

# ECS5520-18X/ECS5520-18T

## L2+/Lite L3 10G Ethernet Aggregation Switch with 2 40G Uplinks



### Product Overview

The ECS5520 series consists of two switches with sixteen 10GbE SFP+ ports or 10GBASE-T ports and two 40GbE uplink ports. The switches are designed for carrier/enterprise aggregation or small data center top-of-rack. The ECS5520 series is an ideal solution for traditional three-tier aggregation or core topologies and folded-Clos architectures, serving with a 2:1 oversubscription. The ECS5520 switches are packed with features that bring high availability, comprehensive security, robust multicast control, and advance QoS to network aggregation, while maintaining simple management. The switch also supports the most advance IPv6 management, IPv6 security, and IPv6 multicast control in accordance with the growth of IPv6 deployment. ISPs can expand their services from home to business users by providing a more reliable and resilient network (ITU-T G.8032 ERPS), L2 VPNs, and advanced OAM (Operations, Administration, and Maintenance) functions to ensure service-level agreements.

### Key Features and Benefits

#### Performance and Scalability

The Edgecore ECS5520-18X/ECS5520-18T is a high-performance 10 Gigabit Ethernet Layer 2+/Lite L3 managed switch with 480 Gbps switching capacity. The switch delivers wire-speed switching performance on all 10GbE ports, taking full advantage of aggregating high-performance Gigabit access switches with 10G uplinks, or TOR switches with links to 10G rack servers etc, significantly improving the responsiveness of applications as well as file and multimedia transfer times.

The two built-in 40G QSFP+ ports provide uplink flexibility, allowing the insertion of fiber 40G transceivers to create 40Gbps high-speed uplinks to service provider core or spine switches, or corporate or campus networks, reducing bottlenecks and increasing the performance of the access network. With 40G-to-10G SFP+ breakout cables, users can increase the number of 10G SFP+ ports to 24.

The ECS5520-18X/ECS5520-18T provides dual hot swappable, load sharing power supplies to ensure the reliability of the switch. The airflow is from front to back and there is a temperature sensor for fan speed control.

#### 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 64 instances.

The ECS5520-18X/ECS5520-18T 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 ECS5520-18X/ECS5520-18T 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 50ms

#### 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 to 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 users 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.

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.

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

The ECS5520-18X/ECS5520-18T also supports both RADIUS and TACACS+ authentication methods to secure your network.

## Key Features and Benefits

### Comprehensive QoS

The ECS5520-18X/ECS5520-18T 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 ECS5520-18X/ECS5520-18T supports Three Color Marker and Policing Single rate: Committed Information Rate (CIR) Two rate: CIR + Peak Information Rate (PIR) Traffic Policing: The switch drops or remarks the priority tags of packets when they exceed the burst size.

### Robust Multicast Control

IGMP snooping prevents the flooding of multicast traffic by dynamically configuring switch ports so that multicast traffic is forwarded to only those ports associated with an IP multicast receiver. IGMP increases the performance of networks by reducing multicast traffic flooding.

IGMP groups allow you to create customer packages for IP-TV channels, making switch configuration easy. IGMP Filtering prevents subscribers seeing unsubscribed IP-TV channels. And, IGMP Throttling allows you to set how many IP-TV channels a subscriber can receive simultaneously.

Multicast VLAN Registration (MVR) is designed for applications such as Media-on-Demand that send multicast traffic across an Ethernet network.

Multicast VLANs are shared in the network, while subscribers remain in separate VLANs. This increases network security and saves bandwidth on core links. Multicast streams do not have to be routed in core L3 switches, which saves CPU power.

### IPv6 Support

The switch supports a number of IPv6 features, including IPv6 Management, DCHPv6 Snooping with Option 37, IPv6 Source Guide.

### Superior 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.

An embedded user-friendly web interface helps users to quickly and simply configure switches.

The ECS5520-18X/ECS5520-18T supports SNMPv1,2c,3 and four-group RMON. The switch provides a complete private MIB for the configuration of most functions via the SNMP protocol.

Administrators can backup and restore firmware and configuration files via TFTP or FTP. The switch also provides the configuration of auto-provision for ease of use in large deployments.

AAA (Authentication, Authorization and Accounting) via RADIUS, TACACS+, enables centralized control of the switches. Access rights can be authorized per user and account for all actions performed by administrators.



