Lantech OS2 PRO Management

Advanced Layer 2 management functions

Auto Feed, NAT, and Open API



OVERVIEW

Lantech OS2 PRO generation provides L2 management, NAT, and advanced security functions for onboard network deployment. WebGUI, and complete CLI settings make configuration easy. The Restful API can greatly improve central management efficiency for various applications including fleet management and AIOT. The advanced cybersecurity mechanism can prevent hackers from hacking or attacking.

InterVLAN Routing

Supports Layer 3 routing between VLANs, enabling direct communication across isolated network segments without the need for an external router. This functionality is essential for managing traffic efficiently in segmented networks, improving performance, and simplifying network architecture.

DHCP over VLAN

Provides DHCP server and relay capabilities per VLAN group, allowing devices in different VLANs to receive IP addresses dynamically from a central server. This feature ensures efficient IP address management in logically separated networks while maintaining scalability and centralized control.

ITXPT label for delay shut down, inventory service, standby green mode

Lantech OS2 PRO switch supports Module inventory, Time service and MQTT broker. When the engine of the vehicle turns off, the switch is able to extend the work from 30sec to 60mins. The switch must be able to provide SRV and TXT records to back office and exports the data in xml file format. The consumption power under sleep mode meets the standard of ITxPT. (-IGN model)

Auto feed configuration for swapped new switches for Seamless Network Maintenance

Lantech OS2 PRO switch supports auto-feed configuration features that revolutionize network switch setup and management. It ensures that new and replacement switches automatically receive the correct configuration without manual intervention.

MQTT – Publisher & Broker

MQTT is a publish-subscribe-based messaging protocol and works on top of the 80CP/IP protocol. An MQTT system comprises one broker and several clients, where clients can either be publishers or subscribers. The publishers send data to the broker in the form of MQTT packets, which consist of a “topic” and “payload”, then the broker distributes the “payload” to the subscribers based on which "topics" they have subscribed.

NAT/PAT & Firewall(wireless) supported*

The switch supports Static IP address, PPPoE (V4&V6), DHCP client, NAT, PAT, OSPF and RIP routing functions, including static route, dynamic route as well as basic firewall* functions with Port forwarding, DMZ, Filtering, Remote

admin and DDoS protection.

mDNS (Multicast DNS) feature

mDNS (Multicast DNS) enables hosts in the LAN to discover and communicate with each other in compliance with the DNS protocol without a traditional DNS server.

Support OPEN API document format for Restful API for better switch performance

Lantech OS2 PRO switch supports OPEN API document format for Restful API hat uses JSON format to access and use data for GET, PUT, POST and DELETE types to avoid traditional SNMP management occupying CPU utilization.

Ignition PoE timer function on IGN model

Lantech OS2 PRO switch (IGN model) has a programmed timer by port to shut down each PoE port, with variants from 30 seconds to 60 minutes, eliminating the additional relay wire to shut down PoE ports and allowing for remote configuration to change the PoE timer time anytime, anywhere.

DDoS Security to Protect Switches and Servers; Optional IEC 62443-4-2 Model to Help Maintain the Safety and Reliability of Critical Infrastructure and Ensure Operational Continuity

The Lantech OS2Pro platform is designed with robust security methods to prevent network threats, such as DDoS attack prevention, 802.1X security authentication, Dynamic ARP Inspection, IP Source Guard, and Port Security.
The optional IEC 62443-4-2 cybersecurity model includes vulnerability checking, encrypted file protection, public key management, strong password enforcement, account management, and penetration and stress testing — totaling more than 90 security measures.
The optional IEC 62443-4-2 defines component-level security requirements, with SL2 cybersecurity compliance to defend against network threats.
Lantech software meets a set of security requirements, including FR.1 Identification and Authentication Control, FR.2 Use Control, FR.3 System Integrity, FR.4 Data Confidentiality, FR.5 Restricted Data Flow, FR.6 Timely Response to Events, and FR.7 Resource Availability. These measures effectively mitigate network threats at both the hardware and software levels.

