

# ECS4510 Series L2+ Gigabit Ethernet Stackable Switch



## Product Overview

The Edge-Core ECS4510 series includes high-performance Gigabit Ethernet Layer 2+ switches featuring 28 or 52 ports; 24 /48 10/100/1000BASE-T ports, two 10G SFP+ ports, and one 10G expansion slot for a dual-port module. The switch is ideal for high-performance server aggregations, such as enterprise data centers, where it can connect high-end or network-attached file servers through fiber ports. It can also be deployed as a backbone upgrade, or to provide Gigabit-to-the-desktop for power users. This switch is packed with features and is a cost-effective solution that brings continuous availability, enhanced security, and advanced QoS to the network edge, while maintaining simplicity of management.

## Key Features and Benefits

### Performance and Scalability

The ECS4510 series includes high-performance Gigabit Ethernet Layer 2+ managed switches with 128/176 Gbps switching capacity. The switches deliver wire-speed switching performance on all Gigabit ports, taking full advantage of existing high-performance PCs, 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, to ensure faster recovery from failed links, 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 up to 65 instances.

The ECS4510 series 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 ECS4510 series 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 ECS4510 series 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 ECS4510 series 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 from 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 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 that offer invalid IP addresses.

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

Private VLANs (traffic segmentation per port) isolate 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.

### Hardware Stacking

ECS4510 series switch is able to stack and extend its port count.

Stack acting as a single device and a single IP address for remote management/administration of the whole units.

### 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 ECS4510 series supports hardware-based IPv4 routing for maximum performance.

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

## Features

Product Model		ECS4510-28T	ECS4510-28P	ECS4510-28F
Product Image				
Port	RJ-45 10/100/1000 Ports	24	24	0
	100/1000 SFP Ports	0	0	22
	10/100/1000 Combo Ports	0	0	2
	SFP+ 10 Gigabit Uplink Ports	2	2	2
	10G SFP+ Expansion Module Slots	1	1	1
	PoE Port	X	24	X
	RJ-45 Console Port	O	O	O
Performance	Switching Capacity	128 Gbps	128 Gbps	128 Gbps
	Forwarding Rate	95.23 Mpps	95.23 Mpps	95.23 Mpps
	Flash Memory	128 MB	128 MB	128 MB
	DRAM	256 MB	256 MB	256 MB
	MAC Address Table Size	16K	16K	16K
	Jumbo Frames	10K	10K	10K
	Auto-negotiation, Auto-MDI/MDIX	O	O	O
PoE	Support on all Gigabit ports based on IEEE 802.3af	X	O	X
	PoE+ based on IEEE 802.3at	X	O	X
	Auto disable after exceeding power budget	X	O	X
	Dynamic Power Allocation	X	O	X
	PoE Power Budget	X	410 W	X
Mechanical	Rack Space	19"	19"	19"
	Dimension (W x D x H)	44 x 31.5 x 4.4 cm	44 x 31.5 x 4.4 cm	44 x 31.5 x 4.4 cm
	Weight	3.7 kg	4.5 kg	3.8 kg
Power Supply	100-240 VAC, 50/60 Hz	O	O	O
	Max System Power Consumption (Watts)	35 W	49 W	42 W
Environment	Operating Temperature	0°C to 45°C	0°C to 45°C	0°C to 45°C
	Storage Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
	Operating Humidity (non-condensing)	10% to 90%	10% to 90%	10% to 90%
	Storage Humidity (non-condensing)	10% to 90%	10% to 90%	10% to 90%
	Environmental Regulation compliance: WEEE	O	O	O
	Environmental Regulation compliance: RoHS	O	O	O
Certification	FCC Class A	O	O	O
	CE	O	O	O
	Safety Compliance: CB	O	O	O
	Safety Compliance: UL	O	O	O

