

### VES1724-56 Series

# **Support Notes**

#### Edition 2





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### **Product Series**

#### **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.

# **General Application**

### **Firmware Upgrade**

#### Using the Web Configurator

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

ZyXEL			
Basic Setting	Maintenance		
VDSL Setup	Current: Configuration 1		
Advanced Applic			
IP Application	Firmware Upgrade	Click Here	
	Restore Configuration	Click Here	
Management	Backup Configuration	Click Here	
	Load Factory Default	Click Here	Without Management IP
Maintenance	Save Configuration	Config 1	Config 2
Access Control			
Diagnostic	Reboot System	Config 1	Config 2
Syslog			
Loop Diagnostic			
MAC Table			
ARP Table			
Hardware Information			
CFM Action			
IP∨6 Cache			

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

#### Using the Console Port:

- a. Download (and unzipped) the correct model firmware to your computer.
- b. Connect to the console port and launch a Terminal Emulation software
- c. Restart the switch to enter the debug mode via the terminal.
- d. Enter "ATUR".
- e. Use the X-modem protocol to transfer (Send File) the firmware.
- f. 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.

ZyXEl	-	
Basic Setting	Maintenance	
VDSL Setup	Current: Configuration 1	
Advanced Appli	c	
IP Application	Firmware Upgrade	Click Here
Managamant	Restore Configuration	<u>Click Here</u>
management	Backup Configuration	Click Here
	Load Factory Default	Click Here Without Management IP
Maintenance	Save Configuration	Config 1 Config 2
Access Control	Dahard Quedan	
Diagnostic	Repoot System	
Syslog		
Loop Diagnostic		
MAC Table		
ARP Table		
Hardware Information		
CFM Action		
IPv6 Cache		

- 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 comfig.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.



ZyXEL		
Basic Setting	Maintenance	
VDSL Setup	Current: Configuration 1	
Advanced Applic	c	
ID Application	Firmware Upgrade	Click Here
The Application	Restore Configuration	Click Here
Management	Backup Configuration	Click Here
	Load Factory Default	Click Here Without Management IP
Maintenance	Save Configuration	Config 1 Config 2
Access Control		
Diagnostic	Reboot System	Config 1 Config 2
Syslog		
Loop Diagnostic		
MAC Table		
ARP Table		
Hardware Information		
CFM Action		
IP∨6 Cache		

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

ZyXEL	
MENU	Reakun Cantingunatian Maintenan
Basic Setting	
VDSL Setup	This page allows you to back up the device's current configuration to your workstation. Now click the
Advanced Application	Backup button.
IP Application	
Management	Backup
Maintenance	
Access Control	
Diagnostic	
Syslog	
Loop Diagnostic	
MAC Table	
ARP Table	
Hardware Information	
CFM Action	
IPv6 Cache	

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:

- 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 "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.



asic Setting DSL Setup	Curre	Maintenance		
dvanced Application / Application anagement	<b>⊳</b>	Firmware Upgrade Restore Configuration Backup Configuration Load Factory Default	Click Here Click Here Click Here Click Here	Without Management IP
ntenance ess Control		Save Configuration	Config 1	Config 2
og p Diagnostic ) Table				
ware Information Action				

- 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.

Microso	ft Internet Explorer 🛛 🛛 🔀
?	Are you sure you want to load factory default?
	OK Cancel

- 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**

### **DHCP Relay per VLAN**

The feature of DHCP relay per VLAN basis comes handy for managing the DHCP IP assignment to the clients. VES-1724-56has 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**

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



ZyXEL						
MENU	8					
Basic Setting		Static	VLAN		VLAN	Profile VLAN Status
VDSL Setup			ACTIVE			
Advanced Application			Name			
IP Application			VLAN Group ID			
Management			VENN OF OUP ID			
			VLAN Profile		DEFVAL Y	
VLAN	~					
Static MAC Forwarding		Port		Control		Tagging
Static Multicast Forwarding		*		Normal	~	🗹 Tx Tagging
Filtering		1	Normal	O Fixed	O Forbidden	🗹 Tx Tagging
Spanning Tree Protocol Broadcast Storm Control		2	Normal	Fixed	Forbidden	🗹 Tx Tagging
Mirroring	Ξ	3	Normal	Fixed	Forbidden	🗹 Tx Tagging
Link Aggregation		4	Normal	O Fixed	O Forbidden	🗹 Tx Tagging
Port Authentication		5	Normal	O Fixed	O Forbidden	🗹 Tx Tagging
MAC Limit		6	Normal	Fixed	Forbidden	🗹 Tx Tagging
Classifier	_	7	Normal	Fixed	Forbidden	🗹 Tx Tagging
Policy Rule Quouing Mathad		8	Normal	Fixed	O Forbidden	🗹 Tx Tagging
VLAN Stacking		9	Normal	Fixed	Forbidden	🗹 Tx Tagging
Multicast		10	Normal	Fixed	Forbidden	🗹 Tx Tagging
Auth and Acct		11	Normal	Fixed	Forbidden	🗹 Tx Tagging
IP Source Guard	~	12	Normal	Fixed	O Forbidden	🗹 Tx Tagging
		13	Normal	Fixed	Forbidden	🗹 Tx Tagging
		14	Normal	Fixed	Forbidden	🗹 Tx Tagging
		15	Normal	Fixed	Forbidden	🗹 Tx Tagging
		16	Normal	O Fixed	O Forbidden	🗹 Tx Taqqinq

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

ZvXEL															
N T															
MENU															
Basic Setting	CO VLAN	Deta	l											VLA	N Status
Advanced Application						F	ort Ni	mber							
Advanced Application	VID	2	4	6	8 1	0 12	1.	16	18	20	22	24	26	Elapsed Time	Status
IP Application		1	3	5	7 5	11	1	15	17	19	21	23	25		
Management	700	•	•	-		-	-	-	-	-	-	-	т	0:00:12	Static
	100	U	•	1		-	-			- ÷ -	1.1	1.1	1.0	0.00.12	orano
VLAN															
Static MAC Forwarding															
Static Multicast Forwarding															
Filtering															
Spanning Tree Protocol															
roadcast Storm Control															
lirroring															
ink Aggregation															
ort Authentication															
IAC Limit															
Classifier															
Policy Rule															
Queuing Method															
/LAN Stacking															
Multicast															
Auth and Acct															
IP Source Guard 🛛 💌															

