ECS4510 Series
L2+ Gigabit Ethernet Stackable Switch

Enterprise Solution

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 files servers through fiber ports. It can also 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 up to 8 units 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	0ºC to 45ºC	0ºC to 45ºC	0ºC to 45ºC
Storage Temperature	-40ºC to 70ºC	-40ºC to 70ºC	-40ºC to 70ºC
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	0ºC to 45ºC	0ºC to 45ºC
Storage Temperature	-40ºC to 70ºC	-40ºC to 70ºC
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 protocl 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 SNTP 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 for the warranty terms in your country.

For More Information

To find out more about Edge-Core Networks products and solutions, visit 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.

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

Ordering Information

Optional Accessories	Product Description
ET4201-SX	1Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850nm)
ET4201-LX	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
ET4201-LHX	1Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1310 nm)
ET4201-ZX	1Gbps, Small Form Factor Pluggable (Distance: 80 km; Wavelength: 1550 nm)
ET4202-SX	1Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850 nm, DDM)
ET4202-LX	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310nm, DDM)
ET5402-SR	1Gbps, Small Form Factor Pluggable (Distance: 3000 km; Wavelength: 850 nm)
ET5402-LR	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
ET5402-ER	1Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1550 nm)
EM4510-10GSFP+	10G SFP+ Dual port module
ECView Pro	SNMP Network Management Software
Redundant Power Supply (RPS900W)	Redundant Power Supply, 1 connected switch with Output: -53.5 V/14.3 A + 11.3 V/10 A

TEL: 886-3-5638888 FAX: 886-3-6686111
No.1, Creation Rd. III, Hsinchu Science Park, Taiwan 30077
sales_ec@edge-core.com   www.edge-core.com

EC-DS-0214-01