

24-Port VDSL2 IP DSLAM + 2-Port Gigabit TP/SFP Combo

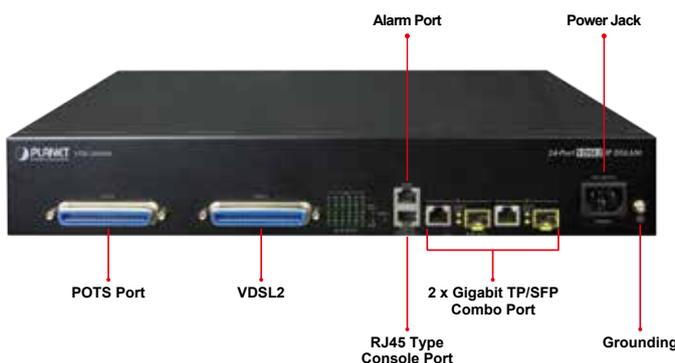


Perfectly Designed for FTTx Last Mile Applications

PLANET VDL-2420M is a telecom-level, high-performance **VDSL2 IP DSLAM** (Digital Subscriber Line Access Multiplexer) with **24 VDSL2 ports**, **2 Gigabit TP/SFP** combo interfaces and robust Layer 2+ switching features. The VDL-2420M is fully compliant with the ITU-T G.993.2 standard and supports VDSL2 30a profiles to offer a maximum download or upload line rate of up to **100/100Mbps** on the existing twisted-pair lines. The VDL-2420M helps service providers to easily provide high bandwidth demanded by triple play services such as IPTV, HDTV, Video Phone and Internet Gaming over the same copper line and they can be uplinked to the core/metro Ethernet network through the two Gigabit fiber-optic interfaces. It is an ideal CO solution for FTTx Last Mile applications of broadband access by ISPs, telecoms and campuses.

Comprehensive and Advanced VDSL2 Configuration

For the bandwidth and distance of broadband access, the VDL-2420M VDSL2 IP DSLAM supports multiple selective VDSL2 profiles (8a, 8b, 8c, 8d, 12a, 12b, 17a and 30a). To help provide the ISPs with internet access service in different physical line installation environments, the VDL-2420M supports configurable **DPBO** (Downstream Power Back-Off) and **UPBO** (Upstream Power Back-Off) to adjust the downstream and upstream transmit power levels for service providers to reduce the interference by nearby wires. Furthermore, it can be configured on a per link basis for transmission mode, rate limitation and SNR (signal-to-noise) margin. These advanced VDSL2 functionalities help service providers to adjust the line performance to ensure the VDSL2 service cannot be impacted by other xDSL services in the same binder group and build a stable and reliable IP DSLAM solution.



VDSL Interface

- 24 full-duplex VDSL links via RJ21(Telco 50) connector
- 24 corresponding **POTS** lines via RJ21(Telco 50) connector
- Built-in **POTS splitter** for each VDSL port
- Auto-speed function for VDSL2 link (by distance and cable quality)

Ethernet Interface

- 2 Gigabit TP and SFP shared combo interfaces
- Auto-MDI/MDI-X detection on Gigabit RJ45 port

VDSL2 Features

- Cost-effective VDSL2 link and central management solution
- ITU-T G.993.2 VDSL2 standard
- **DMT** (Discrete Multi-Tone) line coding VDSL
- ITU-T G.993.2, 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a profiles
- Configurable line template and alarm template
- Configurable UPBO, DPBO, USO allowed and virtual noise PSD
- Configurable Bitswap/G.hs carrier set/RFI Band
- Symmetric data rate of up to **100/100Mbps**
- Copper wiring distance up to 1km
- Selectable target data rate and target SNR margin
- Built-in surge protection against surge damage from high energy spike
- Voice and data communication can be shared on the existing telephone wire simultaneously
- Supports downstream/upstream rate control on each port

Layer 2 Features

- High performance of Store-and-Forward architecture and runt/CRC filtering eliminate erroneous packets to optimize the network bandwidth
- Broadcast/multicast/unicast storm control
- Supports **VLAN**
 - IEEE 802.1Q tag-based VLAN
 - Port-based VLAN
 - Q-in-Q tunneling (VLAN stacking)
 - GVRP for dynamic VLAN management

