

## ECS4120-28Fv2-AF

### L2+/Lite L3 Gigabit Ethernet Access / Aggregation Switch with 4 10G Uplinks

#### Product Overview

The Edgecore ECS4120-28Fv2-AF is a Gigabit Ethernet access switch with four 10G uplink ports. The switch is ideal for Internet Service Providers (ISPs) and Multiple System Operators (MSOs) to provide home users with triple-play services with up to Gigabit bandwidth. It is also an ideal Gigabit access switch for SMB, enterprise, and campus networks. The ECS4120-28Fv2-AF is packed with features that bring high availability, comprehensive security, robust multicast control, and advance QoS to the network edge, 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 ECS4120-28Fv2-AF is a high-performance Gigabit Ethernet L2+/L3 Lite managed switch with 128Gbps/176Gbps switching capacity. The switch delivers wire-speed switching performance on all Gigabit ports, taking full advantage of existing high-performance Gigabit CPEs, PCs, 11n/ac Wi-Fi APs etc, significantly improving the responsiveness of applications and file transfer times.

The four built-in 10G SFP+ ports provide uplink flexibility, allowing the insertion of fiber or copper, Gigabit or 10G transceivers, to create up to 10 Gbps high-speed uplinks to servers or service provider, corporate, or campus networks, reducing bottlenecks and increasing the performance of the access network.

The Voice VLAN function automatically detects VoIP devices by OUI or LLDP and groups the voice traffic into a separate VLAN for better performance. It can also automatically change port priorities, so a higher CoS value can be assigned for guaranteed voice quality.

##### 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 ECS4120-28Fv2-AF supports IEEE 802.3ad Link Aggregation Control Protocol (LACP). LACP increases bandwidth by automatically aggregating several physical links together as a logical trunk and offers load balancing and fault tolerance for uplink connections.

The ECS4120-28Fv2-AF 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.

##### Reliability and Energy Efficiency

The design of the ECS4120-28Fv2-AF incorporates high energy efficiency in order to reduce the impact on the environment. The Green Ethernet power-saving features and fanless design significantly reduce the power consumption.

##### 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 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 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.

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 ECS4120-28Fv2-AF also supports both RADIUS and TACACS+ authentication methods to secure your network.

## Key Features and Benefits

### Comprehensive QoS

The ECS4120-28Fv2-AF 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 ECS4120-28Fv2-AF 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 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.

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

### IPv6 Support

The switch supports a number of IPv6 features, including IPv6 Management, DHCPv6 Snooping with Option 37, IPv6 Source Guide, and MVR6.

### 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 ECS4120 Series 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 switch. You can also authorize access rights per user and account for all actions performed by administrators.

### Service Monitoring and Management

The ECS4120-28Fv2-AF supports IEEE 802.1ag and ITU-T Y.1731, allowing service providers to monitor end-to-end services, identify connectivity and performance issues, and isolate problems from a remote location without dispatching an engineer onsite.

The switch also provides the capability to monitor service availability, delay and delay variation for verifying SLA conformance (for billing purposes) and providing advance indication of performance degradation before a service outage occurs.


### Virtual Private Networks

The ECS4120-28Fv2-AF 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.

# ECS4120-28Fv2-AF Product Specifications

www.edge-core.com

Product Model		ECS4120-28Fv2
Product Image		
Port	RJ-45 10/100/1000BASE-T Ports	0
	100/1000BASE-X SFP Ports	20
	Combo Gigabit (RJ-45/SFP) Ports	4
	SFP+ 10 Gigabit Uplink Ports	4
	GE Out-of-Band Management Port	1
	RJ-45 Console Port	1
Performance	Switching Capacity	128 Gpbs
	Forwarding Rate	95 Mpps
	Flash Memory	256 MB
	DRAM	512 MB
	MAC Address Table Size	16 K
	Jumbo Frames	9 KB
	Auto-negotiation, Auto-MDI/MDIX	Yes
PoE	Support on all Gigabit ports based on IEEE 802.3af	No
	PoE+ based on IEEE 802.3at	No
	Auto disable after exceeding power budget	No
	Dynamic Power Allocation	No
	PoE Power Budget	No
Mechanical	Rack Space	19"
	Dimension (W x D x H) cm	44 x 22 x 4.4
	Weight	3.32 kg
Power Supply	100-240 VAC, 50-60 Hz	Yes
	DC Power Input (-48~-60 V)	Yes
	Max System Power Consumption (Watts)	60 W
Environmental	Operating Temperature	0°C to 50°C
	Storage Temperature	-40°C to 70°C
	Operating Humidity (non-condensing)	0% to 90%
	Storage Humidity (non-condensing)	0% to 90%
	Environmental Regulation Compliance: WEEE	Yes
	Environmental Regulation Compliance: RoHS	Yes
Certification	FCC Class A	Yes
	CE	Yes
	Safety Compliance: CB	Yes
	Safety Compliance: UL	Yes

