L3 Lite / L3 Software License for OS3/OS4 Platform Switches

Upgradable L3 Lite / L3 software for Lantech OS3/4 Ethernet switches

OVERVIEW

Lantech Layer3 Lite / Layer3 software (for OS3/OS4 switches) are advanced routing protocols across VLAN, multicast functions to achieve safer security and better performance network. The VRRP can help to be fault-tolerant and improve the fault isolation on the network. DHCP L3 and L2 relay can send assigned IP addresses across VLAN for easy devices management. Comprehensive multicast routing features including PIM-SM/DM/SSM/BSR and DVMRP in L3 software can correctly and efficiently establish and route the multicast packets with loop free path.

Lantech OS3/OS4 switches run with dual images firmware with Nand-flash protection mechanism to ensure the switch system's reliability and robustness during the harsh applications.

FEATURES & BENEFITS – L3L

- **Inter-VLAN Routing**
  Route traffic between different VLAN by implementing a switch with routing function in the network.
- **Router-on-a-stick**
  A type of routing configuration in which a single physical interface set as VLAN trunk port manages traffic between multiple VLANs from edge site.
- **VRRP**
  Provides automatic assignment of available VLAN gateways to participating hosts and increases the availability and reliability of VLAN routing paths via automatic default gateway selections on different VLAN groups.
- **Static route (Up to 32)**
  Set routing path manually, static routes are fixed and do not change if the network is changed or reconfigured.
- **Rescue mode**
  Offers the ability to repair operating system if the booting image of the switch is damaged.
- **PIM-SM**
  Protocol-Independent Multicast (PIM) is a family of multicast routing protocols for Internet Protocol (IP) networks that provide one-to-many and many-to-many distribution of data over a LAN, WAN or Internet. PIM Sparse Mode (PIM-SM) explicitly builds unidirectional shared trees rooted at a rendezvous point (RP) per group, and optionally creates the shortest-path trees per source. PIM Allow RP (Rendezvous Points) enable the receiving device to use its own RP to create state and build shared trees when a PIM Join is processed and a different RP is identified. Lantech switches support static RP client and dynamic RP address (BSR). BSR (Bootstrap) can let Lantech switch find address of RP automatically.
- **OSPF**
  Open Shortest Path First (OSPF) protocol is an Interior Gateway Protocol used to distribute routing information within a single Autonomous System.
- **TTDP (IEC61375-2-5)****
  TTDP (Train Topology Discovery Protocol) can assign IP and Gateway IP automatically when train network topology is changed due to the adjustment of train cars.
- **Dual flash images**
  Provides independent primary and secondary operating system files for backup while upgrading
- **Multiple configuration files**
  Stores easily to the flash image
- **Complete session logging**
  Provides detailed information for problem identification and resolution
- **SNMPv1, v2c, and v3**
  Facilitate centralized discovery, monitoring, and secure management of networking devices
- **SNMP MIB – RMON**
  Uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **Command authorization**
  Leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail log activity
- **Secure Web GUI**
  Provides a secure, easy-to-use graphical interface for configuring the module via HTTPS

FEATURES & BENEFITS – L3

L3 includes all L3L features mentioned above plus the following features:

- **PIM-DM/SSM***

  Protocol-Independent Multicast (PIM) is a family of multicast routing protocols for Internet Protocol (IP) networks that provide one-to-many and many-to-many distribution of data over LAN, WAN or Internet. PIM Dense Mode (PIM-DM) uses dense multicast routing. It implicitly builds shortest-path trees by flooding multicast traffic domain wide, and then pruning back branches of the tree where no receivers are present. PIM Source-Specific Multicast (PIM-SSM) builds trees that are rooted in just one source, offering a more secure and scalable model for a limited number of applications (mostly broadcasting of content).

- **DVMRP***

  Distance Vector Multicast Routing Protocol (DVMRP) is a routing protocol used to share information between routers to facilitate the transportation of IP multicast packets among networks.

- **RIP v1/v2***

  Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network.