#### **VLAN Port Setting**

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



ZvXEL									
								🗉 Save	🖸 Status 🗎 Logout 🖬
MENU Basic Setting		VLAN	Port Setting	Subnet	Based Vlan	Protocol Based Vian	MAC Based Vian	VLAN Status	
VDSI Satun			C) (D)		_				
Advanced Application			GVKF Dort isol	, ation					
Novanceo Application			P OT 1304	ation					
IP Application									
Management									
		Port	Ingress Check	PVID	GVRP	Acceptable	Frame Type	VLAN Trunking	
/LAN	•	*				All	*		
Static MAC Forwarding		1		700		All	~		
litering		2		1		All	~		
panning Tree Protocol		-	=						
roadcast Storm Control		3		1		All		_	
tirroring		4		1		All	<u>×</u>		
ink Aggregation		5		1		All	*		
ort Authentication		6		1	]	All	~		
lassifier		7	<b>—</b>	1		All	~		
olicy Rule									
ueuing Method		8		1		All	<u> </u>		
LAN Stacking		9		1		All	<b>~</b>		
lulticast		10		1		All	~		
uth and Acct		11	<b>—</b>	1		ΔII	~		
- Source Guard	9	40							
		12		1		AI	<u> </u>		
		13		1		All	~		

#### **Configure an In-band IP Address**

- a. In the navigation panel, click **Basic Setting > IP Setup**.
- b. In the In-band IP Addresses section, type "192.168.1.100" in the IP Address field.
- c. Type "255.255.255.0" in the IP Subnet Mask field.
- d. Type "700" in the **VID** field.
- e. Type "192.168.1.101" in the **Default Gateway** field.
- f. 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											
Add Cancel											
Index IP Address	IP Subnet Mask VID Default Gateway Manageable Delete										
Delete Cancel											



#### **DHCP VLAN Setting**

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

ZyXEL			🗈 Save	🖻 Status 🖸 Logout 🖬 Help
Basic Setting	VLAN Setting		Status	
VDSL Setup	VID	700		
Advanced Application	Remote DHCP Server 1	192.168.1.101		
IP Application Management	Remote DHCP Server 2	0.0.0		
Management	Remote DHCP Server 3	0.0.0		
Static Routing	Relay Agent Information	Option 82		
DiffServ DHCP	Information	<ul> <li>Append Circuit ID by host name</li> </ul>		
0	Relay Remote ID	Remote ID		
	Remote ID Information	Append Remote ID by port name		
	A	dd Cancel Clear		
	VID Type	DHCP Status Delete		
	700 Relay	192.168.1.101		
		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.







# **Triple Play**

# 4

### **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

MENU Basic Setting	() Interface Configu	iration
Network Setting Service Setting	Interface	upl 🗸
Statistics	IP Address	172.168.23.10
Management	IP Subnet Mask	255.255.255.0
Interface Config		Apply Cancel
VLAN Config		
Static Routing		

- f. Select "down1" for the downlink Interface
- g. Input the IP Address for the downlink interface, e.g. "172.168.23.10"
- h. Input the IP Subnet Mask for the downlink interface, e.g. "255.255.255.0"
- i. Click Apply

MENU Basic Setting	( ) Interface Configu	ration	
Network Setting	Interface	down1 🗸	
Statistics	IP Address	192.168.3.1	
Management	IP Subnet Mask	255.255.255.0	
Interface Config VLAN Config		(Apply) Cancel	

#### 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	DDDoE Softing							
Basic Setting	PPPoE Setting							
Network Setting	AC Name	test.com						
Service Setting	Activalite							
Statistics	Service Name	Click here to edit Service Name						
Management		O Use RADIUS Assigned IP						
		Increment IP address and start from						
PPP Setting								
PPPoE Setting	Remote IP Address Assignment	Starting IP Address: 192.168.3.100						
ISP Info Setting	-	Accient remate ID addresses from ID Basi						
L2TP Setting		Assign remote IP addresses from IP Pool						
DHCP Setting		Click here to edit IP Peol						
Billing Profile								
Subscriber Management	Maximum Concurrent Sessions							
Billing Records	Allow Duplicate MAC Address							
		Apply Cancel						

#### 3. ISP Info Setting Configuration

- a. Go to Service Setting > ISP Info Setting
- b. Input the ISP Domain Name, e.g. "test.com"
- c. Select the Authentication Method, e.g. "PAP"
- d. Select the Authentication Server, e.g. "Radius"
- e. Click Add

MENU Basic Setting	() ISP Info Setting	
Network Setting	ISP Domain Name	test.com
Statistics	Authentication Method	PAP 💌
Management	Authentication Server	🔘 Local 💿 Radius
PPP Setting PPPoE Setting		Add Cancel

- f. Click the test.com ISP Domain Name just created to edit
- g. Select "Yes" for the Strip Domain Name
- h. Input the Primary DNS Server, e.g. "168.95.1.1"
- i. Input the Secondary DNS Server, e.g. "10.59.1.1"
- j. Input the IP address of the Primary Radius Server, e.g. "172.168.23.101"
- k. Input the Authentication port of the Primary Radius Server, e.g. "1812"
- I. Input the Accounting Port of the Primary Radius Server, e.g. "1813"
- m. Input the Secret of the Primary Radius Server, e.g. "key123"
- n. Click Apply



MENU				
Basic Setting	ISP Information	Edit		<u>ISP Info</u>
Network Setting Service Setting	ISP Domain Name	test.com		
Statistics	Authentication Method	PAP 🗸		
Management	Authentication Server	🔘 Local 💿 Radius		
	Strip Domain Name	🔘 No 💿 Yes		
PPP Setting PPPoF Setting	Primary DNS Server	168.95.1.1		
ISP Info Setting	Secondary DNS Server	10.59.1.1		
L2TP Setting	Primary WINS Server	0.0.0.0		
DHCP Setting	Secondary WINS Server	0.0.0.0		
Billing Profile Subscriber Management	Primary Radius Server			
Billing Records		IP Address	172.168.23.101	
8		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

- a. 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
- b. Check if the **NAS Secret** and the **Authorization** and **Accounting ports** match the settings in the SMG-700

System settings			X						
NAS Secret:	key123								
Authorization port:	1812								
Accounting port:	1813								
Launch when systematic systema	em startups								
Minimize the application when startups									
ОК		Cancel							

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



Add user		×								
User name:	VDSL2	_								
Password:	1234									
Group:										
Address:										
Cash prepaid:	0 Cents	5								
Expiry date:										
Note: yyyy/mm/dd means expiry date; digit means valid days since first login; empty means never expired.										
Others:										
O Prepaid user	Postpaid user									
Accounting method:	Based on Time	•								
ОК	Cancel									

d. Check if the account is successfully created

Operati	ion LOG Ad	dvanced Settings	s View Help							
D	🖻 🔒	× +	- 🦻 💲	a 💡						
ID	Time		Message	1 1			1			
1	2009y5m11d	i 15h42m27s	Add user sur	ccessfully.						
2	2009y5m11d	1 15h42m53s	User informa	ation refreshed						
3	2009y5m11d	1 15h43m16s	Query starte	d:						
4	2009y5m11d	l 15h43m16s	Query ender	d.						
use	rname	status	password	groups	addr	cash	expiry	others	method	billtype
cht		offline	1234			0			Based on Time	Postpaid
cht	v1	offline	1234			0			Based on Time	Postpaid
tele	fonica	online	1234			0			Based on Time	Postpaid
VD	5L2	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

