Restricting access to the administration server

The access to the administration server can be protected by a login and password.

### To protect access to the administration server,

- Select the “System” menu, and then the “Administration rights” menu.

## 6 Recovering a free access to the administration server

Press the push-button, located on the top of the product, is pressed, the default configuration is temporarily restored.

The IP address of the html server is 192.168.0.128. and accessing to it is free.  
Make the necessary modifications and save.

## 7 Assigning an IP address to the LAN interface

An IP address must be assigned to that interface; the HTML server is located at that IP address.

To assign an IP address to the LAN interface,

- select “Set up > IP protocol and IP routing” > IP protocol”;
- enter the IP address, the netmask and the default gateway address.

If IPV6 must be used,

- select the “Enable IPV6” checkbox;
- enter the V6 IP address of the XSLAN+, the netmask and the default gateway address.

## 8 IP routing and broadcast filtering

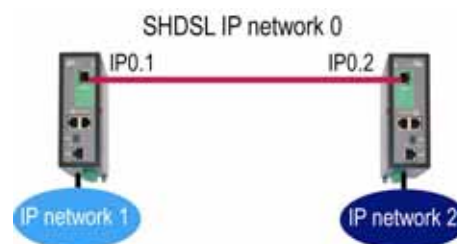
The SHDSL XSLAN switch is an Ethernet switch; it works like any usual switch to transmit any upper level protocol.

It is why, generally, it is not necessary to enable the IP routing function.

However, the IP routing feature can be used in particular cases, to avoid to transfer multicast or broadcast frames or other traffic towards the SHDSL link.

To make IP routing possible, the network connected to the LAN interface of the XSLAN must be a different IP network from the SHDSL IP network and from other networks.

For instance, referring to the drawing below, if the XSLAN Nr 1 is used as a router, the IP @ of the network 1 must be different from the IP @ of the SHDSL network and from network 2



2. Routes must be created or the RIP protocol must be enabled.

A route is a table which registers which gateway address must be used to transfer IP packets to a particular network.

For instance, referring to the drawing above, if IP packets have to be transmitted from the IP network 1 to the IP network 2, a route has to be created as follows :

Route name : “From NETWK 1 to NETWK 2”  
 Destination IP addr : “network 2 IP address”  
 Gateway IP addr : IP02

*Remarks :*

“Network 2 IP address” is the address of the network Nr 2; for instance 192.168.2.0.

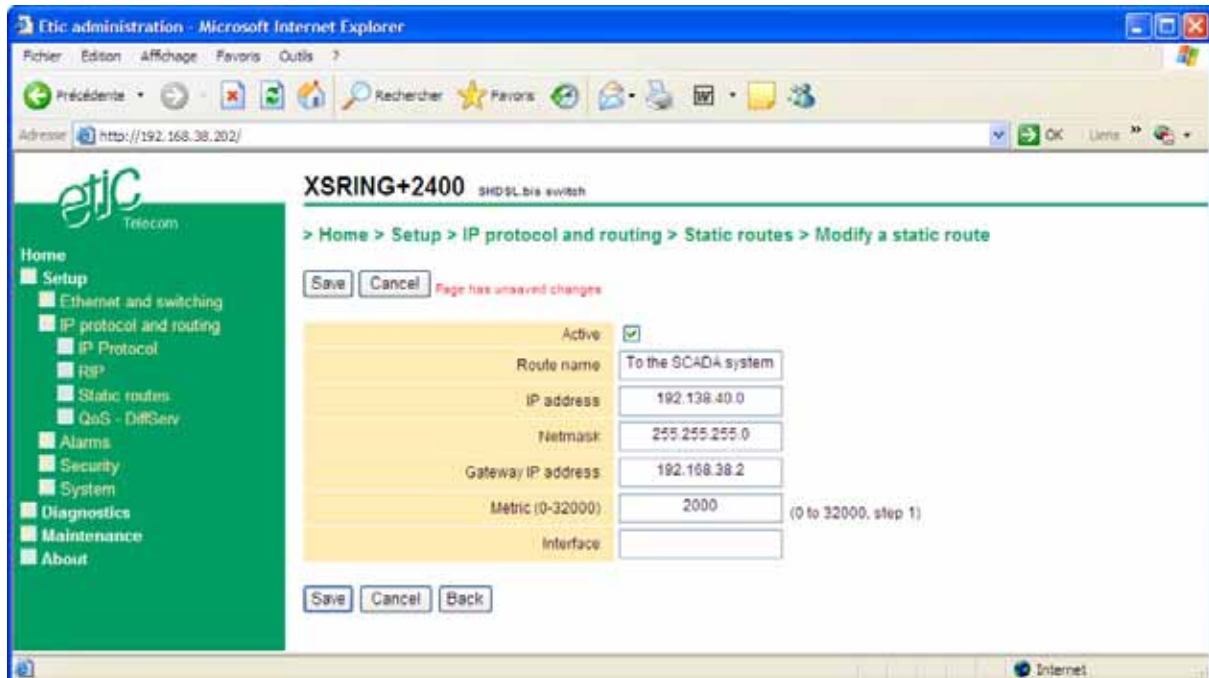
IP02 is the address of the SHDSL interface of the XSLAN Nr 2.

**To enable the router function and assign an IP @ to the SHDSL interface of the XSLAN+,**

- select the "IP protocol & routing" menu and then the "IP protocol" menu;
- select the "Router mode" checkbox;
- enter the IP address assigned to the SHDSL interface of the XSLAN+.

**To register a route,**

- select "IP protocol & routing > Static route";
- click the "Add" button;
- Enter the parameters of the route.

**To enable the RIP protocol instead of programming routes,**

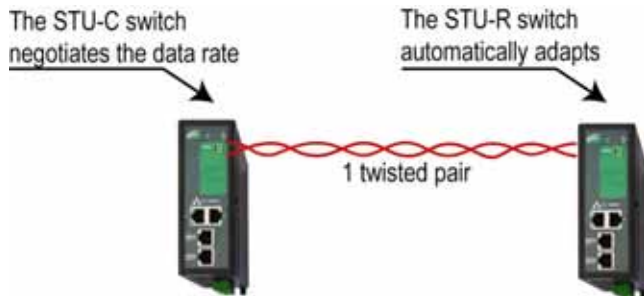
- select "IP protocol and routing > RIP".
- Select the "Enable RIP" checkbox.

## 9.1 Principle of operations

### The SHDSL switch called STU-C is in charge of setting the connection

When two shdsl switches are connected through a twisted pair, one has the function to initiate the connection, to analyse the connection quality, and to negotiate the data rate; the other SHDSL switch can only accept.

The SHDSL switch which initiates the connection is called the STU-C, while the one which accepts the connection is called the STU-R switch.



### The STU-C negotiates in order to obtain the selected SNR margin

When it connects, the STU-C switch measures the reception signal level and the noise level and calculates the signal-to-noise ratio (SNR ratio).

The longer the distance and the higher the noise level over the line, the smaller the SNR ratio.

A minimum SNR is required to connect two SHDSL switches through a line at a given data rate.

The difference between the SNR ratio as it is measured and the minimum required is the SNR margin.

The greater the SNR margin, the more reliable the connection at a given data rate.

One can select the SNR margin; in that way, one selects the reliability of the connection.

The STU-C SHDSL switch negotiates with the STU-R switch; the data rate is decreased from the maximum data rate, until the selected SNR margin is obtained.

### To make the configuration simple, one does not select the SNR margin or such or such technical parameter but only a connection profile.

All the technical parameters of the shdsl connection, including the SNR margin, are stored in a table called a connection profile.

To configure an shdsl connection, one has only to assign one of the five default connection profiles to each SHDSL port.

The Performance profile optimises the data rate up to 5,7 Mb/s.

The standard profile is the advised compromise between the data rate and the reliability of the connection.

The Endurance profile optimises the reliability; the data rate which will be obtained is generally lower than with the standard or the performance profile.

The Turbo-short profile can be used only over short distance (not more than 1 Km); it provides up to 10 Mb/s using a proprietary modulation.

## 9.2 SHDSL connection profiles

### Auto STU-R profile :

That connection profile has to be assigned to an shdsl port when it has to wait for the connection (see the drawing above).

### Endurance STU-C profile :

An shdsl port to which that profile is assigned will initiate the connection.

The value of the SNR margin of that profile is maximum; it means that the connection will be set at a low data rate to decrease the disconnection probability.

That profile is convenient when the conditions are poor because the noise level varies or is important, and or because the distance is important, and or because the quality of the twisted pair is poor.

That profile has to be advised also if disconnections are observed when using the standard profile or the performance profile.

That profile can be advised, also, when the frequency of the disconnections must be as low as possible.

### Standard STU-C profile :

An shdsl port to which that profile is assigned will initiate the connection.

The value of the SNR margin is medium; it is why, the connection will be set at a medium data rate.

Disconnections may appear but only in case of strong signal disturbances.

That profile is convenient in usual conditions when the noise level is stable, and or the distance is not too close from the limit, and or when the quality of the line is good.

### Performance STU-C profile :

An shdsl port to which that profile is assigned will initiate the connection.

The value of the SNR margin is low; it is why, the connection will be set at a high data rate. Disconnections may appear in case of disturbances.

That profile is convenient when the highest data rate is wished.

That profile is convenient when the noise level is stable and low, and or the distance is far from the limit, and or when the quality of the line is good.

### Turbo-short STU-C profile :

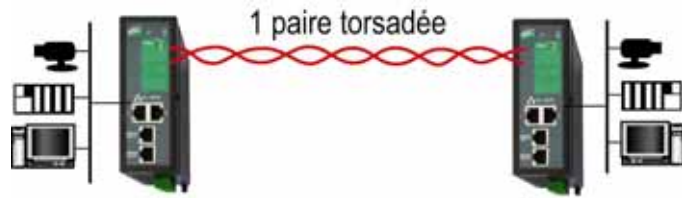
An shdsl port to which that profile is assigned will initiate the connection.

That profile makes possible to get a high data rate – up to 10 Mb/s – over a short distance (typically shorter than 1 Km).

**10 Setting up the SHDSL connection parameters when using one twisted pair**

We describe hereafter how to configure an shdsl connection between two SHDSL switches using only one twisted pair

either between two XSLAN+1XXX,



or between an XSLAN+4400 and an XSLAN+1XXX



## 10.1 Set-up steps

Step 1 : SHDSL Connection set-up

To assign the STU-R profile to the first switch,

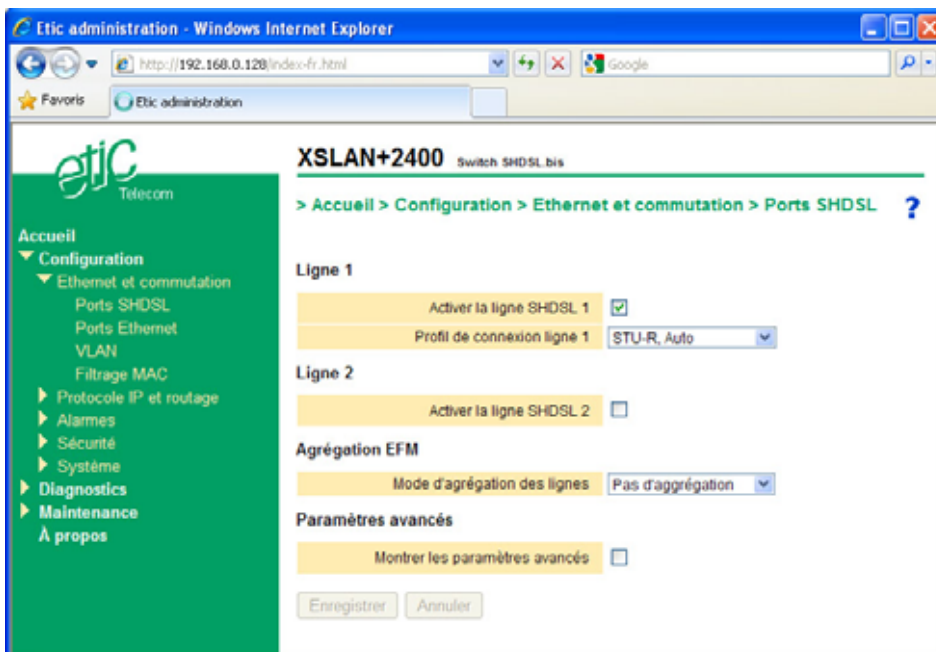
To assign a connection profile (Performance, Standard, Endurance, Turbo-short) to the second one.

