



High Performance Switching

- + 12.8Gbps Switching Capacity
- + Stack up to 32 Units per stack using D-Link® Single IP Management (SIM)
- + Physical Stacking up to 8 Units¹
- + Fanless for Silent Operation
- + Jumbo Frames up to 9KBytes

Security

- + D-Link Safeguard™ Engine
- + Microsoft® NAP
- + SSHv2, SSLv3
- + TACACS+, RADIUS
- + IP-MAC-Port Binding
- + DHCP Server Screening
- + Traffic Segmentation
- + L2/3/4 Access Control List
- + Time-based ACL
- + Guest VLAN
- + MAC-based Access Control (MAC)
- + Web-based Access Control (WAC)
- + Loopback Detection

Network Management

- + SNMPv1/v2c/v3 Support
- + RMON (4 Groups)
- + Web GUI or CLI
- + Cross Stack Port Mirroring
- + sFlow¹
- + LLDP

xStack® Managed 24-Port 10/100 Stackable L2+ Switch with 4 Gigabit Copper Ports and 2 Combo SFP Slots

The D-Link® xStack® DES-3528 is a high-performance, managed, stackable Layer 2 switch that provides an ideal solution for workgroups and edge deployments of a network. The D-Link Single IP Management (SIM) allows administrators to cluster up a virtual stack of up to 32 DES-3528 dispersed switches with fewer distance limitations through a single IP address. The clustering environment spans buildings, making it perfect for businesses that require multiple building deployments. The DES-3528 also supports physical stacking of up to eight units in a stack, so that the entire stack can act as a single logical unit with up to 4Gbps of stacking backplane. The DES-3528 also provides comprehensive security for edge access such as Access Control List, DHCP server screening and DoS attack prevention.

Non-Blocking Switching

The DES-3528 provides a non-blocking switching solution for 10/100 Fast Ethernet connections. The DES-3528 supports 24 10/100Mbps ports, with four gigabit 10/100/1000BASE-T ports. Two of these copper Gigabit ports are disabled when the two 1000BASE-X SFP are used, also known as dual personality or combo ports. The DES-3528 has a non-blocking bandwidth of 12.8Gbps and has a redundant power option for mission critical applications.

Advanced Network Security

For edge network security, the DES-3528 supports DHCP Server Screening, Client Filtering, and IP-MAC-Port Binding to prevent security breaches such as rogue DHCP server, man-in-the-middle attacks and IP spoofing. For clients with Windows® XP SP3, Windows Vista®, or servers with Windows Server® 2008, the DES-3528 works in conjunction with Microsoft's Network Access Protection

(NAP) as part of an ecosystem that enforces compliance with network health policies. The DES-3528 will grant network host access only if it complies with IT security policies such as up-to-date anti-virus signatures and operating system patches. This prevents a virus-infested client or server from gaining access and furthering contamination.

The DES-3528 also supports loopback detection, which detects a loop in the network even though the end device causing the loop is without spanning tree. When the switch detects a loop is in the connected node, the DES-3528 shuts down the port with the loop so that the entire system will continue to function normally. This feature can also be VLAN based.

The DES-3528 incorporates advanced mechanisms to detect an attack against the switch's central processing unit and to take corrective action on the attacking interface. When a Denial-of-Service attack is waged against the xStack switch, the D-Link Safeguard Engine detects the threat and prevents overload of the central processor, thus ensuring network integrity and helping to maintain open network bandwidth channels.

In addition, the DES-3528 supports 802.1X authentication, which securely allows users to log onto your network. When used in conjunction with a RADIUS server, 802.1X requires each user workstation attached to the xStack switches to provide a username and password before gaining access to the network. Web-based authentication option is available for those clients who may not have the 802.1X supplicant, while MAC-based authentication can make the authentication process automatically authenticated by the 802.1X server based on the client's MAC address. Other security features include Access Control List, in which an administrator can restrict the access of a network through a variety of means including MAC address, IP, UDP/TCP, and even VLAN ID.



Advanced Standards Based Enterprise Features

- + 802.1p Priority (8 Queues)
- + L2/L3/L4 QoS
- + 802.1x (Port/MAC-based)
- + 802.1Q VLANs (port-based, up to 4K Groups)
- + MAC-based VLAN
- + Q-in-Q
- + IGMP Snooping v1/2/3
- + MLD Snooping v1/2
- + VLAN-based IGMP Snooping

IP Clustering Stackable

The xStack DES-3528 provides D-Link Single IP Management Technology (SIM), allowing a set of switches to be managed by a single IP, regardless of geographical locations. Traffic running among units in this virtual stack goes through the full-duplex Gigabit interfaces and your usual network wires, doing away with the costly and cumbersome stacking cables. Without any stacking cable, cable distance barrier, and physical stacking limitations, your stack can comprise of units that are located anywhere on the network, minimizing the impact of any single point of failure. Furthermore, multiple xStack switches can be configured, monitored and maintained from any workstation running a web browser through one unique IP address. The stack is managed as a single object, with all units identified by a single IP address. With Tree View, you can obtain an overview of the members of the stack and a network topology showing the locations of the units and their link information. This provides simple yet powerful web-based management without expensive SNMP network management software. You can add up to 32 switches per stack and are not limited to any specific D-Link models. With embedded SIM, you can expand your Ethernet stack to include L3 core Gigabit and chassis-based switches to accommodate your network growth.