802.1X security by MAC address

MAC-based port authentication is an alternative approach to 802.1x for authenticating hosts connected to a port. By authenticating based on the host's source MAC address, the host is not required to run a user for the 802.1x protocol. The RADIUS server that performs the authentication will inform the switch if this MAC can be registered in the MAC address table of the switch.

RADIUS and TACACS+

Lantech OS2 PRO switch supports RADIUS and TACACS+ to handle authentication, authorization, and accounting (AAA) services for network access control.

Enhanced G.8032 ring, 8 MSTI MSTP

Lantech OS2 PRO switch features enhanced G.8032 ring which can be self-healed in less than 20ms for single ring topology protection covering multicast packets. It also supports various ring topologies that covers enhanced ring and basic ring by easy setup than others. It supports MSTP that allows each spanning tree for each VLAN for redundant links with 8 MSTI.

DHCP option 82 & Port based, Mac based DHCP, Option66, DHCP Snooping, L3 DHCP relay

DHCP server can assign dedicated IP address by MAC or by port (Port based for single switch), it also can assign IP address by port for multiple switches with single DHCP option82 server. DHCP Snooping is supported. DHCP Option66 server can offer IP address of TFTP server to DHCP client for VOIP application. L3 DHCP Relay acts as an

intermediary agent that enables DHCP communication between clients and servers located on different subnets or VLANs.

IGMPv3, MLD snooping, query, GMRP, static multicast forwarding and multicast Ring protection

The unique multicast protection under enhanced G.8032 ring can offer immediate self-recovery instead of waiting for IGMP table timeout. It also supports IGMP v3 with Query mode for multimedia, GMRP, router port, MLD snooping and static multicast forwarding binding by ports for video surveillance applications.

Support RTC (Real Time Clock) with longevity Golden Capacitor; CPU watchdog

Our switch supports RTC which is powered by a golden capacitor, ensuring accurate real-time event logs. The built-in watchdog design can automatically reboot the switch when CPU is found dead.

User-friendly GUI, Editable configuration text file, Auto topology drawing, Enhanced Environmental Monitoring

The user-friendly UI, innovative auto topology drawing and topology demo makes Lantech OS2 PRO switch much easier to get hands-on. The complete CLI** enables professional engineer to configure setting by command line. The configuration file of Lantech OS2 PRO switch can be exported in text file so that it can be edited and configured back to switch with ease for mass deployment. It supports optional enhanced environmental monitoring for actual input voltage, current, ambient temperature and total power load.

Optional IEEE 802.1AS for precise time protocol

The generalized Precision Time Protocol (gPTP**) is a protocol used to synchronize clocks throughout a network. The gPTP** supports two-step processing bridge mode to support 1 microsecond in 6 hops for PTP accuracy and precision. (-PTP model)

Dual NTP Server Synchronization

The switch supports dual-source NTP synchronization to ensure continuous clock accuracy. By configuring Primary and Secondary NTP servers, the switch enables automated failover if the main source fails. This redundancy prevents clock drift, maintaining precise time-stamped logs across the network infrastructure.

Optional LantechView** for Lantech devices maintenance

LantechView can automatically discover Lantech devices on the network, providing seamless configuration management. It supports both single-device operation and batch import/export of configurations across multiple IP subnets and VLAN areas, enhancing network efficiency and management.
Additionally, LantechView also features firmware management capabilities, allowing batch verification and simultaneous upgrades to the latest firmware versions, ensuring consistency across all devices.
To learn more about Lantech LantechView software solutions, please refer to **Lantech LantechView Software Datasheet**

OS2 Pro vs. OS2 Pro-SEC comparison

	OS2 Pro	OS2 Pro -SEC
Management	Web UI/Telnet complete CLI command line	Web UI/Telnet complete CLI command line
IEC 62443 Cyber Security	NA	Y, Ready; optional license
Hardware Environmental Monitoring	Y	Y
Bypass	optional	optional
Boot up time	Within 60sec.	Around 90sec.