Step 2 : Test and adjustment

## 10.2 Step 1 : SHDSL connection set up

### Setting up the XSLAN+ number 1

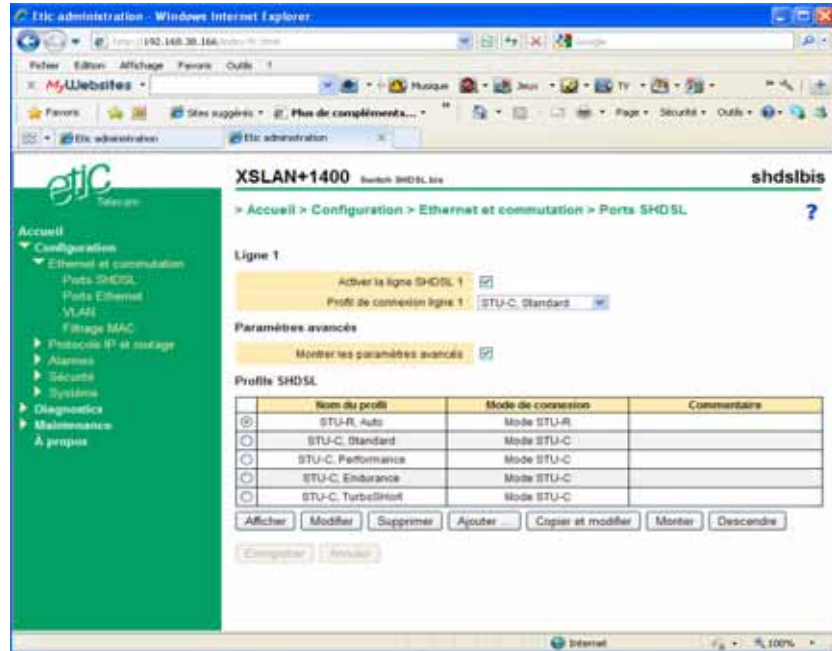
- Click Set up > Ethernet & switching > SHDSL ports.
- Select « Enable » (port 1 or 2 or 3 or 4).
- Assign the SHDSL profile « STU-R, Auto ».
- Click “Save”.



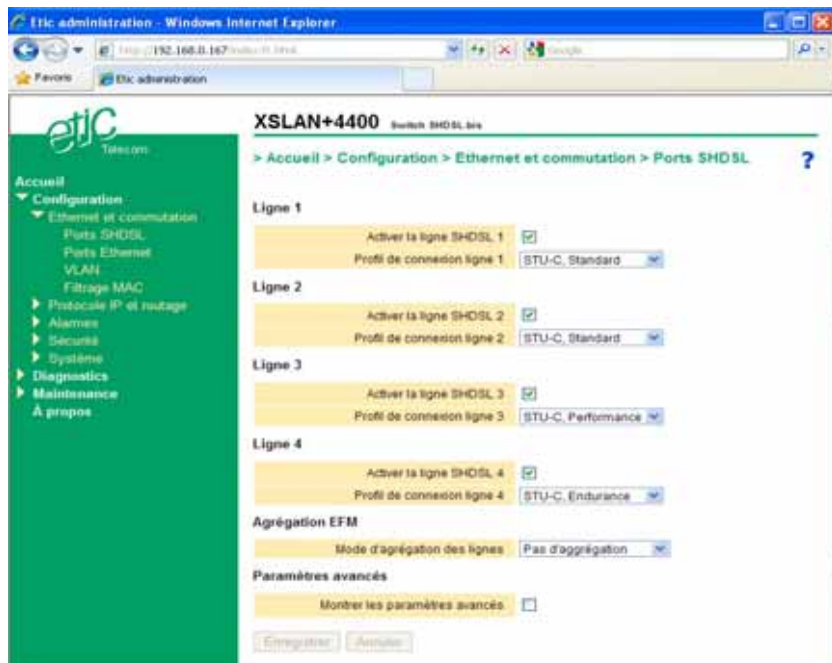
### Setting up the XSLAN+ number 2

- Click Set up > Ethernet & switching > SHDSL ports.
- Select « Enable » (port 1 or 2 or 3 or 4).
- Assign one connection profile to the SHDSL port (Standard or Performance or Endurance or TurboShort)

SHDSL page  
XSLAN+1400



SHDSL page :  
XSLAN+4400





### 10.3 Step 2 : SHDSL test and set up adjustment

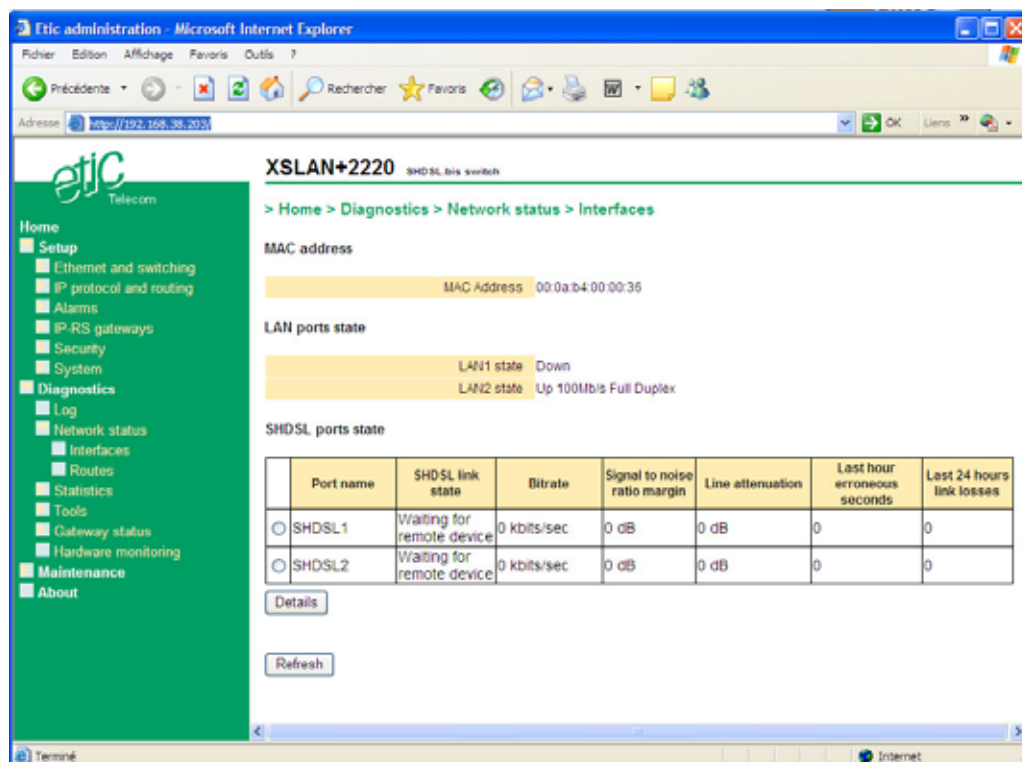
- Connect the two XSLAN+ to the line.
- Switch the power ON.
- The connection will be established 30 s after the product reset delay.
- The SHDSL led report the connection status according to the table below :

	STU-C	STU-R
The other XSLAN+ has not been detected (for instance when the line is not connected)	Flashing 0,1 s ON / 2 s OFF	Flashing 1 s ON / 1 s OFF
The other XSLAN+ has been detected	Flashing 1s ON / 1s OFF	Flashing 1s ON / 1s OFF
Data rate negotiation	Flashing 0,3s ON / 0,3s OFF	Flashing 0,3s ON / 0,3s OFF
Connected	Always ON	Always ON
Connected & transmitting data	Flashing at high speed	Flashing at high speed

- Connect the PC to the SHDSL switch configured as an STU-C.
- Click Diagnostic> Network status> Interface, to check the connection quality on each line.

The “SHDSL ports state” table is displayed. It reports the status of each SHDSL port.

- Check the quality of each SHDSL port :  
 The SNR ratio margin must be 2 / 4 or 3 / 4 or 4 / 4.  
 The number of erroneous seconds during the last hour must be next to 0.  
 The number of link losses during the last 24 hours must be 0 or a few ones.



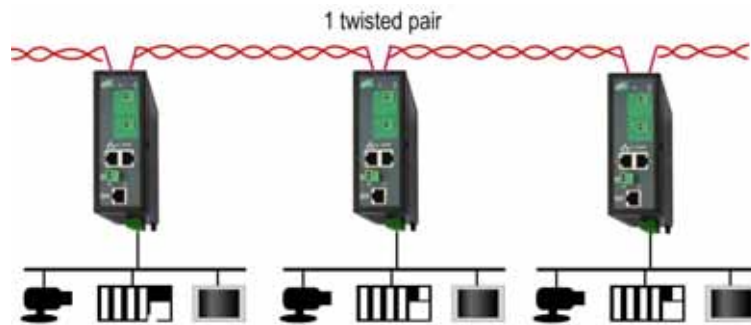
- If the SNR ratio margin of one shdsl port is only 1 / 4, go back to “Ethernet & switching” , select a more reliable connection profile (Endurance instead of standard for instance) for that port and check the connection again.
- Once all the SHDSL connections run correctly, send periodically a PING to a remote device to check that no error occur.

Remark : one can use the PING tool included in the product (Diagnostic > Tool > PING).

- If, in spite of these modifications, the result of one connection remains insufficient,  
check each conductor of the line is correctly connected;  
disconnect and by-pass the surge arresters to check if they are not the cause of the dysfunction;  
check the cable shield is correctly connected to the ground.

## 11 Setting up a multidrop SHDSL connection

This chapter describes how to set up two XSLAN+2XXX when they are used in a multidrop (or daisy chain) network.



