



## VES1724-56 Series

### Support Notes

Edition 2



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# Product Series

1

## Physical appearance:

VES1724-56: 1.5U, with FAN



VES1724-56B2: 1 U, no FAN



## FW difference:

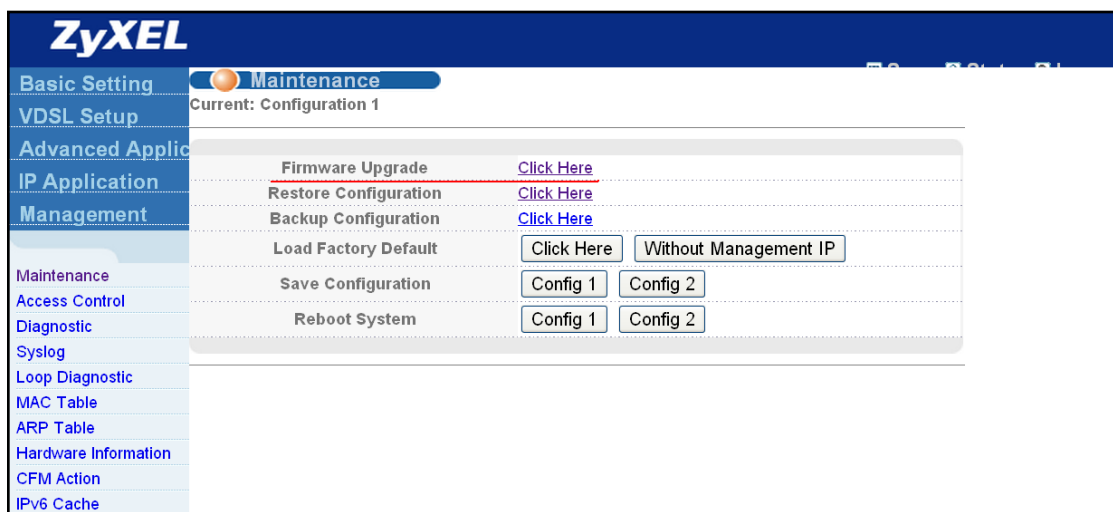
VES1724-56B2 is the same as VES1724-56, only without FAN-control setting/MIB

And the following setting we will use **VES1724-56** as examples.

## Firmware Upgrade

### Using the Web Configurator

- Download (and unzipped) the correct model firmware to your computer.
- Click **Management > Maintenance** in the navigator panel to display the following screen.



- Click the **Click Here** link for Firmware Upgrade
- In the File Path field, click Browse to locate the firmware file.
- Click Upgrade to start the firmware upgrade process.

### Using the Console Port:

- Download (and unzipped) the correct model firmware to your computer.
- Connect to the console port and launch a Terminal Emulation software
- Restart the switch to enter the debug mode via the terminal.
- Enter "ATUR".
- Use the X-modem protocol to transfer (Send File) the firmware.
- Enter "ATGO" to restart the switch after the file transfer is complete and the firmware upgrade process is done.

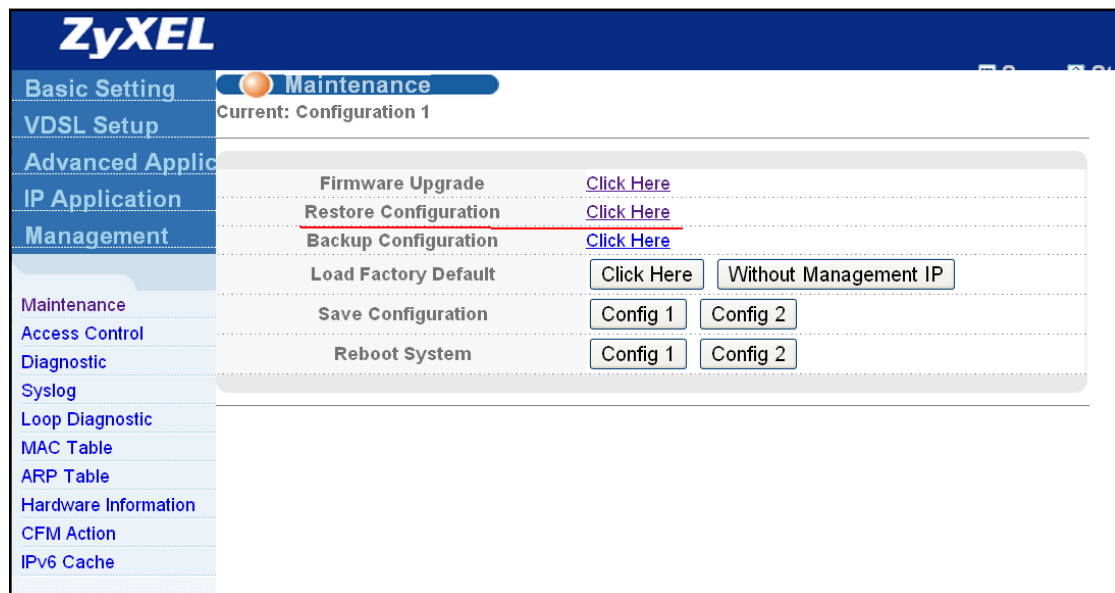
## Using FTP:

- a. Download (and unzipped) the correct model firmware to your computer.
- b. Launch the FTP client on your computer to log into switch. (From the command prompt, type “ftp <Switch IP>”).
- c. Press [ENTER] when prompted for a user name.
- d. Enter the administrator login password to access the switch and display FTP prompt.
- e. Enter “bin” to set the transfer mode to binary.
- f. Use “put” to transfer the firmware from the computer to the switch, for example: “put firmware.bin ras-0” (or ras-1) transfers the firmware on your computer (firmware.bin) to the switch and renames it to “ras”.
- g. Enter “bye” to log out from the switch.

## Restore a Configuration File

### Using the Web Configurator:

- a. Click **Management > Maintenance** in the navigator panel to display the following screen.



- b. Click the **Click Here** link for Restore Configuration
- c. In the File Path field, click Browse to locate the firmware file.
- d. Click Restore to start restoring configuration.

## Using the Console Port:

- a. Connect to the console port and launch a Terminal Emulation software.
- b. Restart the switch to enter the debug mode via the terminal.
- c. Enter "ATLC"
- d. Use X-modem protocol to transfer (Send File) the configuration file (with a .rom file extension).
- e. Enter "ATGO" to restart the switch after file transfer and the configuration restore processes are complete.

## Using FTP:

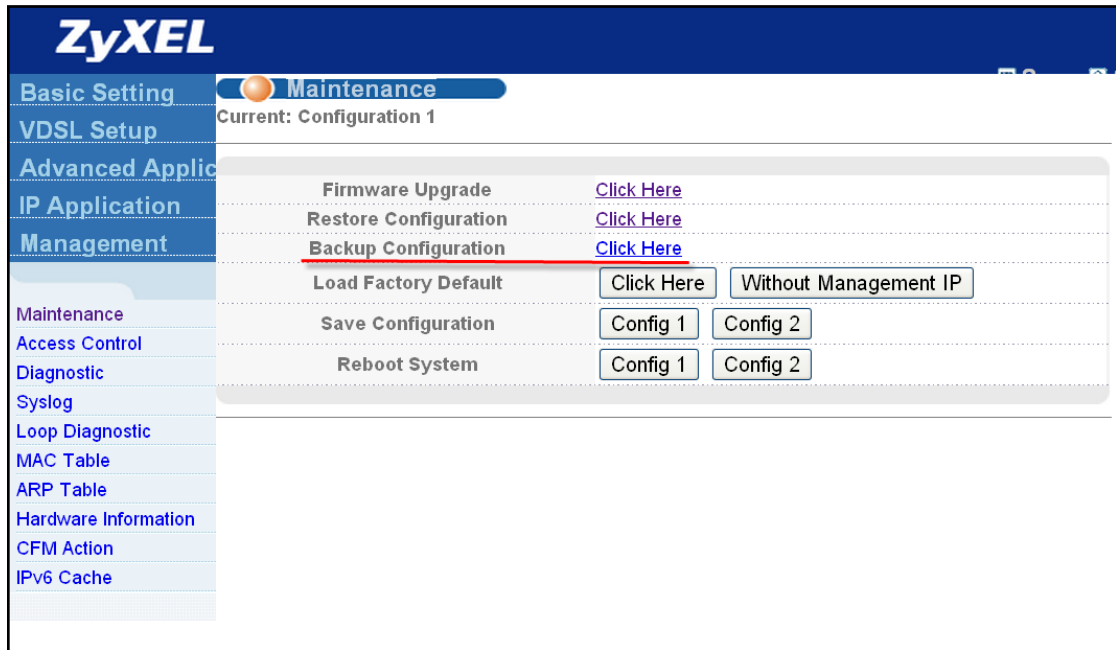
- a. Download (and unzipped) the correct model firmware to your computer.
- b. Launch the FTP client on your computer to log into the switch. (From the command prompt, type "ftp <Switch IP>".
- c. Press [ENTER] when prompted for a user name
- d. Enter the administrator login password to access the switch and display FTP prompt.
- e. Enter "bin" to set the transfer mode to binary.
- f. Use "put" to transfer the configuration file from the computer to the switch, for example: "put config.rom rom-0" transfers the configuration file on your computer (config.rom) to the switch and renames it to "rom-0".
- g. Enter "bye" to log out from the switch.

# Backing Up a Configuration File

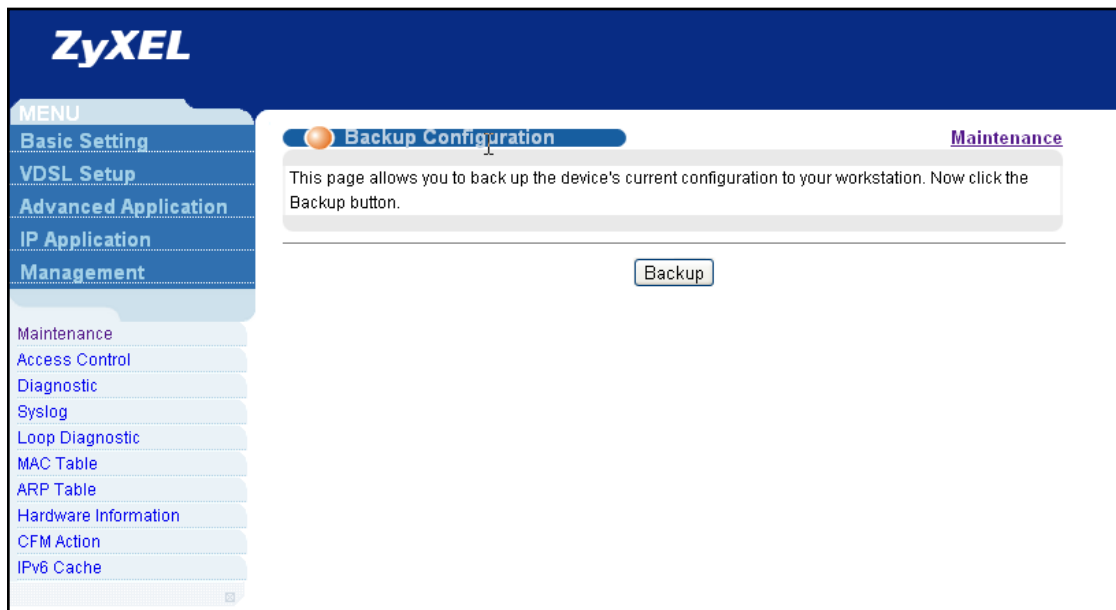
## Using the Web Configurator:

- a. Click **Management > Maintenance** in the navigator panel to display the following screen.





b. Click the **Click Here** link for Backup Configuration to display the following screen.



c. Click **Backup** to display the File Download dialog. Then, click **Save** to back up the configuration text file to a location you specify on your computer.