ZyXEL																	
																	🖹 Save
Basic Setting	OVLAN	Detai													VLA	<u>N Status</u>	
Advanced Application		Port Number															
Advanced Application	VID	2	4	6	8	10	12	14	16	18	20	22	24	26	Elapsed Time	Status	
IP Application		1	3	5	7	9	11	13	15	17	19	21	23	25			
Management	400			-	-	-	-	-	-	-	-	-			0.00.00	04-4-	
	100	Т	•	-	-	-	-	-	-	-	-	-	•	U	0.00.08	Static	

- 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. "<u>VDSL2@test.com</u>"
- 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

ZyXEL		
>	Network > WAN > Internet Connection	
Status	Internet Connection More Conn	ections
P-870HW-51a V2	General	
-Network	Name	INTERNET
WAN	Mode	PPPoE 🗸
- LAN	User Name	VDSL2@test.com
- Wireless LAN	Password	••••
	Service Name	
-Security	Retry when the authenticatio	on fails
Advanced	Retry Interval	1
Maintenance	IP Address	
	<ul> <li>Obtain an IP Address Automati</li> <li>Static IP Address</li> <li>IP Address: 0.0.0</li> </ul>	ically
	Connection <ul> <li>Nailed-Up Connection</li> <li>Connect on Demand</li> <li>Max Idle Time</li> </ul>	0 Mins.

- k. Click Advanced Setup
- I. 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



	ZyXEL	
		Network > WAN > Internet Connection > Advanced
~	Status Status	
		Multicast Setup
	Network	IGMP Multicast
	WAN	PPPoE Passthrough No 💌
	- LAN - Wireless LAN	IP Filter
	NAT	IP Filter Active
₽	Security Advanced	VLAN
	Maintenance	VLAN Active           VLAN ID           Priority   [0-4095] [0-7]
		Back (Apply) (Reset)

### 2. Verification

#### P-870HW-51aV2

Check the status on the homepage:

ZyXEL						
	) Status					
Status				Refresh Inte	erval : None	Apply
	Device Information			System Stat	us	
-870HW-51a V2						
- Network	Host Name:	1234		System Uptime	: 0:0	:12
Security	Model Number:	P-870HW-51a V2		Current Date/T	ime: 1 Ja	n 2000 00:16:6
	MAC Address:	00:19:cb:00:00:01		System Mode:	Rou	ting / Bridging
Advanced	ZyNOS Firmware Version:	1.00(AWZ.1)		CPU Usage:		3%
+ Maintenance	DSL Firmware Version:	AvC011.d21i3		Memory Usage	:	74%
	WAN 1 Information					
	- Mode:	PPPoE				
	- IP Address:	192.168.3.168		Interface St	atus	
	- IR Address:	102 168 1 1				
	- IP Subnet Mask:	255 255 255 0	_	Interface	Status	Rate
	- DHCP:	Server	_	DSI	Lie.	20520 khos (100016 khos
	WLAN Information			USL	υþ	30329 KDps / 100016 KDps
	- ESSID:	ZvXEL		LAN 0	Disabled	100M/ Full
	- Channel:	6		LAN 1	Disabled	100M/ Full
	- WPS Status:	Unconfigured		25011	0.000100	2001/1100
				LAN 2	Up	100M/ Full
				LAN 3	Disabled	100M/ Full
				WLAN	Up	54M

The PPPoE connection was successful!



### 3. Win RADIUS

Query the user info:

Operati	on LOG Advand	ed Settings Vie:	w Help					
D	🖻 🖬 🔰	× + -	🕒 💲	4	?			1
ID	Time	-	Message					
1 2 3 4 5 6 7 8 9 10 11	2009y5m11d 15h4 2009y5m11d 15h4 2009y5m11d 15h4 2009y5m11d 15h4 2009y5m11d 19h3 2009y5m11d 19h3 2009y5m11d 19h3 2009y5m11d 19h4 2009y5m11d 19h4 2009y5m11d 19h4	12m27s 12m53s 13m16s 13m16s 10m1s 15m38s 15m38s 12m50s 12m50s 18m12s	Add user su User inform Query start: Query ende User (telefo Query start: Ouery ende User (VDSL: Query starto Query starto Query starto Query starto	rccessfully. lation refre ed: .d. nica) call () ed: ed: 2) authenti 2) call () sta ed.	shed ) ended, (26760 cate OK. rted	)5) seconds used, fe	e is (13383) cent.	
ID	username	status	password	gro	oups	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

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



Basic Setting		Iulticast Settin	ng <u>Multio</u>	cast Status IGMP S	Snooping VLAN IGN	IP Filtering Profile MV
VDSL Setup				Active		
Advanced Application				Host Timeout	260	
P Application		IGMP Snoo	ping	Leave Timeout	2	
Management				802 1n Priority	No Chango V	
		IGMP Pro		Active		
VLAN 🔺		IGMP Filter	rina	Active		
Static MAC Forwarding		Unknown Multica	ast Frame	Flooding	Orop	
Static Multicast Forwarding		Reserved Multic	ast Group	Flooding	Orop	
Spanning Tree Protocol						
Broadcast Storm Control						
lirroring						
ink Aggregation	Port	Immed. Leave	Max Group Num.	IGMP Msg Limit	IGMP Filtering Profil	e IGMP Querier Mode
Authentication	*		Enable	Enable	Default 💌	Auto 🔽
assifier	1	<b>V</b>	Enable 5	Enable 0	Default 🛩	Edge 💌
licy Rule	2		Enable 0	Enable 0	Default 🛩	Edge 💌
ieuing Method	3		Enable 0	Enable 0	Default 🛩	Edge 😽
LAN Stacking	4		Enable 0	Enable 0	Default 🗸	Edge 🗸
utticast uth setup	5		Enable 0	Enable 0	Default 🗸	Edge 🗸
op Guard 🔹 🔻	6				Default 🗸	Edge V
	7				Default v	Edgo V
	, ,				Default v	Edge V
	8		Enable V	Enable V	Default ¥	
	9		Enable 0	Enable U	Default 👻	Edge 🚩
	10		Enable 0	Enable 0	Default 🚩	Edge 🚩
	11		Enable 0	Enable 0	Default 💙	Edge 💙
	12		Enable 0	Enable 0	Default 🛩	Edge 🚩
	13		Enable 0	Enable 0	Default 🔒	Edge 🔽
	14		Enable 0	Enable 0	Default 🛩	Edge 🔒
	15		Enable 0	🔲 Enable 0	Default 🛩	Edge 🛩
	16		Enable 0	Enable 0	Default 🛩	Edge 🔽
	17		Enable 0	Enable 0	Default 🗸	Edge 🔽
	18		Enable 0	Enable 0	Default 💌	Edge 🔽
	19		Enable 0	Enable 0	Default 🗸	Edge 🗸
	20				Default v	Edge V
	20				Default v	Edgo
	21				Default v	Edge V
	22		Enable V		Default ¥	Edge 🗸
	23		Enable V	Enable V	Default 🚩	Edge 🚩
	24		Enable 0	Enable 0	Default 💌	Edge 💌
	25		Enable 0	Enable 0	Default 💌	Auto 💌
	26		Enable 0	Enable 0	Default 💌	Fixed 💌
	_			Apply Canc	el	