### Virtual Private Networks

The ECS5520-18X/ECS5520-18T supports Layer 2 VPNs by using Q-in-Q functions, where an 802.1Q tag from a customer VLAN (called CE-VLAN ID) is encapsulated in a second 802.1Q tag from a service-provider network (called an SP-VLAN ID). The switch supports rewriting the VLAN tag of egress traffic when the ingress traffic is tagged.

The switch also supports Layer 2 Protocol Tunneling for STP, CDP, VTP, PVST+, with Cisco-proprietary multicast address (01-00-0c-cd-cd-d0) replacement.

# ECS5520-18X/ECS5520-18T Product Specifications

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Product Model		ECS5520-18X	ECS5520-18T
Product Image			
Port	10G SFP+ Ports	16	0
	10GBASE-T Ports	0	16
	40G QSFP+ Ports	2	2
	GE out-of-band Management Port	1	1
	RJ-45 Console Port	1	1
	USB Port	1	1
Performance	Switching Capacity	480 Gpbs	480 Gpbs
	Forwarding Rate	357.12 Mpps	357.12 Mpps
	Flash Memory	1GB NAND, 32MB SPI NOR	1GB NAND, 32MB SPI NOR
	DRAM	2 GB	2 GB
	MAC Address Table Size	64K (shared with L2, multicast, L3 table)	64K (shared with L3 table)
	Jumbo Frames	10 KB	10 KB
	Auto-negotiation, Auto-MDI/MDIX (Copper port)	Auto-MDI/MDIX (Copper port) only	Yes
Mechanical	Rack Space	19"	19"
	Dimension (W x D x H) cm	43.84 x 28 x 4.34	43.84 x 28 x 4.34
	Weight	3.9 kg (8.6 lb) with 1 PSU	4.1 kg (9.04 lb) with 1 PSU
Power Supply	AC Power Supply Module (100-240 VAC, 50/60 Hz)	1 (Optional 2nd Power module for redundancy)	1 (Optional 2nd Power module for redundancy)
	DC Power Module (-36- -72VDC)	Yes (Optional)	Yes (Optional)
	Max System Power Consumption (Watts)	132 W	132 W
	Dying Gasp	No	No
Environmental	Operating Temperature	0°C to 50°C	0°C to 50°C
	Storage Temperature	-40°C to 70°C	-40°C to 70°C
	Operating Humidity (non-condensing)	5% to 95%	5% to 95%
	Storage Humidity (non-condensing)	5% to 95%	5% to 95%
	Environmental Regulation Compliance: WEEE	Yes	Yes
	Environmental Regulation Compliance: RoHS	Yes	Yes
Certification	FCC Class A	Yes	Yes
	CE	Yes	Yes
	Safety Compliance: CB	Yes	Yes
	Safety Compliance: UL	Yes	Yes

## Features

### L2 Features

- Dual-speed (1G and 10G) fiber interfaces
- SFP+ ports support:
  - IEEE 802.3ae (10GBASE-SR/LR/ZR/ER)
  - 10G DAC/AOC
  - IEEE 802.3z (1000BASE-SX/LX/LHX/ZX)
- Digital Diagnostic Monitoring (DDM) on 10G SFP+ ports only
- 10GBASE-T copper interfaces (ECS5520-18T only)
- Auto-negotiation for port speed and duplex mode (ECS5520-18T only)
- Auto MDI/MDI-X (ECS5520-18T only)
- 40G QSFP+ fiber interface
- Flow Control:
  - IEEE 802.3x for full duplex mode
  - Back-Pressure for half duplex mode
- Jumbo frames 10KB
- 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), 64 instances
  - BPDU Guard
  - BPDU filtering
  - Root Guard
  - Loopback detection
- Non-Spanning Tree loopback detection
- ITU-T G.8032 Ethernet Ring Protection
  - Sub 50 msec convergence
  - Revertive operation mode
  - Multiple-ring network
- VLANs:
  - Supports 4K VLANs
  - Port-based VLANs
  - IEEE 802.1Q VLANs
  - GVRP
  - VLAN trunking
  - IEEE 802.1v protocol-based VLANs
  - IP subnet-based VLANs
  - MAC-based VLANs
  - Traffic Segmentation
- L2 Virtual Private VLAN
  - Q-in-Q
  - L2 protocol tunneling (xSTP, CDP, VTP & PVST+)
  - CDP/PVST+ filtering
- Link Aggregation:
  - Static trunk
  - IEEE 802.3ad Link Aggregation Control Protocol
  - Trunk Groups: 12 up to 8 10G/ 2 40G ports per group
  - Load Balancing: SA+DA, SA, DA, SIP+DIP, SIP, DIP
- MLAG
- IGMP Snooping:
  - IGMP v1/v2/v3 snooping
  - IGMP Proxy Reporting
  - IGMP Filtering
  - IGMP Throttling
  - IGMP Immediate Leave
  - IGMP Querier
- MVR (Multicast VLAN Registration)
  - Supports 5 multicast VLANs
- Port mirroring
- Remote port mirror (RSPAN)

