



## LevelOne GTL-2891 L3 Gigabit Ethernet Stackable Switch



### Product Overview

The LevelOne GTL-2891 is a family of high-performance Gigabit Ethernet Layer 3 switches featuring 28 ports; with 24 10/100/1000BASE-T ports, 2 10G SFP+ ports, and one 10G dual port expansion slot. The switches are ideal for high-performance server aggregations, such as enterprise data centers, where they can connect high-end or network-attached files servers over fiber ports. They can also be deployed as a backbone upgrade, or to provide Gigabit-to-the-desktop for power users. These switches are packed with features and are a cost-effective solution that bring continuous availability, enhanced security, and advanced QoS to the network edge, while maintaining simplicity of management.

### Key Features and Benefits

#### Performance and Scalability

The GTL-2891 includes high-performance Gigabit Ethernet Layer 3 managed switches with 128 Gbps switching capacity. The switches deliver wire-speed switching performance on all Gigabit ports, taking full advantage of existing high-performance PCs by significantly improving the responsiveness of applications and file transfer times.

#### Continuous Availability

The IEEE 802.1w Rapid Spanning Tree Protocol provides a loop-free network and redundant links to the core network with rapid convergence, ensuring a faster recovery from failed links and enhancing overall network stability and reliability.

The IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base, providing Layer 2 load sharing on redundant links for up to 32 instances.

The GTL-2891 supports IEEE 802.3ad Link Aggregation Control Protocol (LACP). It increases bandwidth by automatically aggregating several physical links together as a logical trunk and offers load balancing and fault tolerance for uplink connections.

The GTL-2891 supports G.8032 Ethernet Ring Protection Switching, with the ability for the network to detect and recover from incidents without impacting users, meeting the most demanding quality and availability requirements. Rapid recovery time when problems do occur is as low as 50 msec.

#### Comprehensive QoS

The GTL-2891 offers advanced QoS for marking, classification, and scheduling to deliver best-in-class performance for data, voice, and video traffic at wire speed. Eight egress queues per port enable differentiated management of up to eight traffic types through the switch.

Traffic is prioritized according to 802.1p and DSCP to provide optimal performance for real-time applications. Weighted Round Robin (WRR) and strict priority ensure differential prioritization of packet flows and avoid congestion of ingress and egress queues.

Asymmetric bidirectional rate-limiting, per port or per traffic class, preserves network bandwidth and allows maximum control of network resources.

The GTL-2891 supports Three Color Marker and Policing Single rate: Committed Information Rate (CIR) Two rate: CIR + Peak Information Rate (PIR) Traffic Policing: Which drop or remark the priority tags of packets when they exceed burst size.

#### Enhanced Security

Port Security limits the total number of devices using a switch port and protects against MAC flooding attacks.

IEEE 802.1X port-based or MAC-based access control ensures all users are authorized before being granted access to the network. When a user is authenticated, the VLAN, QoS, and security policy are automatically applied to the port where the user is connected, otherwise the port is grouped in a guest VLAN with limited access.

DHCP snooping allows a switch to protect a network from rogue DHCP servers to offer invalid IP address.

IP Source Guard prevents people from using IP addresses that were not assigned to them.

Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on source and destination MAC addresses, IP addresses, or TCP/UDP ports. ACLs are hardware supported, so switching performance is not compromised.

Secure Shell and Secure Sockets Layer (SSL/HTTPS) encrypt Telnet and web access to the switch, providing secure network management.

Private VLANs (traffic segmentation per port) isolates edge ports to ensure user privacy.

DAI (Dynamic ARP Inspection) is a security feature that validates Address Resolution Protocol (ARP) packets in a network. DAI allows a network administrator to intercept, log, and discard ARP packets with invalid MAC-to-IP address bindings.

#### Simple Management

An industry-standard command-line interface (CLI), accessed through the console port or Telnet, provides a familiar user interface and command set for users to manage the switch.

#### Layer 3 Features IPv4 Static Route

The GTL-2891 supports hardware-based IPv4 routing for maximum performance.

Routing protocols, such as RIP v1/v2, and static routes are supported.