## Using the Console Port:

- Connect to the console port and launch a Terminal Emulation software.
- Restart the switch to enter the debug mode via the terminal.
- Enter "ATTD".

- d. Use X-modem protocol to transfer (Receive File) the configuration file (with a .rom file extension).
- e. Enter "ATGO" to restart the switch after file transfer and the configuration backup processes are complete.

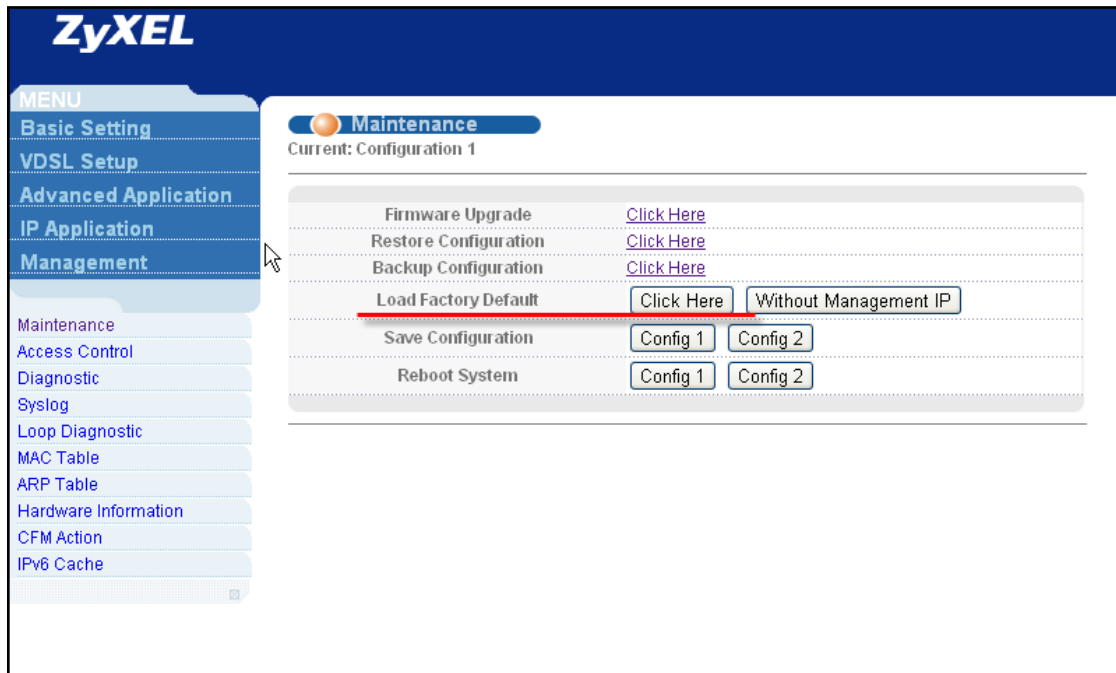
### Using FTP:

- a. Download (and unzipped) the correct model firmware to your computer.
- b. Launch the FTP client on your PC to log into the switch. (From the command prompt, type "ftp <Switch IP>")
- c. Press [ENTER] when prompted for a user name
- d. Enter the administrator login password to access the switch and display FTP prompt.
- e. Enter "bin" to set the transfer mode to binary.
- f. Use "get" to transfer the configuration file from the switch to your computer, for example: "get rom-0 config.rom" transfers the configuration file on the switch (rom-0) to your computer and renames it "config.rom".
- g. Enter "bye" to log out from the switch.

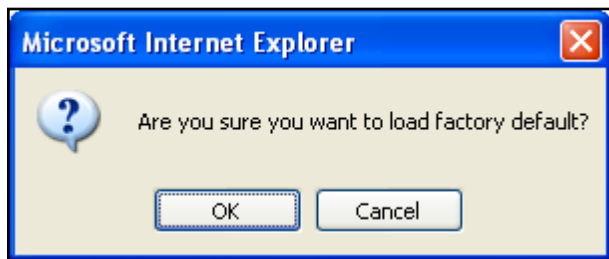
## Load Factory Defaults

### Using the Web Configurator:

- a. Click **Management > Maintenance** in the navigation panel to display the following screen.



- b. Click **Click Here** link for Load Factory Default.
- c. A dialog box pops up with the “Are you sure you want to load factory defaults?” prompt.

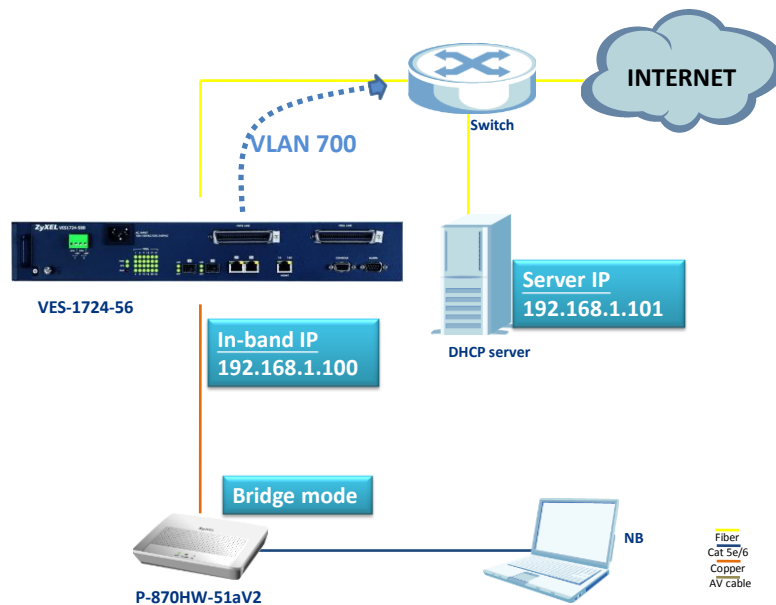


- d. Click **OK**.
- e. Click **OK** again to start the configuration reset process. After it is complete, the device automatically restarts.
- f. Please note that the IP address of the switch is now 192.168.1.1.

## DHCP Relay per VLAN

The feature of DHCP relay per VLAN basis comes handy for managing the DHCP IP assignment to the clients. VES-1724-56 has the ability to relay the DHCP request packets according to its VLAN tag to the DHCP server in the uplink Network.

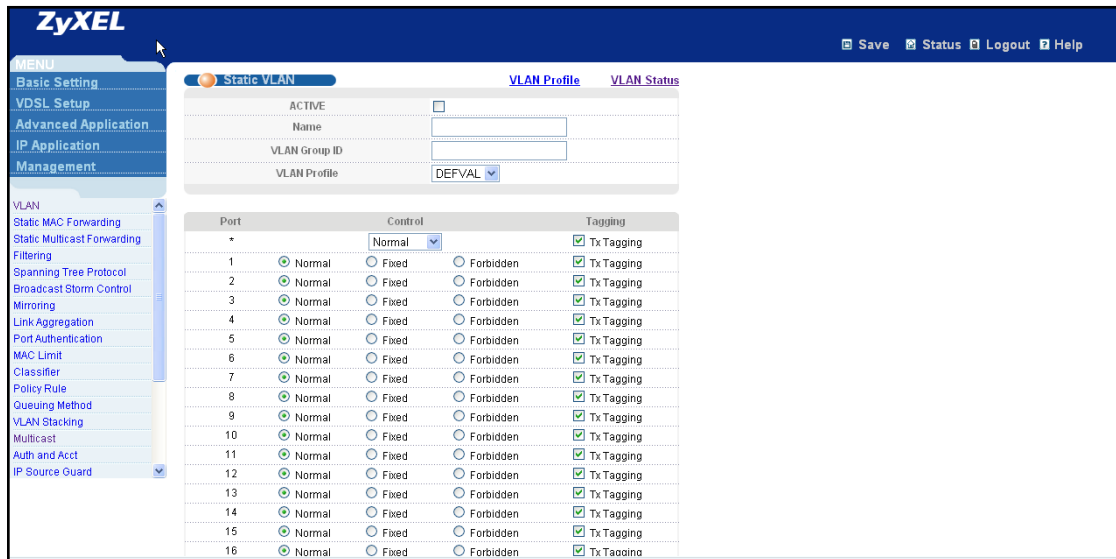
### Scenario



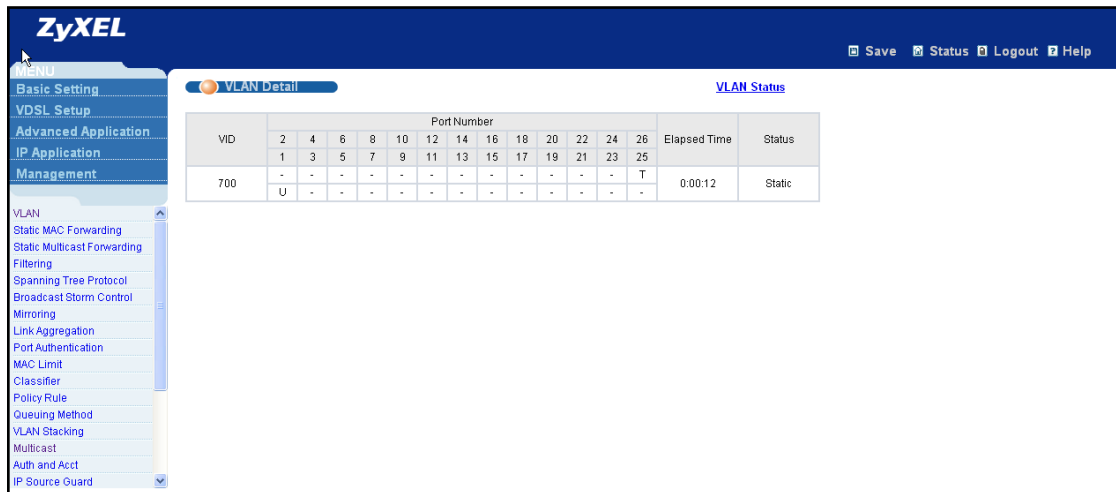
The purpose is to have a DHCP relay on the VES according to VLAN=700, to the DHCP server (IP=192.168.1.101). The VES' In-band is 192.168.1.100, and tags a PVID=700 to the ingress traffic on port 1. The NB shall receive the IP assigned from the DHCP server.

### Configure a Static VLAN

- In the navigation panel, click **Advanced Application > VLAN > Static VLAN**. The **Static VLAN** screen appears.