### 11.1 Set up steps

#### Step 1 : SHDSL Connection set up

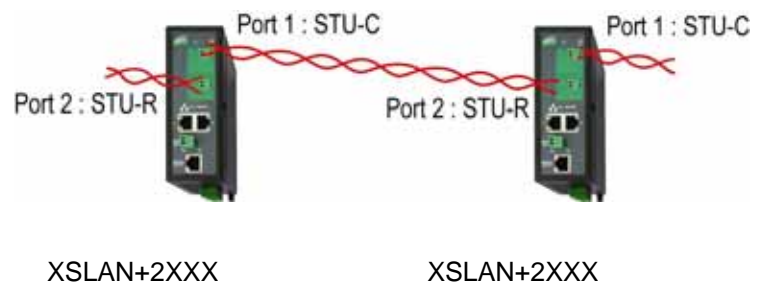
To assign the STU-R and STU-C profiles to the SHDSL ports

#### Step 2 : Connection test and set up adjustment.

### 11.2 Step 1 : SHDSL connection set up

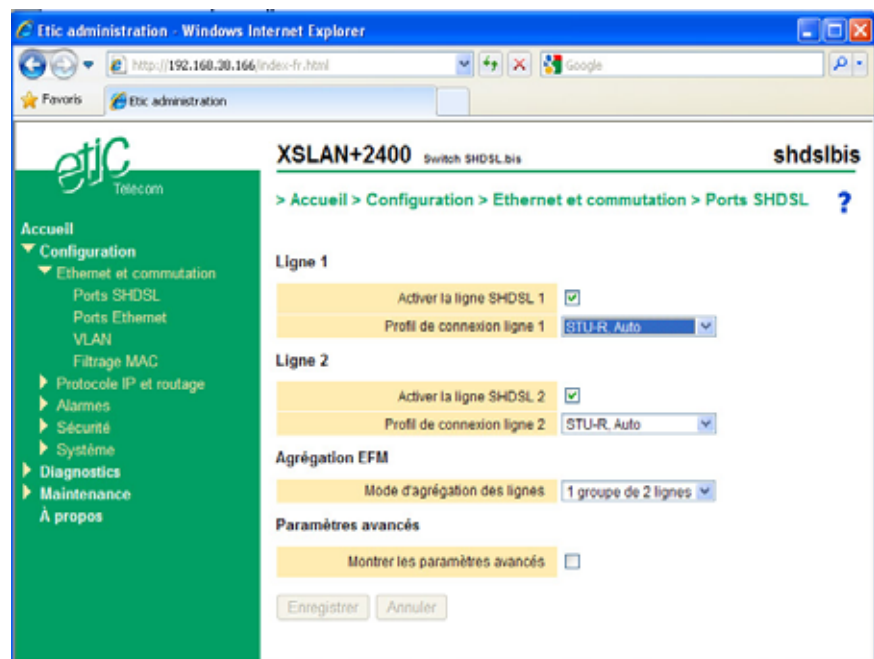
We advise to connect the SHDSL port 1 of the first SHDSL switch to the port 2 of the second switch and to set them up as displayed on the drawing.

In that way, the configuration of each switch can be the same or at least similar.



#### Setting up the XSLAN+ (Number 1 or number 2)

- Click Set up > Ethernet & switching > SHDSL ports.
- Port 1 : Select « Enable » and assign one connection profile to the SHDSL port 1 (Standard or Performance or Endurance or TurboShort)
- Port 2 : Select « Enable » and assign the SHDSL profile « STU-R, Auto » to the SHDSL port 2.
- Click "Save".



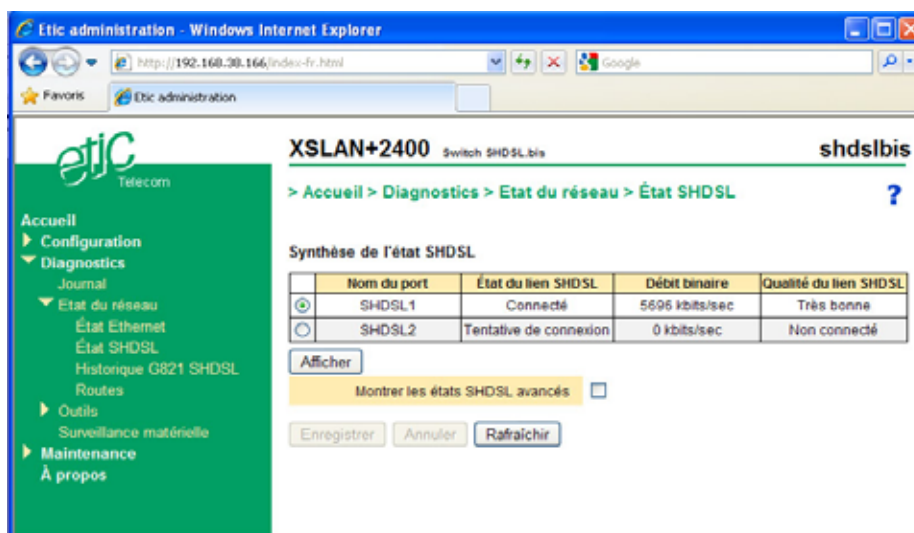
### 11.3 Step 2 : SHDSL test and set up adjustment

- Connect the two XSLAN+ to the lines.
- Switch the power ON.
- The connection on each line will be established 30 s latter.
- The led attached to each SHDSL port reports the connection status according to the table below :

	STU-C	STU-R
The other XSLAN+ has not been detected (for instance when the line is not connected)	Flashing 0,1 s ON / 2 s OFF	Flashing 1 s ON / 1 s OFF
The other XSLAN+ has been detected	Flashing 1s ON / 1s OFF	Flashing 1s ON / 1s OFF
Data rate negotiation	Flashing 0,3s ON / 0,3s OFF	Flashing 0,3s ON / 0,3s OFF
Connected	Always ON	Always ON
Connected & transmitting data	Flashing at high speed	Flashing at high speed

- Connect the PC to the SHDSL switch configured as an STU-C.
- Click Diagnostic> Network status> Interface, to check the connection quality on each line.

The “SHDSL ports state” table is displayed. It reports the status of each SHDSL port.



- Check the quality of each SHDSL port :  
The SNR ratio margin must be 2 / 4 or 3 / 4 or 4 / 4.  
The number of erroneous seconds during the last hour must be next to 0.  
The number of link losses during the last 24 hours must be 0 or a few ones.
- If the SNR ratio margin is only 1 / 4, go back to “Ethernet & switching” , select a more reliable connection profile (Endurance instead of standard for instance) for that port and check the connection again.
- Once all the SHDSL connection run correctly, send periodically a PING to a remote device to check that no error occur and that the response delay is as expected.

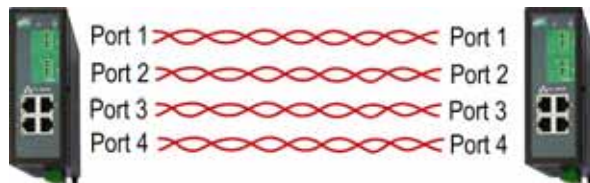
Remark : one can use the PING tool included in the product (Diagnostic > Tool > PING).

- If, in spite of these modifications, the result of one connection remains insufficient,  
check each conductor of the line is correctly connected;  
disconnect and by-pass the surge arresters to check if they are not the cause of the dysfunction;  
check the cable shield is correctly connected to the ground;

## 12 Setting up a point to point connection using 2 or 3 or 4 twisted pairs

This chapter describes how to set up a connection between two XSLAN+ using up to four twisted pairs to multiply the effective data rate.

The XSLAN+2XXX SHDSL switch provides two SHDSL interfaces; using two twisted pairs, the data rate can reach 11,4 Mb/s (5.7 Mb/s over each pair) and even 20 Mb/s (10 Mb/s over each pair) over 1 Km.



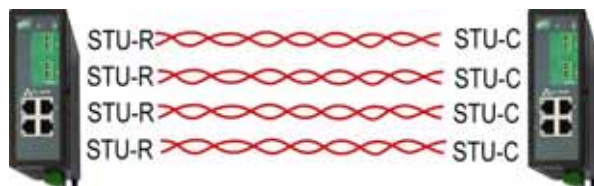
The XSLAN+4400 SHDSL switch provides four SHDSL interfaces; using four twisted pairs, the data rate can reach 22.8 Mb/s (5.7 Mb/s over each pair) and even 40 Mb/s (10 Mb/s over each pair).

### 12.1 Set up steps

#### Step 1 : SHDSL Connection set up

That step consists in assigning a STU-C connection profile (Performance, Standard, Endurance, Turbo-short) to each SHDSL port of the second SHDSL switch,

And to assign the STU-R profile to all the SHDSL ports of the first switch,



XSLAN+4400  
or XSLAN+2XXX

XSLAN+4400  
or XSLAN+2XXX

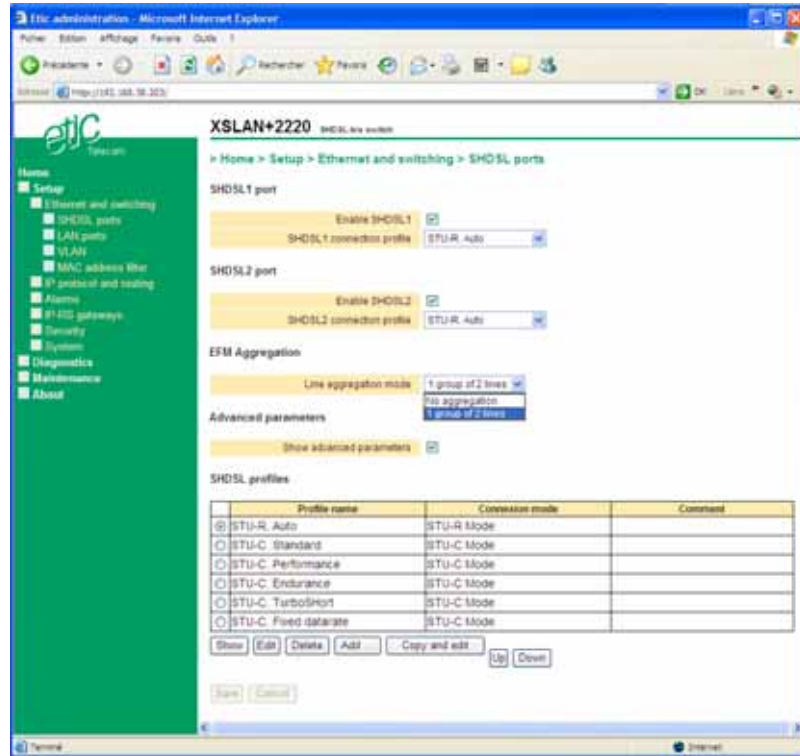
#### Step 2 : Connection test and set up adjustment.

### 12.2 Step 1 : SHDSL connection set up

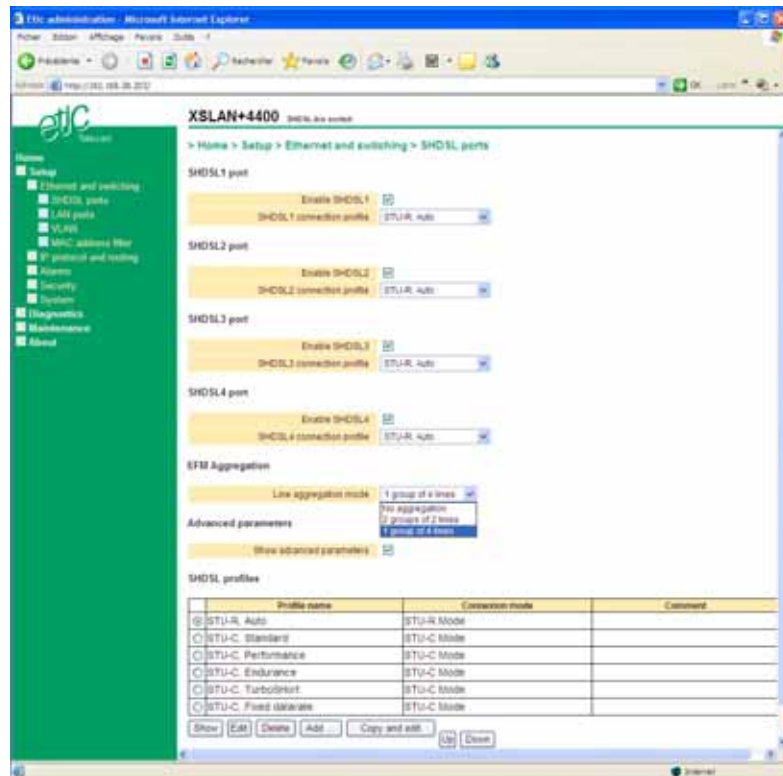
#### Setting up the XSLAN+ number 1

- Click Set up > Ethernet & switching > SHDSL ports.
- Select « Enable » (port 1 to 4).
- Assign the SHDSL profile « STU-R, Auto ».
- Select the line aggregation options  
XSLAN-2XXX : 1 group of two lines  
XSLAN-4400 : 1 group of 4 lines or 2 groups of two lines
- Click "Save".