SPECIFICATIONS

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI/OPEN API document format for Restful API
SNMP MIB	MIBII MIB SNMP MIB, IF MIB RMON MIB, Bridge MIB, LLDP MIB Private MIB
Enhanced G.8032 ring	Support ITU G.8032 v2/2012 for Ring protection in less than 20ms for self-heal recovery (single ring enhanced mode) Support various ring/chain topologies Includes basic single ring and enhanced ring Enhanced G.8032 ring configuration with ease Cover multicast & data packets protection
PoE Management (PoE model)	PoE Detection to check if PD is hang up then restart the PD PoE Scheduling to On/OFF PD upon routine time table
Per Port PoE Status (PoE model)	On/ Off, voltage, current, watts, temperature
PoE Off/Timer on ignition standby mode** (PoE model)	System Shutdown Duration, PoE Disable Duration (-IGN model)
User-friendly UI	■ Auto topology drawing ■ Topology demo ■ Complete CLI for professional setting**
Port Trunk with LACP	LACP Port Trunk: 8 Trunk groups

LLDP	Supports LLDP to allow switch to advise its identification and capability on the LAN
CDP	Cisco Discovery Protocol for topology mapping
VLAN	IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) GVRP
IPv6/4	Present
RSTP/MSTP	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree, IEEE802.1s Multiple Spanning Tree 8 MSTI
Quality of Service (QoS)	The quality of service is determined by port, Tag and IPv4 Type of service, IPv4 Differentiated Services Code Points - DSCP
Class of Service	Support IEEE802.1p class of service, per port provides 8 priority queues
Remote Admin	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Login Security	Supports IEEE802.1X Authentication/RADIUS/TACACS+
Port Mirror	Support 3 mirroring types: “RX, TX and Both packet”
Network Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruders. 802.1X access control/MAC-Port binding

	INGRESS ACL L2/L3 SSL/ SSH v2 for Management HTTPS for secure access to the web interface
IGMP	Support IGMP snooping v1,v2,v3; 1024 multicast groups; IGMP router port; IGMP query; GMRP, MLD snooping
Static MAC-Port bridge	Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application
L3 routing function	Static route, NAT, VRRPv2 (WAN only), OSPF and RIP
Firewall (wireless)*	Port forwarding DMZ Filtering Remote admin DDoS protection
Bandwidth Control	Support ingress packet filter. Ingress filter packet type combination rules are Broadcast/Multicast/Flooded Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all types of packet. The packet filter rate can be set an accurate value through the pull-down menu for the ingress packet filter.
Flow Control	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex
System Log	Supports System log record and remote system log server
Protection	■ Miss-wiring avoidance ■ Node failure protection ■ Loop protection
SNMP Trap	Up to 10 trap stations; trap types including: ● Device cold start ● Authorization failure ● Port link up/link down ● Topology change (ITU ring) ● Power failure ● Environmental abnormal
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82 (Server and relay)/Port-based DHCP; DHCP Snooping; DHCP option 7/61/66; L3 DHCP relay
gPTP**	IEEE 802.1AS gPTP; Bridge mode and end mode
NTP	Supports SNTP to synchronize system clock in Internet