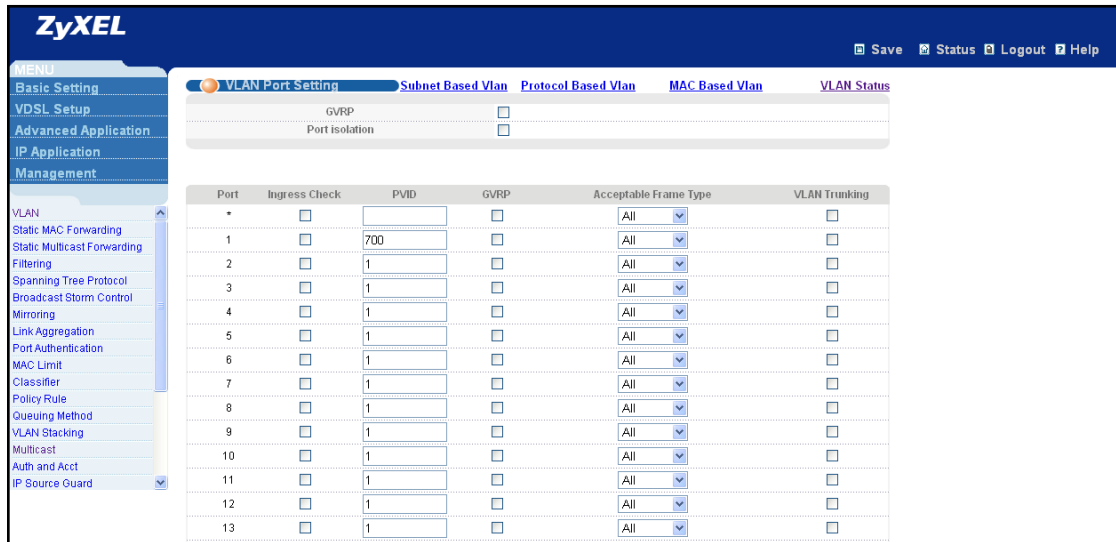


- Click to select the **ACTIVE** checkbox.
- Type "700" in the **Name** field.
- Type "700" in the **VLAN Group ID** field.
- In the **Port 1** field, select **Fixed** and click to clear the **Tx Tagging** checkbox.
- In the **Port 26** field, select **Fixed**.
- Leave the **Tx Tagging** checkbox of **Port 26** checked.
- Click the **Add** button.



## VLAN Port Setting

- In the navigation panel, click **Advanced Application > VLAN > VLAN Port Setting**. The **VLAN Port Setting** screen appears.
- Type "700" in the **PVID** field of **Port 1**.
- Click the **Apply** button.



## Configure an In-band IP Address

- In the navigation panel, click **Basic Setting > IP Setup**.
- In the **In-band IP Addresses** section, type "192.168.1.100" in the **IP Address** field.
- Type "255.255.255.0" in the **IP Subnet Mask** field.
- Type "700" in the **VID** field.
- Type "192.168.1.101" in the **Default Gateway** field.
- Click the **Add** button.

**In-band IP Addresses**

IP Address	192.168.1.100
IP Subnet Mask	255.255.255.0
VID	700
Default Gateway	192.168.1.101
Manageable	<input type="checkbox"/>

Index	IP Address	IP Subnet Mask	VID	Default Gateway	Manageable	Delete
<input type="button" value="Delete"/> <input type="button" value="Cancel"/>						

## DHCP VLAN Setting

- In the navigation panel, click **IP Application > DHCP > VLAN**. The **VLAN Setting** screen appears.
- Type “700” in the **VID** field.
- Type “192.168.1.101” in the **Remote DHCP Server 1** field.
- Click the **Add** button.

The screenshot shows the ZyXEL VLAN Setting configuration page. The left sidebar contains a menu with options: Basic Setting, VDSL Setup, Advanced Application, IP Application, Management, Static Routing, DiffServ, and DHCP. The main content area is titled 'VLAN Setting' and includes the following fields and options:

- VID: 700
- Remote DHCP Server 1: 192.168.1.101
- Remote DHCP Server 2: 0.0.0.0
- Remote DHCP Server 3: 0.0.0.0
- Relay Agent Information:  Option 82
- Information:  Append Circuit ID by host name
- Relay Remote ID:  Remote ID
- Remote ID Information:  Append Remote ID by port name

Buttons: Add, Cancel, Clear

VID	Type	DHCP Status	Delete
700	Relay	192.168.1.101	<input type="checkbox"/>

Buttons: Delete, Cancel

### 1. Save Configuration

Click the **Save** link in the top right-hand corner of the screen to save your configuration into the Switch’s nonvolatile memory.

The screenshot shows the ZyXEL Successful message screen. The left sidebar contains a menu with options: Basic Setting, VDSL Setup, Advanced Application, IP Application, Management, Static Routing, DiffServ, and DHCP. The main content area displays a 'Successful' message:

**Successful**

Successful Message: This configuration is saved.





## Triple Play concept

The concept for the setting up a triple play service in VES-1724-56, is to manage the Internet, IPTV and VoIP traffic that are assigned into different VLANs. We will give an example of a service deployed in the fields, according to the following diagram.



## PPPoE service

PPPoE application to INTERNET access is a common scene in the nowadays ADSL service deployment, but as xDSL has progressed to the VDSL technology, it is finally time to have the PPPoE application also implemented in the VDSL scenario. ZyXEL, the world's leading broadband access solutions provider, can demonstrate this scenario with products uniquely on its own.

## Idea behind the PPPoE service

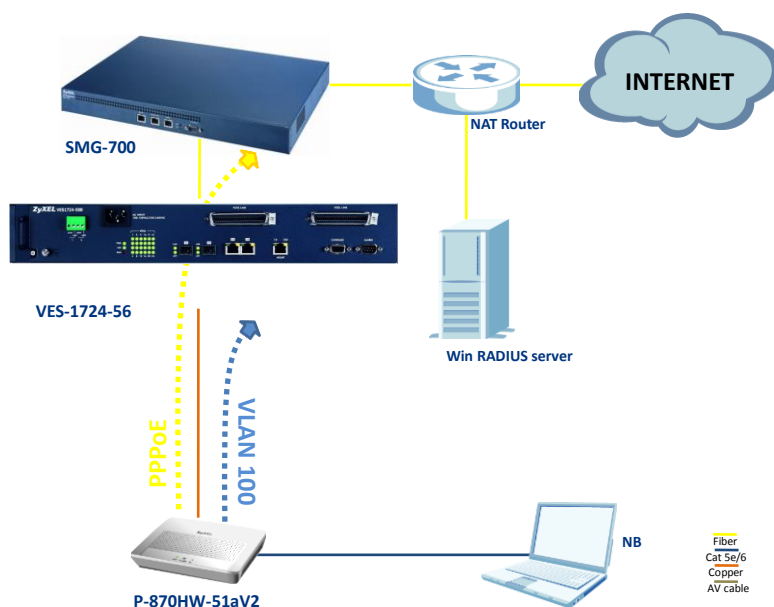
The goal of this case study is to demonstrate a proof of concept on a PPPoE service applied on ZyXEL own VDSL2 and BRAS devices. The scenario is focused on 3 devices: VES-1724-56, P-870HW-51aV2 and SMG-700. The client shall be able to enjoy INTERNET access, by simply plugging the Ethernet cable to the CPE, i.e. P-870HW-51aV2.

## Hardware/Firmware for deployment

	Hardware	Firmware
BRAS Server	SMG-700	1.00(TF.4)c0   06/07/2007
VDSL COE	VES-1724-56	V1.00(AABH.0)C0   02/03/2012
VDSL CPE	P-870HW-51aV2	1.00(AWZ.1)C0   03/24/2009

Note: the radius server used for this demo is “WinRadius v4.00”

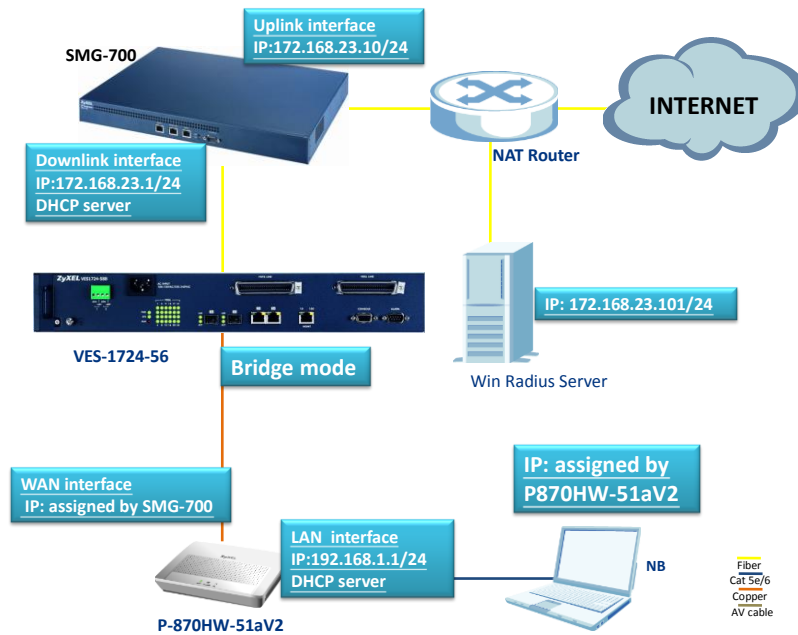
## Scenario



The WAN interface in P-870HW-51aV2 shall be configured into PPPoE mode with the correct username and password, which the egress traffic will automatically be tagged with VLAN=100. VES-1724-56 untags the coming PPPoE traffic from the CPE,

and relay it to the BRAS, SMG-700. The SMG-700 shall be able to establish the PPPoE connection by authenticating the username/password with the help of the Win RADIUS server, and relay the traffic to the NAT router, to allow the client to be able to access INTERNET.

## IP domain topology



The IP topology is described in details on the above diagram, keeping in mind that the NAT router at this demo has the ability to route the 172.168.23.0 domain to the INTERNET with NAT feature. Notice that the WinRADIUS is a (free) software that can be installed in Windows OS, in this case, WinXP.

## SMG-700 configuration

### 1. Interface Configuration

- a. Go to **Network Setting > Interface Configuration**
- b. Select “up1” for the uplink **Interface**
- c. Input the **IP Address** for the uplink interface, e.g. “172.168.23.10”
- d. Input the **IP Subnet Mask** for the uplink interface, e.g. “255.255.255.0”
- e. Click **Apply**

The screenshot shows the 'Interface Configuration' page in the SMG-700 web interface. On the left is a 'MENU' sidebar with options: Basic Setting, Network Setting, Service Setting, Statistics, and Management. Under 'Management', 'Interface Config' is highlighted. The main content area has a title 'Interface Configuration' and a form with the following fields: 'Interface' (dropdown menu set to 'up1'), 'IP Address' (text box with '172.168.23.10'), and 'IP Subnet Mask' (text box with '255.255.255.0'). At the bottom right of the form are 'Apply' and 'Cancel' buttons.

- f. Select “down1” for the downlink **Interface**
- g. Input the **IP Address** for the downlink interface, e.g. “192.168.3.1”
- h. Input the **IP Subnet Mask** for the downlink interface, e.g. “255.255.255.0”
- i. Click **Apply**

The screenshot shows the 'Interface Configuration' page in the SMG-700 web interface for a downlink interface. The 'MENU' sidebar is the same as in the previous screenshot. The main content area has a title 'Interface Configuration' and a form with the following fields: 'Interface' (dropdown menu set to 'down1'), 'IP Address' (text box with '192.168.3.1'), and 'IP Subnet Mask' (text box with '255.255.255.0'). At the bottom right of the form are 'Apply' and 'Cancel' buttons.