### 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
- I. Check the **Tagging** box for **port 26**
- m. Click Add

ZyXEL					
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Advanced Application		Benavior	O IGMP Shooping	IGMP Proxy	
ID Application				۲	
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Management					
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Static MAC Ecowarding		Name	IPTV		
Static Multicast Forwarding	I	Multicast VLAN ID	200		
Filtering		802.1p Priority	5 🛩		
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Broadcast Storm Control					
Mirroring					
Link Aggregation					
MAC Limit	Port	Source Port	Receiver Port	None	Tagging
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Policy Rule	4	<u> </u>		<u> </u>	
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VLAN Stacking	3	<u> </u>			
Multicast	4	Ŏ			
Auth setup	5				
Loop Guard 🔹	6	Ŏ			
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	200 Xo	s IPTV	Dynamic 26	Receiver Po 4	5 Delete
	<u>200</u> Te		Dynamic 20		5
			Delete Cancel		
					© Copyright 1995-2009 by Z



### 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

Z <sub>V</sub> XEL	
	🗎 Save 🖻 Status 🗈 Logout 🖬 Help
MENU Basic Setting	( 🥘 Successful 🔹 )
VDSL Setup	
Advanced Application	Successful Message: This configuration is saved.
IP Application	
Management	
System Info	
Switch Setup	
IP Setup	
Port Setup	
Rate Limit Profile Setup	
	@ Convertent 1995-2009 by ZvXEL Communications C



### **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

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



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LyxLL						🖻 Save
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Filtering		2	Normal	C Fixed	Forbidden	
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Broadcast Storm Control		4	Normal	C Fixed	C Forbidden	Tx Tagging
Mirroring		5	Normal	C Fixed	Forbidden	
Link Aggregation		6	Normal	C Fixed	Forbidden	
Port Authentication		7	Normal	C Fixed	Forbidden	V Ty Tanging
MAC Limit		8	Normal	C Fixed	Forbidden	V Ty Tagging
Classifier		0 0	Normal	C Fixed	C Forbidden	Tx Tagging
Policy Rule		10	Normal	C Fixed	Forbidden	Tx Tagging
VLAN Stacking		11	Normal	C Fixed	Forbidden	Tx Tagging
Multicast		12	Normal	C Fixed	Forbidden	Tx Tagging
Auth setup		12	Normal	C Fixed	Forbidden	Tx Tagging
Loop Guard	· •	14	Normal	C Fixed	Forbidden	Tx Tagging
		15	Normal	C Fixed	Forbidden	Tx Tagging
		16	Normal	C Fixed	Forbidden	Tx Tagging
		17	Normal	C Fixed	Forbidden	Tx Tagging
		18	Normal	C Fixed	Forbidden	Tx Tagging
		10	Normal	C Fixed	Forbidden	
		20	Normal	C Fixed	Forbidden	Tx Tagging
		20	Normal	C Fixed	Forbidden	Tx Tagging
		22	Normal	C Fixed	Forbidden	
		22	Normal	C Fixed	Forbidden	Tx Tagging
		24	Normal	C Fixed	Forbidden	Tx Tagging
		25	Normal	C Fixed	Forbidden	
		20	Normal	Fixed	Forbidden	Tx Tagging
		20	U Normai	O Fixeu	- Forbidden	
				Add Ca	ancel Clear	
		VID	Active		Name	Delete
		<u> </u>	Yes		1	
		<u>100</u>	Yes		Internet	
		<u>300</u>	Yes		VoIP	
				Delete	Cancel	

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



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VDSL Setup							Port	t Num	ber							
Advanced Application	VID	2	4	6	8	10	12	14	16	18	20	22	24	26	Elapsed Time	Status
IP Application		1	3	5	7	9	11	13	15	17	19	21	23	25		
Management		-	-	-	-	-	-	-	-	-	-	-	-	т		
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Spanning Tree Protocol																
Broadcast Storm Control																
Link Aggregation																
Port Authentication																
MAC Limit																
Classifier																
Policy Rule																
Queuing Method																
VLAN Stacking																
Multicast																
Auth setup																
Loop Guard 🔹 🔻																
															© Copyright 1995-20	109 by ZyXEL Comr