### QoS Features

- Priority Queues: 8 hardware queues per port
- Traffic classification
  - IEEE 802.1p CoS
  - IP Precedence
  - DSCP
  - MAC Access control list (source/destination MAC, Ether type, priority ID/ VLAN ID )
  - IP Standard access control list (source IP)
  - IP extended access control list (source/destination IP, protocol, TCP/UDP port number)
- Traffic scheduling
  - Strict priority
  - Weighted Round Robin
  - Strict + WRR
- Single/ Two rate Three color marker
- Ingress policy map
- Egress policy map
- Rate Limiting (Ingress and Egress, per port base)
  - 10G: Resolution 64Kbps ~ 10,000Mbps
- Auto Traffic Control

### Security

- User Security for Enterprise
  - IEEE 802.1X port based and MAC based authentication
  - Dynamic VLAN assignment, auto QoS
  - MAC authentication
  - Web authentication
  - Voice VLAN
  - Guest VLAN
- User Security for ISP/MSO
  - DHCP Snooping
  - DHCP Option 82
  - IP Source Guard
  - PPPoE IA
  - L2/L3/L4 access control list
  - MAC access control list (source/destination MAC, Ether type, priority ID/ VLAN ID )
  - IP standard access control list (source IP)
  - IP extended access control list (source/destination IP, protocol, TCP/UDP port number)
- TCP/UDP port number)
  - IPv6 ACL
- Network Security
  - Port security
  - Dynamic ARP Inspection
  - Denial of Service protection
  - CPU Guard
  - CPU/Memory threshold and alarm
- Management Security
  - Login security
  - RADIUS authentication
  - RADIUS accounting
  - RADIUS authorization
  - TACACS + authentication
  - TACACS + accounting
  - TACACS + authorization
  - Management interface access filtering (SNMP, Web, Telnet)
  - SSH (v2.0) for secure Telnet
  - SSL for HTTPS
  - SNMPv3

### Routing

- IPv4 static route
- IPv6 static route

## Features

### IPv6 Features

- IPv4/IPv6 dual protocol stack
- IPv6 Address Types Stack: Unicast
- IPv6 Neighbor Discovery
  - Duplicate address
  - Address resolution
  - Unreachable neighbor detection
- Stateless auto-configuration
- Manual configuration
- Remote IPv6 ping
- IPv6 Telnet support
- IPv6 DNS Resolver
- HTTP over IPv6
- SNMP over IPv6
- SSH over IPv6
- IPv6 Syslog support
- IPv6 SNTTP support
- IPv6 TFTP support
- RA Guard
- IPv6 ND Snooping
- MLD Snooping v1/v2
- IPv6 source guard
- DHCPv6 snooping

### Management

- Switch Management:
  - CLI via console port or Telnet/SSH
  - Web management
  - SNMP v1, v2c, v3
- Firmware and Configuration:
  - Firmware upgrade via TFTP/HTTP/FTP server
  - Multiple configuration files
  - Configuration file upload/download via TFTP/HTTP/FTP server
- RMON (groups 1, 2, 3 and 9)
- DHCP client for IP address assignment
- DHCP dynamic provision Option 66,67
- SNTTP
- Event/error log
- Syslog
- SMTP
- Supports LLDP (802.1ab)
- sFlow v4, v5
- Cable diagnostic (only ECS5520-18T)

### OAM

- IEEE 802.3ah link

### Safety

- UL (CSA 22.2. NO 60950-1 & UL60950-1)
- CB (IEC60950-1)

