

# ES3528MV2/ES3528MV2-DC

## L2 Fast Ethernet Standalone Switches



### Product Overview

The Edgecore ES3528MV2 and ES3528MV2-DC are Fast Ethernet Layer 2/4 switches featuring 28 ports; 24 100BASE-TX ports and 4 combination Gigabit Ethernet RJ-45/SFP (Small Form Factor Pluggable) ports. The switches are ideal for desktop Fast Ethernet connectivity and wiring closet installations with their fanless design for silent operation. Using IP Clustering for a virtual stack of up to 36 switches, the whole stack can be managed as a single entity with a single IP address. These switches are packed with features and are a cost-effective solution that brings continuous availability, enhanced security and advanced QoS to the network edge, while maintaining simplicity of management with optional DC power capability.

### Key Features and Benefits

#### Performance and Scalability

With 12.8 Gbps switching capacity, the ES3528MV2 and ES3528MV2-DC deliver wire-speed switching performance on all Fast and Gigabit Ethernet ports, allowing users to take full advantage of existing high-performance PCs by significantly improving the responsiveness of applications and file transfer times.

There are four Gigabit Ethernet combination ports for uplink flexibility, allowing copper or fiber uplinks. The switch also supports digital diagnostic monitoring (DDM) for SFP transceivers.

#### Continuous Availability

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.

IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base, providing Layer 2 load sharing on redundant links.

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

The ES3528MV2 and ES3528MV2-DC support 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.

#### Comprehensive QoS

Eight egress queues per port enable differentiated management of up to eight traffic types. Traffic is prioritized according to 802.1p and DSCP, giving optimal performance to real-time applications such as voice and video.

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

#### Enhanced Security

Port security allows access to switch ports based on MAC address, 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. User authentication is carried out using any standard-based RADIUS server.

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) encrypts Telnet and web access to the switch, providing secure network management.

TACACS+/RADIUS authentication enables centralized control of the switch and prevents unauthorized users from altering the configuration of the switch.

Private VLANs isolate edge ports to ensure user privacy.

IGMP snooping prevents flooding of IP multicast traffic and limits bandwidth intensive video traffic to only the subscribers.

#### Service Monitoring and Management

The ES3528MV2 and ES3528MV2-DC support IEEE 802.1ag Connectivity Fault Management (CFM) and ITU-T Y.1731, allowing service providers to monitor end-to-end services, identify connectivity/performance issues, and isolate problems from a remote location without dispatching onsite service personnel.

Additionally, this provides the capability to monitor service availability, delay, jitter, and dropped packets, used to verify SLA conformance for billing purposes while providing advance indication of performance degradation before a service outage occurs.

#### Simple Management

An industry-standard command-line-interface (CLI), accessed through the console port or Telnet, provides a convenient way to configure and troubleshoot the switch. An embedded user-friendly web interface helps users quickly and simply configure the switch. Four-group RMON is supported to collect traffic statistics and run network diagnostics. The switch can also backup and restore firmware and configuration files via TFTP.

## Features

### Physical Ports

24 100BASE-TX ports  
4 Combo Gigabit (RJ-45/SFP) ports  
1 RS-232 DB-9 console port

### Performance

Switching Capability: 12.8 Gbps  
Packet Buffer Size: 8 Mb  
Memory: 128 MB  
Flash: 32 MB  
MAC Address Table: 16 K

### L2 Features

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)  
Loop Back Detection  
Spanning Tree Fast Forwarding  
BPDU Guard  
BPDU Filter  
Root Guard  
Auto Edge Port

VLANs:  
Supports 4K IEEE 802.1Q VLANs  
Port-based VLANs  
MAC-based VLANs  
IP-based VLANs  
Voice VLANs  
IPv6 VLANs  
IEEE 802.1v protocol-based VLANs  
Private VLANs (community)  
GVRP/GARP  
VLAN trunking  
Traffic segmentation

Link Aggregation:  
Static trunk  
IEEE 802.3ad Link Aggregation Control Protocol  
Trunk groups: 12, trunk links: 2~8  
Balance over trunking port

IGMP Snooping:  
IGMP v1/v2/v3 Snooping  
IGMP Querier  
IGMP Filtering  
IGMP Immediate Leave  
IGMP Snooping Leave Proxy  
IGMP v1/v2/v3 Proxy  
IGMP Throttling

MVR (Multicast VLAN Registration)  
Support Q-in-Q  
Support selective Q-in-Q  
G.8032 (ERPS)  
Non-STP loopback detection  
UDLD  
DDM  
Support for jumbo frames up to 10KB  
Storm control: Broadcast / multicast / unknown unicast

### QoS Features

Priority Queues: 8 hardware queues per port  
Traffic classification based on IEEE 802.1p CoS, IP, and DSCP  
Support WRR, Strict Priority and Hybrid mode

Bandwidth Control:  
Egress rate limiting: FE: 64K bits/sec ~ 100M bits/sec  
GE: 64K bits/sec ~ 1000M bits/sec  
Ingress rate limiting: FE: 64K bits/sec ~ 100M bits/sec  
GE: 64K bits/sec ~ 1000M bits/sec