XSLAN+2XXX



XSLAN+4XXX

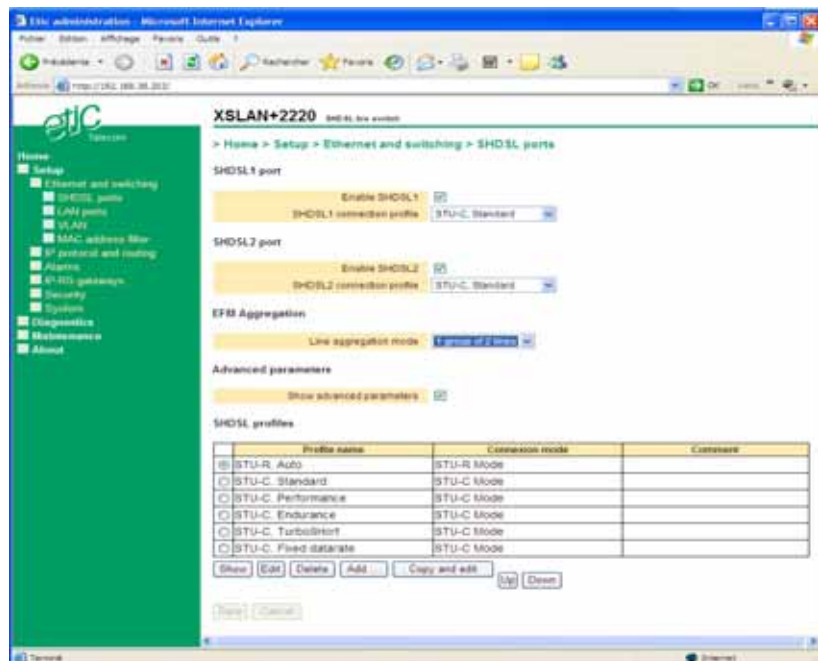




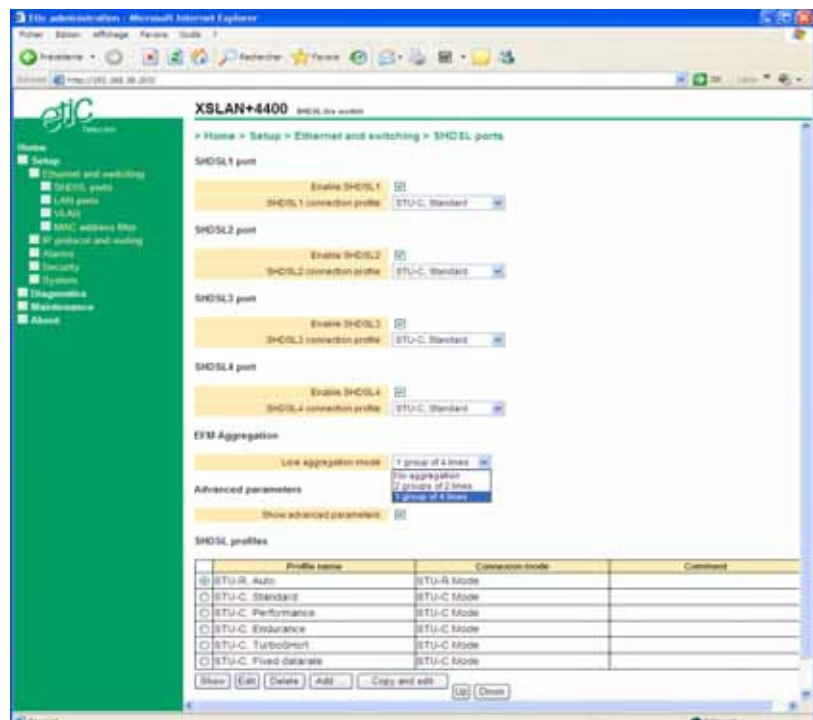
## Setting up the XSLAN+ number 2

- Click Set up > Ethernet & switching > SHDSL ports.
- Select « Enable » (port 1 or 2 or 3 or 4).
- Assign one connection profile to the SHDSL port (Standard or Performance or Endurance or TurboShort).
- Select the line aggregation options  
 XSLAN-2XXX : 1 group of two lines  
 XSLAN-4400 : 1 group of 4 lines or 2 groups of two lines
- Remark : the aggregation option must be the same for the XSLAN+ number 1 and the for the XSLAN+ number 2.

SHDSL page XSLAN+2400



SHDSL page XSLAN+4400



### 12.3 Step 2 : SHDSL test and set up adjustment

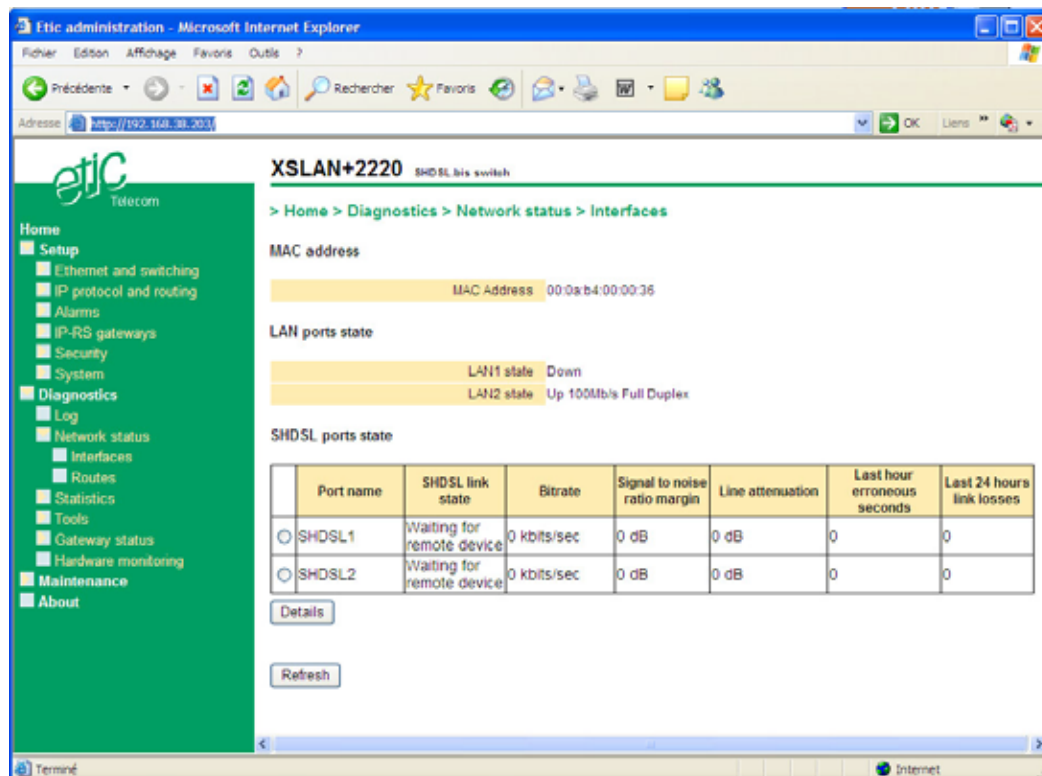
- Connect the two XSLAN+ to the lines (2 or 3 or 4 twisted pairs) .  
Each line should be connected at the same position on both SHDSL switches (port 1 to port 1, port 2 to port 2 etc...).
- Switch the power ON.
- The connection on each line will be established 30 s latter.
- The led attached to each SHDSL port reports the connection status according to the table below :

	STU-C	STU-R
The other XSLAN+ has not been detected (for instance when the line is not connected)	Flashing 0,1 s ON / 2 s OFF	Flashing 1 s ON / 1 s OFF
The other XSLAN+ has been detected	Flashing 1s ON / 1s OFF	Flashing 1s ON / 1s OFF
Data rate negotiation	Flashing 0,3s ON / 0,3s OFF	Flashing 0,3s ON / 0,3s OFF
Connected	Always ON	Always ON
Connected & transmitting data	Flashing at high speed	Flashing at high speed

- Connect the PC to the SHDSL switch configured as an STU-C.
- Click Diagnostic> Network status> Interface, to check the connection quality on each line.

The “SHDSL ports state” table is displayed. It reports the status of each SHDSL port.

- Check the quality of each SHDSL port :  
The SNR ratio margin must be 2 / 4 or 3 / 4 or 4 / 4.  
The number of erroneous seconds during the last hour must be next to 0.  
The number of link losses during the last 24 hours must be 0 or a few ones.



- If the SNR ratio margin of one shdsl port is only 1 / 4, go back to “Ethernet & switching” , select a more reliable connection profile (Endurance instead of standard for instance) for that port and check the connection again.



- Once all the SHDSL connections run correctly, send periodically a PING to a remote device to check that no error occur.

Remark : one can use the PING tool included in the product (Diagnostic > Tool > PING).

- If, in spite of these modifications, the result of one connection remains insufficient,  
check each conductor of the line is correctly connected;  
disconnect and by-pass the surge arresters to check if they are not the cause of the dysfunction;  
check the cable shield is correctly connected to the ground.

## 13 VLAN

### 13.1 Overview

#### VLAN function

The VLAN technology conform to the IEEE 802.1Q norm makes possible to transmit up to 4096 Ethernet networks over the same physical Ethernet layer.

The devices belonging to the same Ethernet VLAN can exchange Ethernet frames with one another but cannot exchange frames with devices belonging to another VLAN except if a level 3 switch or an equivalent device makes possible to bridge that VLANs.

#### Ethernet ports

When we speak of an Ethernet port of an XSLAN+, we speak not only of 10/100 BT Ethernet ports, but also of the SHDSL ports.

All SHDSL ports are supposed to be a unique SHDSL port.

#### Principles of operations

A particular field of each Ethernet frame stores the VLAN identity (VID) to which the frame belongs. When that field stores the VLAN ID, one says the frame is tagged.

#### How are Ethernet frames tagged and untagged ?

An Ethernet frame can be tagged by the device which produces it.

Otherwise, the Ethernet frame is tagged by the switch to which the device is connected.

Reciprocally, the VLAN ID of an Ethernet frame can be removed by the Ethernet switch before being transmitted to the Ethernet device or can be transmitted tagged to the device.

#### The switch filters the Ethernet frames according to their VLAN ID

When they come into the switch on an Ethernet port, Ethernet frames are tagged with the VLAN ID assigned to that Ethernet port.

When it is received by the switch, a tagged Ethernet frame can only come out to an Ethernet port, if the VLAN ID assigned to that port is the same as the VLAN ID of the Ethernet frame.

