

24-Port VDSL2 IP DSLAM



PLANET VC-2402 is a rack-mountable pizza-box IP DSLAM supporting two Gigabit Ethernet (GbE) trunk interfaces and 24 VDSL2 ports (ADSL 2+ compatible) at line side. It provides a non-blocking solution for the last mile of broadband access to facilitate digital family.

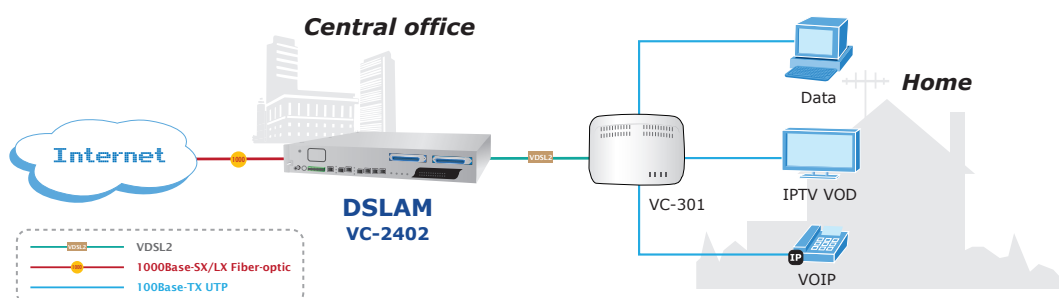
As the demand for home broadband connections steadily increases, cable modems and ADSL now are not fast enough to support the integration of home services. VDSL / VDSL2 are viewed as the next step media in providing a complete home-communication / entertainment solution. The PLANET VC-2402 takes advantage of VDSL2 technology with core IP switching functionality to perform competitive broadband service for the last mile. This allows operators to easily offer services such as IPTV, VoIP, HDTV, VOD, videoconferencing, Internet access and advanced voice services at the same copper line.

Besides, due to the performance of VDSL2 is limited by loop length in which performance degrades dramatically when loop length longer than 300 meters, the VC-2402 providing ADSL 2/2+ operation modes in the same copper line with VDSL2 will be beneficial to industry to enhance coverage of a VDSL2 DSLAM. The VC-2402 is suitable for small scale application and can be easily deployed in remote locations such as remote terminal, business parks, street cabinets and so on to extend the service reach distance.

APPLICATIONS

Perfect solution for NSP (Network Service Provider) to offer broadband services

The PLANET VC-2402 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. The PLANET VDSL2 IP DSLAM is the perfect solution for NSP with cost-effective and high-value central management capability.



KEY FEATURES

HIGH SPEED VDSL2 TECHNOLOGY

- The VC-2402 supports VDSL2 service via POTS / ISDN user interface.

Built-in POTS / ISDN Splitters

- Streamline installation and increase cost-effectiveness.

SYSTEM OVERHEATING PROTECTION

- This system includes three functions - FAN alarm indicating if FAN malfunction, temperature monitoring and system overheating trap functionality, and automatic power cutoff when system overheating.

EXPANDED REVENUE OPPORTUNITIES

- ADSL 2+ backward compatibility enables service providers to migrate to VDSL2 service while continue providing existing customers with option of ADSL 2+ service.

HIGH RELIABILITY AND EASY MAINTENANCE

- The VC-2402 is equipped with fan and air filter unit to cool the system operation. Also, it is equipped with low power requirements plus full diagnostic and alarm reporting capability. The powerful SNMP, CLI, and Web GUI management features provided is easy to use. It offers remote login and software download that helps service providers minimize daily operational costs.

COMPACT DESIGN FOR LIMITED SPACE

- The VC-2402 VDSL2 mini-DSLAM occupies only 1U of standard telecom rack space for 24 lines. It will easily be fitted in existing Remote Terminals. With optional temperature-hardened design, the VC-2402 VDSL2 mini-DSLAM is a good fit for outdoor plant cabinet, indoor rack, or wall-mounting enclosures.

