

# Layer 3 Stacking Switch, iPECS Ethernet Switch 4500G Series

iPECS ES-4500G Series provides speedy Gigabit performance combined with high availability. This switch family offers Gigabit Ethernet edge ports, 10 Gigabit Ethernet uplinks, and redundant power options to allow numerous installation options based on application requirements. The management software is ready for future requirements today by including both IPv4 and IPv6 Management options without additional cost.

## OVERVIEW

The iPECS ES-4526G/ES-4550G offers stacking of up to 8 units of either 24 or 48 port switches providing up to 384 Gigabit and 16 10G ports. It provides 24 or 48 built-in copper Gigabit ports, including four (4) Combo SFP ports supporting either copper links or SFP transceivers for easy, flexible connection to fiber-based Gigabit media and a switching capacity of up to 186Gbps. The 2 10G module slots on the rear of the switch support 10G Ethernet uplink connections providing XFP, 10GBASE-T, SFP+ ports without impacting front panel performance. These provide high bandwidth connections to the core of a network or high capacity servers and are in addition to the 2 stacking connectors giving high capacity connections to the other units in the stack.

Ericsson-LG Enterprise provides a comprehensive software solution including hardware accelerated layer 3 routing combined with L2 and L4 features. Free technical support and design services are also provided to help customers design and implement customer centric solutions.

The iPECS ES-4526G/ES-4550G is the latest example of Ericsson-LG Enterprise continued commitment to our channel partners and customers to be the industry leader in cost-effective, reliable, high performance, feature-rich switches.

## ARCHITECTURE & KEY PERFORMANCE

Theoretical network architectures and practical implementations are continuously evolving, driven by the need for faster speeds, new technologies and new applications. These changes are being driven by technologies such as iSCSI storage solutions and virtualization which is providing more efficient use of server hardware solutions. The part of this ongoing transition includes 1G to every desk top and 10G as a critical part of the topology design even within SMB networks. Higher speeds of Ethernet technologies such as 10G have emerged from niche solutions in the enterprise to main stream and mass market for networks of all sizes which demand higher performance.

Since the creation of Ethernet over 30 years ago it has become the defacto standard for networking by continuously evolving. The evolution has allowed Ethernet to offer main stream high performance and relatively low costs compared to other non-ethernet based options such as Fiber Channel and Infini-band, etc. Due to its standardization, it also offers native interoperability and supports multi vendor networks allowing customers to choose the best solution for each part of the network based on features and cost.

However these performance transitions can lead to a number of challenges in parts of the network where speed boundaries occur.

Connecting 10G links from servers to 1G edge connections or even legacy 100M edge connections can pose challenges to any switch especially when the overall system data requirements are high. This can be especially true in the latest generation applications where the capabilities of servers and networking infrastructure are pushed to the limits. Ethernet as a technology is by definition chatty and has bursts of data; this drives the need for complex buffering architectures when crossing speed boundaries.

The iPECS ES-4526G/ES-4550G family of switches has been specifically designed to handle these next generation 10G driven networks supporting high performance servers and clients. These enhancements are delivered by expanding buffer memory and higher performance stacking architectures. The buffer memory enhancements are able to provide better handling of bursty data at speed boundaries by providing larger memory pools and more elastic buffer management.

These new products will specifically help storage networks, clusters and heavily virtualized environments when combined with Ericsson-LG Enterprise 10G adapter cards.



## KEY BENEFITS

### Easy to Install

The iPECS Ethernet Switches have plug and play capabilities such as Auto-negotiation of speed and duplex mode, Auto-MDI/MDIX, at-a-glance intuitive status LEDs right on top of the ports. Its intuitive web user interface makes the installation and administration much easier.

### Layer 3

Routing capabilities are critical in the enterprise to offer maximum flexibility for rapidly changing network topologies and application demands. Supporting both Unicast and Multicast routing helps the deployment of flexible data, advanced video streaming and voice services from within a single switching infrastructure. These switches can be deployed as advanced edge networking hardware or as an aggregation switch to support larger numbers of basic edge devices.

### Secure Networking

The iPECS ES-4500G Series Ethernet Switches support key security features like RADIUS authentication and authorization as well as multi-layer filtering. All these management via web management sessions are secured with HTTPS encryption.