## Features

Product Model		ECS4510-52T	ECS4510-52P
Product Image			
Port	RJ-45 10/100/1000 Ports	48	48
	100/1000 SFP Ports	0	0
	10/100/1000 Combo Ports	0	0
	SFP+ 10 Gigabit Uplink Ports	2	2
	10G SFP+ Expansion Module Slots	1	1
	PoE Port	X	48
	RJ-45 Console Port	O	O
Performance	Switching Capacity	176 Gbps	176 Gbps
	Forwarding Rate	130.94 Mpps	130.94 Mpps
	Flash Memory	128 MB	128 MB
	DRAM	256 MB	256 MB
	MAC Address Table Size	16K	16K
	Jumbo Frames	10K	10K
	Auto-negotiation, Auto-MDI/MDIX	O	O
PoE	Support on all Gigabit ports based on IEEE 802.3af	X	O
	PoE+ based on IEEE 802.3at	X	O
	Auto disable after exceeding power budget	X	O
	Dynamic Power Allocation	X	O
	PoE Power Budget	X	780 W
Mechanical	Rack Space	19"	19"
	Dimension (W x D x H)	44 x 39.1 x 4.4 cm	44 x 39.1 x 4.4 cm
	Weight	5.4 kg	6.5 kg
Power Supply	100-240 VAC, 50/60 Hz	O	O
	Max System Power Consumption (Watts)	55 W	65 W
Environment	Operating Temperature	0°C to 45°C	0°C to 45°C
	Storage Temperature	-40°C to 70°C	-40°C to 70°C
	Operating Humidity (non-condensing)	10% to 90%	10% to 90%
	Storage Humidity (non-condensing)	10% to 90%	10% to 90%
	Environmental Regulation compliance: WEEE	O	O
	Environmental Regulation compliance: RoHS	O	O
Certification	FCC Class A	O	O
	CE	O	O
	Safety Compliance: CB	O	O
	Safety Compliance: UL	O	O

## 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
- Broadcast/Multicast/Unknown Unicast Storm Control
- 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
- VLANs:
  - Supports 4K IEEE 802.1Q VLANs
  - Port-based VLANs
  - GVRP/GARP
  - IEEE 802.1v Protocol-based VLANs
  - MAC-based VLANs
  - IP subnet-based VLANs
  - Private VLANs (Community)
  - Traffic Segmentation (port isolated)
  - Voice VLANs
  - VLAN trunking
  - VLAN translation
- 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
- IGMP Snooping:
  - IGMP v1/v2/v3 snooping
  - IGMP SNP Proxy (V1/V2/V3)
  - IGMP Filtering
  - IGMP Throttling
  - IGMP Immediate Leave
  - IGMP v1/v2 Querier
  - IGMP Authentication
- 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)
- Cable diagnostics
- Support MSTP instances to 65 (64 MSTI + 1 CIST)
- CPU protection
- HW Stacking
- Non-STP loopback detection
- L2 Protocol Tunneling(CDP,PVST,STP,LLDP)
- Packet filtering of L2 control CDP/PVST

### QoS Features

- Priority Queues: 8 hardware queues per port
- Traffic classification
  - IEEE 802.1p CoS
  - DSCP
  - PHB (Per Hop Behavior – internal priority)
  - Port-based default priority
- Traffic Scheduling
  - Strict Priority
  - Weighted Round Robin
  - Strict + WRR traffic scheduling
- Diffserv
- Rate Limiting (ingress and egress, per port base)
  - GE: Resolution 64 Kbps ~ 1000 Mbps