### Electromagnetic Compatibility

- CE Mark
- FCC Class A
- CISPR Class A
- VCCI Class A
- BSMI

### Environmental Specifications

- Temperature:
  - 0°C to 50°C (standard operating)
  - -40°C to 70°C (non-operating)
- Humidity: 5% to 95% (non-condensing)

### Power Supply

- Power Input
  - AC power supply module (100 to 240 VAC, 50/60 Hz)
  - DC power supply module (-36 to -72 VDC)

### Warranty

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

### For More Information

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

### About Edgecore Networks Corporation

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

Edgecore Networks Corporation is a subsidiary of Accton Technology Corporation, the leading network ODM company. The Edgecore data center switches are developed and manufactured by Accton.

To purchase Edgecore Networks solutions, please contact your Edgecore Networks Corporation representatives at +886 3 563 8888 (HQ) or +1 (949)-336-6801 or authorized resellers.

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## Ordering Information

Optional Accessories	Product Description
GW-T150WV12	150 W AC power supply module (100 to 240 VAC, 50/60 Hz)
YM-1151E	150 W DC power supply module (-36 to -72 VDC)
ET4201-SX	1 Gbps, Small Form Factor Pluggable (Distance: 550 m; Wavelength: 850 nm)
ET4201-LX	1 Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm)
ET4201-LHX	1 Gbps, Small Form Factor Pluggable (Distance: 40 km; Wavelength: 1310 nm)
ET4201-ZX	1 Gbps, Small Form Factor Pluggable (Distance: 80 km; Wavelength: 1550 nm)
ET4201-RJ45	1000BASE-T RJ-45 transceiver, 100 m
ET4202-SX	1 Gbps, Small Form Factor Pluggable (Distance: 500 m; Wavelength: 850 nm, DDM)
ET4202-LX	1 Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310 nm, DDM)
ET4203-BX20	1 Gbps, SFP (Distance: 20 km; Wavelength: Tx1310 nm / Rx1490 nm)
ET4203-BX20D	1 Gbps, SFP (Distance: 20 km; Wavelength: Tx1490 nm / Rx1310 nm)
ET5402-SR	10 Gbps, SFP+ (Distance: 300 m; Wavelength: 850 nm)
ET5402-LR	10 Gbps, SFP+ (Distance: 10 km; Wavelength: 1310 nm)
ET5402-ER	10 Gbps, SFP+ (Distance: 40 km; Wavelength: 1550 nm)
ET5402-RJ45	10GBASE-T SFP+, RJ-45 transceiver, 30 m
ET5303-BX10	10 Gbps, SFP+ (Distance: 10 km; Wavelength: Tx1270 nm / Rx1330 nm)
ET5303-BX10D	10 Gbps, SFP+ (Distance: 10 km; Wavelength: Tx1330 nm / Rx1270 nm)
ET5402-DAC-1M	10 Gigabit SFP+ DAC cable, 1 m
ET5402-DAC-3M	10 Gigabit SFP+ DAC cable, 3 m
ET5402-DAC-5M	10 Gigabit SFP+ DAC cable, 5 m
ET5402-AOC-3M	10 Gigabit SFP+ AOC cable, 3 m
ET5402-AOC-5M	10 Gigabit SFP+ AOC cable, 5 m
ET5402-AOC-7M	10 Gigabit SFP+ AOC cable, 7 m
ET5402-AOC-10M	10 Gigabit SFP+ AOC cable, 10 m
ET6401-LR4	40G QSFP+ long reach transceiver, 10 km over SMF, LC connector, DDM
ET6401-PLR4 (PSM4)	40G QSFP+ long reach transceiver, 10 km over SMF, MPO connector, DDM
ET6402-40DAC-1M	40G to 40G DAC cable, QSFP+ DAC cable, 1 m
ET6402-40DAC-3M	40G to 40G DAC cable, QSFP+ DAC cable, 3 m
ET6402-10DAC-1M	40G to 4 10G DAC cable, QSFP+ DAC- 4*SFP+DAC Cable, 1 m
ET6402-40AOC-3M	40G to 40G AOC cable, QSFP+ AOC cable, 3 m
ET6402-10AOC-3M	40G to 4 10G SFP+ AOC cable, QSFP+ AOC breakout cable, 3 m
ET6401-SR4	40G QSFP+ short range transceiver 100 m