### 2. PPPoE Setting Configuration

- a. Go to **Service Setting > PPPoE Setting**
- b. Type the **AC name** (access concentrator) of the PPPoE service, e.g. “test.com”
- c. Select the **Increment IP address and start from** and input the IP, e.g. “192.168.3.100”
- d. Input the **Maximum Concurrent Sessions**, e.g. “3000”
- e. Check the **Allow Duplicate MAC Address** box

f. Click **Apply**

MENU

- Basic Setting
- Network Setting
- Service Setting
- Statistics
- Management
  - PPP Setting
  - PPPoE Setting
  - ISP Info Setting
  - L2TP Setting
  - DHCP Setting
  - Billing Profile
  - Subscriber Management
  - Billing Records

PPPoE Setting

AC Name: test.com

Service Name: [Click here to edit Service Name](#)

Remote IP Address Assignment:

- Use RADIUS Assigned IP
- Increment IP address and start from

Starting IP Address: 192.168.3.100

Assign remote IP addresses from IP Pool [Click here to edit IP Pool](#)

Maximum Concurrent Sessions: 3000

Allow Duplicate MAC Address:

Apply Cancel

### 3. ISP Info Setting Configuration

- Go to **Service Setting > ISP Info Setting**
- Input the **ISP Domain Name**, e.g. “test.com”
- Select the **Authentication Method**, e.g. “PAP”
- Select the **Authentication Server**, e.g. “Radius”
- Click **Add**

MENU

- Basic Setting
- Network Setting
- Service Setting
- Statistics
- Management
  - PPP Setting
  - PPPoE Setting
  - ISP Info Setting

ISP Info Setting

ISP Domain Name: test.com

Authentication Method: PAP

Authentication Server:  Local  Radius

Add Cancel

- Click the **test.com** ISP Domain Name just created to edit
- Select “Yes” for the **Strip Domain Name**
- Input the **Primary DNS Server**, e.g. “168.95.1.1”
- Input the **Secondary DNS Server**, e.g. “10.59.1.1”
- Input the **IP address** of the **Primary Radius Server**, e.g. “172.168.23.101”
- Input the **Authentication port** of the **Primary Radius Server**, e.g. “1812”
- Input the **Accounting Port** of the **Primary Radius Server**, e.g. “1813”
- Input the **Secret** of the **Primary Radius Server**, e.g. “key123”
- Click **Apply**

ISP Information Edit		ISP Info
ISP Domain Name	test.com	
Authentication Method	PAP	
Authentication Server	<input type="radio"/> Local <input checked="" type="radio"/> Radius	
Strip Domain Name	<input type="radio"/> No <input checked="" type="radio"/> Yes	
Primary DNS Server	168.95.1.1	
Secondary DNS Server	10.59.1.1	
Primary WINS Server	0.0.0.0	
Secondary WINS Server	0.0.0.0	
Primary Radius Server		
IP Address	172.168.23.101	
Authentication Port	1812	
Accounting Port	1813	
Secret	key123	
Secondary Radius Server		
IP Address	0.0.0.0	
Authentication Port		
Accounting Port		
Secret		

## 4. Win RADIUS

- Make sure that Win Radius v4.00 is properly installed in a PC (OS: WinXP) with the IP of the NIC configured as IP: 172.168.23.101/24
- Check if the **NAS Secret** and the **Authorization** and **Accounting ports** match the settings in the SMG-700

System settings	
NAS Secret:	key123
Authorization port:	1812
Accounting port:	1813
<input checked="" type="checkbox"/> Launch when system startups	
<input type="checkbox"/> Minimize the application when startups	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

- Create a PPPoE account, e.g. username/password = VDSL2/1234

**Add user** [X]

User name:

Password:

Group:

Address:

Cash prepaid:  Cents

Expiry date:

**Note: yyyy/mm/dd means expiry date; digit means valid days since first login; empty means never expired.**

Others:

Prepaid user    Postpaid user

Accounting method:

OK   Cancel

d. Check if the account is successfully created

Operation LOG Advanced Settings View Help

ID	Time	Message
1	2009y5m11d 15h42m27s	Add user successfully.
2	2009y5m11d 15h42m53s	User information refreshed
3	2009y5m11d 15h43m16s	Query started.
4	2009y5m11d 15h43m16s	Query ended.

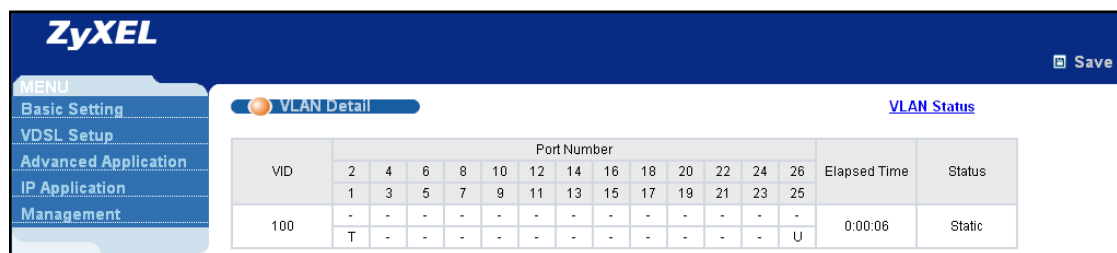
  

username	status	password	groups	addr	cash	expiry	others	method	billtype
cht	offline	1234			0			Based on Time	Postpaid
chtv1	offline	1234			0			Based on Time	Postpaid
telefonica	online	1234			0			Based on Time	Postpaid
VDSL2	offline	1234			0			Based on Time	Postpaid

# VES-1724-56 configurations

## 1. VLAN configuration

- a. Go to **Advanced Application > VLAN > Static VLAN**
- b. Check the **Active** box
- c. Input the **Name**, e.g. "Internet"
- d. Input the **VLAN Group ID**, e.g. "100"
- e. Set **port 1** to be "fixed" and check the **Tx Tagging** box
- f. Set **port 25** to be "fixed" and uncheck the **Tx Tagging** box
- g. Click **Add**



The screenshot shows the ZyXEL web interface for VLAN configuration. The top navigation bar includes the ZyXEL logo and a 'Save' button. A left sidebar menu lists 'Basic Setting', 'VDSL Setup', 'Advanced Application', 'IP Application', and 'Management'. The main content area is titled 'VLAN Detail' and includes a 'VLAN Status' link. A table displays the configuration for VLAN 100, showing port numbers 2 through 26, their respective configurations (T for tagged, U for untagged), elapsed time (0:00:06), and status (Static).

VID	Port Number																Elapsed Time	Status
	2	4	6	8	10	12	14	16	18	20	22	24	26					
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0:00:06	Static
	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	U		

- h. Go to **Advanced Application > VLAN > VLAN Port Setting**
- i. Set "100" in the **PVID** box of **port 25**
- j. Click **Apply**



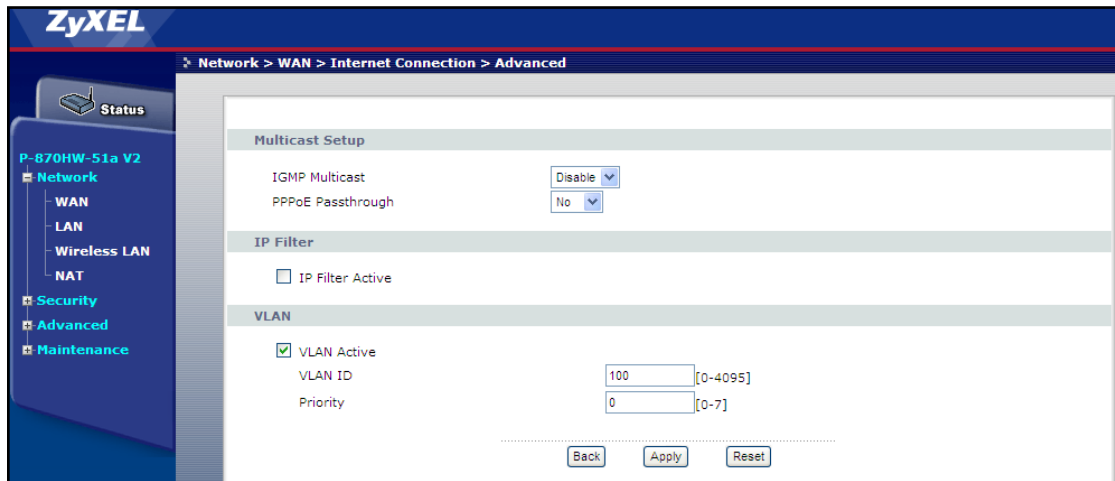
## P-870HW-51aV2 configurations

### 1. WAN configuration

- a. Go to **Network > WAN > Internet Connection**
- b. Input the **Name**, e.g. "INTERNET"
- c. Select the **Mode** as "PPPoE"
- d. Type the **User Name**, e.g. "VDSL2@test.com"
- e. Type the **Password**, e.g. "1234"
- f. Check the **Retry when the authentication fails** box
- g. Input "1" in the **Retry Interval**
- h. Select **Obtain an IP Address Automatically**
- i. Select **Nailed-Up Connection**
- j. Check the **Active NAT** box

The screenshot shows the ZyXEL web interface for the P-870HW-51a V2 router. The navigation menu on the left includes Status, Network (WAN, LAN, Wireless LAN, NAT), Security, Advanced, and Maintenance. The main content area is titled "Network > WAN > Internet Connection" and contains the "Internet Connection" configuration page. The "General" section includes fields for Name (INTERNET), Mode (PPPoE), User Name (VDSL2@test.com), Password (masked with dots), Service Name, and a checked box for "Retry when the authentication fails" with a Retry Interval of 1. The "IP Address" section has "Obtain an IP Address Automatically" selected. The "Connection" section has "Nailed-Up Connection" selected and a Max Idle Time of 0 Mins.

