

# Vision VES-1124

## 24-port QAM 2-band VDSL Switch



Recently, Ethernet has been more widely used for access applications, transport, and backbone infrastructure. More service providers are adopting Ethernet as the first mile (EFM) in their FTTB/C deployments. Among different EFM technologies, EFM over copper is filling the bandwidth gap between high-speed, Metro fiber networks and low-bandwidth, copper-based services. It utilizes existing copper wires, thus giving service providers a cost-effective solution today, tomorrow, and beyond. Furthermore, EFM uses mature Ethernet technology that allows seamless connectivity between enterprise Ethernet LANs and the WAN.

As influential as EFM, Ethernet over VDSL has changed the fundamental economics of broadband services for the last mile and the MTU market. With Ethernet over VDSL, small to medium sized corporations can receive the same high bandwidth services as large companies. Additional benefits include the ability to enjoy the video, data, and voice services, which VDSL allows, eliminating the limitations of low bandwidth. VDSL delivers cost-effective, high-bandwidth broadband access to enterprise campus and multi-tenant buildings (commercial buildings, residential buildings, hotels, and etc.) without new wiring.

ZyXEL's VES-1124 is a 24-port VDSL switch based on Quadrature Amplitude Modulation (QAM) and the latest Ethernet technologies. The VES-1124 aggregates traffic from ZyXEL's Prestige 841-25 QAM-based VDSL CPE, and multiplexes data traffic into two 10/100Base-Tx uplinks that connect to any third-party Ethernet switch or WAN router. The built-in POTS/ISDN splitter splits and sends the voice traffic to the PSTN. The VES-1124 supports up to 15Mbps for both downstream and upstream, extending Ethernet service up to distances of 1.5km.

The IEEE 802 standard-based firmware provides a rich set of features and ensures interoperability with equipment from other vendors. In addition, the firmware includes many advanced features such as bandwidth management, 802.1X, IGMP snooping, broadcast storm control, and MAC address filtering, which enhance service differentiation, network security and bandwidth utilization.

With a broad array of fully integrated, advanced technologies, the VES-1124 together with the Prestige 841-25 enable service providers and system administrators to affordably build up full service networks and to make all kinds of media-rich applications possible.

### Benefits

#### Port Trunking Provides Higher Availability

The VES-1124 supports IEEE 802.3ad with load distribution control and fail over recovery. The VES-1124 distributes traffic to each trunk port based on the source and destination MAC addresses, and thus balances the traffic load.

#### VLAN Offers Both Security and QoS (Quality of Service)

The VLAN feature in the VES-1124 offers the benefits of both security and performance. VLAN provides better security by isolating traffic between different users. Different services can be tagged and mapped into different priority queues. Thus, Quality of Service can be achieved and improved.

#### Multicasting Optimizes Bandwidth Utilization

The IGMP snooping feature only forwards traffic to subscribers who request multicast traffic. This prevents the unnecessary forwarding of multicast traffic to all subscribers, thereby optimizing bandwidth utilization for bandwidth-consuming application such as broadcast video.

#### Rate Limiting Allows Service Differentiation

In order to fulfill the needs of different customers, service providers need a network infrastructure that combines guaranteed performance and flexibility in service provisioning. Rate limiting on both Ethernet and VDSL ports allow service providers to offer tiered service.

#### Access Control Enhances Network Security

The VES-1124 supports not only 802.1x port-based access control for subscriber authentication, but also allows system administrators to define a limited number of MAC addresses that can access the network from a particular port. This feature denies unauthorized devices from accessing and communicating through the switch, highly enhancing network security. An additional access control feature is the capability to limit the number of users (MAC addresses) that can access the network simultaneously on a per-port basis, allowing the service provider to offer flexible billing plans.