#### Html administration server and the serial gateway

If the VLAN function is enabled, Ethernet frames produced by the html administration server and the serial gateway are tagged with a particular VLAN.

If the html administration server and the serial gateway do not belong to the same VLAN, a separate IP address must be assigned to the serial gateway

#### Setting up the VLAN function

The VLAN set up is divided in two parts : The Egress policy set up and the Ingress policy set up.

**The Egress policy** consists in registering the authorised VLAN IDs and defining which Ethernet ports belong to each VLAN.

**The Ingress policy** consists in defining which process must be applied to each Ethernet frames going into the switch :

Tagging the frame with a VLAN ID or leaving the frames untagged etc ...

## 13.2 Set up

### Attention :

Before saving the VLAN configuration, make sure you will be able to access to the administration html server through an Ethernet port or remotely through the line.

One Ethernet port at least belong to the same VLAN as the administration html server of the XSLAN+.

- Select “Set up > Ethernet & switching > VLAN”.

The VLAN page is displayed.

- Select the “Enable VLANs” checkbox.

The screenshot shows the 'VLAN' configuration page for 'XSLAN+4400'. The 'Activer les VLANs' checkbox is checked. The 'VLAN ID pour l'administration' and 'VLAN ID pour les passerelles' are both set to 1. The 'VLANs : Politique d'entrée' section shows policies for Ethernet 0 through 3 and SHDSL. The 'VLANs : Politique de sortie' table is as follows:

Nom du VLAN	ID du VLAN	politique de sortie Ethernet 0	politique de sortie Ethernet 1	politique de sortie Ethernet 2	politique de sortie Ethernet 3	politique de sortie SHDSL
vlan1	1	Les trames sortent non taggées	Les trames sortent non taggées	Les trames sortent non taggées	Les trames sortent non taggées	Les trames sortent non taggées
Test	4	Les trames sortent taggées	Les trames sortent taggées	Les trames sortent taggées	Les trames sortent taggées	Les trames sortent taggées

That page is divided in three parts :

Egress policy,

Ingress policy.

html server and of the serial gateway.

### 13.2.1 Egress policy set up

That part of the page is made to register the VLAN IDs and to specify which process must be applied to exiting tagged frames with that VLAN ID.

The processes which can be applied to an outgoing frame are :

- Frames exit that port untagged.
- Frames exit that port tagged.
- Frames exit that port unmodified
- Port does not belong to that VLAN

Example

Three VLANs are defined : 4, 5, 12.

The Ethernet port 1 is registered on VLAN 4 and 5. The tagged frames with that VLAN ID must exit untagged.

The Ethernet port 2 is registered on VLAN 5 and 12. The tagged frames with that VLAN ID must exit tagged.

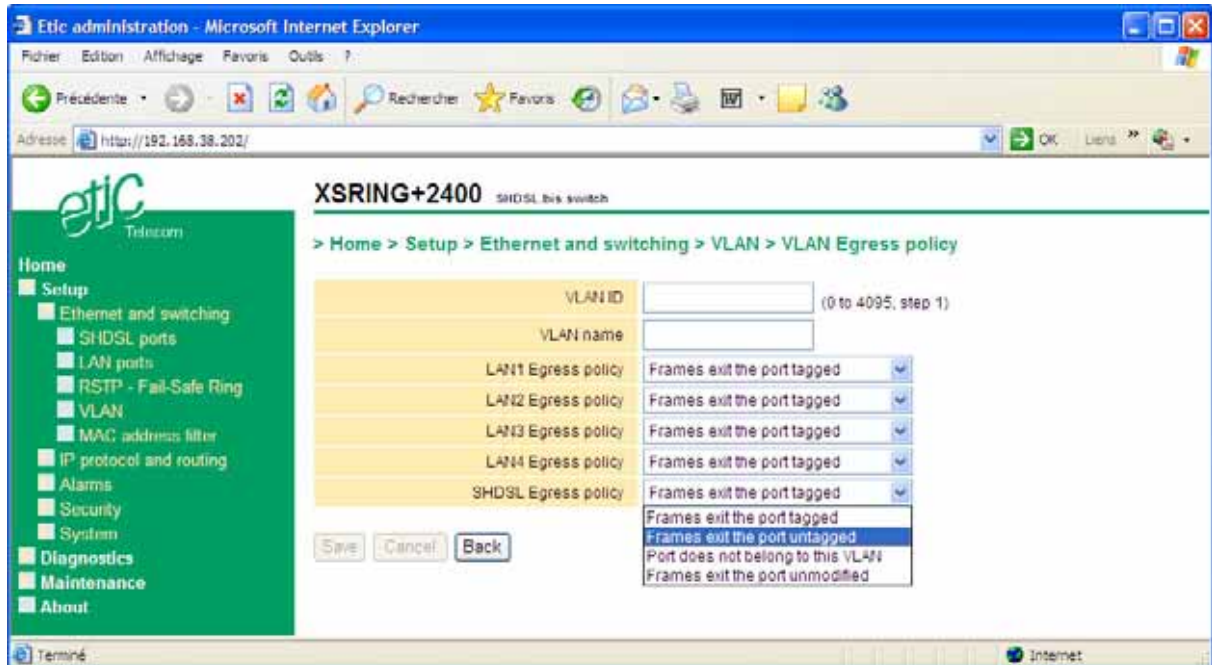
All frames must be transmitted to the SHDSL network.

Egress policy	Eth 1	Eth 2	SHDSL
VLAN 4	Yes Untagged	No	Yes unmodified
VLAN 5	Yes Untagged	Yes tagged	Yes unmodified
VLAN 12	No	Yes tagged	Yes unmodified

The text of the table above is simplified; see hereafter for detailed set up information.

**To set up the Egress policy**

- Select “Set up > Ethernet & switching > VLAN”.
- Click the « Add » button located under the Egress policy table.
- Enter a VLAN ID and assign a name to that VLAN.



For each Ethernet port (including the SHDSL ports), select which Egress policy must be applied.

**Frames exit tagged :**

Ethernet frames tagged with that VLAN can exit that port. The frames exit tagged.

**Frames exit untagged :**

Ethernet frames tagged with that VLAN can exit that port. The frames exit untagged.

**Frames exit unmodified :**

Ethernet frames tagged with hat VLAN can exit that port. The frames exit unmodified.

**Port does not belong to that VLAN :**

Ethernet frames tagged with hat VLAN cannot exit that port.

### 13.2.2 Ingress policy set up

That part of the page is made to register which process must be applied to the Ethernet frames when they enter a given port of the switch or when they are received from the line.

One defines

which already tagged frames can enter the switch;

which VLAN ID will be assigned to untagged frames coming into the switch.

Example :

Let us go on with the example given at the previous paragraph; we have defined the Egress policy :

<b>Egress policy</b>	<b>Eth 1</b>	<b>Eth 2</b>	<b>SHDSL</b>
VLAN 4	Yes Untagged	No	Yes unmodified
VLAN 5	Yes Untagged	Yes tagged	Yes unmodified
VLAN 12	No	Yes tagged	Yes unmodified

The table hereafter, defines the ingress policy :

<b>Ingress policy</b>	<b>Eth 1</b>	<b>Eth 2</b>	<b>SHDSL</b>
Accept all frames			X
Refuse a frame not belonging to a configured VLAN		X	
Refuse a frame not belonging to a VLAN associated to the port	X		
VLAN ID	4	5	12

Ethernet 1

Only frames already tagged with the VLAN 4 can enter the switch through the port 1.

Untagged frames are tagged with the VLAN 4.

Ethernet 2

Only frames already tagged with the VLAN 4 or 5 or 12 can enter the switch through the port 2.

Untagged frames are tagged with the VLAN 5.

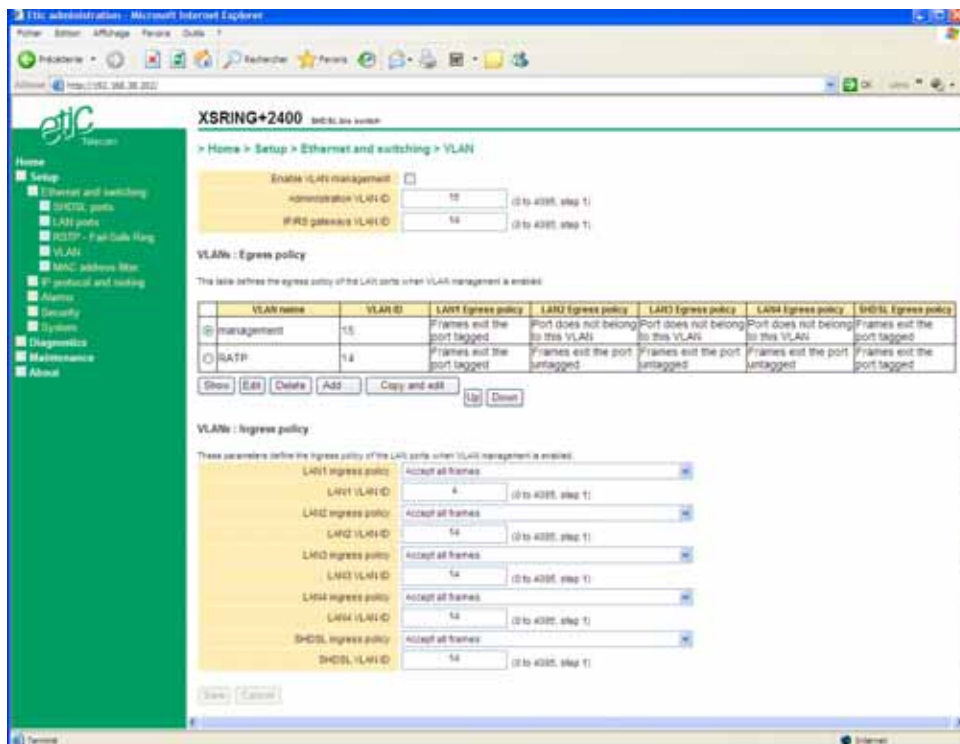
SHDSL

All frames coming from one of the SHDSL ports can enter the switch.

Untagged frames are tagged with the VLAN 12.

## To set up the Ingress policy

- Select “Set up > Ethernet & switching > VLAN”.
- Go to the Ingress policy part of the page



- For each Ethernet port and for the SHDSL ports, select the Ingress policy and the VLAN ID which must be applied to the untagged frames entering the XSLAN+ switch.

### “LAN (1 to 4) Ingress policy” parameter :

#### Accept all frames :

All incoming frames are accepted on this port, regardless of the VLAN they belong to. If a tagged frame enters the switch, it is not modified. If an untagged frame enters the switch, it is tagged with the selected VLAN ID.

#### Refuse a frame not belonging to a configured VLAN :

The port will only accept the frames that are in a known VLAN, i.e. present in the VLAN Egress policy table.

If an untagged frame enters the switch, it is tagged with the selected VLAN ID.

#### Refuse a frame not belonging to a VLAN associated to the port :

Tagged frames can enter the port only if their VLAN ID is one of the VLAN ID on which the port is registered in the Egress policy table.

### “LAN (1 to 4) VLAN ID” parameter :

Enter the VLAN ID with which untagged incoming frames must be tagged

## 13.3 Html server and serial gateway

When VLAN management is enabled, the administration web server and the serial gateway must belong to a VLAN.

**“Administration VLAN ID” parameter :**

Enter the VLAN ID to which the administration html server belongs.

**“Serial gateway VLAN ID” parameter :**

Enter the VLAN ID to which the serial gateways belong.