SPECIFICATION

Product	24-Port VDSL2 IP DSLAM	
Model	VC-2402 / VC-2402-48	
Hardware Specification		
Case	1U high box-type with a rack-mountable enclosure	
Ports	Uplink	2 x Gigabit Ethernet Combo ports (10/100/1000 Base-T and SFP)
	Console	1 x RS-232 Serial Port (9600, 8, N, 1)
	MGMT	1 x RJ-45 10/100 Ethernet port for local management
	HK / ALM	1 x RJ-50 connector for four housekeeping inputs and one alarm contact output
	LINE	1 x RJ-21 Connector
	PHONE	1 x RJ-21 Connector
LED Indicators		1 x SYS LED
		1 x ALM LED
		2 x Link LEDs
		2 x Act LEDs
		24 x VDSL LEDs
Software Specification		
VDSL / VDSL2 Standard	<ul style="list-style-type: none">> VDSL / VDSL2 functions comply with ITU-T G.993.1 and G.993.2.> Supports Packet Transport Mode (PTM) per G.993.1 and G.993.2 when operating in VDSL mode.> Supports provisioning the VDSL optional band (25K to 138K Hz) usage> VDSL OAM communication channels including IB (Indicator Bits) channel, EOC (Embedded Operations Channel), and VOC (VDSL Overhead control Channel).> Supports selectable band plan A (profile 998, Annex A of G.993.1 and plan B (profile 997, Annex B of G.993.1) for each VDSL line on a per port basis.> Line rate of a VDSL2 line port can reach symmetrical 100/100 Mbps or asymmetrical 100/50 Mbps at an ideal loop condition.> Supports selectable spectrum profile of 8a/b/c/d, 12a/b, 17a, and 30a for frequency bands (Annex A, B and C) defined in G.993.2 when operating in VDSL2 mode.	
	<ul style="list-style-type: none">> 24 xDSL subscribers lines and supports provisioning of the operation modes (VDSL/VDSL2, ADSL2/2+) with a default of VDSL2 on a per port basis.> Handshake procedure of each DMT xDSL circuit complies with ITU-T G.994.1.> Physical layer management of each DMT xDSL circuit complies with ITU-T G.997.1.> xDSL subscriber interfaces support the following functions:<ul style="list-style-type: none">1. Upstream and downstream non-overlapped mode2. Auto retrain3. Scrambling functionality4. FEC functionality5. Trellis coding6. Bit-swap7. Interleaving selection	
Line Interface	<ul style="list-style-type: none">8. Target, maximum and minimum SRN margins programmable per port basis, independently for UP/DOWN directions9. Tx power adjustment while the SNR margin detected from the xDSL line exceeds the configured maximum SNR margin> Rate adaptation modes defined in ITU-T G.992.5 and G.997.1 including Fixed (manually configured) and Adaptive at Init modes.> xDSL subscriber interface is able to support Fast Channel or Interleaved Channel independently for each xDSL port.> Supports Upstream Power Back-off (UPBO) while received power exceeds configured max-aggregation-PSD in the upstream direction.> Supports detection of Dying Gasp message from xDSL CPE and indicate a CPE power loss alarm in the management interface. This is cleared upon the commencement of a retrain operation (i.e. when the CPE becomes active once more).	
POTS Splitter	<ul style="list-style-type: none">> Compliant with ETSI TS 101 952-1-1 option A for European, ETSI TS 101 952-1-3 for Annex B European ISDN, or ANSI 600.> The splitter/low pass filter is passive element. Even the system is loss of power (power supply fails), the POTS service is still OK.	