*Future release

**Optional

SERIES COMPARISON

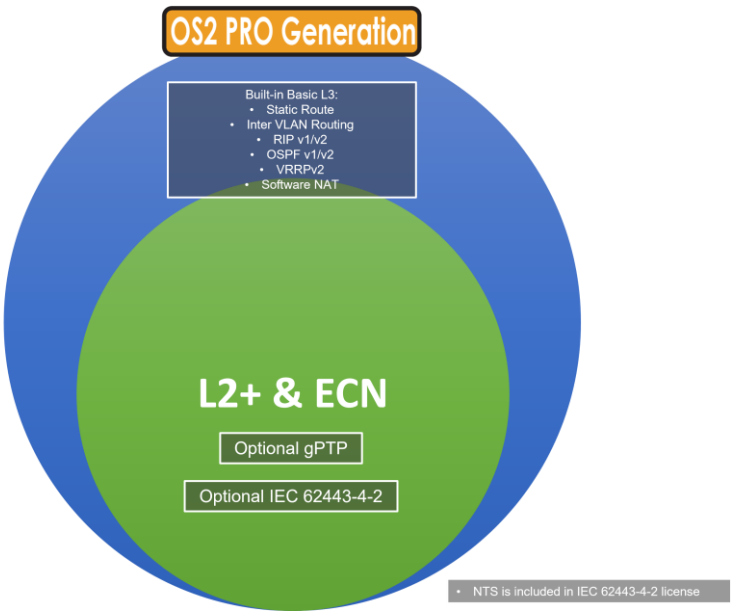
*Future release	OS5			OS4 / OS3			OS2PRO	OS2	OS1
**Optional	L3	L3 Lite	L2+	L3	L3 Lite	L2+			
Static Route	•	•		•	•		•		
Inter VLAN Routing	•	•		•	•		•		
L3 DHCP Relay	•	•		•	•		•		
Unicast Routing: RIP v1/v2	•			•			•		
Unicast Routing: OSPF v1/v2	•	•		•	•		•		
IPv6 Routing: RIPng / OSPFv3	•**								
Static Multicast Routing	•	•		•	•				
Multicast Routing: DVMRP (IPv4)	•			•					
Multicast Routing: PIM (DM) (IPv4)	•	•		•	•				
Multicast Routing: PIM (SSM) (IPv4)	•	•		•	•				
Multicast Routing: PIM (SM) (IPv4)	•	•		•	•				
Multicast Routing: PIM (BSR) (IPv4)	•	•		•	•				
IPv6 Multicast Routing: PIMv6	•**								
VRRPv2	•	•		•	•		WAN only		
VRRP aware PIM	•	•		•	•				
VRRPv3 (IPv6)	•*								
Hardware NAT: Static NAT/ PAT	•**	•**		OS4 only**	OS4 only**		Software NAT		
MACsec	•**	•**	•**						
IEC 62443-4-2	•**	•**	•**	OS3 only**	OS3 only**	OS3 only**	•**		
Prevention of DDoS/DoS attack	•	•	•	•	•	•	•		
IP based port	•	•		•	•		•		
Rescue Mode				•	•	•			
ACL	Ingress/Egress	Ingress/Egress	Ingress/Egress	Ingress/Egress	Ingress/Egress	Ingress/Egress	Ingress Only	Ingress Only	Ingress/Egress
Port Security	•	•	•	•	•	•			
IPSource Guard	•	•	•	•	•	•			
Dynamic ARP Inspection	•	•	•	•	•	•			
Remote admin (limitation of accessing interface)	•	•	•	•	•	•	•	•	•
Remote admin Access Restriction Rules (25)	•	•	•	•	•	•	•		IP Security
Login Security (TACACS+)	•	•	•	•	•	•	•	•	•**
Login Security (RADIUS)	•	•	•	•	•	•	•	•	port authentication only
SSH	•	•	•	•	•	•	•	•	•
SSL Certificate Management	•	•	•	•	•	•	•	•	•
Perpetual / Fast PoE	•	•	•						
PTP	•**	•**	•**	I(P)GS-R6416XF**	I(P)GS-R6416XF**	I(P)GS-R6416XF**	gPTP**		
NTP/NTS (Network Time Security)	•**	•**	•**	•	•	•	•**		
PXE application	•	•	•	•	•	•			
TTDP (IEC 61375-2-5)	•**	•**		•**	•**				
R-NAT (built-in IEC 61375-2-5)	•**	•**		OS4 only**	OS4 only**				
DHCP for TTDP	•**	•**		•**	•**				
TRDP (IEC 61375-2-3)	•**	•**		•**	•**				
QoS under 61375-3-4	•	•	•	•	•	•		•	•