**Remark :**

If the serial gateway does not belong to the same VLAN as the html administration server, a particular IP address must be assigned to serial gateways.

- Select “Set up > IP protocol 1 routing > IP protocol ”.
- Select the “Use a different address for the serial gateways” checkbox.
- Enter the IP address assigned to the serial gateways.



## 14 Quality of service (QoS) set up

### 14.1 DiffServ benefits & overview

The goal of Quality of Service algorithms is to guarantee that critical data flows will be transmitted with lower delay than others.

For instance, it can be difficult to transmit on the same SHDSL network an important video data flow, a small but critical PLC protocol data flow and digital voice protocols.

To solve that question, the XSLAN+ implements the DiffServ algorithm.

- **Terms definitions**

A **service** is the association of a protocol (TCP, UDP, ICMP, AH, ESP, GRE, IGMP) and a port number; for instance TCP and port 502.

A **device or machine** is a range of IP addresses (IP address plus netmask); for instance 192.168.1.0 / 255.255.255.0 .

A **traffic** is a particular data flow defined by a particular device destination address and a particular service.

- **Classes :**

4 traffic classes are defined : Platinum, Gold, Silver, Bronze,

The Platinum class will be transmitted with the first priority.

A minimum and a maximum bandwidth are assigned to each class.  
The bandwidth of the Platinum class is not limited.

An example is given hereafter :

	Minimum bandwidth % of the whole bandwidth	Maximum bandwidth % of the whole bandwidth
CLASSES :		
Platinum	-	unlimited
Gold	20 %	30 %
Silver	30 %	20 %
Bronze	10 %	40 %
Total	60 %	90 %

• **Assigning each traffic to the classes**

Each traffic (Service plus device) entering the shdsl network can be assigned to one class; Any traffic not assigned to one class is supposed to belong to the default class.

• **How it works ?**

The IP data flow entering the XSLAN switch is analysed and **marked** as premium or gold or silver or bronze or default and then transported through the shdsl network with the relevant priority.

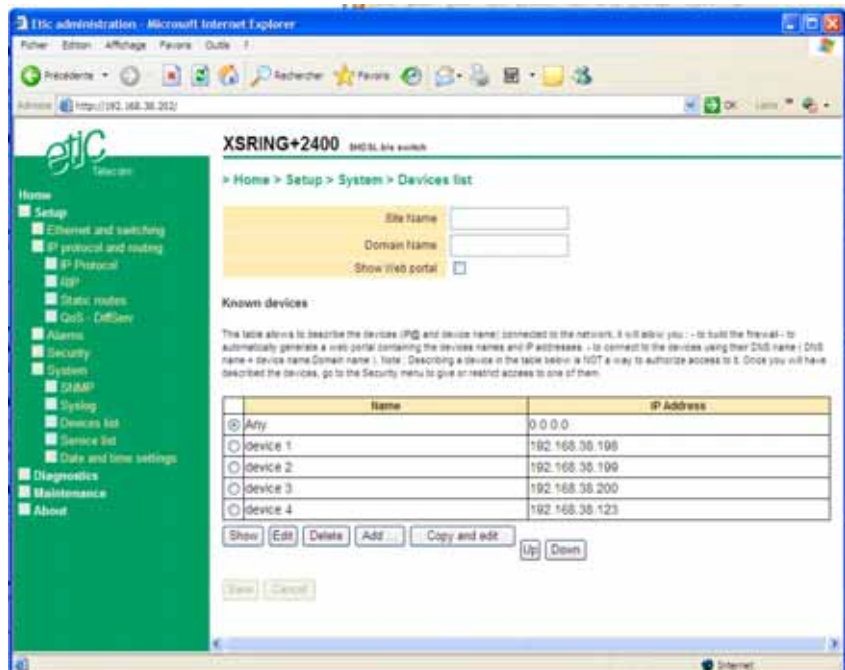
### 14.2 QoS set up

**Step 1 : Complete the services list**

- Select "Set up > System > Service list".
- Add new services if necessary (Protocol & port number).

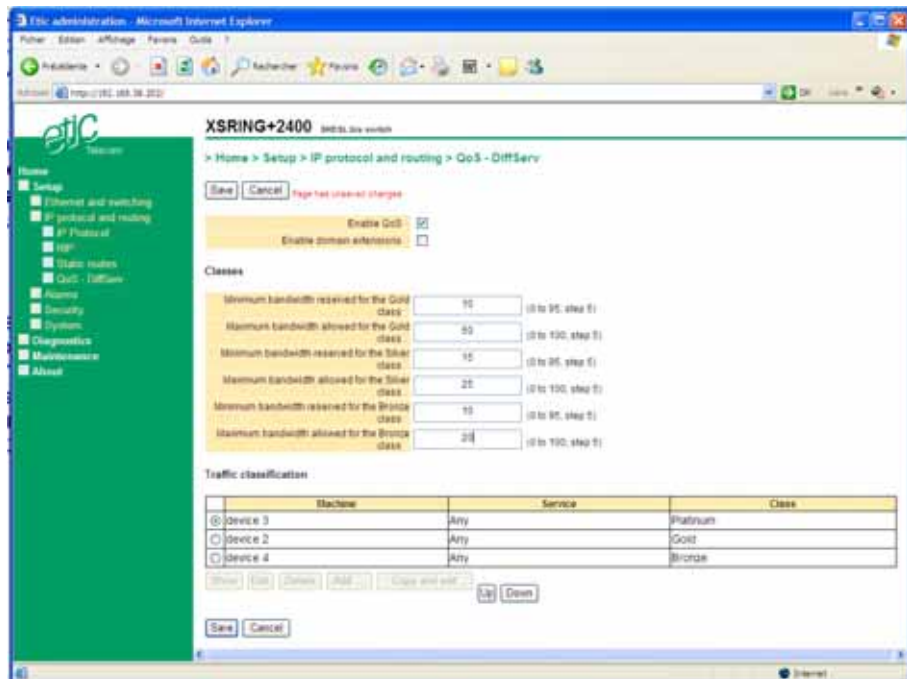
**Step 2 : Define the destination IP addresses (Devices addresses)**

- Select the "System" menu and then "Devices list".
- Click the "Add" button. Enter an IP address to specify a single host (for instance 192.168.10.12) or a range of IP addresses and a netmask (for instance 192.168.10.0/255.255.255.0).

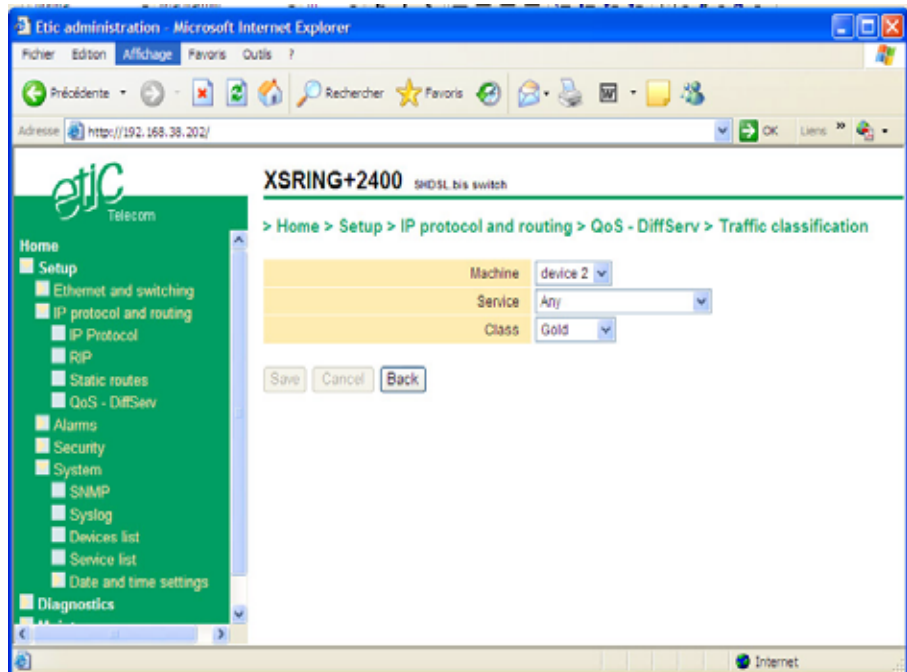


**Step 3 : Define the classes**

- Select the QoS menu. Assign a minimum and a maximum bandwidth to each class.


**Step 4 : Classify the traffics**

- Under the traffic classification table, click the "Add" button.
- Assign each device and service you wish to a class (Gold, silver etc...).



## 15 SNMP

### 15.1 Overview

The XSRING+ supports the following MIBS :

- RFC1213-MIB (MIB-2)
- HDLSL2-SHDSL-LINE-MIB
- HOST-RESOURCES-MIB
- IF-MIB
- IP-MIB
- BRIDGE-MIB

The SNMP manager can acquire, in particular, the following information :

Ethernet 10/100 BT ports status : Up / down  
SHDSL links status : connected or not  
SHDSL links bit rate  
SHDSL links SNR ratio margin  
SHDSL links Number of erroneous seconds during the last quarter of hour  
SHDSL links Number of erroneous seconds during the last 24 hours  
MAC addresses data base

The XSRING+ is also able to send SNMP traps when the following events occur :

Ethernet 10/100 BT port connection  
Ethernet 10/100 BT port disconnection  
SHDSL connection established for each SHDSL port  
SHDSL connection disconnected for each SHDSL port  
Failsafe ring established  
Failsafe ring failure  
Product restart

### 15.2 Setting up the SNMP function

To enable the SNMP function,

- Select "Set up > System > SNMP".
- Select the "Enable" checkbox.

**"Manager IP address" parameter :**

Enter the IP address of the SNMP manager

**"Community name" parameter :**

Enter the name of the community to which the XSRING+ belongs.

**"System name" parameter :**

The system name is the name of the product.

Enter a string which identifies the product reference; for instance XSRING+2400.

**"System location" parameter :**

Enter a string which identifies the location where the XSRING+ is installed.

### 15.3 Setting up the SNMP traps

To enable the SNMP traps,

- Select “Set up > Alarms > SNMP traps”.
- Select the traps which must be transmitted by the XSRING+

**“Product start up – cold start” checkbox:**

If that checkbox is selected, a trap is transmitted each time the XSRING+ restarts.

**“SHDSL link 1 (or 2) connection” checkbox:**

If that checkbox is selected, a trap is transmitted each time the shdsl interface 1 (or 2) connects.

**“SHDSL link 1 (or 2) disconnection” checkbox:**

If that checkbox is selected, a trap is transmitted each time the shdsl interface 1 (or 2) connects.

## 16 Serial gateway

The XSLAN-1220 or 2220 features 1 RS232 and 1 RS485 – 2 wires – ports.

The XSLAN-1230 or -2230 features two RS232 serial ports.

A serial gateway can be assigned to each serial port .

However, if the same type of gateway is assigned to both serial ports, the UDP or TCP port numbers must be different.

For instance, it is not possible to use modbus TCP with the port 502 at the same time on the serial ports 1 and 2.

The gateways listed below are provided :

**Modbus client or server (i.e. master or slave)**

To connect several serial modbus slaves to several IP modbus clients.

Or to connect a serial modbus master to an IP modbus server.

**RAW TCP server or client :**

To connect 2 serial devices through an IP network.

**RAW UDP :**

To exchange serial data between several serial and IP devices, through an IP network, using a table of IP addresses..