### Security Features

- Port security
- 802.1x (authentication)
  - Port-based Authentication
  - MAC-based Authentication
  - Guest VLANs
  - EAPOL frames pass-through
- 802.1x Supplicant support
- Dynamic VLAN assignment
- Dynamic QoS assignment
- MAC Authentication
- Web Authentication (per port)
- Intrusion Lock (Link Detection)
- MAC Filter
- Access Control List
  - L2/L3/L4
  - Ingress
  - Egress
  - Statistics
  - Time-based (time range)
- AAA
  - RADIUS authentication
  - RADIUS accounting
  - TACACS+ authentication
  - TACACS+ authorization
  - TACACS+ accounting
- Local Authentication
- Remote Authentication via RADIUS
- Remote Authentication via TACACS+
- 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:
  - Web Based Management
  - CLI Based Management
- Telnet
  - Client
  - Server
- Software/configuration download/upgrade
  - TFTP
  - HTTP
  - FTP
- Dual Images
- Auto Upgrade
  - TFTP
  - FTP
- SNMP
  - v1
  - v2c
  - v3
- RMON
  - RMON1 (groups 1, 2, 3, and 9)
- BOOTP
  - Client
- DHCP
  - Client
  - Relay
  - Snooping
  - Snooping Option82
  - Dynamic Provision (via Option 66, 67)
- IP Source Guard
- Port Mirroring
- VLAN Mirror
- MAC Based Mirror
- ACL Mirror
- Remote Port Mirror (RSPAN)
- Event/Error Logging
  - Syslog (local flash)
  - Remotelog
  - SMTP (e-mail notification)

## Features

### Management

- DNS
  - Client
  - Proxy
- Remote Ping
- SNTPv4
- NTP
- IP Clustering
- LLDP (802.1ab)
  - Link Layer Discovery Protocol (LLDP)
  - LLDP-MED (VoIP related)
- Mac flush
- sFlow (V4/V5)
- Dynamic ARP Inspection (DAI)
- Auto Traffic Control (ATC) (SW rate limit)
- PPPoE Intermediate Agent
- Delay reload

### IPv6 Features

- IPv4/IPv6 dual protocol stack
- IPv6 address type
  - Unicast
  - Multicast (internal used)
- ICMPv6
- ICMPv6 Redirect (Host)
- IPv6 Path MTU Discovery
- IPv6 Neighbor Discovery
  - Router discovery
  - Duplicate address
  - Parameter discovery
  - Prefix discovery
  - Address resolution
  - Unreachable neighbor detection
- Stateless autoconfiguration
- Manual configuration
- SNMP over IPv6
- HTTP over IPv6
- SSH over IPv6
- IPv6 telnet support
- IPv6 DNS resolver
- IPv6 Syslog support
- IPv6 SNMP support
- IPv6 TFTP support
- Remote IPv6 Ping
- Ping over IPv6
- Trace route over IPv6
- IPv6 sFlow
- DHCPv6
  - Client
  - Snooping
- MVR6
- IPv6 Source Guard
- RA Guard
- MLD Snooping v1/v2
- IPv6 ND Snooping
- IPv6 ACL
- IPv6 Diffserv

### OAM Features

- IEEE 802.3ah Link
- IEEE 802.1ag Connectivity Fault Management (CFM)
- ITU-T Y.1731 performance and throughput management

### 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 100BASETX 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

### Warranty

Please check [www.edge-core.com](http://www.edge-core.com) for the warranty terms in your country.

Country of Origin: Taiwan (TAA Compliant)

### For More Information

To find out more about Edge-Core Networks products and solutions, visit [www.edge-core.com](http://www.edge-core.com).

### About Edge-Core Networks

Edge-Core Networks is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edge-Core Networks delivers the software and systems that transform the way the world connects. Edge-Core Networks serves customers and partners worldwide. Additional information can be found at [www.edge-core.com](http://www.edge-core.com).

To purchase Edge-Core Networks solutions, please contact your Edge-Core Networks representative at 886 3 563 8888 or authorized reseller.

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## Ordering Information

### Optional Accessories

- ET4201-SX
- ET4201-LX
- ET4201-LHX
- ET4201-ZX
- ET4202-SX
- ET4202-LX
- ET5402-SR
- ET5402-LR
- ET5402-ER
- EM4510-10GSFP+
- ECView Pro
- Redundant Power Supply (RPS900W)

### Product Description

- 1Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1310 nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 80 km; Wavelength: 1550 nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850 nm, DDM)
- 1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310nm, DDM)
- 1Gbps, Small Form Factor Pluggable (Distance: 3000 km; Wavelength: 850 nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
- 1Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1550 nm)
- 10G SFP+ Dual port module
- SNMP Network Management Software
- Redundant Power Supply, 1 connected switch with Output: -53.5 V/14.3 A + 11.3 V/ 10 A