- k. Click **Advanced Setup**
- l. Uncheck the **IP Filter Active** box
- m. Check the **VLAN Active** box
- n. Input "100" in the **VLAN ID**
- o. Input **Priority** value, e.g. "0"
- p. Click **Apply**



## 2. Verification

### P-870HW-51aV2

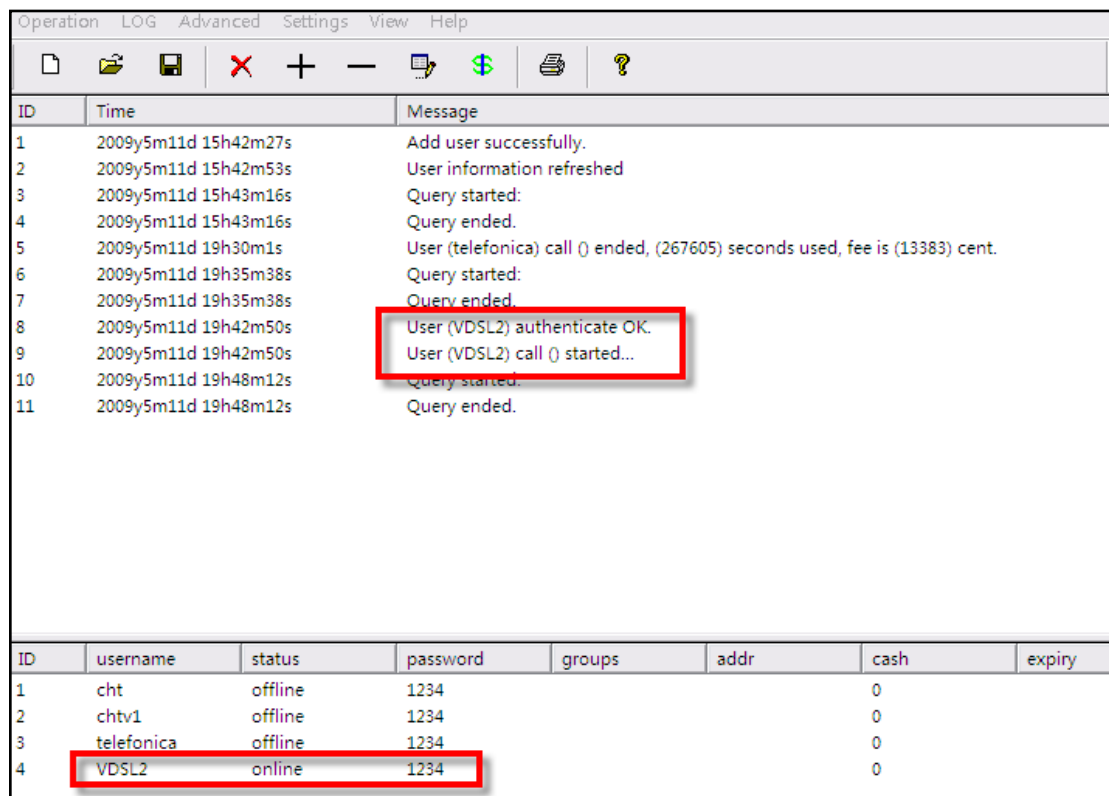
Check the status on the homepage:



The PPPoE connection was successful!

### 3. Win RADIUS

Query the user info:



The screenshot shows a WinBox RADIUS log window with a menu bar (Operation, LOG, Advanced, Settings, View, Help) and a toolbar. The log is displayed in a table with columns for ID, Time, and Message. A red box highlights the message "User (VDSL2) authenticate OK." in row 8. Below the log is a summary table with columns for ID, username, status, password, groups, addr, cash, and expiry. A red box highlights the row for user VDSL2, which is online.

ID	Time	Message
1	2009y5m11d 15h42m27s	Add user successfully.
2	2009y5m11d 15h42m53s	User information refreshed
3	2009y5m11d 15h43m16s	Query started:
4	2009y5m11d 15h43m16s	Query ended.
5	2009y5m11d 19h30m1s	User (telefonica) call () ended, (267605) seconds used, fee is (13383) cent.
6	2009y5m11d 19h35m38s	Query started:
7	2009y5m11d 19h35m38s	Query ended.
8	2009y5m11d 19h42m50s	User (VDSL2) authenticate OK.
9	2009y5m11d 19h42m50s	User (VDSL2) call () started...
10	2009y5m11d 19h48m12s	Query started:
11	2009y5m11d 19h48m12s	Query ended.

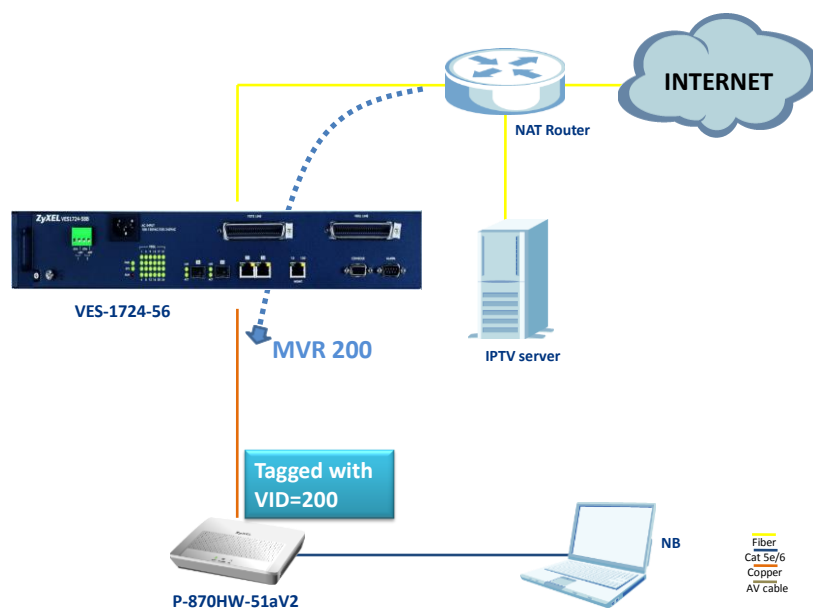
  

ID	username	status	password	groups	addr	cash	expiry
1	cht	offline	1234			0	
2	chtv1	offline	1234			0	
3	telefonica	offline	1234			0	
4	VDSL2	online	1234			0	

We can see the record that the use successfully logged in!

# Multicast Service

We shall set up an MVR=200 in VES-1724-56, to allow the multicast traffic to pass through without consuming too much resources. The multicast traffic is tagged with VID=200 before coming to the VES. The P-870HW-51Av2 also tags the IGMP upstream traffic with VLAN=200, and untags it at the downstream direction.



## 1. IGMP Proxy Settings

- In the navigation panel, click **Advanced Application > Multicast > Multicast Setting**, and the **Multicast Setting** screen appears
- Click to select the **Active** checkbox of **IGMP Proxy**
- Select “Drop” for **Unknown Multicast Frame**
- Select “Drop” for **Reserved Multicast Group**
- Check the **Immed. Leave** box for **port 1**
- Check the **Max Group Num.** box for **port 1** and enter “5” group
- Select “Fixed” from the **IGMP Querier Mode** drop-down list box of **Port 26**
- Click the **Apply** button

**ZyXEL** Save Status Logout Help

**MENU**  
 Basic Setting  
 VDSL Setup  
 Advanced Application  
 IP Application  
 Management

**Multicast Setting**    **Multicast Status**    IGMP Snooping VLAN    IGMP Filtering Profile    **MVR**

IGMP Snooping    Active   
 Host Timeout    260  
 Leave Timeout    2  
 802.1p Priority    No-Change

IGMP Proxy    Active   
 IGMP Filtering    Active   
 Unknown Multicast Frame     Flooding     Drop  
 Reserved Multicast Group     Flooding     Drop

Port	Immed. Leave	Max Group Num.	IGMP Msg Limit	IGMP Filtering Profile	IGMP Querier Mode
*	<input type="checkbox"/>	<input type="checkbox"/> Enable	<input type="checkbox"/> Enable	Default	Auto
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Enable	5	Default	Edge
2	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
3	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
4	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
5	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
6	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
7	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
8	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
9	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
10	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
11	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
12	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
13	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
14	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
15	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
16	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
17	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
18	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
19	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
20	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
21	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
22	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
23	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
24	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Edge
25	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Auto
26	<input type="checkbox"/>	<input type="checkbox"/> Enable	0	Default	Fixed

Apply    Cancel

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## 2. MVR Settings

- a. Go to **Advanced Application > Multicast > Multicast Setting > MVR**
- b. Select "IGMP Proxy" in **Behavior**
- c. Click **Apply**
- d. Check the **Active** box
- e. Input the **Name**, e.g. "IPTV"

- f. Input the **Multicast VLAN ID** as “200”
- g. Select “5” to be the **802.1p Priority**
- h. Select the **Mode** to be “Dynamic”
- i. Select “Receiver Port” for **port 1**
- j. Check the **Tagging** box for **port 1**
- k. Select “Source Port” for **port 26**
- l. Check the **Tagging** box for **port 26**
- m. Click **Add**

**ZyXEL** Save Status Logout Help

MENU

- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management
- VLAN
  - Static MAC Forwarding
  - Static Multicast Forwarding
  - Filtering
  - Spanning Tree Protocol
  - Broadcast Storm Control
  - Mirroring
  - Link Aggregation
  - Port Authentication
  - MAC Limit
  - Classifier
  - Policy Rule
  - Queueing Method
  - VLAN Stacking
  - Multicast
  - Auth setup
  - Loop Guard

MVR Multicast Setting Group Configuration

Behavior  IGMP Snooping  IGMP Proxy

Apply Cancel

Active

Name IPTV

Multicast VLAN ID 200

802.1p Priority 5

Mode  Dynamic  Compatible

Port	Source Port	Receiver Port	None	Tagging
*		Source Port		<input type="checkbox"/>
1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>
2	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
4	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
5	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
6	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
7	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
8	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
9	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
10	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
11	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
12	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
13	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
14	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
15	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
16	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
17	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
18	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
19	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
20	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
21	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
22	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
23	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
24	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
25	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
26	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>

Add Cancel

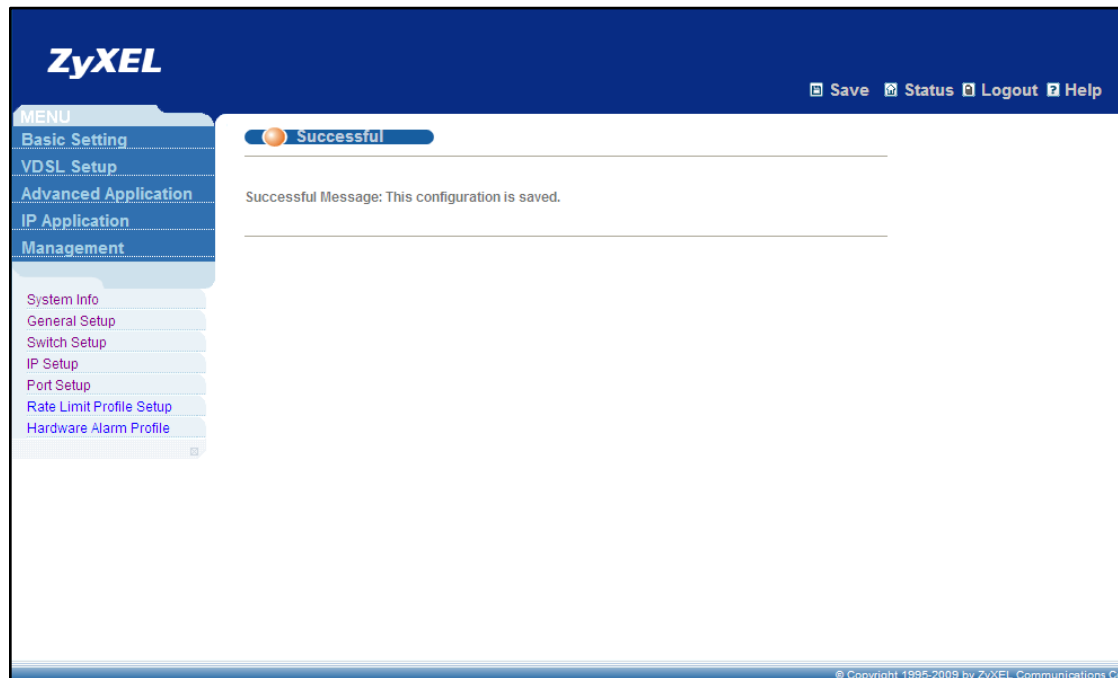
VLAN	Active	Name	Mode	Source Port	Receiver Port	802.1p	Delete
200	Yes	IPTV	Dynamic	26	1	5	<input type="checkbox"/>