**Telnet :**

To connect a Telnet terminal to the XSLAN+.

**Unitelway slave :**

To connect a serial unitelway master to an IP network.

## 16.1 Modbus gateway

The ETIC modbus gateway is made to link modbus devices connected to its serial interface to TCP modbus devices connected to the ethernet TCP/IP network.

**A TCP Modbus client device** is a device connected to the ethernet TCP/IP network and able to send a modbus request to a modbus TCP server which is in charge of answering; A TCP modbus client is equivalent to a master.

**A TCP Modbus server device** is a device connected to the ethernet TCP/IP network and able to answer to a modbus request received from a TCP modbus client device. A TCP modbus server is equivalent to a slave.

A TCP modbus server can answer to any client of the Ethernet TCP/IP network.

The ETIC modbus gateway can be configured

either

to link serial slaves to several TCP modbus clients devices connected to the ethernet network; in that case, select the modbus client gateway,

or

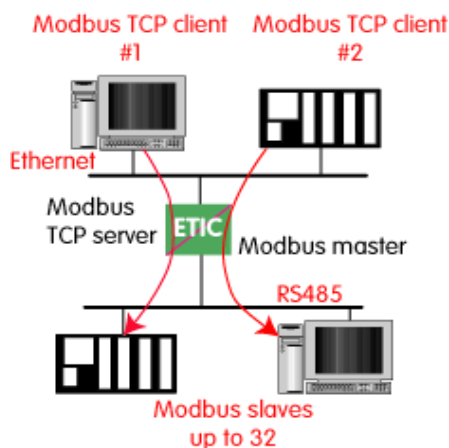
to connect a serial master to several TCP modbus servers devices connected to the ethernet network; in that case, select the modbus server gateway.

### 16.1.1 Modbus server gateway

Modbus slaves devices are connected to the serial interface.

That gateway links asynchronous modbus slaves to modbus TCP clients connected to the ethernet network.

Each TCP client (i.e. modbus master) can send requests to any modbus slave device of the serial interface.



**To configure the Modbus server gateway,**

- select the modbus menu and then modbus server,
- enable the modbus server gateway and set the parameters as follows:

**“Modbus protocol” parameter :**

Select the RTU or ASCII option

**“Activate Proxi cache” parameter :**

Enable the proxi option if you wish to avoid to frequent requests on the serial interface.

**“Cache refreshment period” parameter :**

the same request is received twice or more inside that delay, it will be sent only once to the slave on the serial interface.

**“Timeout waiting for the answer” parameter :**

Set up the timeout the gateway has to wait for the answer of the modbus slave.

**“Local retry” parameter :**

Set up the number of times the gateway will repeat a request to one of the modbus slaves on the serial interface before declaring a failure.

**“Inter-character gap” parameter :**

Set up the maximum delay the gateway will have to wait between a received character of a modbus answer frame on the serial interface and the following character of the same frame.

**“Modbus slave address\* parameter :**

**If only one modbus slave** device is connected to the serial interface, set the modbus address of the device; any TCP modbus request received by the gateway will be sent on the serial interface using that modbus address.

**If several modbus slave devices** are connected to the serial interface, select “specified by modbus TCP client”;

In that case, each request sent by the TCP/IP modbus client to one of the slaves connected to the serial interface must specify the modbus slave address value in the modbus address field.

**“TCP inactivity Timeout” parameter :**

Set the time the gateway will wait before disconnecting the TCP link if no characters are received.

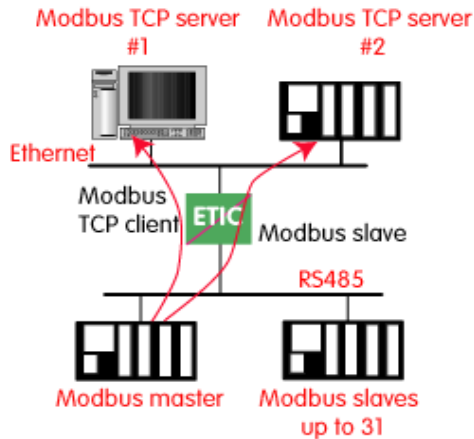
**“TCP port number” parameter :**

Set the port number the gateway has to use.

### 16.1.2 “Modbus client” gateway

That gateway can be used only if a serial modbus master device is connected to the serial interface of the XSLAN.

That modbus master can send requests to slaves connected to the serial interface or to up to 256 modbus TCP servers connected to the IP network (i.e. modbus slaves).



To configure the modbus client gateway,

- select the modbus menu and then “modbus client” menu;
- enable the “modbus client” gateway and set up the parameters as follows :

**“ASCII / RTU protocol” parameter :**

Select the right option

**“Inter-character gap” parameter :**

Set up the maximum delay the gateway will have to wait between a received character of a modbus answer frame and the following character of the same frame.

**“TCP inactivity Timeout” parameter :**

Set the time the gateway will wait before disconnecting the TCP link if no characters are detected.

**“TCP port number” parameter :**

Set the TCP port number the gateway has to use.

**“IP address table” :**

When the serial master sends a modbus request to a slave, it includes the modbus address of that slave.

If that slave is not a serial slave but a TCP modbus server on the ethernet network, the ETIC gateway needs to know what is its IP address.

That IP address table allows to assign an IP address to each modbus slave address.

- To assign an IP address to each modbus slave device with which the serial master device needs to communicate, click the “add a link” button; Assign an IP address in front of each modbus slave address with which the serial master device will have to communicate.

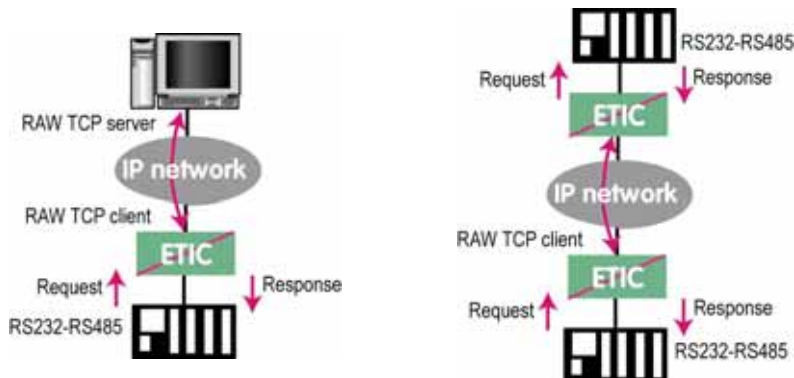


## 16.2 RAW TCP gateway

### 16.2.1 Raw client gateway

The RAW client gateway can be used if a serial “master” device has to send requests to one slave device (also called server) located on the IP network.

The server can be either an ETIC gateway or a PC including a software TCP server.



- Select the “transparent” and then the “raw client COM1” or the “raw client COM2” menu .
- Enable the raw client gateway; and set up the parameters as follows :

**“RS232/485 input buffer size” parameter :**

Set up the maximum length of an asynchronous string the gateway will store before transmitting it to the IP network.

**“Timeout of RS232/485 end of frame” parameter :**

Set up the delay the gateway will wait before declaring complete a string received from the asynchronous device.

Once declared complete, the gateway will transmit the string to the IP network.

**“TCP inactivity Timeout” parameter :**

Set the time the gateway will wait before disconnecting the TCP link if no characters are detected.

**“TCP port number” parameter :**

Set the port number the gateway has to use.

If the Raw TCP client gateway is assigned to both serial COM ports, the TCP port numbers must be different on each port.

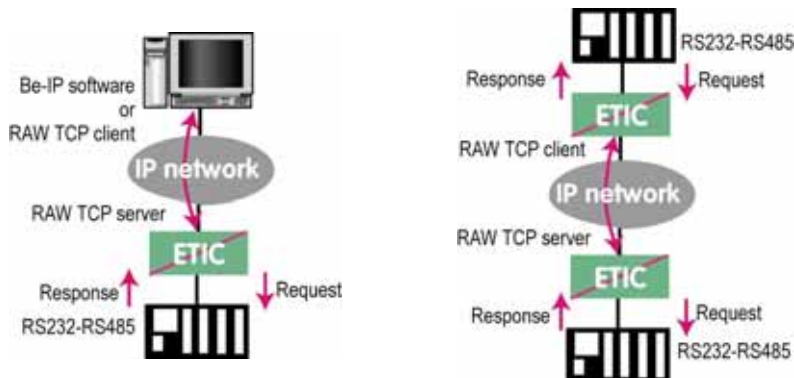
**“Raw server IP address” parameter :**

The raw client gateway is able to communicate with a raw server gateway.

Assign an IP address to define the destination gateway.

## 16.2.2 Raw server gateway

That gateway can be used if a serial slave device has to answer requests coming from devices located on the IP network and acting like a master (also called TCP client).



- Select the “transparent” and then the “raw server COM1” or the “raw server COM2” menu.
- Enable the raw server gateway and set up the parameters as follows :

### “RS232/485 input buffer size” parameter :

Set up the maximum length of an asynchronous string the gateway will store before transmitting it to the IP network.

### “Timeout of RS232/485 end of frame” parameter :

Set up the delay the gateway will wait before declaring complete a string received from the asynchronous device.

Once declared complete, the gateway will transmit the string to the IP network.

### “TCP inactivity Timeout” parameter :

Set up the time the gateway will wait before disconnecting the TCP link if no characters are detected.

### “TCP port number” parameters :

Set up the port number the gateway has to use.

If the Raw TCP server gateway is assigned to both serial COM ports, the TCP port numbers must be different on each port.

## 16.3 RAW UDP gateway

### 16.3.1 Overview

The RAW UDP gateway enables you to connect together a group of serial or IP devices through an IP network.

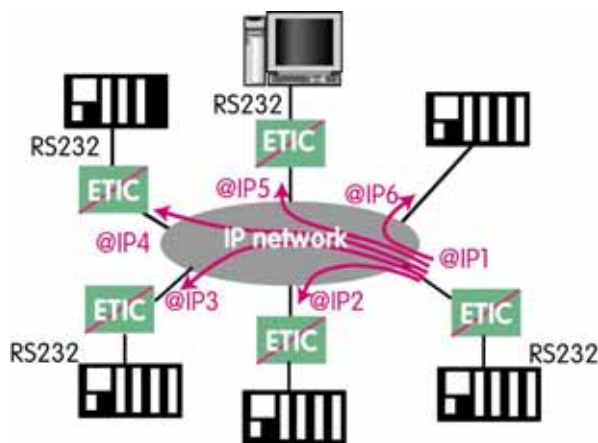
The group can include IP devices if they have the software pieces able to receive or transmit serial data inside UDP.

Serial data transmitted by each device is transmitted to all other serial devices through the IP network.

A table of IP destination gateways is stored in each XSLAN+ belonging to the group.

The serial data is encapsulated in the UDP protocol.

The UDP frame is sent to each destination IP address stored in the table.



### 16.3.2 Configuration

- Select the “gateway” menu and then the “Transparent” menu and then click “RAW UDP”.
- Select the “Activate” option.

**« Serial input buffer size » parameter (value 1 to 1024) :**

Sets the maximum size of an UDP frame.

**“End of frame time-out” parameter (value 10 ms to 5 sec) :**

Sets the delay the gateway will wait before sending the UDP frame towards the IP network when no characters are received from the serial interface.

**«UDP port number» parameter :**

Sets the UDP port number.

If the Raw UDP gateway is assigned to both serial COM ports, the UDP port numbers must be different on each port.