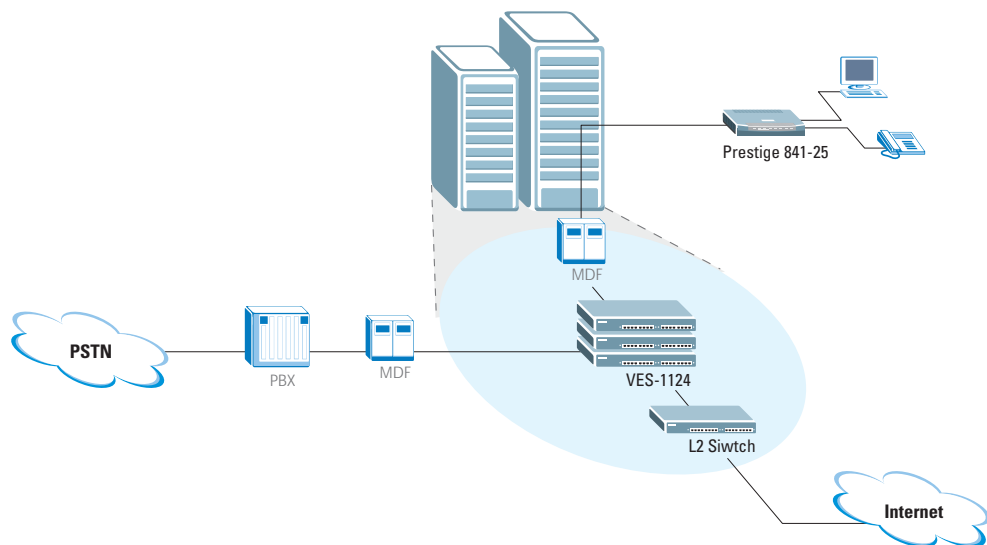
#### Clustering Simplifies Network Configuration and Management

The clustering management design enables system administrators to configure and manage up to 24 units of the VES-1124 through a single IP address. This enables service providers to start with a minimal initial investment and add more equipment as customers increase. Network expansion can be accomplished without increasing management efforts.

#### Configuration and Management Simplifies Daily Operation

The VES-1124 also offers service providers extensive management capabilities. The Web-based management interface of the VES-1124 offers an easy-to-use platform, independent management, and configuration options. The VES-1124 supports SNMP and MIBs, both of which can be managed via standard-based management software. In addition to remote management capabilities, a console port is available for local management.

### Application Diagram



## Features

### General

#### Uplink Interface

- Two 10/100 Ethernet ports
- RJ-45 connector

#### VDSL Interface

- 24-port VDSL
- One Telco 50 connector to CPE
- VDSL complies with 10BaseS, G.997, G.998
- Ethernet over VDSL
- Maximum transmission rate 18Mbps upstream, 16Mbps downstream
- Power back-off algorithm
- Rate Adaptation
- Support VDSL profile setup

#### POTS/ISDN Interface

- Built-in POTS/ISDN splitter
- 24-port POTS
- One Telco 50 connector to PBX or CO

### Performance & Management

#### Switching

- Switching fabric: 8.8Gbps
- Non-blocking
- Frame size: 1522 bytes
- Forwarding frame: 802.3, 802.1q, Ethernet II, PPPoE
- Prevent the forwarding of corrupted packets
- Pause frame disposal

#### Ethernet

- Support 802.3/3u/3x
- Back pressure flow control for half duplex
- Flow control for full duplex (802.3x)

#### Rate Limiting

- Ethernet at 100Kbps increment
- VDSL at 100Kbps increment

### VLAN

- Port-based VLAN
- Tag-based VLAN
- No. of VLAN IDs: 4K
- No. of static VLAN entries: 256
- GVRP

### Port Trunking

- Static port trunking for bandwidth aggregation
- Support 802.3ad

### QoS

- 802.1p
- 2 queues

### STP

- 802.1d
- 802.1w

### Multicast

- Support IGMP snooping
- Broadcast storm control

### Bridging

- 6K MAC addresses
- MAC address filtering
- MAC counting

### Access Control

- 802.1x

### Scalability

- Up to 24

### System Control

- Alarm/Status Surveillance
  - Automatic alarm and status report
  - Alarm/event history
  - LED indication for alarm and system status
- Performance monitoring
  - Line rate