Delete Cancel

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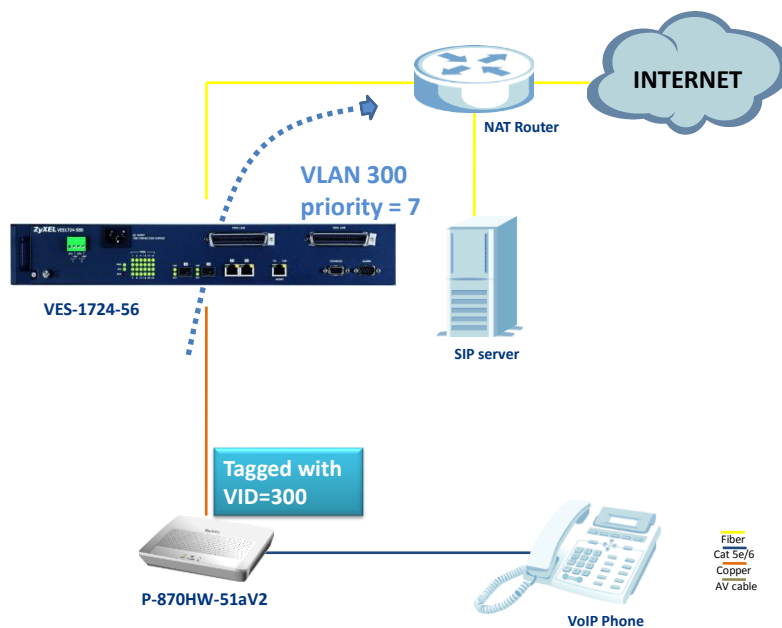
### 3. Save Configuration

Click the **Save** link in the top right-hand corner of the screen to save your configuration into the nonvolatile memory of the VES



# VoIP Service

The VoIP traffic is tagged by the P-870HW-51aV2 with VID=300, so the objective of the VES is to make sure that the traffic of VLAN 300 is treated with high priority, forcing its 802.1p to be 7 at all time. In here will demonstrate how this configuration is done by using the classifier and policy rules.



## 1. VLAN configuration

- Go to **Advanced Application > VLAN > Static VLAN**
- Check the **Active** box
- Input the **Name**, e.g. "VoIP"
- Input the **VLAN Group ID**, e.g. "300"
- Set **port 1** to be "fixed" and check the **Tx Tagging** box
- Set **port 26** to be "fixed" and uncheck the **Tx Tagging** box
- Click **Add**



**ZyXEL** Save Status Logout Help

**MENU**

- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management

**VLAN**

- Static MAC Forwarding
- Static Multicast Forwarding
- Filtering
- Spanning Tree Protocol
- Broadcast Storm Control
- Mirroring
- Link Aggregation
- Port Authentication
- MAC Limit
- Classifier
- Policy Rule
- Queuing Method
- VLAN Stacking
- Multicast
- Auth setup
- Loop Guard

**Static VLAN** VLAN Status

ACTIVE

Name

VLAN Group ID

Port	Control			Tagging
*	Normal			<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
25	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
26	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Add Cancel Clear

VID	Active	Name	Delete
<a href="#">1</a>	Yes	1	<input type="checkbox"/>
<a href="#">100</a>	Yes	Internet	<input type="checkbox"/>
<a href="#">300</a>	Yes	VoIP	<input type="checkbox"/>

Delete Cancel

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h. Go to **Advanced Application > VLAN** and click the index that VID="300"

**ZyXEL** Save Status Logout Help

MENU  
 Basic Setting  
 VDSL Setup  
 Advanced Application  
 IP Application  
 Management

VLAN Detail [VLAN Status](#)

VID	Port Number														Elapsed Time	Status
	2	4	6	8	10	12	14	16	18	20	22	24	26			
300	1	3	5	7	9	11	13	15	17	19	21	23	25	0:13:40	Static	
	-	-	-	-	-	-	-	-	-	-	-	-	-			T
	T	-	-	-	-	-	-	-	-	-	-	-	-			

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## 2. Classifier configuration

- a. Go to **Advanced Application > Classifier**
- b. Check the **Active** box
- c. Input the **Name**, e.g. "VoIP"
- d. Input the **VLAN on Layer 2** as "300"
- e. Select the **Source Port on Layer 2** as "1"
- f. Click **Add**

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Index	Active	Name	Rule	Delete
1	Yes	PING-VDSL-01	SrcMac = 02:10:18:01:00:02;	<input type="checkbox"/>
2	Yes	VoIP	Vlan = 300; SrcPort = port 1;	<input type="checkbox"/>

### 3. Policy Rule configuration

- Go to **Advanced Application > Policy Rule**
- Check the **Active** box
- Input the **Name**, e.g. "SIP"
- Select "VoIP" as the **Classifier**
- Input "300" for the **VLAN ID**
- Select the **Priority** to be "7"
- Select "Set the packet's 802.1 priority" in the **Action > Priority** field
- Check the "Set the packet's VLAN ID" in the **Action > Outgoing** field
- Click **Add**

- MENU
- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management

- VLAN
- Static MAC Forwarding
- Static Multicast Forwarding Filtering
- Spanning Tree Protocol
- Broadcast Storm Control
- Mirroring
- Link Aggregation
- Port Authentication
- MAC Limit
- Classifier
- Policy Rule
- Queuing Method
- VLAN Stacking
- Multicast
- Auth setup
- Loop Guard

Policy

Active	<input checked="" type="checkbox"/>		
Name	SIP		
Classifier(s)	<div style="border: 1px solid black; padding: 2px;">             PING-VDSL-01  <b>VoIP</b> </div>		
Parameters	General		Metering
	VLAN ID	<input type="text" value="300"/>	Bandwidth <input type="text" value="0"/> Kbps
	Egress Port	<input type="text" value="1"/>	Out-of-Profile DSCP <input type="text" value="0"/>
	Priority	<input type="text" value="7"/>	
	DSCP	<input type="text" value="0"/>	
	TOS	<input type="text" value="0"/>	
Action	Forwarding		
	<input checked="" type="radio"/> No change		
	<input type="radio"/> Discard the packet		
	<input type="radio"/> Do not drop the matching frame previously marked for dropping		
	Priority		
	<input type="radio"/> No change		
	<input checked="" type="radio"/> Set the packet's 802.1 priority		
	<input type="radio"/> Send the packet to priority queue		
	<input type="radio"/> Replace the 802.1 priority field with the IP TOS value		
	Diffserv		
	<input checked="" type="radio"/> No change		
	<input type="radio"/> Set the packet's TOS field		
	<input type="radio"/> Replace the IP TOS field with the 802.1 priority value		
<input type="radio"/> Set the Diffserv Codepoint field in the frame			
Outgoing			
<input type="checkbox"/> Send the packet to the mirror port			
<input type="checkbox"/> Send the packet to the egress port			
<input checked="" type="checkbox"/> Set the packet's VLAN ID			
Metering			
<input type="checkbox"/> Enable			
Out-of-profile action	<input type="checkbox"/> Drop the packet		
	<input type="checkbox"/> Change the DSCP value		
	<input type="checkbox"/> Set Out-Drop Precedence		
	<input type="checkbox"/> Do not drop the matching frame previously marked for dropping		

Add Cancel Clear

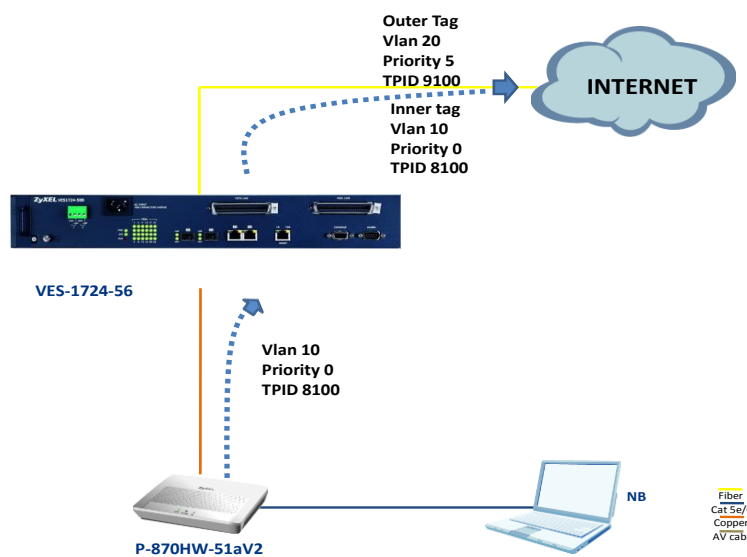
Index	Active	Name	Classifier(s)	Delete
1	Yes	SIP	VoIP	<input type="checkbox"/>

Delete Cancel

## Double Tagging application notes

As the telecommunication market grows rapidly, customers nowadays have the privilege of subscribing to multi-optional Internet Service Providers, based on the benefits that each service provider offers. Double-tagging (QinQ) can be very useful for multiple Internet Service Providers, allowing them to use VLANs internally while mixing traffic from clients that are already VLAN-tagged, to improve management efficiency.

### Scenario



The WAN interface in P-870HW-51aV2 is configured so that its egress traffic is automatically tagged with VLAN=10, priority=0 under TPID=8100. According to the Service Provider this client subscribed to, the VES-1724-56 has to add an outer tag of VLAN=20, priority=5 under TPID=9100 before forwarding upwards to the Internet. For the traffic on the downlink direction, the VES-1724-56 shall only untag VLAN=20, priority=5 under TPID=9100, and let the P-870HW-51aV2 untag the rest, i.e. VLAN=10, priority=0 under TPID=8100.

# 1. VLAN Stacking configuration

- a. Go to **Advanced Application > VLAN Stacking**
- b. Select the **Active** box
- c. Select the **SP TPID** to be "0x9100"
- d. Select the **Role** of **port 1** to be "Access Port"
- e. Input the **SPVID** of **port 1** to be "20"
- f. Input the **Priority** of **port 1** to be "5"
- g. Select the **Role** of **port 25** to be "Tunnel Port"
- h. Click **Apply**

The screenshot shows the ZyXEL web interface for VLAN Stacking configuration. The top navigation bar includes the ZyXEL logo and links for Save, Status, Logout, and Help. A left-hand menu lists various configuration options, with 'VLAN Stacking' selected. The main configuration area is titled 'VLAN Stacking' and contains the following settings:

- Active:**
- SP TPID:**  0x9100 (selected)  Others  (Hex)

Below these settings is a table with columns for Port, Role, SPVID, and Priority. The table lists ports from 1 to 26, with port 1 configured as an Access Port with SPVID 20 and Priority 5, and port 25 configured as a Tunnel Port. All other ports are set to Normal with SPVID 1 and Priority 0.

Port	Role	SPVID	Priority
*	Normal		0
1	Access Port	20	5
2	Normal	1	0
3	Normal	1	0
4	Normal	1	0
5	Normal	1	0
6	Normal	1	0
7	Normal	1	0
8	Normal	1	0
9	Normal	1	0
10	Normal	1	0
11	Normal	1	0
12	Normal	1	0
13	Normal	1	0
14	Normal	1	0
15	Normal	1	0
16	Normal	1	0
17	Normal	1	0
18	Normal	1	0
19	Normal	1	0
20	Normal	1	0
21	Normal	1	0
22	Normal	1	0
23	Normal	1	0
24	Normal	1	0
25	Tunnel Port	1	0
26	Normal	1	0

At the bottom of the configuration area are 'Apply' and 'Cancel' buttons. The footer of the page contains the copyright notice: © Copyright 1995-2009 by ZyXEL Communications Co.