Delivering Highly-demanding Connectivity for ISPs/Triple Play Devices

As the demand for home broadband connections increases, the VDSL2 technology is the next media to support the integration of home services and provides a significant transmission speed faster than that of the current cable modem and ADSL technology. The VDL-2420M applies the EoVDSL (Ethernet over VDSL) to providing up to 100Mbps download capability and makes the following multi-media services more efficient on the local network:

- IPTV/HDTV
- VoD (Video on Demand)
- Voice over IP
- Video Conferencing/Video Phone
- On-line Gaming
- Internet Radio/On-line Music
- Long-distance Education

The VDL-2420M offers an excellent bandwidth to meet the requirements of the triple play devices for home entertainment and communications

QoS Features Provided to Ensure Best Performance

The VDSL2 DSLAM contains robust QoS features such as port-based, 802.1p priority and IP ToS/DSCP to ensure the best performance of its VoIP and video stream transmission, thus empowering the enterprises to take full advantage of the limited network resources.

Selectable VDSL2 Data Rate for Service Differentiation

Through the management interface, the administrator can control the data transmission speed of each VDSL2 interface. Telecoms and ISPs can immediately and remotely upgrade/downgrade bandwidth service upon different demands.

Efficient Management

To further expand the current network, PLANET VDL-2420M provides **console** and **Telnet** command line interfaces, and advanced **Web** and **SNMP** management interfaces. With its built-in Web-based management interface, the VDSL2 DSLAM offers an easy-to-use, platform-independent management and configuration facility. The VDSL2 DSLAM supports standard Simple Network Management Protocol (SNMP) and can be monitored via any standard-based management software. For text-based management, the VDSL2 DSLAM can also be accessed via Telnet and the console port. The features above provide an efficient way to manage the devices from the internet environment with no need to add an extra secure system either by means of hardware or software.

Robust Layer 2 Features

For efficient management, via Web interface, the VDL-2420M can be programmed for basic switch management functions, such as port speed configuration, port **link aggregation**, IEEE **802.1Q** VLAN and Q-in-Q VLAN, port mirroring, **Rapid Spanning Tree**, and ACL security. Additionally, the firmware includes advanced features such as **IGMP snooping**, QoS (Quality of Service), broadcast storm and **bandwidth control** to enhance bandwidth utilization.

Advanced Security

The VDSL2 DSLAM offers comprehensive Layer 2, Layer 3 and Layer 4 Access Control List (**ACL**) to filter out unwanted traffic. Its protection mechanisms comprise **RADIUS** and port-based **802.1X** user and device authentication. Moreover, the VDSL2 IP DSLAM provides MAC filter, static MAC, IP/MAC binding and **Port Security** for enforcing security policies to the edge. The administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

- Private VLAN edge (PVE/protected port)
- Link Aggregation
 - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
 - Cisco ether-channel (static trunk)
- Spanning Tree Protocol
 - STP, IEEE 802.1D
 - MSTP, IEEE 802.1s
- Port mirroring to monitor the incoming or outgoing traffic on a particular port

Quality of Service

- 4 priority queues on all switch ports
- Traffic classification:
 - IEEE 802.1p CoS
 - IP ToS/DSCP
 - Port-based priority
- Strict priority and Weighted Round Robin (WRR) CoS policies

Multicast

- Supports IGMP snooping v1 and v2
- IGMP querier mode support

Security

- IEEE 802.1X port-based network access control protocol
- RADIUS users access authentication
- L2/L3/L4 Access Control List (ACL)
- MAC filtering and source IP-MAC/port-binding
- Port security for source MAC address entries filtering