# Specifications

## Features

	Product Model	GTL-2891
<b>Port</b>	RJ-45 10/100/1000 Ports	24
	100/1000 SFP Ports	0
	10/100/1000 Combo Ports	0
	SFP+ 10 Gigabit Uplink Ports	2
	10G SFP+ Expansion Module Slots	1
	RJ-45 Console Port	0
<b>Performance</b>	Switching Capacity	128 Gbps
	Forwarding Rate	95.23 Mpps
	Flash Memory	128 MB
	DRAM	512 MB
	MAC Address Table Size	16 K
	Jumbo Frames	10 K
	Auto-negotiation, Auto-MDI/MDIX	0
<b>Mechanical</b>	Rack Space	19"
	Dimension (W x D x H)	44 x 31.5 x 4.4 cm
	Weight	3.7 kg
<b>Power Supply</b>	100-240 VAC, 50-60 Hz	0
	Max System Power Consumption ( Watts)	35 W
<b>Environment</b>	Operating Temperature	0°C to 45°C
	Storage Temperature	-40°C to 70°C
	Operating Humidity (non-condensing)	10% to 90%
	Storage Humidity (non-condensing)	10% to 90%
	Environmental Regulation compliance: WEEE	0
	Environmental Regulation compliance: RoHS	0
<b>Certification</b>	FCC Class A	0
	CE	0
	Safety Compliance: CB	0
	Safety Compliance: UL	0

# Specifications

## Features

### L2 Features

Auto-negotiation for port speed and duplex mode

Flow Control:

- IEEE 802.3x for full-duplex mode
- Back-pressure for half-duplex mode

Spanning Tree Protocol:

- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- BPDU Guard
- BPDU filtering
- Root Guard
- Loopback detection
- Spanning Tree Fast Forwarding
- Auto Edge-Port
- BPDU Forward

Storm Control (broadcast/multicast/unknown unicast)

VLANs:

- Supports 4K IEEE 802.1Q VLANs
- Port-based
- GVRP/GARP
- VLAN Translation
- IEEE 802.1v Protocol-based VLANs
- MAC-based VLANs
- IP subnet-based VLAN
- Private VLAN (Community)
- Traffic Segmentation (port isolated)
- Guest VLAN
- Voice VLAN
- VLAN trunking

Link Aggregation:

- Static trunk
- IEEE 802.3ad Link Aggregation Control Protocol
- Trunk groups: 16
- Trunk links: 2~8 ports for Gigabit Ethernet ports  
2~4 ports for 10 Gigabit Ethernet ports
- Load Balance: SA+DA, SA, DA, SIP+DIP, SIP, DIP

IGMP Snooping:

- IGMP v1/v2/v3 snooping
- IGMP Filtering
- IGMP Throttling
- IGMP Immediate Leave
- IGMP Querier v1/v2
- IGMP SNP Proxy (v1/v2/v3)
- IGMP Authentication
- Source Filtering Mode Data Forwarding

Non-STP loopback Detection

L2 Protocol Tunneling (CDP,PVST,STP,LLDP)

MVR (Multicast VLAN Registration)

Supports Q-in-Q

Supports select Q-in-Q

UDLD

G.8032 v2 (ERPS)

Supports jumbo frames up to 10KB

Supports Digital Diagnostic Monitoring (DDM)

Packet filtering of L2 control CDP/PVST

Cable diagnostics

HW Stacking

### QoS Features

Priority Queues: 8 hardware queues per port

Traffic classification

- IEEE 802.1p CoS
- DSCP

Traffic Scheduling

- Strict Priority
- Weighted Round Robin
- Strict + WRR traffic scheduling

PHB (Per Hop Behavior – internal priority)

Port-based default priority

Diffserv

Rate Limiting (ingress and egress, per port base)

- GE: Resolution 64 Kbps ~ 1000 Mbps

### Security Features

Port security

IEEE 802.1X port-based and MAC-based authentication

IEEE 802.1X EAPOL frames pass-through

IEEE 802.1X supplicant support

Dynamic VLAN assignment

Dynamic QoS assignment

MAC authentication, Web authentication

Voice VLAN, Guest VLAN

Access Control List

- L2/L3/L4
  - L2 ACL filter SA/DA/VLAN
  - L3 IP SA/DA, subnet based
  - L4 TCP/UDP port
  - IPv6
- Time-based (time range)