## 2. Static VLAN configuration

- Go to **Advanced Application > VLAN**
- Select the **Active** box
- Input the **Name**, e.g. "20"
- Input the **VLAN Group ID** to be "20"
- Select **port 1** to be "fixed"
- Uncheck the **Tx Tagging** box of **port 1**
- Select **port 20** to be "fixed"
- Click **Apply**

The screenshot shows the ZyXEL web interface for configuring a Static VLAN. The page title is "Static VLAN" and it includes a "VLAN Status" link. The configuration is as follows:

- ACTIVE:**
- Name:** 20
- VLAN Group ID:** 20

The main configuration table lists 26 ports with their respective control and tagging settings:

Port	Control	Tagging
*	Normal	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input type="checkbox"/> Tx Tagging
2	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
25	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
26	<input checked="" type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Buttons: Add, Cancel, Clear

VID	Active	Name	Delete
1	Yes	1	<input type="checkbox"/>
20	Yes	20	<input type="checkbox"/>

Buttons: Delete, Cancel

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### 3. Verification

If we capture the packets from the uplink ports of the VES, we can see the double tags on all traffic, such as the following picture

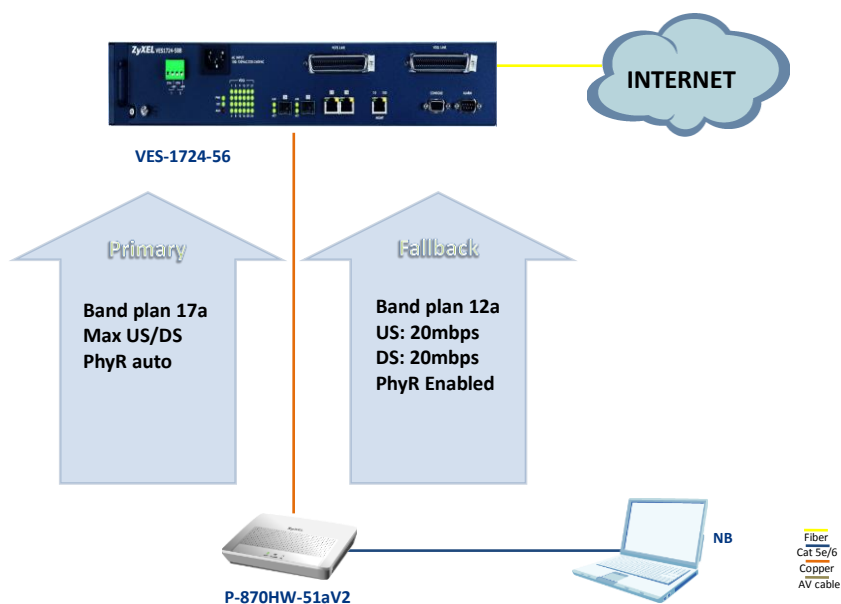
```
Type: Unknown (0x9100)
802.1Q Virtual LAN, PRI: 5, CFI: 0, ID: 20
101. .... = Priority: 5
...0 .... = CFI: 0
... 0000 0001 0100 = ID: 20
Type: 802.1Q Virtual LAN (0x8100)
802.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 10
000. .... = Priority: 0
...0 .... = CFI: 0
... 0000 0000 1010 = ID: 10
Type: ARP (0x0806)
Trailer: 0000000000000000000000000000000000000000000000000000000000000000
```



## VDSL Template application notes

On VES-1724-56, you can specify a primary and a fallback VDSL template for each subscriber port. A subscriber port uses the parameters defined in the primary VDSL template when the line is initialized. When the actual line condition is too poor to use the primary template (for example, the defined minimum transmission rate cannot be reached), the VES then uses the fallback template instead. We can select a looser fallback template for a line, acting as a backup profile.

## Scenario



The primary VDSL profile should consist of:

1. Band plan 17a
2. Maximum Upstream/Downstream rate
3. PhyR auto

The Fallback VDSL profile should consist of:

1. Band plan 12a
2. US/DS = 20/20 mbps

3. PhyR enabled

## 1. VDSL Profile Configuration for Primary Template

- Go to **VDSL Setup > VDSL Profile > Line Profile**
- Input the **Name**, e.g. "lineprofileA"
- Select the **VDSL2 Profile** to be "17a"
- Click **Add**

**ZyXEL**

**MENU**

- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management
- VDSL Line Setup
- VDSL Profile
- VDSL Alarm Profile

**VDSL Line Profile Setup** [Template](#) [ChanProfile](#) [InmProfile](#)

Name:

VDSL2 Profile:  30a  17a  12a  12b  
 8a  8b  8c  8d

	Down Stream	Up Stream
Max SNR Margin	<input type="text" value="31.0"/> dB <input type="checkbox"/> noLimit	<input type="text" value="31.0"/> dB <input type="checkbox"/> noLimit
Target SNR Margin	<input type="text" value="6.0"/> dB	<input type="text" value="6.0"/> dB
Min SNR Margin	<input type="text" value="0.0"/> dB	<input type="text" value="0.0"/> dB
Bitswap	<input checked="" type="radio"/> On <input type="radio"/> Off	<input checked="" type="radio"/> On <input type="radio"/> Off
Max Rx Power		<input type="text" value="14.5"/> dBm <input type="checkbox"/> noLimit
Max Tx Power	<input type="text" value="14.5"/> dBm	<input type="text" value="14.5"/> dBm
Min Overhead Rate	<input type="text" value="16"/> kbps	<input type="text" value="16"/> kbps

Transmission Mode:

Limit P 8D Mask:

Limit Mask:

USO Mask:

Auto  Override  Disable

UPBOKL:  dB

	A	B
UpStream Band 1	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 2	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 3	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 4	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>

PM Mode:  allowTransitionsToidle

USO:  Allow  Disable

Rate Adaptive:  [Modify](#)

MIB P 8D MASK:  [Modify](#)

DPBO:  [Modify](#)

RFI BAND:  [Modify](#)

Virtual Noise:  [Modify](#)

Name	VDSL2 Profile	SNR Margin	Applied Ports	Delete
<a href="#">DEFAULT</a>	8a/8b/8c/8d/12a/12b/17a/30a	6.0/6.0	1-24	<input type="checkbox"/>
<a href="#">lineProfileA</a>	17a	6.0/6.0		<input type="checkbox"/>

- e. Go to **VDSL Setup > VDSL Profile > ChanProfile**
- f. Input the **Name**, e.g. “ChannelprofileA”
- g. Select the **PhyR** to be “auto”
- h. Click **Add**

Name	Payload Rate	Min INP	Max Delay	Applied Ports	Delete
DEFVAL	100 032M/100 032M	2/2	8/8	1-24	<input type="checkbox"/>
ChannelprofileA	100 032M/100 032M	2/2	8/8		<input type="checkbox"/>

- i. Go to **VDSL Setup > VDSL Profile > VDSL Template Setup**
- j. Input the **Name**, e.g. “TemplateA”
- k. Select “lineprofileA” to be the **Line Profile**
- l. Select “ChannelprofileA” to be the **Channel Profile**
- m. Click **Add**

Name	Line Profile	Channel Profile	Applied Ports	Delete
DEFVAL	DEFVAL	DEFVAL	1-24	<input type="checkbox"/>
TemplateA	lineProfileA	ChannelprofileA		<input type="checkbox"/>

## 2. VDSL Profile Configuration for Secondary Template

- a. Go to **VDSL Setup > VDSL Profile > Line Profile**

- b. Input the **Name**, e.g. "lineprofileB"
- c. Select the **VDSL2 Profile** to be "12a"
- d. Click **Add**

**ZyXEL**

**MENU**

- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management

**VDSL Line Setup**

- VDSL Profile
- VDSL Alarm Profile

**VDSL Line Profile Setup** Template ChanProfile LineProfile

Name:

VDSL2 Profile:  30a  17a  12a  12b  
 8a  8b  8c  8d

Down Stream: Max SNR Margin:  dB  noLimit  
Target SNR Margin:  dB  
Min SNR Margin:  dB  
Bitswap:  On  Off

Up Stream: Max SNR Margin:  dB  noLimit  
Target SNR Margin:  dB  
Min SNR Margin:  dB  
Bitswap:  On  Off

Max Rx Power:  dBm  noLimit  
Max Tx Power:  dBm  
Min Overhead Rate:  kbps

Transmission Mode:   
Class Mask:   
Limit Mask:   
USO Mask:   
 Auto  Override  Disable  
LPBOKL:  dB

UPBO	A	B
UpStream Band 1	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 2	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 3	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>
UpStream Band 4	<input type="text" value="40.0"/>	<input type="text" value="0.0"/>

PM Mode:  allowTransitionsToIdle  
USO:  Allow  Disable

Rate Adaptive:   
MIB P SD MA SK:   
DPBO:   
RFI BAND:   
Virtual Noise:

[Add] [Cancel] [Clear]

Name	VDSL2 Profile	SNR Margin	Applied Ports	Delete
<a href="#">DEFAULT</a>	8a/8b/8c/8d/12a/12b/17a/30a	6.0/6.0	1-24	<input type="checkbox"/>
<a href="#">lineProfileA</a>	17a	6.0/6.0		<input type="checkbox"/>
<a href="#">lineProfileB</a>	12a	6.0/6.0		<input type="checkbox"/>

- e. Go to **VDSL Setup > VDSL Profile > Channel Profile**
- f. Input the **Name**, e.g. "ChannelprofileB"
- g. Input the **Downstream Max Net Data Rate** to be "20000"
- h. Input the **Upstream Max Net Data Rate** to be "20000"
- i. Select the **PhyR** to be "enabled"
- j. Click **Add**

**ZyXEL** Save Status Logout Help

**MENU**  
 Basic Setting  
 VDSL Setup  
 Advanced Application  
 IP Application  
 Management  
 VDSL Line Setup  
 VDSL Profile  
 VDSL Alarm Profile

**VDSL Channel Profile Setup** Template LineProfile InmProfile

Name: ChannelprofileB

DownStream UpStream

Net Data Rate MAX 20000 MIN 192 MAX 20000 MIN 192

Max Interleave Delay 8 ms 8 ms

Min INP 2 symbol 2 symbol

Min INP8 4 symbol 4 symbol

PhyR  Enable  Disable  Auto  Enable  Disable  Auto

SOS Min Data Rate 0 0

G.INP DS.Forbidden US.Forbidden [Modify](#)

Add Cancel Clear

Name	Payload Rate	Min INP	Max Delay	Applied Ports	Delete
<a href="#">DEFVAL</a>	100.032M/100.032M	2/2	8/8	1-24	<input type="checkbox"/>
<a href="#">ChannelprofileA</a>	100.032M/100.032M	2/2	8/8		<input type="checkbox"/>
<a href="#">ChannelprofileB</a>	20.000M/20.000M	2/2	8/8		<input type="checkbox"/>

- k. Go to **VDSL Setup > VDSL Profile > VDSL Template Setup**
- l. Input the **Name**, e.g. "TemplateB"
- m. Select "lineprofileB" to be the **Line Profile**
- n. Select "ChannelprofileB" to be the **Channel Profile**
- o. Click **Add**

**ZyXEL** Save Status Logout Help

**MENU**  
 Basic Setting  
 VDSL Setup  
 Advanced Application  
 IP Application  
 Management  
 VDSL Line Setup  
 VDSL Profile  
 VDSL Alarm Profile