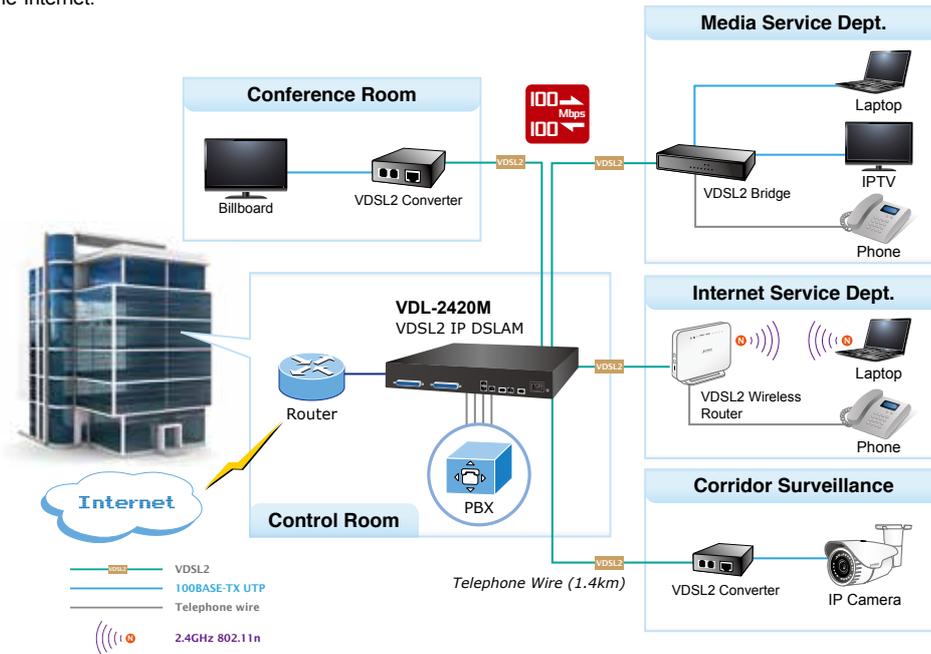
Management

- Switch Management Interface
 - Telnet command line interface
 - Web switch management
 - SNMP v1, v2c, v3 switch management
- DHCP client for IP address assignment
- Link Layer Discovery Protocol (LLDP) for easy network management
- DHCP **option 82** and DHCP relay
- Built-in Trivial File Transfer Protocol (TFTP) client
- Firmware upgrade via TFTP or HTTP
- Configuration upload/download via TFTP or HTTP
- Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
- SNMP trap for interface Link Up and Link Down notification
- Reset button for system management
- RJ45 console interface for switch basic management and setup