### High Availability

Provides backup power in case of power failure. 802.1w RSTP enables a loop free network and redundant links to the core network. MSTP and LACP provide load sharing and fault tolerance for connections. VRRP prevents your system from failing by dynamically backing up multiple L3 switches for routing.

### IPv6

IPv6 is becoming a mainstream solution being deployed in a wide range of networks to deliver future proofed connectivity for edge devices based on the latest standards. The iPECS ES-4500G family supports both Unicast and Multicast IPv6 routing helping to deliver an easy to deploy future proofed solution using a single networking infrastructure.

It works in parallel with the existing IPv4 routing infrastructure enabling reducing the need to make radical changes to the network topology and providing a way for a gradual switch over to the new solution.

In addition to the routing features, the iPECS ES-4500G family also supports IPv6 management offering a way to manage and monitor the switches using the latest networking standards.

### Advanced Quality of Service (QoS)

Prioritization of the data on the network is essential in order to ensure that mission critical applications such as voice are delivered in a timely manner. The Switches are able to classify packets into one of eight different priority queues and serve each packet in the priority queues using WRR (Weighted Round Robin) or SPQ (Strict Priority Queuing) method.

## Enterprise-class L3 switching features available in iPECS ES-4526G/ES-4550G

• RIP/OSPF/PIM-DM	Flexible Layer 3 routing for advanced network architectures
• STP, RSTP, MSTP	Provides path redundancy while preventing undesirable loops in the network, thus improving network resiliency and availability
• IGMP Snooping v1/2/3	With IGMP Snooping enabled, eliminate unnecessary traffic and improve overall network performance
• Advanced Security	802.1x/Radius/TACACS+ Authentication & encryption, Advanced ACL, Guest VLAN, DHCP Snooping, Dynamic ARP Inspection, SSHv2, HTTPS
• Advanced QoS	Standard L2/L3 QoS Features + Priority marking, L2-L4 Policing (Metering), Time-Based ACL, CPU Interface Filtering
• Link aggregations	Group together any number of ports automatically using LACP, 8 members per group, 12 groups
• VLAN	Segment the network by grouping users for optimal use of the network – Port/Protocol/MAC/IP based VLAN, 4096 VLANs
• Stacking	Single IP Management via stacking up to 8 switches

## Accessories

Type	Models	Description
Option module	ESA-10GXFPM	1-port 10Gigabit XFP Module
	ESA-10GSFPM	1-port 10Gigabit SFP+ Module
Stacking cable	ESA-STC30	Switch to switch stacking cable (30cm)
	ESA-STC130	Loop back from top to bottom stacking cable (130cm)