DHCP Snooping

DHCP Snooping Option 82

IP Source Guard Dynamic

ARP Inspection Instruction

lock (link detection) PPPoE

Intermediate Agent

RADIUS authentication and accounting

TACACS + authentication, authorization, and accounting

Management Security

- HTTPS and SSL (secured Web)
- Denial of Service (DoS) protection
- SSH 1.5/V2.0 (secured telnet session)
- Management interface access filtering (SNMP, Web, Telnet)

### Management

Switch Management:

- CLI via console port or Telnet
- Web management
- SNMP v1, v2c, v3

Firmware and Configuration:

- Firmware upgrade via TFTP server
- Supports dual image
- Supports auto configuration provision
- Supports auto firmware upgrade
- Multiple configuration files
- Software download/upgrade via TFTP or HTTP server
- Configuration file download/upgrade via TFTP or HTTP server

RMON (groups 1, 2, 3 and 9)

BOOTP, DHCP client for IP address assignment

SNTP, NTP IP

clustering Port

mirroring

VLAN mirror

sFlow

Event/error log/syslog, remote log, SMTP

MIB I/II

LLDP (802.1ab)

Auto traffic control

DHCP: Relay, dynamic provision (via Option 66,67), DHCPINFO, SERVER

MAC-based mirror

ACL mirror

Remote port mirror (RSPAN)

DNS client, proxy

Link Layer Discovery Protocol (LLDP)

LLDP-MED (VoIP related)

### OAM Features

IEEE 802.3ah link

IEEE 802.1ag Connectivity Fault Management (CFM)

ITU-T Y.1731 performance and throughput management

## Features

### IPv6 Features

- IPv4/IPv6 dual protocol stack
- IPv6 address types (unicast/multicast only used internally)
- ICMPv6 & ICMPv6 Redirect
- IPv6 Path MTU Discovery
- IPv6 Neighbor Discovery
  - Duplicate address
  - Static cache entry
  - Address resolution
  - Unreachable neighbor detection
- Manual configuration
- SNMP over IPv6
- HTTP over IPv6
- SSH over IPv6
- Ping over IPv6
- Traceroute over IPv6
- IPv6 Telnet support
- IPv6 DNS resolver
- IPv6 Syslog
- IPv6 SNTTP
- IPv6 sFlow
- IPv6 TFTP (CLI not support)
- Remote IPv6 Ping
- DHCPv6 Snooping
- MVRv6
- IPv6 DiffServ
- IPv6 ACL support
- IPv6 Source Guard
- RA Guard
- IPv6 ND Snooping
- MLD Snooping v1/v2

### L3 Features IPv4

- Static unicast routes
- Equal cost multipath routing (ECMP)
- RIP v1/v2
- OSPF
- BGP4+
- PIM-DM
- IGMP v1/v2
- IGMP v1/v2 proxy
- IGMP v3
- IGMP v3 proxy
- PIM-SM
- VRRP
- Proxy ARP
- UDP Helper

### L3 Features IPv6

- PIM-DM6
- PIM-SM6
- OSPFv3
- MLD v1/v2

### IEEE Standard

- IEEE 802.1p priority tags
- IEEE 802.1X port authentication
- IEEE 802.3x Ethernet frame start and stop requests and timers used for flow control on full-duplex links
- IEEE 802.3u CSMA/CD access method and physical layer specifications for 100BASE-TX Fast Ethernet
- IEEE 802.3z CSMA/CD access method and physical layer specifications for 1000BASE Gigabit Ethernet
- IEEE 802.1q Virtual LAN
- IEEE 802.1d Spanning Tree Protocol
- IEEE 802.3ad Link Aggregation Control Protocol
- IEEE 802.1s Rapid Spanning Tree Protocol
- IEEE 802.1w Multiple Spanning Tree Protocol