Applications

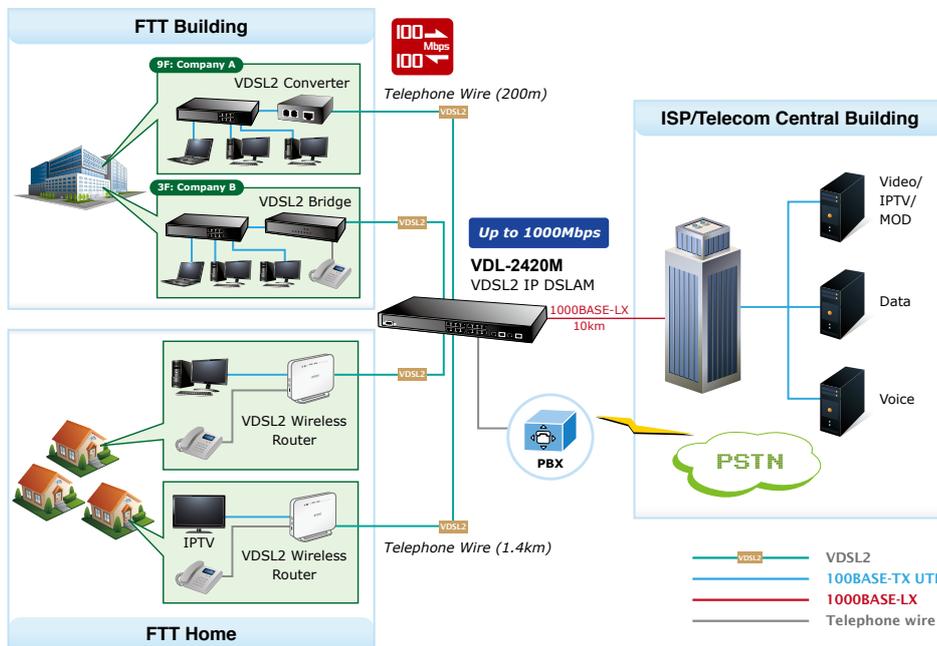
MTU/MDU/Hospitality Solution

IPTV, VoD and digital message broadcasting services are currently the trend worldwide. More and more service providers have gradually upgraded the client-side devices from analog system to digital system. PLANET VDL-2420M VDSL2 CO Switch and VC-23x VDSL2 CPEs are the best solutions to quickly providing cost-effective and high-speed network services by utilizing the existing telephone wire infrastructure. IP network installation is straightforward and requires no new wiring. With enough bandwidth, the VDL-2420M with up to 100/100Mbps symmetric capability enables to make multi-media services on the local Internet, such as VoD (Video on Demand), Voice over IP, video phone, IPTV, distance education and so on, more efficient. This kind of infrastructure will minimize the burden on the Internet.



Last Mile of FTTx Deployment

Co-working with various PLANET VDSL2 CPE product lines, the VDL-2420M provides a symmetric data rate of up to 100/100Mbps within 300m, thus making long-range connections possible. It offers the benefit of high performance to central office co-location and MTU (Multi-Tenant Unit)/MDU (Multi-Dwelling Unit) markets. It provides service of broadband data over existing copper wires without affecting the conventional voice service by 24 subscriber ports with built-in POTS splitter and long-distance support through the two fiber optic uplink interfaces. The various distances of SFP (small-form factor) and Bidi (WDM) transceivers are optional for customers. The VDL-2420M VDSL2 IP DSLAM is a great and ideal solution for FTTx (Fiber to the Building, Fiber to the Campus or Fiber to the Home) applications. It supports high bandwidth VDSL2 over existing telephone wires in the "last mile" from the ISP/telecom/service provider's fiber node to the buildings and customers' homes with cost-effective and high-value central management capability.



Product Specifications

Product	VDL-2420M
Hardware Specifications	
Hardware Version	1.0
VDSL Interface	24-port VDSL2 Line via 1 RJ21 (Telco 50) connector 24-port POTS/Telephone via 1 RJ21 (Telco 50) connectors
Copper Ports	2 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
Transient Voltage Suppressor	IEC 61000-4-2 (ESD): ±8kV (air), ±4kV (contact) IEC 61000-4-4 (EFT): power port 1KV, signal port 0.5KV IEC 61000-4-5 (Lightning): power port 2 KV(1.2/50µs), signal port 1KV(1.2/50µs), 12 ohm
Switch Architecture	Store-and-Forward
Switch Fabric	8.8Gbps/non-blocking
Switch Throughput	6.547Mpps @64bytes
Address Table	8K entries
Shared Data Buffer	512K bytes
Maximum Frame Size	9K bytes
Flow Control	Back pressure for half-duplex IEEE 802.3x pause frame for full-duplex
LED	VDSL2, PWR, SYS, LNK/ACT, 1000
Reset Button	< 5 sec: System reboot > 10 sec: Factory default
Dimensions (W x D x H)	435 x 260 x 67 mm, 1.5U height
Weight	4.3 kg
Power Requirements	100~240V AC, 50-60 Hz
Power Consumption/ Dissipation	90 watts (max.)
VDSL2	
VDSL2 Standard	Complies with ITU-T G.993.1 and G.993.2. Supports provisioning the VDSL optional band (25K to 138K Hz) usage
Band Plan	Selectable band plan for each VDSL line on a per port basis Band Plan A: - Profile 998, Annex A of G.993.1; optimized for symmetric services Band Plan B: - Profile 997, Annex B of G.993.1; optimized for asymmetric services
Rate Adaptation	Manual Rate Dynamics
Power Back-Off	Downstream Power Back-Off (DPBO) PSD Upstream Power Back-Off (UPBO) PSD
Encoding	VDSL-DMT
VDSL2 Template	Configurable Line Template Configurable Alarm Template
VDSL2 Features	Selectable rate limit control Selectable target SNR (Signal to Noise Ratio) mode POTS voices passthrough
Layer 2 Function	
Management Interface	Console; Telnet; Web browser; SNMP v1, v2c, v3
Gigabit Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable
Gigabit Port Status	Display each port's speed duplex mode, link status and flow control status Auto-negotiation status, trunk status
Port Mirroring	TX / RX / Both 1 to 1 monitor
Bandwidth Control	Ingress / Egress rate limit control Gigabit Port: - Allow to configure per 128Kbps VDSL2 Port: - Allow to configure per 4Kbps