### 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



Active          Active          Active          Active          Name       VolP         Packet Format       All         VLAN       ③ 300         Static MAC Forwarding          Static Mallicest Forwarding          Static MAC Forwarding          Static Maching Tree Protocol          Broadcast Storm Control       MAC Address         Marc Address          Mac Address          Source          Port          Inthe Aggregation          Port          Destination       MAC Address         Mac Address          Marc Address          Mac Address          DscP          Anty          IP Protocol          Others          IP Protocol          Address Prefix<	7vXFI		
ALENU Basic Setting (D SL Setup Advanced Application P Application Management VLAN Static Multicast Forwarding Static Multicast Forwarding Static Multicast Forwarding Filtering Spanning Tree Protocol Layer 2 Layer 2 Layer 2 Layer 2 Layer 3 Source Destination MAC Address Port MAC Address Others (Hex) MAC Address Others (Hex) Destination MAC Address Others (Dec) (D 0.0 Address / Address / Dec) (D 0.0 Address / Address / Dec) (D 0.0 Address / Address / Dec)	Lynel		🗉 Save 📓 Status 🗎 L
Basic Setting          () Classifier          Active          Active         Name       VolP         P Application          Packet Format         All          () Any          VLAN          () 300          Static Multicast Forwarding          () Any          Static Multicast Forwarding          () Any          Static Multicast Forwarding          Ethernet Type          Spanning Tree Protocol          () Any          Diradcast Storm Control          Mirroring          Mirroring          Source          Port Authentication          MAC Address          MAC Limit          O Any          Classifier          Port          Policy Rule          OSCP          Oueuing Method          OSCP          Multicast          Old Miress / Old Old          Loop Guard          O Source          IP Protocol          IP Address / Old Old          ULAY Stacking          Address / Old Old          Multicast          Auth setup          Loop Guard          O Source	MENU		
Active   Active   Advanced Application   P Application   P Application   Almagement   VLAN   Static MAC Forwarding   Static Mac Address   Conters   (Hex)   Broadcast Storm Control   Mirroring   Link Aggregation   Port   O Any   Port   O Any   Port   Outering   Cleasing   Multicast   Auth setup   Loop Guard     Layer 3     Source     Others   (Dec)   IP Address /   (Dottors   (Dec)     IP Address /   (Dottors   (Dec)	Basic Setting	sifier	
Name       VolP         P Application       Any         Management       Any         VLAN       300         Static MAC Forwarding       Priority         Static MAC Forwarding       Any         Static MAC Forwarding       Priority         Static Mac Forwarding       Priority         Static Mac Forwarding       Any         Static Multicast Forwarding       Ethernet Type         Spanning Tree Protocol       Any         Broadcast Storm Control       MAC Address         Mirroring       MAC Address         Link Aggregation       Port         Port       Any         Destination       MAC Address         Mac 1:       :         Destination       MAC Address         Math Setup       DSCP         All       Establish Only         IP Protocol       All         IP Address /       0.0.0         Address Prefix       0.0.0         IP Address Prefix       0.0.0         IP Address Prefix       0.0.0	/DSL Setup Active	<b>v</b>	
P Application       Packet Format       All         Anagement       Any         VLAN       ③ 300         Static Multicast Forwarding       Priority       ④ Any         Static Multicast Forwarding       Ethernet Type       ④ All         Spanning Tree Protocol       Ethernet Type       ④ Any         Broadcast Storm Control       MAC Address       ● Any         Mirroring       Discrete       MAC Address       ● Any         Port Authentication       MAC Address       ● Any       ● Any         Policy Rule       Discrete       ● Any       ● Any         Queuing Method       VLAN Stacking       ● Any       ● Any         Multicast       Auth setup       ● Any       ● Any         Loop Guard       IP Protocol       ● Any       ● Any         IP Address / Addr	Advanced Application Name	VoIP	
Lanagement       Any         ALAN       Any         ALAN       3300         ALAN       Any         Static Multicast Forwarding       Priority         Broadcast Storm Control       Any         Mirroring       Any         Jink Aggregation       Any         Port       Any         Port       Any         Port       Any         Port       Any         Destination       MAC Address         Port       Any         Destination       MAC Address         MAC Limit       Destination         Date Rate Portocol       Any         Port       Any         Destination       MAC Address         MAC       Andress         Port       Any         Destination       MAC Address         Mac       I         Protocol       Any         IP Protocol       Any         IP Protocol       Any         IP Address / Address Prefix       IO 0.0         Address Prefix       IO 0.0         IP Address Prefix       Any	P Application Packet For	nat All	
/LAN       Any         Static Multicast Forwarding       Priority       Any         Static Multicast Forwarding       Ethernet Type       All         Spanning Tree Protocol       Any       Any         Sroadcast Storm Control       MAC Address       Any         Jink Aggregation       MAC Address       Any         ort Authentication       MAC Address       Any         MAC Limit       Destination       MAC Address         Classifier       Destination       MAC Address         Poilcy Rule       DSCP       Any         Ulticast       MAC       All         Auth setup       Others       (Dec)         Layer 3       Source       Any	lanagement	VLAN	<ul> <li>○ Any</li> <li>● 300</li> </ul>
Class filtering       Ethermet Type       All         Spanning Tree Protocol       Cothers       (Hex)         Broadcast Storm Control       MAC Address       Any         NAC Limit       Source       Port       Any         Port       1       Otherss       MAC         Destination       MAC Address       Any       MAC         Port       1       Otherss       MAC         Destination       MAC Address       MAC       Source         Port       Any       MAC       Source       MAC         Destination       MAC Address       MAC       Source       Source         Uniticast       DSCP       Any       MAC       Source       MAC         IP Protocol       Others       (Dec)       IP Address / Address / Address / Address Prefix       0.0.0.0       /         Layer 3       Source       Others       0.0.0       /       Address Prefix	/LAN AC Forwarding	Priority	Any     O
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IP Address / Address Prefix 0.0.0.0 /	Auth setup	IP Protocol	All      Establish Only     Others     (Dec)
Socket Number	Layer 3	Source	IP Address / 0.0.0.0 /
IP Address / Address Prefix Destination Socket Number		Destination	IP Address / Address Prefix 0.0.0.0 / Socket Number Any
PING-VDSI-	1	Yes 01	SrcMac = 02:10:18:01:00:02;
1 Yes 01 SrcMac = 02:10:18:01:00:02;	2	Yes VolP	Vian = 300; SrcPort = port 1;
1         Yes         SrcMac = 02:10:18:01:00:02;           2         Yes         VolP         Vlan = 300; SrcPort = port 1;			Delete
1         Yes         01         SrcMac = 02:10:18:01:00:02;			

#### 3. Policy Rule configuration

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



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(LAN)										
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Static Multicast Forwarding				General		Metering				
Filtering		VLAN ID		300	Bandwidth	0 Kbps				
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oop Guard 🔹 🔻		O No change								
		Set the packet's	s 802.1 priority							
		O Send the packe	et to priority queue							
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		O Set the packet's TOS field								
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		O Set the Diffserv	Codepoint field in the fra	ame						
		Outaoina								
		Send the packe	et to the mirror port							
		Send the packet to the egress port								
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			Do not drop the r	natching frame previo	usly marked for dropp	ping				
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	<u> </u>		01		von ,	<u> </u>				
			Delete	Cancel						
					© Copy	right 1995-2009 by ZyXEL Comm				



# VLAN Stacking

### **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

ZyXEL					
				🖹 Save 🔯 Stat	us 🛙 Logout 🖬 Help
Basic Setting	🔘 VLAN	Stacking			
VDSL Setup		Activo			
Advanced Application		Acuve	Ox9100 ▼		
IP Application		SP TPID	Others (Her)		
Management					
VLAN					
Static MAC Forwarding	Port	Role	SPVID	Priority	
Static Multicast Forwarding Filtering	*	Normal 👻		0 🗸	
Spanning Tree Protocol	1	Access Port 💌	20	5 🕶	
Broadcast Storm Control	2	Normal 💌	1	0 🕶	
Mirroring	3	Normal 🛛 👻	1	0 🗸	
Link Aggregation Port Authentication	4	Normal 💉	1	0 🕶	
MAC Limit	5	Normal 💌	1	0 🕶	
Classifier	6	Normal 🗸	1	0 🗸	
Policy Rule	7	Normal 🗸	1	0 🗸	
Queuing Method	8	Normal 🗸	1	0 🗸	
Multicast	9	Normal 🗸	1	0 🗸	
Auth setup	10	Normal 🗸	1	0 🗸	
Loop Guard 🔹	11	Normal	1		
	10	Normal	1		
	12	Normal	1		
	10	Normal •	1	0 4	
	14	Normai 👻	<u> </u>		
	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 🗸	
			Apply Cancel		
			Concer		