*Future release	OS5			OS4 / OS3			OS2PRO	OS2	OS1
**Optional	L3	L3 Lite	L2+	L3	L3 Lite	L2+			
OOB (Out of Band) Service	By model	By model	By model						
OPEN API document format for Restful API	•	•	•	•	•	•	•		
SNMP V1 / V2c / V3	•	•	•	•	•	•	•	•	•
SNMP V3 USM / VACM / TSM	•	•	•						
SNMP Trap	•	•	•	•	•	•	•	•	•
CDP	•	•	•	•	•	•	•	•	•
Firmware upgrading	WEB/SFTP/FTP	WEB/SFTP/FTP	WEB/SFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP
Configuration file import/export	WEB/SFTP/FTP	WEB/SFTP/FTP	WEB/SFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP
Auto-Provisioning	•	•	•	•*	•*				•
Snapshot	•	•	•	•	•	•	•		
Auto-Feed	•	•	•	•	•	•	•		
Dual Image				•	•	•			
Environment Monitoring	•	•	•	•	•	•	•	•**	•**
Digital Input/ Output	•	•	•	•	•	•	•	•	•
Triggered by event of environment	•	•	•	•	•	•	•	•**	•**
Triggered by event of SFP DDM	•	•	•	•	•	•	•	•	•
Ping	•	•	•	•	•	•	•	•	•
ARP	•	•	•	•	•	•	•	•	•
Topology View	•	•	•	•	•	•	•	•	•
RSPAN	•	•	•						
Port Mirroring	•	•	•	•	•	•	•		
VLAN based QoS	•	•	•	•	•	•	•	•	•
MSTP	•	•	•	•	•	•	•	•	•
MRP	•	•	•	•	•	•			•
Loop Protection	•	•	•	•	•	•	•	•	•
BPDU Guard	•	•	•	•	•	•	•		•
Dual Homing	•	•	•	•	•	•	•	•	•
Proprietary redundant protocol	ITU-Ring Standard mode	ITU-Ring Standard mode	ITU-Ring Standard mode	ITU-Ring Basic mode, Enhanced mode, Standard mode (OS3 only)	ITU-Ring Basic mode, Enhanced mode, Standard mode (OS3 only)	ITU-Ring Basic mode, Enhanced mode, Standard mode (OS3 only)	ITU-Ring Enhanced mode	ITU-Ring Basic mode, Enhanced mode	ITU-Ring Auto mode, Basic mode, Enhanced mode Multiple VLAN
Protocol Based VLAN	•	•	•	•	•	•			
Subnet Based VLAN	•	•	•	•	•	•			
QinQ VLAN	•	•	•	•	•	•			•
GVRP	•	•	•	•	•	•	•	•	•
IGMP router port	•	•	•	•	•	•	•	•	•
MLD Snooping	•	•	•	•	•	•	•		
GMRP	•	•	•	•	•	•	•	•	•
DHCP by VLAN	•	•		•	•		•		
MAC based DHCP	•	•	•	•	•	•	•	•	•
Option82 DHCP Relay	•	•	•	•	•	•	•	•	•
Option 7/61/66	Option 7/66	Option 7/66	Option 7/66	Option 7/61	Option 7/61	Option 7/66	Option 7/61	Option 66 only	Option 66 only
DHCP Snooping	•	•	•	•	•	•	•	•	•
IPv6 DHCP Server	•	•	•	•	•	•			

*Future release	L3	L3 Lite	L2+	L3	L3 Lite	L2+			
**Optional	OS5			OS4 / OS3			OS2PRO	OS2	OS1

ORDERING INFORMATION

- **OS2 PRO – gPTP .....P/N: 9000-001**
  OS2 PRO software platform IEEE 802.1AS gPTP feature (1 year)
- **OS2 PRO – gPTP .....P/N: 9000-0011**
  OS2 PRO software platform IEEE 802.1AS gPTP feature (5 year)
- **OS2 PRO – IEC 62443-4-2 .....P/N: 9000-127**
  OS2 PRO software platform IEC-62443-4-2 Cybersecurity features



Lantech Communications Global Inc.
www.lantechcom.tw
info@lantechcom.tw

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