SPECIFICATION

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	RFC 1215 Traps MIB**, RFC 1213 MIBII RFC 1158 MIBII RFC 1157 SNMP MIB, RFC 1493 Bridge MIB RFC 1573 IF MIB RFC 2674 VLAN MIB**, Partial RFC 1757 RMON, RFC 2674 Q-Bridge MIB**; LLDP MIB RSTP MIB** Private MIB
ITU G.8032	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 train ring*, auto ring*, basic single ring, enhanced ring, multiple-VLAN ring* Enhanced G.8032 ring configuration with ease Cover multicast & data packets protection
PoE Management	1. PoE Detection to check if PD is hang up then restart the PD 2. PoE Scheduling to On/OFF PD upon routine time table
Per Port PoE Status	On/ Off, voltage, current, watts, temperature
User friendly UI	■ Auto topology drawing ■ Topology demo ■ Auto configuration for G.8032(auto mode**) for single ring ■ DDM threshold monitoring with dB values*** ■ 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
Environmental Monitoring	System status for input voltage, current and ambient temperature to be shown in GUI and sent alerting if any abnormal status
VLAN	Port Based VLAN IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) GVRP, QinQ, QoS QinQ**, Protocol based VLAN ; IPv4 Subnet based VLAN
IPv6/4	Present
Spanning Tree	Supports IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree,
	IEEE802.1s Multiple Spanning Tree 8/16* MSTI
Quality of Service	The quality of service determined by 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
QoS by VLAN	Tagged QoS by VLAN for all devices in the network
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
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 intruder. 802.1X access control for port based and MAC based authentication/static MAC-Port binding Ingress/Egress ACL L2/L3 SSL/ SSH for Management HTTPS for secure access to the web interface TACACS+ for Authentication
IGMP	Support IGMP snooping v1,v2,v3; Supports IGMP static route; 256 multicast groups; IGMP router port ; IGMP query; GMRP
Static multicast forwarding	Static multicast forwarding forward reversed IGMP flow with multicast packets binding with ports for IP surveillance application
Bandwidth Control	Support ingress packet filter and egress packet limit. The egress rate control supports all of packet type. 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 and the egress packet limit.
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
SMTP**/Text SMS**	Supports SMTP** Server and 8 e-mail accounts for receiving event alert; can send

	SMS** text alert via mobile
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 ● DI triggered ● Typology change(ITU ring) ● Power failure ● Environmental abnormal**
DHCP	Provide DHCP Client/ DHCP Server/DHCP Option 82/Port based or VLAN based DHCP distribution (DHCP relay agent); DHCP Option 66; IPv6 address resolution for basic DHCP server
Mac based DHCP Server	Assign IP address by Mac that can include dumb switch in DHCP network
DNS	Provide DNS client feature and connect with Primary and Secondary DNS server.
SNTP	Supports SNTP to synchronize system clock in Internet
Firmware Update	Supports TFTP/SFTP** firmware update, TFTP backup and restore; HTTP firmware upgrade; LantechTM InstaView** for multiple upgrade
Configuration upload and download	Supports text configuration file for system quick installation; Support factory reset button to restore all settings back to factory default; USB for auto restore/backup configuration file
Dual Image Firmware	Support dual image firmware function

TTDP (IEC61375-2-5)**	TTDP (Train Topology Discovery Protocol) can assign IP and Gateway IP automatically when train network topology is changed due to the adjustment of train cars.
Inter-VLAN routing	Support dynamic routing and static routing
Router-on-a stick	Route traffic between different VLAN groups via VLAN trunking port.
VRRP	Combine Max. 2 gateways as single virtual gateway
Static route	Up to 32
Rescue mode	Offer repairing ability to repair operating system if booting image of switch is damaged.
PIM (Protocol Independent Multicast)	PIM-SM (Sparse Mode) PIM-BSR (Bootstrap) PIM-DM* (Dense Mode, L3 only) PIM-SSM* (Source-Specific Multicast Mode, L3 only)
OSPF	Open Shortest Path First (OSPF) protocol is an Interior Gateway Protocol used to distribute routing information within a single Autonomous System.
RIP* (L3 only)	v1/v2
DVMRP* (L3 only)	Distance Vector Multicast Routing Protocol (DVMRP) is a routing protocol used to share information between routers to facilitate the transportation of IP multicast packets among networks.