#### 2. Static VLAN configuration

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

ZyXEL					
					🖹 Save
MENU					
Basic Setting	Static	VLAN	)		VLAN Status
VDSL Setup		ACTIVE			
Advanced Application		Name		20	
IP Application		VI AN Group ID		20	
Management		VEAN GIOUP ID		20	
_					
VLAN 🔺	Port		Contro	1	Tagging
Static MAC Forwarding	*		Normal	<b>~</b>	🗹 Tx Tagging
Static Multicast Forwarding	1	O Normal	Fixed	🔘 Forbidden	🔲 Tx Tagging
Filtering	2	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
Spanning Tree Protocol	3	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
Broadcast Storm Control	4	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
Mirroring	5	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
Link Aggregation	6	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
MAC Limit	7	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
Classifier	8	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
Policy Rule	9	Normal	🔘 Fixed	🔘 Forbidden	🗹 Tx Tagging
Queuing Method	10	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
VLAN Stacking	11	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
Multicast	12	Normal	🔘 Fixed	🔘 Forbidden	🗹 Tx Tagging
Auth setup	13	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
Loop Guard 🔹 🔻	14	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	15	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
	16	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	17	Normal	Fixed	Forbidden	🗹 Tx Tagging
	18	Normal	O Fixed	🔘 Forbidden	🗹 Tx Tagging
	19	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	20	Normal	Fixed	Forbidden	🗹 Tx Tagging
	21	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	22	Normal	🔘 Fixed	🔘 Forbidden	🗹 Tx Tagging
	23	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	24	Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	25	🔘 Normal	Fixed	🔘 Forbidden	🗹 Tx Tagging
	26	Normal	O Fixed	O Forbidden	🗹 Tx Tagging
			Add Ca	ancel Clear	
	VID	Activo		Namo	Delete
	1	Yee		1	
	<u>1</u> 20	Yes		20	
					_
			Delete	Cancel	



### 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



# **VDSL** Template

### **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**

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

ZyXEL										
Recip Satting	🔿 VD\$L Line Pro	file Setup		Template Cha	nProfile in	nProfile				
VDSI Satun										
Advanced Application	Name	IneProfileA								
	VD8L2 Profile	□ 308 ⊡ 178								
Managamant		Dow	n Stream		Up Stream					
management	Max 8NR Margin	31.0 dB [	noLimit	31.0 d	B 🔲 noLimit					
VOSI Line Setup	Target SNR Margin	6.0 dB		6.0 d	B					
VDSL Profile	Min SNR Margin	0.0 dB		0.0 d	B					
VDSL Alarm Profile	NEL         ng         Application ont         Setup         Name         Interpretation         Name       Store         Interpretation         Name       Store         Unit       Name         Name       Store         Unit       Name <td< th=""><th></th></td<>									
	Plastion       VDSLLING Profile Solidity       Tendada       ClassProfile       Incertochic         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name       Incertochic       12 a       12 a       12 a         VD       Name NR Margin       10 a       1	t								
	Min Overhead Rate	16 kbps		Template         ChanProfile         InmProfile           120         3d         Up Stream         Up Stream           8d         Up Stream         Up Stream         Up Stream           110         dB         noLimit         0.0           0.0         dB         0.0         0ff           14.5         dBm         noLimit         14.5           14.5         dBm         noLimit         14.5           16         Kbps         0.0         0.0           2              15         Kbps         0.0         0.0           2              16         Kbps         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           10.0         Wodify         M						
		Transmission Mo	de G.993.2 Anne	хA	~					
	Limit P 90 Mack	Class Mask	998							
	CHIEF OF HEAR	Limit Mask	D-32		<b>~</b>					
		US0 Mask	EU-32	<b>*</b>						
		O Auto	O Override	Disable						
		OPBORL	0.0 08	P						
	UPBO	UpStream Band 1	40.0	0.0						
		UpStream Band 2	40.0	0.0						
		UpStream Band 3	40.0	0.0						
		UpStream Band 4	40.0	0.0						
	PM Mode	allowTransiti	onsToldle							
	U 80	Allow	O Disable							
	Rate Adaptive	DS:Dynam	c US:Dynamic		Modify_					
	MIB P 8D MA 8K	DS:0 B	PUSOBP		Modify_					
	RFI BAND	0	band		Modify					
	Virtual Noise	DS:Disab	e US:Disable		Modify					
	Virtual Notse DS-Disable US-Disable Modify.									
	Name	VD 8L2 Prof	lle	<b>SNR Margin</b>	Applied Ports	Delete				
	DEFVAL 8	3a/8b/8c/8d/12a/12	b/17a/30a	6.0/6.0	1-24					
	lineProfileA	178		6.0/6.0						
		r.		a						



- 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

<b>⊾ZyXEL</b>							S Status	R Longert	
							⊡ status	E Logoui	ынер
Basic Setting	🔿 🔘 VDSL Channel	Profile Setup	Template	LineProfile	InmProfile				
VDSL Setup	Namo	ChannelprofileA							
Advanced Application	Name	DownStream		U	pStream				
IP Application	Net Data Rate	MAX 100032 MIN 192	MA	X 100032	MIN 192				
Management	Max Interleave Delay	8 ms	8	ms					
	Min INP	2 v symbol	2	symbol					
VDSL Line Setup	Min INP8	4 👻 symbol	4	🝸 symbol					
VDSL Profile	PhyR	🔘 Enable 🔘 Disable 💿 /	Auto 🔘	Enable 🔘	Disable 💿 Aı	uto			
VDSL Alarm Profile	SOS Min Data Rate	0	0						
	G.INP	DS:Forbidden US:Forbi	dden		Modify				
		Add Cance	Clear						
	Name	Payload Rate	lin INP N	lax Delay /	Applied Ports	Delete			
	DEFVAL 1	00.032M/100.032M	2/2	8/8	1-24				
	ChannelprofileA 1	00.032M/100.032M	2/2	8/8					

- 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
- I. Select "ChannelprofileA" to be the Channel Profile
- m. Click Add