- Configuration

- VLAN setting
  - VDSL line rate setting (bandwidth control)
  - Software upgrade and download via console, Web and FTP
  - Default configuration
  - BOOTP/DHCP client
- Security and Memory Backup
    - Support login authorization and security levels
    - Provides non-volatile memory to back-up system database
    - Keep previous system parameters during re-booting
    - Self diagnostic

### Network Management

- Interface: RS-232C (DB-9) for command line interface
- SNMP manageable
- Status display and event report from web-based management
- RMON groups 1, 2, 3, 9 (history, statistics, alarms, and events)
- Support Telnet
- Provide fault, performance, configuration, and security managements
- Single IP management

### MIBs

- SNMP MIB II (RFC1213)
- RFC1493
- RFC1757
- RFC2674
- Private MIB

## Specifications

### Hardware Specification

#### LED and Switch

- Power: on, off
- System
  - Light off: System not ready or failed
  - Light on: System ready and running ok
  - Light flashing: System booting
- Alarm: on, off
- VDSL
  - Light on: Link on
  - Light flashing: Snd/Rcv
  - Light off: link is down or no connection
- Ethernet
  - Green light: 10M Ethernet
  - Orange light: 100M Ethernet
  - Light off: Ethernet not ready or failed

- Light on: Ethernet link ok; color will indicate if 10 or 100M LAN is on
  - Light flashing: Snd/Rcv
- Power switch for power on or off

#### Power

- 100 ~ 240VAC, 50/60Hz

#### Physical Specification

##### Dimensions

- 440(L) x 300(D) x 44.5(H) mm
- Rack mountable enclosure

#### Operating Environment

##### Temperature

- Operating: -5°C ~ 60°C
- Storage: -25°C ~ 70°C

#### Humidity

- 5% ~ 90% (non-condensing)

#### Certification

##### EMC

- FCC Part 15 Class A
- CE-EMC Class A

##### Safety

- UL60950-1
- CSA60950-1
- EN60950 -1
- IEC60950-1
- ITU-T K.21 (Version 2000)

# Prestige 841-25

## Compatible CPE



### Features

#### VDSL Interface

- One RJ-11 connector
- Ethernet over VDSL
- Transmission rate: 5, 10, 15Mbps for symmetric/asymmetric
- Power back-off algorithm

#### POTS/ISDN Interface

- One RJ-11 connector
- POTS/ISDN splitter built-in
- 4-wire POTS support

#### Ethernet Interface

- One 10/100 Ethernet port
- RJ-45 connector

#### System Control

- Firmware upgrade from VES-1124
- Plug and play

#### Network Protocols

- IEEE 802.3/3u/3x
- Flow control in full duplex mode
- Back pressure in half duplex mode
- Transparent bridging

### Specifications

#### Hardware Specification

##### LED and Switch

- Power: Light on & off: System on or off
- VDSL
  - Light on: Link on
  - Light flashing: link active
  - Light off: link is down or no connection
- Ethernet
  - Green light: 10M Ethernet
  - Orange light: 100M Ethernet
  - Light off: Ethernet not ready or failed
  - Light on: Ethernet link ok; color indicates if 10 or 100M LAN is on
- Light flashing: Snd/Rcv

##### Power

- 110V or 240VAC, 50/60Hz

##### Physical Specification

##### Dimensions

- 181(L) x 128(D) x 30(H) mm
- Standalone box

#### Operating Environment

##### Temperature

- Operating: 0°C ~ 50°C
- Storage: -25°C ~ 70°C

##### Humidity

- 10% ~ 90% (non-condensing)

##### Certification

##### EMC

- FCC Part 15 Class B
- CE-EMC Class B

##### Safety

- UL60950-1
- CSA60950-1
- EN60950 -1
- IEC60950-1
- ITU-T K.21 (Version 2000)



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