Voice and Video Applications

For today's businesses, having voice, data and video on the same network is common practice. This challenge is met by the DES-3528, which supports 802.1p with eight queues. The administrator can designate the priority of the traffic based on a variety of means including IP or MAC address, so that voice data is always clear and jitter-free. Video traffic can also be assigned with the same priority. In addition,

the DES-3528 provides IGMP Snooping or MLD Snooping, which allows the forwarding of multicast packets such as streaming audio and video, without increasing network broadcast congestion. By snooping IGMP registration information within a frame, a list of workstations in the multicast group is created. This list then allows the switch to intelligently forward packets to only the appropriate member workstations. In conjunction with the 802.1Q VLANs, Quality of Service and security can be achieved on a network infused with data traffic.

For other multimedia-on-demand applications, such as IPTV deployments, the DES-3528 provides advanced features for easy video streaming management. For example, this xStack family supports per port multicast stream control, which allows a service provider to assign limited multicast addresses per port. This means it can act as a security control that pre-configures channels for each subscriber on a port level to prevent unauthorized hosts from receiving traffic for a multicast group they did not join. DES-3528 also supports IGMP multicast VLAN, which eliminates duplicate multicast traffic being sent to clients in different VLANs, thus removing bottlenecks in the uplink port.

Ease of Management

The DES-3528 supports SNMP v1/2c/3 so traps can be set on abnormal events and information can be polled to maximize the productivity of the network. Other standard management features are also supported including RMON and IEEE 802.1D/w/s spanning tree. User interface includes an intuitive web-based browser graphic interface or industry-standard CLI, either of which can be protected through SSL or SSH encryptions.

Technical Specifications

Product Specifications

Device Interface	24 10/100BASE-TX Auto-Negotiating, Auto-MDI/MDIX Ports
	2 Dual-Usage 10/100/1000BASE-T Stacking Ports
	2 Combo 10/100/1000BASE-T Ports/SFP Slots
	RS-232 Console Port
MAC Address Table	16K
Switching Capacity	12.8Gbps
Maximum 64-Byte System Packet Forwarding Rate	9.5 Mpps



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Number of VLANs Per Device	Maximum 4,096 Static VLAN Groups
	Maximum 255 Dynamic VLAN Groups
Quality of Service (QoS)	8 Independent Hardware Queues (802.1p/Diffserv/ToS)
Stackability	Virtual Stacking with D-Link Single IP Management (SIM) Up to 32 Devices per Virtual Stack
MLD v1/v2	256 Groups Supported
Access Control Lists	Up to 768 Access Rules, Time-based ACL, CPU Interface Filtering
Jumbo Frame Support	Up to 9,216K Bytes
IGMP Snooping	Supports 256 Groups, IGMP Fast Leave, Host-based IGMP Fast Leave ¹
Flow Control	802.3x Flow Control, HOL Blocking Prevention
Port Mirroring	Supports one-to-one or many-to-one, Flow-based mirroring
Link Aggregation	Supports up to eight 8-port Groups
D-Link Safeguard Engine	Protects CPU from Broadcast/Multicast/Unicast Flooding
Web-based Graphic User Interface (GUI)	Compatible with Internet Explorer®, Netscape®, Mozilla®, Firefox®, Opera®, Safari® browsers

Interface Options

RJ-45	10-BASE-T, 100BASE-TX & 1000BASE-T
SFP Expansion Slots	Media Support Dependent On GBIC Transceiver
Diagnostic LEDs	Per Device: Power, Console, RPS
	Per Gigabit Port: Link/Activity, 10/100Mbps or 1000Mbps Speed
	Per Ethernet Port: Link/Activity, 10Mbps or 100Mbps Speed

Network Management

In & Out of Band	Web-based GUI, Single IP Management v1.6, Command Line Interface (CLI), Telnet Server, Zmodem, SNMP v1/v2c/v3, SNMP Traps, System Log, RMON v1, Support 1,2,3,9 Groups, RMON v2, Support ProbeConfigGroup, BootP/DHCP Client, DHCP Auto-configuration, DHCP Relay, DHCP Relay Option 82, Dual Image, Dual Configuration, CPU Monitoring, NTP/SNTP
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Network Management