## Feature Specifications

List	Feature	Specifications	ES-4500G series
Layer 3	IPv4 Unicast Routing	RIP v1, v2, OSPF, ECMP, Static	Yes
	IPv4 Multicast Routing	IGMP v1, v2, v3, PIM-DM, PIM-SM	Yes
	IPv6 Unicast Routing	Static, OSPFv3	Yes
	IP Redundancy	VRRP	Yes
	IPv6 Multicast Routing	MLD v1, v2, PIM-DM6	Yes
Layer 2	Spanning Tree Protocols	802.1d : Spanning tree protocol (STP), 802.1w : Rapid Spanning Tree Protocol (RSTP)	Yes
		802.1s : Multi Spanning Tree Protocol (MSTP)	Yes
		Max number of groups	12
	Link Aggregation	Max number of members per group	8
		Source and Destination MAC based load balance	Yes
	VLAN	VLAN IDs	4096
		Max Number of active VLANs per Switch	4096
		Port/MAC/IP based VLAN, Private VLAN, GVRP, Voice VLAN, VLAN Trunking	Yes
		MVR (Multicast VLAN Registration), GVRP, VLAN Double tagging (Q in Q)	Yes
	LLDP	Link Layer Discovery Protocol (802.1ab)	Yes
	IGMP Snooping	IGMP Snooping v1/2/3, Snoop IGMP packets per VLAN, Join / Leave, Fast Leave, Quierer	Yes
Max Number of multicast groups		1K	
Traffic Control	QoS	Voice VLAN & Auto QoS, QoS on L3 layer using TOS field of IP packet header	Yes
		DSCP to 802.1p mapping, QoS on L2 layer using TCI field of VLAN header	Yes
		Marking / Remarking	Yes
		Strict Priority Queuing, Weighted Round Robin Queuing, Hybrid Queuing	Yes
	ACL	MAC based ACL, Source/Destination IP based ACL	Yes
		Source/Destination Port based ACL	Yes
		Protocol type based ACL, MAC limit per port, Time based ACL	Yes
		Max number of ACLs	2K
	Flow Control	Full / half duplex, Back pressure flow control for half duplex	Yes
	Rate Limiting / Shaping	Port based	Yes
Storm Control	Broadcast and Multicast packet control	Yes	
Security	DHCP	DHCP snooping, IP Source Guard - IP spoofing prevention, ARP spoofing prevention	Yes
	Authentication	RADIUS/TACACS+ Authentication and Accounting	Yes
		802.1x Extensible Authentication(EAP), 802.1x MHMA	Yes
		Guest VLAN w / EAP enabled on port (GVLAN-SHSA)	Yes
		Multiple Host Single EAP Authentication - EAP + GVLAN	Yes
		MAC based EAP Authentication (Clientless EAP)	Yes
RADIUS assigned VLAN in MHMA mode	Yes		
Management	Interface	HTTP, HTTPS, Telnet/SSH, SNMP v1/v2c/v3, Trap (RFC 1215)	Yes
	MIB	TCP / IP-based internets, RMON v1/2	Yes
	DHCP	DHCP Server/Client, DHCP Snooping, Dynamic Provision (Option 66, 67)	Yes
	File Transfer	FTP client, TFTP client	Yes
	Event/Error Log	Store on local non-volatile memory, Send to remote syslog server	Yes
	Port Mirroring	Received traffic , Transmit traffic, Received and Transmit traffic	Yes
	Network Time	SNTP	Yes
	Backup	Configuration backup / restore	Yes
	Firmware upgrade	Firmware backup / restore / upgrade, Dual firmware images	Yes
	Stacking	Up to 8 units	Yes

## Technical Specifications

List	Detailed information	ES-4526G	ES-4550G
Performance	Switching Fabric Capacity (Gbps)	138	186
	Packet Forwarding Throughput (Mpps)	103Mpps	138Mpps
	Flash Memory	64M	64M
	DRAM	256M	256M
	Packet Buffer Size	2M	4M
	MAC Address Capacity	16K	16K
	MTU / Jumbo Frames support	9K	9K
	Auto-negotiation, Auto-MDI/MDIX	Yes	Yes
	MTBF (Years)	8	8
Ports	Type of Service ports	10/100/1000 Base-T	10/100/1000 Base-T
	10/100/1000Base-T Ports per Unit	24	48
	Type of Built-in Gigabit uplink ports	4 combo SFP	4 combo SFP
	Stacking ports	2	2
	10G uplink slots	2	2
	Types of transceivers support	SFP, XFP, SFP+	SFP, XFP, SFP+
Management	Management Console ports (Connector)	RJ45	RJ45
Dimensions	19" Rack Mount	Yes	Yes
	Height (mm)	44	44
	Width (mm)	440	440
	Depth (mm)	415	415
	Weight (Kg)	3.72	4.34
Power	100 ~ 240 VAC, 50/60Hz, 2A	Yes	Yes
	Max power consumption (Watts)	64	104
	Redundant Power Connection	Yes	Yes
Environmental	Operating Temperature (°C)	0 to 50 °C	0 to 50 °C
	Storage Temperature (°C)	-40 to 70 °C	-40 to 70 °C
	Operating Humidity (non-condensing)	10% to 90%	10% to 90%
	Storage Humidity (non-condensing)	10% to 90%	10% to 90%
	Operating Altitude (Meters)	4000m	4000m
Certifications	EMC Compliance - FCC class A, CE	Yes	Yes
	Electromagnetic Immunity	Yes	Yes
	Safety Compliance - UL	Yes	Yes
	Australia (C-Tick)	Yes	Yes
	Korea (KCC)	Yes	Yes
Environment Regulation Compliance	WEEE	Yes	Yes
	RoHS	Yes	Yes
	PFOS	Yes	Yes

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