ŻyXEL						
MENU Basic Setting	🔵 VDSL Temp	late Setup	LineProfile	<u>ChanProfile I</u>	mProfile	
VDSL Setup	Na	me	TemplateA			
Advanced Application	Line	Profile	lineProfileA 🗸			
P Application	Channe	I Profile	ChannelprofileA 🛩			
Management	Inm I	Profile	DEFVAL 🗸			
	Rate Adap	tation Ratio	DownStream	Up Str	eam	
VDSL Line Setup	Cha	nnel1	100 %	100 %		
VDSL Profile						
VDSL Alarm Profile		Add	Cancel Clear			
	Name	Line Profile	Channel Profile	Applied Ports	Delete	
	DEFVAL	DEFVAL	DEFVAL	1-24		
	TemplateA	lineProfileA	ChannelprofileA			
		De	Cancel			

#### 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 Racia Satting	O VD \$L Line Prot	file Setup		Template	ChanProfile	InmProfile
VD 8L Setup						
VDSL setup	Name	lineProfileB				
Advanced Application	VD 8L2 Profile	30a 🗆 17a	2 128	125		
IP Application		1 88 L 85 L	180 L 80	8	Lie Alexand	
Management	Max SND Marcia	Down	acream	24.0	opatream	
	Targat SND Margin	60 de L	noulimis	(31.0 (a.o.		nis
VDSL Line Setup	Min SNR Margin	0.0 dB		0.0		
VDSL Profile	Bitswap	@ on @ off		(*) On	0.07	
VDSL Alarm Profile	Max Rx Power			14.5		lmit
	Max Tx Power	14.5 dBm		14.5	dBm	
	Min Overhead Rate	16 kbps		16	kbps	
		Transmission Mod	e 0.993.2 A	Annex A	~	
	Limit P 8D Mask	Class Mask	998	<b>~</b>		
		Limit Mask	D-32		<u> </u>	
		US0 Mask	EU-32	<u> </u>		
		O Auto	O Overn	ide 🙂 Dis	sable	
		UPBORE	0.0			
	UPBO	UpStream Band 1	40.0	1 0.0		
		UpStream Band 2	40.0	0.0	_	
		UpStream Band 3	40.0	0.0	_	
		UpStream Band 4	40.0	0.0		
	PM Mode	allowTransition	nsToldie			
	U 80	④ Allow	O Disabi	le		
	Rate Adaptive	DS:Dynamic	: US:Dynami	le	Modify.	
	MIB P 8D MA 8K	DS:0 BR	PUS:0 BP		Modify.	
	DPBO	DIS	ABLE		Modify	
	HFI BAND	05.01440	oano Listo olembia	-	Modity	
	Virtual Norse	00.01500	. 05.0156016	•	trivelity.	
		(Add	Cancei ]	(Clear)		
	Name	VD 8L2 Profi	le	SNR Ma	argin Applied Po	rts Delete
	DEFVAL 8	a/8b/8c/8d/12a/12b	/17a/30a	6.0/6	0 1-24	
	lineProfileA	17a		6.0/6	0	
	line Profile B	128		6.0/6	0	

- 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 🖬
MENU Basic Setting	🔿 🔘 VDSL Channe	Profile Setup	Template LineProfil	e InmProfile		
/DSL Setup	Name	ChannelprofileB				
Advanced Application		DownStream		UpStream		
IP Application	Net Data Rate	MAX 20000 MIN 192	MAX 20000	MIN 192		
Management	Max Interleave Delay	8 ms	8 ms			
	Min INP	2 🖌 symbol	2 🖌 symbo			
VDSL Line Setup	Min INP8	4 💌 symbol	4 💌 symbol			
VDSL Profile	PhyR	⊙ Enable ○ Disable ○	Auto 💿 Enable 🔘	Disable 🔘 Auto		
VDSL Alarm Profile	SOS Min Data Rate	0	0			
	G.INP	DS:Forbidden US:Forb	idden	Modify		
					_	
		Add Canc	el Clear			
	Name	Payload Rate	Min INP Max Delay	Applied Ports Delete	1	
	DEFVAL 1	00.032M/100.032M	2/2 8/8	1-24		
	ChannelprofileA 1	00.032M/100.032M	2/2 8/8			
	ChannelprofileB	20.000M/20.000M	2/2 8/8			

- k. Go to VDSL Setup > VDSL Profile > VDSL Template Setup
- I. 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	P Help
MENU Basic Setting	🔵 VDSL Temp	late Setup	LineProfile	<u>ChanProfile I</u>	nmProfile				
VDSL Setup	N	ame	TemplateB						
Advanced Application	Line	Profile	lineProfileB 🗸						
IP Application	Chann	el Profile	ChannelprofileB 💌						
Management	Inm	Profile	DEFVAL 💌						
	Rate Adap	otation Ratio	DownStream	UpStre	eam				
VDSL Line Setup	Cha	innel1	100 %	100 %					
VDSL Profile									
VDSL Alarm Profile		Add	Cancel Clear						
	Name	Line Profile	Channel Profile	Applied Ports	Delete				
	DEFVAL	DEFVAL	DEFVAL	1-24					
	TemplateA	lineProfileA	ChannelprofileA						
	TemplateB	lineProfileB	ChannelprofileB						
		D	elete 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



Save Status D Logout D      MENU Basic Setting VDSL Setup Port Primary Template Fallback Template Alarm Template	lelp
MENU           Basic Setting         VDSL Line Setup           VDSL Setup         Port         Primary Template         Fallback Template         Alarm Template	
Basic Setting         VDSL Line Setup           VDSL Setup         Port         Primary Template         Fallback Template         Alarm Template	
VDSL Setup Port Primary Lemplate Fallback Lemplate Alarm Lemplate	
Advanced Application	
IP Application 2 DEFVAL V None DEFVAL V	
Management 3 DEFVAL V None DEFVAL V	
VDSL Line Setup 5 DEF VAL V None V DEF VAL V	
VDSL Profile b DEFVAL V None V DEFVAL V	
VUSL Alarm Profile / DEFVAL V None V DEFVAL V	
Apply Cancel	