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### Security

Port Security  
IEEE 802.1X  
Port-based authentication  
MAC-based authentication  
Supplicant support  
Authenticator  
VLAN assignment  
QoS assignment  
Guest VLAN  
EAPOL frames pass-through  
RADIUS authentication  
RADIUS accounting  
TACACS+ authentication  
TACACS+ authorization  
TACACS+ accounting  
IP Source Guard  
Dynamic ARP Inspection  
Intrusion lock (link detection)  
MAC filter  
Access Control List  
L2/L3/L4  
Time-based  
SSH (v1.5/v2.0)  
HTTPS and SSL  
User Authentication  
Local authentication  
Remote authentication

### 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 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 ACL  
IPv6 DSCP

## Features

### OAM

IEEE 802.3ah Link  
 IEEE 802.1ag Connectivity Fault Management  
 ITU-T Y.1731 Performance and Throughput Management  
 Complies with MEF 9 and 14 specifications

### 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  
     RMON (groups 1, 2, 3, and 9)  
 BOOTP  
     Client  
 DHCP  
     Client  
     Snooping  
     Snooping Option 82  
     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)  
     Remote log  
     SMTP (e-mail notification)  
 Remote Ping  
 SNTPv4  
 NTP  
 IP Clustering  
 LLDP (802.1ab)  
     Link Layer Discovery Protocol (LLDP)  
     LLDP-MED (VoIP related)  
 MAC flush  
 sFlow  
 Dynamic ARP Inspection (DAI)  
 Auto Traffic Control (ATC) (SW rate limit)  
 Delay reload  
 Cable Diagnostics /TDR

### Mechanical

Dimensions (H x W x D): 4.3 x 44 x 17.1 cm (1.69 x 17.32 x 6.73 in. 1RU)  
 LED Indicators: Port, Uplink, System, Diagnostic  
 Weight: 2 kg (4.41 lb)  
 Quiet fanless design

### Maximum Current

ES3528MV2  
 0.25 A @ 115 VAC  
 0.12 A @ 230 VAC  
 ES3528MV2-DC  
 0.3 A @ -48 VDC

### Environmental Specifications

Temperature:  
     IEC 68-2-14  
     0°C to 55°C (32 °F to 131 °F) standard operating  
     -20°C to 70°C (-4 °F to 158 °F) non-operating  
 Humidity: 5% to 95% non-condensing  
 Vibration: IEC 68-2-36, IEC 68-2-6  
 Shock: IEC 68-2-29  
 Drop: IEC 68-2-32

### IEEE Standards

IEEE 802.1D Spanning Tree Protocol and traffic priorities  
 IEEE 802.1w Rapid Spanning Tree Protocol  
 IEEE 802.1p priority tags  
 IEEE 802.1Q VLAN  
 IEEE 802.1v protocol-based VLANs  
 IEEE 802.1x port authentication  
 IEEE 802.3-2005  
 Ethernet, Fast Ethernet, and Gigabit Ethernet  
 Full-Duplex flow control  
 Link Aggregation Control Protocol  
 IEEE 802.3ac VLAN tagging

### SNMP Standards

RFC 1493 Bridge MIB  
 RFC 3289 Differentiated Service MIB  
 RFC 2742 SNMP Agents MIB  
 RFC 2096 Forwarding Table MIB  
 RFC 2933 IGMP MIB  
 RFC 2233 Interface Group MIB  
 RFC 2668 MAU MIB  
 RFC 1213 MIB II  
 RFC 2621 RADIUS Authentication Client MIB  
 RFC 2819 RMON MIB  
 RFC 2021 RMON II Probe Configuration Group  
 RFC 2011 SNMPv2 IP MIB  
 RFC 3584 SNMP Community MIB  
 RFC 3411 SNMP Framework MIB  
 RFC 3412 SNMP-MPD MIB  
 RFC 3413 SNMP Target MIB, SNMP Notification MIB  
 RFC 3414 SNMP User-Based SM MIB  
 RFC 3415 SNMP View Based ACM MIB  
 RFC 2013 TCP MIB  
 RFC 1215 Trap  
 RFC 2012 UDP MIB  
 RFC 2013 TCP MIB  
 RFC 1541 DHCP Client  
 RFC 1112 IGMP  
 RFC 2236 IGMPv2  
 RFC 2618 RADIUS  
 RFC 1757 RMON  
 RFC 1157 SNMP  
 RFC 2571 SNMPv2  
 RFC 2030 SNTP  
 RFC 1350 TFTP  
 TACACS Authentication Client MIB  
 Private MIB  
 Quality of Service MIB

## Features

### Electromagnetic Compatibility

CE Mark  
FCC Class A  
CISPR Class A

### Safety

CSA/NRTL (UL1950, CSA 22.2.9.50)  
TUV/GS (EN60950)

### 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

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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
ET3201-FXP	100BASE-FX, Small Form Factor Pluggable (Distance: 2 km; Wavelength:1310 nm)
ET3201-FX20	100BASE-FX, Small Form Factor Pluggable (Distance: 20 km; Wavelength:1310 nm)
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: 550 m; Wavelength: 850 nm, DDM)
ET4202-LX	1Gbps, Small Form Factor Pluggable (Distance: 10 km; Wavelength: 1310nm, DDM)
ECView Pro	Network Management Software