**“IP addresses of the destination devices » table :**

This table stores the IP addresses of the gateways to which the serial data, encapsulated inside UDP, have to be sent.

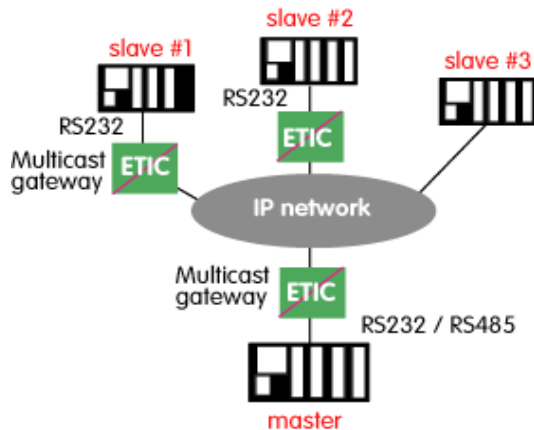
A different UDP port number can be entered for each destination IP address.

## 16.4 Multicast gateway

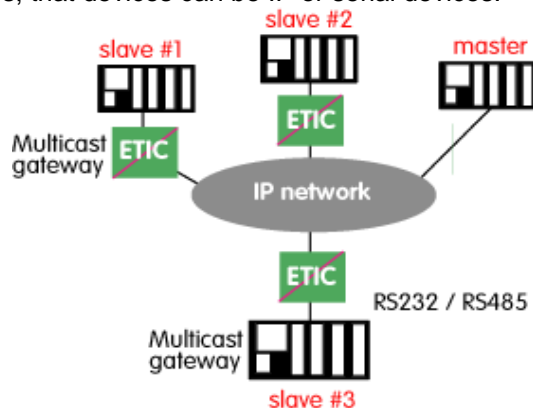
*Internet Protocol multicast* is a bandwidth-conserving technology that reduces traffic by simultaneously delivering a single stream of information to thousands of corporate recipients.

Thus, the multicast gateway must be used when

- a serial master device has to send requests to multiple slave devices; that devices can be IP or serial devices.



- Or when an IP master device (client) has to send requests to multiple slave devices; that devices can be IP or serial devices.



The *Internet Assigned Numbers Authority (IANA)* controls the assignment of IP multicast addresses.

The range of addresses from 224.0.1.0 through 238.255.255.255 are called “globally scoped addresses”. They can be used to multicast data between organizations and across the Internet. The range of addresses from 239.0.0.0 through 239.255.255.255 contains limited scope addresses or administratively scoped addresses. These are defined by RFC 2365 to be constrained to a local group or organization. Routers are typically configured with filters to prevent multicast traffic in this address range from flowing outside an autonomous system (AS) or any user-defined domain. Within an autonomous system or domain, the limited scope address range can be further subdivided so those local multicast boundaries can be defined. This also allows for address reuse among these smaller domains.

**Note** This address range is only for the group address or destination address of IP multicast traffic. The source address for multicast datagrams is always the unicast source address.

**To configure the multicast gateway,**

- Select the “transparent” and then the “multicast” menus.
- Enable the multicast gateway and set up the parameters as follows :

**“RS232/485 input buffer size” parameter**

Set up the maximum length of an asynchronous string the gateway will store before transmitting it to the IP network.

**“Timeout of RS232/485 end of frame” parameter**

Set up the delay the gateway will wait before declaring complete a string received from the asynchronous device.

Once declared complete, the gateway will transmit the string to the IP network.

**“TCP port” parameter**

Set the port number the gateway has to use.

**Multicast group IP address**

Enter the multicast IP address assigned to the group with respect to the rules of the IANA authority.

## 16.5 Unitelway gateway

The unitelway gateway is made to connect an RS232-RS485 unitelway master PLC to an IP network.

- Select the Unitelway menu; select "enable the unitelway transceiver".
- Enter the XWAY address assigned to the asynchronous unitelway PLC on the IP network.
- Select « enable the IP-RS transceiver ».
- Enter the Xway address of the master PLC and, if they exist, the Xway addresses of the slave unitelway PLCs connected to the master PLC.



## 1 Diagnostic menu

Select the Diagnostic menu and then the appropriate sub-menu.

### 1.1 Log

The log displays the last three hundred time-stamped events :

- Ethernet ports up to down or down to up transition
- SHDSL ports connection and disconnection
- Product restart
- etc ...

### 1.2 Network status

That screen displays the current status of the LAN interfaces and of the SHDSL interfaces.

The "SHDSL interfaces" table reports the following information for each port :

**Connection status :**

Connected or not

**Bit rate** over the SHDSL line :

From 128 kb/s to 5.7 Mb/s if the performance, standard or endurance profile have been selected.  
Or up to 10 Mb/s if the TurboShort profile has been selected.

**Signal to noise ratio margin :**

That parameter reports the reliability of the connection

To obtain a reliable connection; the value of that parameter must be 2/4 or 3/4 or 4/4.

**Line attenuation XX (minimum ?):**

That parameter reports the signal attenuation over the line.

The attenuation depends on the line range and of the conductors quality.

**Last 24 hours link losses**

That parameter reports the number of disconnections of the SHDSL connection during the last 24 hours. It must be 0 or next to zero.

**Last hour erroneous seconds :**

That parameter reports the number seconds of the last 60 minutes during which the transmission has been seriously disturbed.

### 1.3 Statistics

#### 1.3.1 Ethernet counters XX

That menu reports the Ethernet 10 / 100 BT counters :

**Input frames :**

**Input erroneous frames :**

**Input good frames :**

**Output frames :**

**Output good octets :**

### 1.3.2 SHDSL counters

That page is divided in two parts; it displays the “SHDSL counters” table and the “SHDSL counters history” table.

The shdsl counter table reports the number of seconds with and without errors in the shdsl data flow.

The shdsl counter history table is a log which reports the same information but hour by hour.

- **SHDSL counters**

That menu reports the SHDSL counters in conformance with the G821 norm. the counters starts from the moment the reset button is pressed.

That counter refers to the errors in the received SHDSL data flow.

**Errors free seconds counter (EFS) :**

The counter reports the number of seconds without errors since the reset button has been pressed.

**Erroneous seconds counter (ES) :**

The counter reports the number of seconds with isolated errors since the reset button has been pressed.

**Severely erroneous seconds counter (SES) :**

The counter reports the number of seconds with an important number of errors since the reset button has been pressed.

**Unavailable seconds counter (US) :**

The counter reports the number of seconds including unavailable data because of errors since the reset button has been pressed.

**Not connected seconds counter (NCS) :**

The counter reports the number of seconds during which the shdsl connection has remained disconnected.

XX Préciser à quel flux ce nombre de secondes se rapporte

XX Pourrait on faire figurer le nombre total de secondes ?

- **SHDSL counters history table**

The “shdsl counter history table logs the same information but hour after hour.

It makes possible to understand if errors occur at a certain time of the day; it makes possible to understand if errors are in relation with an event such as an electric motor start or with another disturbance.

### 1.4 Serial gateway

That page displays the current status of the serial gateways :

- Type of the gateway (Modbus, RAW, Telnet ...),
- serial port set-up (data rate etc...),
- number of characters received or sent,
- Number of TCP frames or UDP datagrams received or sent,
- Number of TCP connections enabled.

The View link displays a window which shows the hexadecimal received and transmitted traffic over each serial COM port.

It can be a great help for trouble shooting.



## 2 Storing the configuration to a file and restoring it

Once a product has been configured, the parameters file can be stored and restored when necessary.

### To store the configuration into a file,

- Select “Maintenance > Configuration management”
- Select the “Current configuration” check box.
- Select the location to store the configuration and give a name to the configuration file.

### Attention :

A parameters file can only be downloaded to a product having the same firmware version. It is why, we advise to assign a name to a parameter file including the product name and the software version.

Example :

Name of a parameters file for an XSLAN+2400 with the firmware version V2.4 :  
xslan+2400\_ V241\_ siteXYZ

## 3 restoring the configuration from a file

Restoring a configuration from a file is carried-out in two steps :

### Step 1 : Import the configuration file into the User configuration table

- Select “Maintenance > Configuration management”.
- In “the import a configuration from a file” part of the page, click the browse button,
- select the file to import,
- Click the “Import from a file” button,  
The file is imported into the “User configuration” table.

### Step 2 : Restore the configuration

- In the “User configuration” table, select the configuration to restore,
- Press the “Restore this configuration” button.

## 4 Updating the firmware

- Select “Maintenance > Firmware update”;
- click Browse;
- select the firmware file;
- click Upgrade now.

When the download is finished, the product automatically reboots.

XX est ce que la conf est conservée ?

Quel conseil donner à propos de la conf ?

.

Maximum distance between 2 switches versus data rate over one twisted pair								
Data rate▶	192 Kb/s	1.15 Mb/s	2.3 Mb/s	5,7 Mb/s	6,7 Mb/s	10 Mb/s	12 Mb/s	15 Mb/s
▼ Wire Φ								
<b>0.9 mm</b>	13 Km 8 miles	8 Km 5 miles	6 Km 3.7 miles	3,7 Km 2.3 miles	2.5 Km 1.5 miles	1.5 Km 0,9 mile	1 Km 0,62mile	0,7 Km 0,4 mile
<b>0.4 mm</b>	7 Km 4.3 miles	4 Km 2.5 miles	3.5 Km 2.2 miles	2 Km 1.2 miles	1.3 Km 0.8 mile	0.9 Km 0.55 mile	0.6 Km 0.4 mile	0.4 Km 0.25 mile



## Set up

### Ethernet & switching

SHDSL ports	To configure the SHDSL interfaces
LAN ports	To set up the 10/100 ports
RTSP / fail safe ring	To set up the failsafe ring
VLANs	To set up the VLAN function
MAC address filter	To filter destination MAC addresses

### IP protocol & routes

IP protocol	To enter the IP @ of the unit
RIP	To enable the RIP protocol
Static routes	To enable IP routing and set the routes
QoS	to assign a priority class to each TCP port and IP source @

### Alarms

Output command	To set up which event drives the digital output
SNMP traps	To select the SNMP traps
Static routes	To enable IP routing and set the routes
QoS	to assign a priority class to each TCP port and IP source @

### Security

Administration rights	To protect access to the html administration server
-----------------------	---

### System

SNMP traps	To select the SNMP traps
Syslog	To export the Log to a PC
Devices list	To define the machines connected to the LAN ( for QoS only)
Service list	To define a list of level 3 protocol and ports number
Date & time	To set date and time of the day

### IP to RS gateway (XSLAN+1220, 1230, 2220 & 2230)

Modbus	To configure the modbus gateway.
Transparent	To configure the raw TCP, raw UDP, multicast & telnet serial gateways
Unitelway	To configure the unitelway gateway

## Diagnostics

### Log

SHDSL ports	To configure the SHDSL interfaces
LAN ports	To set up the 10/100 ports
RTSP / fail safe ring	To set up the failsafe ring
VLANs	To set up the VLAN function
MAC address filter	To filter destination MAC addresses

### Network status

Interfaces	To display the status of the SHDSL and Ethernet ports
RTSP status	To display the status of the ring
Routes	To display the routes

### Statistics

Ethernet counters	To display the Ethernet counters
SHDSL counters	To display the SHDSL G821 counters

### Tools

To ping a device



**Maintenance**

- Configuration management      To save or restore the configuration
- Firmware update                To update the firmware
- Reboot                              To restart the product

**About**

To display the firmware and hardware identification codes





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