# **ADSL Fallback application**

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  $\rightarrow$  VDSL Profile  $\rightarrow$  VDSL Line Profile Setup. Step 2. Type name. Ex.adsltest. Step 3. Select ADSL/VDSL Protocol.Ex. G992.5(ADSL2+)and click "Add" buttonafter finishing setting. PS.G992.1→ADSL G.dmt G992.2→ADSL G.lite G992.3→ADSL2 G992.5→ADSL2+ G993.2→VDSL2 🏉 Web Configurator - Windows Internet Explorer 😋 🕞 🗢 🙋 http://192.168.0.1/rpSys.html 🚖 我的最愛 🛛 🍰 🙋 建膳的網站 👻 🖉 網頁快訊圖庫 👻 Heb Configurator ZyXEL VDSL Line Profile Setup Template ChanProfile InmProfile **Basic Setting** VDSL Setup Step 2 Name adsltest 🔲 30a 🗹 17a 🔲 12a 🔲 12b VDSL2 Profile **IP** Application 🗖 8a 🗖 8b 🗖 8c 🗖 8d DownStream UpStream Management 31.0 31.0 Max SNR Margin dB 🔲 noLimit dB 📃 noLimit 6.0 6.0 Target SNR Margin dB dB VDSL Profile Step 1 Min SNR Margin 0.0 0.0 dB dB Bitswap On Off On O Off VDSL Bonding Setup Max Rx Power 14.5 dBm 🔲 noLimit Max Tx Power 14.5 14.5 dBm dBm Min Overhead Rate 16 16 kbps kbps Transmission Mode G.993.2 Annex B 🔻 ADSL/VDSL Protocol 🔲 G.992.1 🔲 G.992.2 📃 G.992.3 📝 G.992.5 Step 3 ANSI ETSI G.993.2 Limit PSD Mask Class Mask 997-M1c Limit Mask B7-1 -US0 Mask FU-32 \* Oisable O Auto Override UPBOKL 0.0 dB



**Step 4.** VDSL Setup  $\rightarrow$  VDSL Line Setup $\rightarrow$  VDSL Template.

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

🏉 Web Configurator - Windows Internet Exp	blorer				
🚖 我的最爱 🛛 🍰 建膳的網站 🔻 🧧	] 網頁快訊圖庫 ▼				
Web Configurator					
ZyXEL					
Basic Setting	( ) VDSL Template	Setup	LineProfi	le ChanProfile	InmProfile
VDSL Setup	Name	ADSI test			
K Advanced Application	Line Profile	adsitest -	Step 5		
172 IP Application	Channel Profile	DEFVAL -			
Management	Inm Profile	DEFVAL -	<b>4</b>		
	Rate Adaptation Ratio	Do	ownStream	UpStrea	im
VDSL Line Setup	Channel1	100 %	1	00 %	
VDSL Profile Step 4					
VDSL Bonding Setup		Add	Cancel Clear		
	Name	Line Profile	Channel Profile	Applied Ports	Delete
	DEFVAL	DEFVAL	DEFVAL	1-18,20-24	
	ADSLtest	adsitest	DEFVAL	19	
		Del	ete		

#### **Step 6.** VDSL Setup $\rightarrow$ 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.

ZyXE	L						
Basic Setting			SL Line Setup	- Fallback T	omplate	Alarm Tamalata	
VDSL Setup		Port 1	DEFVAL V	None	emplate	DEFVAL -	
IP Application	Advanced Application		ADSLtest 💌	Step 7 None	•	DEFVAL -	
Management		3 DEFVAL 💌		None	•	DEFVAL 💌	
	_	4	DEFVAL 💌	None	-	DEFVAL 💌	
VDSL Line Setup	Step 6	5	DEFVAL 💌	None		DEFVAL 💌	
VDSL Profile		6	DEFVAL 💌	None		DEFVAL 💌	
VDSL Alarm Profile	in	7	DEFVAL 💌	None	•	DEFVAL 💌	
voor bonding dett		8	DEFVAL 💌	None		DEFVAL 💌	



#### **Step 8.** Advanced Application $\rightarrow$ VLAN

#### Step 9. Select Static VLAN

ZyXEL					
MENU Basic Setting VDSL Setup	VLAN Status	= 2	VLAN Port Setting	Static VLAN Step 9	<u>Vlan Counter</u>
Advanced Application	Index	VID	Elapsed Time		Status
3 IP Application	1	1	2:57:43		Static
Management	2	100	2:40:16		Static
VLAN Step 8  Static MAC Forwarding Static Multicast Forwarding Filtering					

**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
						Po	rt Num	iber							
VID	2	4	6	8	10	12	14	16	18	20	22	24	26	Elapsed Time	Statu
	1	3	5	7	9	11	13	15	17	19	21	23	25		
31	Т	15	852	54		- 25	853	53		15	852	53	U	0:01:21	Otatic
1		24	0.42	-27	-	34	848	- 22	-	24	0.40	-2	-	0.01.31	Static

Step 11. Advanced Application → ADSL fallbackStep 12. Set PVC Configureas follows.

Active	
Port	2
VPI	0
VCI	33
PVID	1
Encapulation	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.

ZyXEL				
MENU				
Basic Setting	Logins			Access Control
VDSL Setup	Administrator			
Advanced Application		Old Password		
IP Application	ŀ	New Password		
Management	Re	etype to confirm		
		-ype to estimate		
Maintenance	Diama and a			
Access Control	Please record yo have forgotten y	our new password whene	ver you change it. The s	ystem will lock you out if
Diagnostic	nave lorgotten y	our password.		
Syslog				
Loop Diagnostic				
MAC Table				
ARP Table	Edit Logins	Here News	Deserved	Deterrate confirm
Hardware Information	Login	User Name	Password	Retype to confirm
CFM Action	1			
IPv6 Cache	2			
	3			
	4			
		F	Apply Cancel	

#### 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.

- a. Connect the console cable to your computer and launch a terminal emulation software.
- b. 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.
- c. Enter "atlc".
- d. 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.

ZyXEL						Save	🖻 Status 🖻 Logout I
IENU Jasic Setting DS- Setup	Domain Name Serve	r 0.0.0.0		<u>IPv6 Setup</u>	-		
vanced Application Application	Default Managemen	t 💿 In-band	Out-of-band				
lanagement rstem Info eneral Setup witch Setup Setup Art Setup	In-band Management IP ( Address	DHCP Client Static IP Address	IP Address IP Subnet Mask Default Gateway	192.168.1.1 255.255.255.0 0.0.0.0			
e Limit Profile Setup dware Alarm Profile E Port Status	V Out-of-band Management IP Address	D	1 IP Address IP Subnet Mask Default Gateway	192.168.0.1 255.255.255.0 0.0.0.0			
		Ap	oly Cancel				

#### 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**.



ZyXEL			Save	🖻 Status 🖬 Loqout 🖬 He
MENU				
Basic Setting	Current: Configuration 1			
VDSL Setup				
Advanced Application	Firmware Upgrade	Click Here		
IP Application	Restore Configuration	Click Here		
Management	Backup Configuration	Click Here		
	Load Factory Default	Click Here Without Management IP		
Maintenance	Save Configuration	Config 1 Config 2		
Access Control	Dahart Sustan			
Diagnostic	Reboot System	Config 1 Config 2		
Sysiog			-	
MAC Table				
ARP Table				
Hardware Information				
CFM Action				
IPv6 Cache				
1 0				

#### 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