## Features

### L2 Features

- Tri-speed (10/100/1000BASE-T) copper interfaces
- Auto-negotiation for port speed and duplex mode
- Auto MDI/MDI-X
- 100M/1G fiber interface  
SFP ports support:  
IEEE 802.3z (1000BASE-SX/LX/LHX/ZX) transceivers  
Support 802.3z GE SFP 10 km, GE SFP 40 km, GE SFP 70 km; FE SFP 10 km (LC)
- 1G/10G fiber interface  
SFP+ ports support:  
IEEE 802.3ae changeable (10GBASE-SR/LR/ZR/ER),  
IEEE 802.3z (1000BASE-SX/LX/LHX/ZX) transceivers  
10G DAC/AOC
- Digital Diagnostic Monitoring (DDM) on 1G SFP and 10G SFP+ port  
Transceiver-threshold current/rx-power/temperature/tx-power/  
voltage/high-low alarm and warning
- Flow Control:  
IEEE 802.3x for full duplex mode  
Back-Pressure for half duplex mode
- Jumbo frames: 12 KB
- Non-Blocking Switching Fabric
- Delay less than 9 ms.
- Packet loss ratio less than  $7, 6 \times 10^{-5}$
- Error Ratio less than  $7, 6 \times 10^{-6}$
- Transparently pass through Synchronous signal (SyncE packets)
- Transparently pass through NTPv2/v3 packets
- Transparent to Jitter and wander according to G.823, G.8261
- Transparent pass through synchronization messages according to 1588v2
- 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  
Spanning-tree restricted-tcn  
Spanning-tree tc-prop-stop Stops propagation of topology change information  
BPDU Guard  
BPDU filtering  
Root Guard  
BPDU transparent  
Loopback detection
- Non-Spanning Tree Loopback detection
- ITU-T G.8032 Ethernet Ring Protection Switching:  
Sub 50 msec convergence  
Non-revertive operation mode  
Multiple-ring topology  
Multiple instance
- VLANs:  
Supports 4K VLAN  
Port-based VLAN  
IEEE 802.1Q VLAN  
GVRP (256 VLAN)  
IEEE 802.1v Protocol-based VLAN  
IP Subnet-based VLAN  
MAC-based VLAN  
Traffic Segmentation
- L2 Virtual Private Networks (Q-in-Q):  
Support 802.1Q and 802.1ad simultaneously  
Selective QinQ  
VLAN Translation  
L2 Protocol tunneling (xSTP, CDP, VTP and PVST+, LLDP)  
CDP/PVST+ Filtering  
Support port configuration base on Vlan according to E-LAN,  
E-LINE, E-TREE comply with CE 2.0 standard and fully comply with  
MEF 9/14 standard

- Link Aggregation:  
Static Trunk  
IEEE 802.3ad Link Aggregation Control Protocol  
Comply to 802.1ax standard  
Trunk groups: 16, up to 8 GE ports per group  
Load Balancing: SA+DA, SA, DA, SIP+DIP, SIP, DIP  
LACP Backup mode: To maintain active and backup link for redundancy purpose
- Support Smart Pair Uplink Redundancy (<50ms)
- IGMP Snooping:  
Support 1000 IGMP Group  
IGMP v1/v2/v3 snooping  
IGMP Proxy reporting  
IGMP Filtering  
IGMP Throttling  
IGMP Immediate Leave  
IGMP Querier  
IGMP mrouter-forward mode  
IGMP router-alert-option-check  
IGMP router-port-expire-time  
IGMP tcn-flood
- MVR (Multicast VLAN Registration): Supports 5 multicast VLANs
- Port mirroring (many source ports to one destination port. One source port to one destination port only)
- Remote port mirror (RSPAN)

### 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:  
L2/L3/L4 Access Control List  
MAC Access control list (Source/Destination MAC, Ether type, Priority ID/VLAN ID)  
Support per port MAC Access List  
IP standard access control list (Source IP)  
IP extended access control list (Source/Destination IP, Protocol, TCP/UDP port number)  
DHCP Snooping (DHCP Filtering)  
DHCP Option 82  
Support modify Interface type for information option TR101 format  
DHCP Option 82 Relay  
IP Source Guard
- Network Security:  
IPv6 ACL  
Port security  
Sticky MAC  
PPPoE IA  
PPPoE 7 Parameter Supported  
Hostname\_Rack/Frame/Shelf/Slot:port\_Svlan:Cvlan  
IPoE 7 Parameter Supported  
Hostname\_Rack/Frame/Shelf/Slot:port\_Svlan:Cvlan  
Support modify Interface type and keep vendor tag  
Dynamic ARP Inspection  
CPU guard  
CPU/Memory threshold and alarm  
Denial of Service protection  
echo-chargen  
smurf  
tcp-flooding  
tcp-null-scan  
tcp-syn-fin-scan  
tcp-xmas-scan  
udp-flooding  
win-nuke