**VDSL Template Setup** LineProfile ChanProfile InmProfile

Name: TemplateB

Line Profile: lineProfileB

Channel Profile: ChannelprofileB

Inm Profile: DEFVAL

Rate Adaptation Ratio

Channel1 DownStream UpStream

100 % 100 %

Add Cancel Clear

Name	Line Profile	Channel Profile	Applied Ports	Delete
<a href="#">DEFVAL</a>	DEFVAL	DEFVAL	1-24	<input type="checkbox"/>
<a href="#">TemplateA</a>	lineProfileA	ChannelprofileA		<input type="checkbox"/>
<a href="#">TemplateB</a>	lineProfileB	ChannelprofileB		<input type="checkbox"/>

Delete Cancel

### 3. VDSL Line Setup Configuration

- a. Go to **VDSL Setup > VDSL Line Setup**
- b. Select "TemplateA" to be the **Primary Template**
- c. Select "TemplateB" to be the **Fallback Template**
- d. Click **Add**

- MENU
- Basic Setting
- VDSL Setup
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- VDSL Line Setup
- VDSL Profile
- VDSL Alarm Profile

VDSL Line Setup

Port	Primary Template	Fallback Template	Alarm Template
1	TemplateA	TemplateB	DEFVAL
2	DEFVAL	None	DEFVAL
3	DEFVAL	None	DEFVAL
4	DEFVAL	None	DEFVAL
5	DEFVAL	None	DEFVAL
6	DEFVAL	None	DEFVAL
7	DEFVAL	None	DEFVAL
8	DEFVAL	None	DEFVAL
9	DEFVAL	None	DEFVAL
10	DEFVAL	None	DEFVAL
11	DEFVAL	None	DEFVAL
12	DEFVAL	None	DEFVAL
13	DEFVAL	None	DEFVAL
14	DEFVAL	None	DEFVAL
15	DEFVAL	None	DEFVAL
16	DEFVAL	None	DEFVAL
17	DEFVAL	None	DEFVAL
18	DEFVAL	None	DEFVAL
19	DEFVAL	None	DEFVAL
20	DEFVAL	None	DEFVAL
21	DEFVAL	None	DEFVAL
22	DEFVAL	None	DEFVAL
23	DEFVAL	None	DEFVAL
24	DEFVAL	None	DEFVAL

Apply Cancel

# ADSL Fallback application

7

The Switch can connect to both VDSL and ADSL CPEs and/or CPEs that have both VDSL and ADSL support. When a port is connected to an ADSL CPE and VDSL connection cannot be established, the Switch tries using the ADSL standards you specified in the **VDSL profile > LineProfile** screen and the PVCs you configured in the **ADSL Fallback** screens for that port to make an ADSL connection.

## How to enable ADSL Fallback function

**Step 1.** VDSL Setup → VDSL Profile → VDSL Line Profile Setup.

**Step 2.** Type name. Ex. adsltest.

**Step 3.** Select ADSL/VDSL Protocol. Ex. G992.5(ADSL2+) and click “Add” button after finishing setting.

**P5.G992.1** → ADSL G.dmt

**G992.2** → ADSL G.lite

**G992.3** → ADSL2

**G992.5** → ADSL2+

**G993.2** → VDSL2

The screenshot shows the ZyXEL VDSL Line Profile Setup web interface. The browser address bar shows <http://192.168.0.1/rpSys.html>. The ZyXEL logo is visible at the top left. The main content area is titled "VDSL Line Profile Setup" and includes a "Name" field with the value "adsltest" (Step 2). Below this, there are sections for "VDSL2 Profile" (with checkboxes for 30a, 17a, 12a, 12b, 8a, 8b, 8c, 8d), "DownStream" and "UpStream" parameters (Max SNR Margin, Target SNR Margin, Min SNR Margin, Bitswap, Max Rx Power, Max Tx Power, Min Overhead Rate), "Transmission Mode" (G.993.2 Annex B), "ADSL/VDSL Protocol" (with G.992.5 selected, Step 3), "Limit PSD Mask" (Class Mask: 997-M1c, Limit Mask: B7-1, US0 Mask: EU-32), and "UPBOKL" (0.0 dB). A "MENU" on the left side of the page lists various configuration options, with "VDSL Profile" highlighted (Step 1).

**Step 4.** VDSL Setup →VDSL Line Setup→VDSL Template.

**Step 5.** Apply Line Profile (We Just setup in **Step1~3**), and click “add” button.

The screenshot shows the ZyXEL VDSL Template Setup page. The 'Line Profile' dropdown is set to 'adsltest' and is highlighted with a red box. The 'Add' button is visible below the form.

Name	Line Profile	Channel Profile	Applied Ports	Delete
DEFVAL	DEFVAL	DEFVAL	1-18,20-24	<input type="checkbox"/>
ADSLtest	adsltest	DEFVAL	19	<input type="checkbox"/>

**Step 6.** VDSL Setup → VDSL Line Setup.

**Step 7.** Select the Port we used(ex. Port 2)and apply the template profile we just setup in Step 4~5.

The screenshot shows the ZyXEL VDSL Line Setup page. The 'Primary Template' dropdown for Port 2 is set to 'ADSLtest' and is highlighted with a red box.

Port	Primary Template	Fallback Template	Alarm Template
1	DEFVAL	None	DEFVAL
2	ADSLtest	None	DEFVAL
3	DEFVAL	None	DEFVAL
4	DEFVAL	None	DEFVAL
5	DEFVAL	None	DEFVAL
6	DEFVAL	None	DEFVAL
7	DEFVAL	None	DEFVAL
8	DEFVAL	None	DEFVAL



**Step 8.** Advanced Application →VLAN

**Step 9.** Select Static VLAN

**ZyXEL**

MENU

- Basic Setting
- VDSL Setup
- Advanced Application
- IP Application
- Management
- VLAN** Step 8
  - Static MAC Forwarding
  - Static Multicast Forwarding
  - Filtering

**VLAN Status** The Number of VLAN = 2

VLAN Port Setting **Static VLAN** Vlan Counter

Step 9

Index	VID	Elapsed Time	Status
1	1	2:57:43	Static
2	100	2:40:16	Static

**Step 10.** Select VLAN 1 and check the TX tagging box which port we want to enable. And uncheck the TX tagging box in 26port, and the VLAN Detail show as below

**VLAN Detail** VLAN Status

VID	Port Number														Elapsed Time	Status
	2	4	6	8	10	12	14	16	18	20	22	24	26			
1	T	-	-	-	-	-	-	-	-	-	-	-	U	0:01:31	Static	
	-	-	-	-	-	-	-	-	-	-	-	-	-			

**Step 11.** Advanced Application →ADSL fallback

**Step 12.** Set PVC Configureas follows.

**PVC Configure**

Active

Port 2

VPI 0

VCI 33

PVID 1

Encapsulation llc

Priority 0

FCS no fcs

MVLAN

## Frequently Asked Questions

### 1. What is the default setting of the IP parameters?

IP address: 192.168.1.1

Subnet: 255.255.255.0

### 2. What is the default login Name and Password of the Web Configurator?

ID: admin

Password: 1234

### 3. How to access my VES through the console port?

Connect the male 9-pin end of the console cable to the console port of the switch. Connect the female end to a serial port (COM1, COM2 or other COM port) of your computer. Launch a terminal emulation software configured to the follow settings:

Terminal emulation: VT100

Baud rate: 115200 bps

Data bits: 8

Parity: none

Stop bit: 1

Flow control: none

### 4. What is default login password for console, telnet, and FTP?

Password: 1234

## 5. How to change the password?

You can only change the administrator login password in the web configurator. After you log in for the first time, it is recommended you change the default administrator password.

**In the Web Configurator:** Click **Management > Access Control > Logins** to display the configuration screen as shown. Then change the password by settings the password fields.

Login	User Name	Password	Retype to confirm
1			
2			
3			
4			

## 6. How to access the Command Line Interface (CLI)?

There are two ways to access the Command Line Interface: through the console port or Telnet. If you want to access through the console port, Refer to the “How to access the VES through the console port?” section for more information.

## 7. If I forgot the password, how to reset the password to default?

If you have changed and forgotten the password, you will need to reload the factory default configuration. Note that your entire previous configuration will be lost.

- Connect the console cable to your computer and launch a terminal emulation software.
- Restart the VES, and press any key to enter the debug mode at the “Press any key to enter Debug Mode within 3 seconds” prompt.
- Enter “atlc”.
- When the “starting XMODEM upload” message displays, start XMODEM upload

- of the default configuration (rom) file to the VES.
- e. After the file upload process is complete, enter “atgo” to exit from the debug mode.
- f. The system will automatically restart. Wait until the system has restarted before you log in again. The default IP address is 192.168.1.1 and the default password is 1234.

## 8. How do I configure an IP address?

### Using the Web Configurator

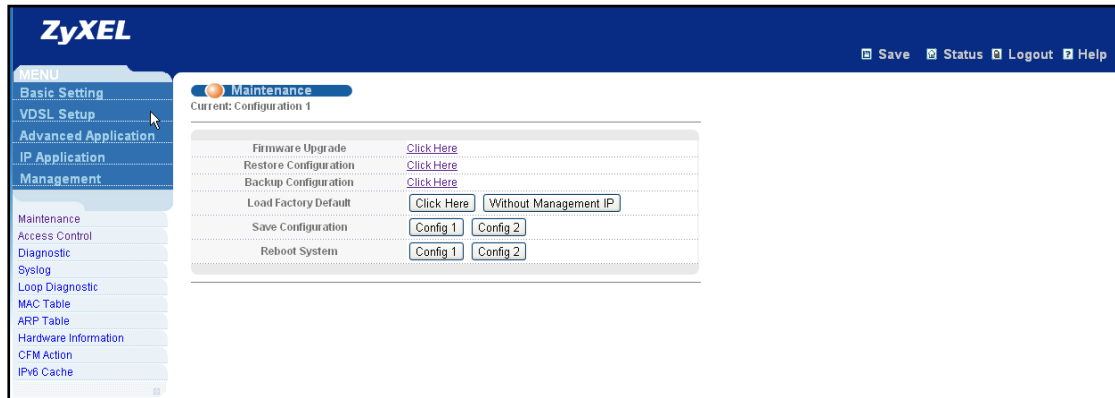
Click **Basic Setting > IP Setup** in the navigation panel to display the configuration screen.

## 9. Is Online Help available on the Web Configurator?

Yes. You can click on the Help link in any web configurator screen to display the help content for that screen.

## 10. How to restart device from the Web Configurator?

- a. Click **Management > Maintenance** in the navigation panel to display the screen as shown.
- b. Click the **Config1** or **Config 2** button next to **Reboot System**.



## 11. How to check the current running firmware version?

Access the console and enter the "show system-information" command. This will display the firmware version the switch is currently using.

## 12. Is the mini GBIC transceiver hot-swappable?

Yes, it is hot-swappable. You can change transceivers while the switch is operating.

## 13. What is "Dual-Personality interface" on a VDSL Switch?

Dual-Personality GbE interface means that one 1000Base-T Copper port and one SFP port shares the same physical interface. Only one of them can be used at a time. Dual-Personality interface is also known as a "Combo Port".

## 14. Can I enable MVR and IGMP snooping at the same time?

Yes