Management	<ul style="list-style-type: none"> > In-band management: provide all system OAM&P functions: software updates, configurations import / export, and management system interaction through trunk port. > Out-band management: provide two kinds of management interfaces. One is the RS-232 local craft interface for basic provisioning. Interface default configuration: 9600 baud rate, 8-bit data, none parity, and 1 stop bit. The other is a 10/100 Base-T auto-sensing Ethernet Interface.
Ethernet / IP Functionality	<ul style="list-style-type: none"> > Supports L2 bridge functionalities defined in IEEE 802.1d including: <ol style="list-style-type: none"> 1. Automatic source MAC learning 2. Static source MAC address table provisioning 3. Maximum 8K MAC addresses allowed to be learned into MAC table per system; 1 ~ 4095 MAC addresses per trunk bridge port with a limitation of maximum 4096 MACs for total number assigned to two trunk interfaces; 0 ~ 512 MAC addresses per line bridge port 4. Provisionable aging time for MAC address table with a default of 300 seconds on a per bridge port basis. > The uplink interfaces support Spanning Tree Protocol (STP) per IEEE 802.1D and Rapid Spanning Tree Protocol (RSTP) per IEEE 802.1w. > Supports DHCP Server (IP allocation to DSL users), DHCP transparent forward, and DHCP relay agent option-82 functionality (the value within Agent Circuit ID and Agent Remote ID sub-options are configurable).
VLAN	<ul style="list-style-type: none"> > IEEE 802.1q Port-based VLAN and Protocol- based VLAN > 512 active VLANs simultaneously and the VLAN ID ranges from 1 to 4094 > 2 layers VLAN stacking ("Q-in-Q") > VLAN translation > Port isolation functionality. When port isolation is enabled, no Layer-2 bridging between different ports (or subscriber lines) is supported in a VLAN > Static VLAN group and membership provisioning per bridge port basis > Configuring a port to be VLAN transparent (i.e., enabled for TLS)
Multicast	<ul style="list-style-type: none"> > Multicast forwarding with IGMP Snooping v1 [RFC 1112] and v2 [RFC 2236], and Multicast MAC address mapping > Supports up to 512 concurrent IGMP groups (multicast channels) per system and a multicast channel has a maximum of 512 copies > Profile-based Multicast Access Control (up to 24 profiles) and assign any profile to a subscriber interface (the maximum number of registered multicast channels within a profile is 512) > Able to limit the maximum number (0 ~ 20) of concurrent multicast groups to be joined per bridge port > IGMP snooping/proxy v1, v2, and v3 > Selection between IGMP proxy and IGMP snooping > Fast and Normal Leave modes
Security	<ul style="list-style-type: none"> > ARP anti-Spoofing and MAC anti-Spoofing > Layer-2 frame filtering based on source/destination MAC addresses > Layer-3 filtering based on IP header including source/destination IP address, protocol ID, and TCP/UDP destination port number > Supports filtering out broadcast frames (destination MAC Address 0xFFFFFFFF) in the downstream direction. When this option is activated, only protocol-specific broadcasts (DHCP, ARP) are allowed to be forwarded to downstream users. > Supports secured forwarding that forces upstream traffic to the specific gateway, by means of replying upstream ARP request with MAC address of default gateway

QoS

- > Supports Ethernet rate limit function including:
 1. Per bridge port rate limiting
 - Profile based configuration
 - Ingress: all kinds of traffic
 - Egress: unicast traffic
 - Apply to line bridge port
 2. Per bridge port per VLAN rate limiting
 - Profile based configuration
 - Ingress: all kinds of traffic
 - Egress: unicast traffic
 - Apply to line bridge port
 3. Per bridge port broadcast traffic rate limiting
 - Profile based configuration
 - Apply to line/trunk bridge port
 4. Per VLAN rate limiting
 - Non-profile based
 - Broadcast: support rate limiting for PVIDs of trunk interfaces with an internal maximum rate 500K bps per PVID VLAN
 - Flooding: support rate limiting for all defined VLANs, trunk/line
- > Supports Three Color Marking (TCM) rate limit policer in accordance with the Metro Ethernet Forum (MEF) Bandwidth Profile and RFCs 2697 & 2698.
- > Supports VLAN priority queue per IEEE 802.1p (4 priority queues for 8 802.1p CoS value. The mapping between 4 priority queues and 8 priority values are configurable.)
- > Supports selectable adopted priority queue mechanisms according to Strict Priority Queue (SPQ) and Weighted Fair Queue (WFQ)
- > Supports traffic classification by re-assigning CoS (p-bit) value according to CoS (802.1p priority bit), VLAN ID, ToS, DSCP, Source/Destination IP address, or Source/Destination MAC address
- > Configurable mapping between ATM PVC and 802.1p CoS for received untagged frame from subscriber port

ATM and Interworking

- > Supports 8 PVCs per subscriber line; VPI range is from 0 to 255 and VCI range from 32 to 65535 conforming to ATM Forum UNI 3.1/4.0, PVCs only.
- > Supports multi-protocol encapsulation over ATM per RFC 2684 / RFC 1483 for bridged mode, LLC encapsulation method only.
- > Supports AAL5 per ITU-T I.363.5.
- > Commit the supported ATM service categories in the increasing order of UBR, CBR on a per port basis.
- > Provide PCR (peak cell rate) configurable parameter for CBR service.
- > Supports profile-based ATM traffic management (up to 16 traffic descriptors with one default and 15 user-configurable descriptors).
- > Supports PPPoE transparent forwarding and PPPoE intermediate agent.

ORDERING INFORMATION

VC-2402	24-Port VDSL2 IP DSLAM (2 GbE Combo, ADSL 2+, 100~240 VAC)
VC-2402-48	24-Port VDSL2 IP DSLAM (2 GbE Combo, ADSL 2+, -48 VDC)
Accessories	
IDL-PAN-48	IDL MDF Patch Panel

RELATED PRODUCT

VC-301	VDSL2 Modem (1 x RJ-11 Port, 1 x RJ-45 Port)
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