## Features

### Security-continued

- Management Security:
  - Login Security
  - Hierarchical User Accounts Authentication
  - RADIUS authentication
  - RADIUS accounting
  - TACACS + authentication
  - TACACS + accounting
  - TACACS + authorization
  - Management Interface Access Filtering (SNMP, Web, Telnet)
  - SSH (v1.5/v2.0) for security Telnet
    - Cipher:
      - aes192-ctr
      - aes256-ctr
      - aes256-gcm@openssh.com
      - chacha20-poly1305@openssh.com
      - aes128-ctr
      - aes128-gcm@openssh.com
    - KEY
      - ssh-rsa
      - rsa-sha2-512
      - rsa-sha2-256" in below
  - SSL for HTTPS
  - SFTP IPv4/ IPv6
  - SNMPv3

### Green Ethernet

- IEEE 802.3az Energy-Efficient Ethernet (EEE)

### OAM

- IEEE 802.3ah Link
- IEEE 802.1ag Connectivity Fault Management:
  - Connectivity check
  - Loopback
  - Linktrace
- ITU-T Y.1731 Performance and Throughput Management:
  - Frame Delay
  - Frame Delay variation

### 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
- Ingress policy map (police rate, remark CoS)
- Egress policy map (police rate, remark CoS/DSCP)
- Support policing and shaping according to 802.1q VLAN
- Support to ensure bandwidth configuration for each Switch port according to:
  - Committed bandwidth, Peak rate, Excess rate, Information Rates
- Rate Limiting (Ingress and Egress, per port base):
  - GE: Resolution 64Kbps ~ 1,000Mbps
- Auto Traffic Control

### 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
- HTTP over IPv6
- SNMP over IPv6
- IPv6 Syslog support
- IPv6 TFTP support
- IPv6 MLD filter: MLD max-groups (throttling)
- IPv6 ND snooping
- MLD Snooping v1/v2
- IPv6 source guard
- DHCPv6 snooping
- MVR6
- TACACS IPv6

### Routing

- VLAN Interface IP address assignment
- IP interface IPv4/v6: 256/128 (Shared)
- IPv4/IPv6 Static Route
- Host route IPv4/v6: 4K/2K
- Net route IPv4/v6: 512/128
- DHCP Server
- RIP v1/v2

### Management

- IPv4, ICMPv4, UDP, TCP
- Switch Management:
  - CLI via console port or Telnet
  - Web management
  - SNMP v1, v2c, v3
  - Provide complete private mib for NMS to Partitioning Management based on functions and equipment
  - PPPoE 7 Parameter Configuration
  - IPoE 7 Parameter Configuration
- IP clustering (32 members)
- Firmware & Configuration:
  - Firmware upgrade via TFTP/HTTP/FTP server
  - Dual images
  - Multiple configuration files
  - Configuration file upload/download via TFTP/HTTP/FTP server
  - Firmware auto upgrade
- RMON (groups 1, 2, 3 and 9)
- BOOTP, DHCP client for IP address assignment
- DHCP dynamic provision option 66, 67
- SNTP/NTP IPv4/ IPv6
- DNS client
- Event/Error Log
- Syslog
- SMTP
- Support LLDP (802.1ab) IPv4/IPv6
- sFlow v4, v5
- Cable diagnostics
- Traceroute
- Traceroute6
- DHCP server (8 pools, 512 IP address)
- TWAMP probe and responder
- Scheduling Reboot
- Support CPU, Memory, Temperature, FAN and Bandwidth Monitoring



## Features

### Safety

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

### Electromagnetic Compatibility

- CE Mark
- FCC Class A
- CISPR Class A

### Environmental Specifications

- Temperature:
  - 0°C to 50°C standard operation
  - 40°C to 70°C (Non-Operating)
- Humidity: 0% to 90% (Non-condensing)

### Power Supply

- Power input
  - AC Power input: 100 to 240 VAC, 50/60 Hz, 1.0A
  - DC power input: -48 ~ -60 VAC, 3.0 A
- Dying Gasp

### 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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