IEEE	802.1Q VLAN Tagging, 802.1v VLAN Protocol, GVRP, 802.1ab Double VLAN (Port-based Q-in-Q, Selective Q-in-Q), VLAN Translation, MAC-based VLAN, Asymmetric VLAN, ISM-VLAN, 802.1p Quality of Service, 802.1D Spanning Tree Protocol (IEEE802.1D-2004 Edition), 802.1w Rapid Spanning Tree Protocol (IEEE802.1D-2004 Edition), 802.1s Multiple Spanning Tree Protocol (IEEE802.1Q-2005 Edition), 802.3x Flow Control, 802.3ad Link Aggregation, 802.3AB LLDP
IETF	RFC 1112/2236/3376 IGMP v1/v2/v3, RFC 1157 SNMP, RFC 2021 RMON v2, RFC 3810 MLD, RFC1213 MIB-II, RFC1493 Bridge MIB, RFC1907 SNMPv2 MIB, RFC1757/2819 RMON MIB, RFC1643/2358/2665 Ether-like MIB, RFC2674 802.1p MIB, RFC2233/2863 IF MIB, RFC2618 RADIUS AuthenticationClient MIB, RFC2620 RADIUS AccountingClient MIB, RFC2925 Ping & TRACEROUTE MIB, Private MIB

Electrical & Emissions Summary

Emissions	FCC Class A, C-Tick, VCCI Class A
Internal Power Supply	AC to DC
Power Input	100 to 240VAC, 1.5A, 50 to 60Hz
Maximum Power Output	12VDC, 5A
Maximum Power Consumption	20.5 watts
Redundant Power Supply	Connector for Optional External DPS-200



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Software Features

L2	Loopback Detection, LLDP		
Quality of Service (QoS)	Queue Handling		
	- Strict	- Weighted Round Robin (WRR)	- Strict + WRR
	CoS Based on		
	- Switch Port	- VLAN ID	- 802.1p Priority Queues
	- MAC Address	- IPv4/v6 Address	- DSCP
	- Protocol Type	- IPv6 Traffic Class	- IPv6 Flow Label
	- TCP/UDP Port	- User-Defined Packet Content	
	Support Flowing Actions for Flows		
	- Remark 802.1p Priority Tag	- Remark TOS-DSCP Tag	- Bandwidth Control
	- Committed Information Rate (CIR), min. granularity 64Kbps		
	SRED Congestion Control		
	Bandwidth Control		
	- Port-based (Ingress/Egress, Min. Granularity 64Kbps)		
	- Flow-based (Ingress, Min. Granularity 64Kbps)		
Security	SSH v1/v2		
	SSL v1/v2/v3		
	Port Security up to 64 MAC Addresses per port		
	Broadcast/Multicast/Unicast Storm Control		
	Traffic Segmentation		
	IP-MAC-Port Binding		
	- Supports 500 Address Binding Entries per Device		
	- Supports ARP/ACL/Auto (DHCP Snooping) Mode		
	D-Link® Safeguard Engine™		
AAA	NetBIOS/NetBEUI Filtering		
	DHCP Server Screening		
	802.1X		
	- Port-based Access Control	- Host-based Access Control	- Dynamic VLAN Assignment
	Web-based Access Control (WAC)		
	- Port-based Access Control	- Dynamic VLAN Assignment	
	MAC-based Access Control (MAC)		
	- Host-based Access Control	- Dynamic VLAN Assignment	
	Guest VLAN		
	RADIUS Accounting		
	RADIUS and TACACS+ Authentication for Switch Access		
	3-Level User Account		



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Physical & Environmental

Temperature	Operating: 32° to 113°F (0° to 45°C)
	Storage: -40° to 158°F (-40° to 70°C)
Humidity	5% ~ 95% Relative, Non-condensing
Dimensions (W x D x H)	17.4in x 8.3in x 1.7in (441mm x 210mm x 44mm)
Weight	5.5 lbs (2.5 kg)
Safety Compliance	CSA International and CB Report

Warranty

Warranty	Lifetime ²
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Ordering Information

<u>Part Number</u>	<u>Description</u>
DES-3528	xStack Managed 24-Port 10/100 Stackable L2+ Switch, 4 Gigabit Copper Ports + 2 Combo SFP
DEM-310GT	1000BASE-LX SFP Module, up to 10Km
DEM-311GT	1000BASE-SX SFP Module, up to 550m
DPS-200	Redundant Power Supply Unit, 60 Watt RPSU
DPS-800	2-Slot RPSU Open Chassis for DPS-200/DPS-500
DPS-900	8-Slot RPSU Open Chassis for DPS-200/DPS-500
DS-510S	D-View 5.1 Network Management Software, Standard Version
DS-510P	D-View 5.1 Network Management Software, Professional Version
DV-600S	D-View 6.0 Network Management Software, Standard Version
DV-600P	D-View 6.0 Network Management Software, Professional Version

¹ Included in future release

² Lifetime warranty available only in the USA and Canada if purchased on or after March 30, 2009. Visit www.dlink.com for warranty details.

All references to speed are for comparison purposes only. Product specifications, size, and shape are subject to change without notice, and actual product appearance may differ from that depicted.