VLAN	IEEE 802.1Q tag-based VLAN, up to 256 VLAN groups, out of 4094 VLAN IDs Port-based VLAN GVRP, up to 128 dynamic VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE/Protected port) with two protected port groups	
Link Aggregation	Static port trunk IEEE 802.3ad LACP (Link Aggregation Control Protocol) Supports 13 groups with 8 ports per trunk	
QoS	4 priority queue Traffic classification based on - Port priority - 802.1p priority - DSCP/TOS field in IP Packet VoIP QoS by application protocol no.	
IGMP Snooping	IGMP (v1, v2) snooping, up to 256 multicast groups	
Access Control List	IP-based Layer 3/Layer 4 ACL Up to 220 ACL rule entries	
Security	Port Security (Disable per port of MAC address learning) Static MAC, MAC filter, IP/MAC binding	
SNMP MIBs	RFC 1213 MIB-II RFC 2863 Interface MIB RFC 2665 EtherLike MIB RFC 1493 Bridge MIB RFC 2819 RMON MIB (Group 1, 2, 3,9)	
Standards Conformance		
Regulatory Compliance	FCC Part 15 Class B, CE, VCCI	
Standards Compliance	IEEE 802.3 IEEE 802.3u IEEE 802.3z IEEE 802.3ab IEEE 802.3x IEEE 802.3ad IEEE 802.1D IEEE 802.1w IEEE 802.1p IEEE 802.1Q IEEE 802.1X ITU-T ITU-T ITU-T RFC 768 RFC 793 RFC 791 RFC 792 RFC 2068 RFC 1112 RFC 2236	10BASE-T 100BASE-TX 1000BASE-SX/LX 1000BASE-T Flow control and back pressure Port trunk with LACP Spanning Tree Protocol Rapid Spanning Tree Protocol Class of Service VLAN tagging Port Authentication Network Control G.993.1 (VDSL) G.997.1 G.993.2 VDSL2 UDP TFTP IP ICMP HTTP IGMP v1 IGMP v2
Cables	<ul style="list-style-type: none"> • VDSL2: twisted-pair telephone wires (AWG24 or better) up to 1km • 10/100BASE-TX: 2-pair UTP Cat.5, up to 100m (328ft) • 1000BASE-T: 4-pair UTP Cat.5E, up to 100m • 1000BASE-SX: 50/125µm and 62.5/125µm fiber-optic cable, up to 550m • 1000BASE-LX: 9/125µm fiber optic cable, up to 10km 50/125µm and 62.5/125µm fiber-optic cable, up to 550m 	
Environment		
Temperature	Temperature: -10 ~ 50 degrees C Relative Humidity: 10~ 90% (non-condensing)	
Humidity	Temperature: -20 ~ 70 degrees C Relative Humidity: 10~ 90% (non-condensing)	

Ordering Information

VDL-2420M	24-Port VDSL2 IP DSLAM + 2-Port Gigabit TP/SFP Combo
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Related Products

MGB-Series Transceiver	1000BASE-SX/LX SFP Transceiver
VC-231	Ethernet over VDSL2 Converter (Profile 30a)
VC-234	4-Port Ethernet over VDSL2 Bridge (Profile 30a)
VDR-300NU	300Mbps Dual Band Wireless VDSL2 Router
VDR-301N	802.11n Wireless VDSL2 Bridge Router
XDL-2420R	24-Port VDSL2/ADSL2+ with 2-Port Gigabit TP/SFP Combo IP DSLAM

Available Modules for Mini-GBIC SFP Slots

MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module
MGB-L30	SFP-Port 1000BASE-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000BASE-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000BASE-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000BASE-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 10km
MGB-LB10	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 10km
MGB-LA20	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 20km
MGB-LB20	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 20km
MGB-LA40	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 40km
MGB-LB40	SFP-Port 1000BASE-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 40km