*Future release

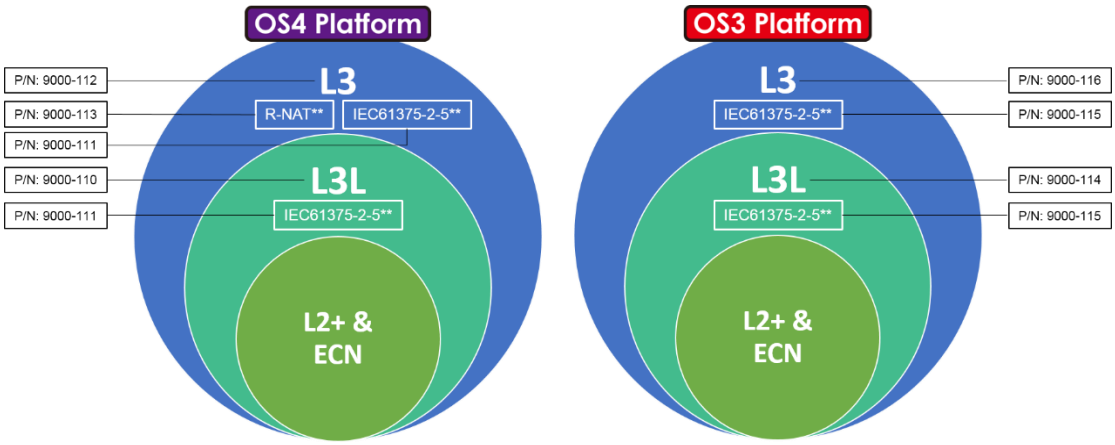
**Optional

PLATFORMS COMPARISON

	Layer 3	Layer 3 Lite	Layer 2 +			Layer 2
	OS4 / OS3			OS2	OS1	2000 series
Unicast Routing: RIP v1/v2*	●					
Multicast Routing: DVMRP*	●					
Multicast Routing: PIM (DM)*	●					
Multicast Routing: PIM (SSM)*	●					
Multicast Routing: PIM (SM)	●	●				
Multicast Routing: PIM (BSR)	●	●				
Unicast Routing: OSPF	●	●				
VRRP	●	●				
VLAN routing	●	●				
Static Route	●	●				
Rescue Mode	●	●				
TTDP (IEC 61375-2-5)**	●	●				
IP based port	●	●				
Static Unicast Routing	●	●				
DHCP pool with per VLAN	●	●				
R-NAT** (OS4 only)	●	●				
MRP	●	●	●		●	
Protocol Based	●	●	●			
Subnet Based	●	●	●			
MLD Snooping	●	●	●			
Port Monitoring	●	●	●			
PXE application	●	●	●			
IP v6 DHCP Server (Basic)	●	●	●			
Dual Image	●	●	●			
ARP inspection	●	●	●		●	
BPDU Guard	●	●	●		●	
QinQ	●	●	●		●	
Remote admin (limitation of accessing way)	●	●	●	●	●	
GVRP	●	●	●	●	●	
SSL	●	●	●	●	●	
Login Security (TACACS+)	●	●	●	●	●	
Login Security (RADIUS)	●	●	●	●	●	
Dual Homing	●	●	●	●	●	
SSH	●	●	●	●	●	
CDP	●	●	●	●	●	
Topology View	●	●	●	●	●	
Environment Monitoring	●	●	●	●**	●**	
MSTP	●	●	●	●	●	
Loop Protection	●	●	●	●	●	
IGMP router port	●	●	●	●	●	
GMRP	●	●	●	●	●	
VLAN based QoS	●	●	●	●	●	
MAC based DHCP	●	●	●	●	●	
Option82 DHCP Relay	●	●	●	●	●	
Option 12/42/66	●	●	●	option 66 only	option 66 only	
DHCP Snooping	●	●	●	●	●	
Digital Input/Output	●	●	●	●	●	
Triggered by event of environment	●	●	●	●**	●**	
Triggered by event of SFP DDM	●	●	●	●	●	
Ping	●	●	●	●	●	
ARP	●	●	●	●	●	
QoS under 61375-3-4	●	●	●	●	●	
Proprietary redundant protocol	ITU-Ring Enhance mode	ITU-Ring Enhance mode	ITU-Ring Enhance mode	ITU-Ring Enhance mode	ITU-Ring Enhance mode	ProRing2se
ACL	Ingress only	Ingress only	Ingress only	Ingress Only	●	●
SNMP Trap	●	●	●	●	●	V1/V2c
Firmware upgrading	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP
Configuration file import/export	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP/FTP	WEB/TFTP
G.8032 standard					●	
Auto Provision					●	

ORDERING INFORMATION

- **OS3 – L3L..... P/N: 9000-114**
  OS3 software platform upgrade to Layer 3 Lite platform
- **OS3 – IEC61375-2-5..... P/N: 9000-115**
  OS3 software platform with IEC-61375-2-5 ETBN (Ethernet Train Backbone Networks) function
- **OS3 – L3*..... P/N: 9000-116**
  OS3 software platform with Layer 3 functions incl. L3L
- **OS4 – L3L..... P/N: 9000-110**
  OS4 software platform upgrade to Layer 3 Lite platform
- **OS4 – IEC61375-2-5..... P/N: 9000-111**
  OS4 software platform with IEC-61375-2-5 ETBN (Ethernet Train Backbone Networks) function
- **OS4 – L3*..... P/N: 9000-112**
  OS4 software platform with Layer 3 functions incl. NAT and L3L
- **OS4 – R-NAT..... P/N: 9000-113**
  OS4 software platform with R-NAT function



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