D-Link®

Business
& Enterprise
SOLUTIONS

——— DGS-3324SRi

24-Port Gigabit Stacking Master

Stacking Up 6 DGS-3224SR Switches

Built-in 24 Copper Gigabit Ports, 8 Combo SFP, 120Gbps Stacking &

Redundant Power Support

The DGS-3324SRi is a powerful, function-rich Layer 3 switch that acts as a Stacking Master, as well as a high port-density Gigabit switch with 24 copper and fiber Gigabit connections. This switch operates as a high-performance external switching fabric for D-Link's DGS-3224SR stackable switches by increasing the available stacking interconnect bandwidth from 20Gbps to 120Gbps.

Cost-Effective Backbone Stacking Master

The DGS-3324SRi combines powerful stacking bandwidth with Layer 3 packet routing and extensive network management capability. It is suitable for deployment as a cost-effective Stacking Master on a fiber backbone. The DGS-3324SRi can provide as much as 120Gbps stacking bandwidth to a stack of DGS-3324SR Layer 3 Gigabit switches for fault tolerant connection to enterprise/ Departmental servers and workstations. The high availability architecture of the DGS-3324SRi supports Layer 3 routing (RIP-1/RIP-2, OSPF, and DVMRP), multi-layer traffic classification/prioritization and optional redundant power.

Star Stacking Architecture

DGS-3324SRi comes with 6 stacking ports operating in full duplex, allowing 6 units of DGS-3324SR to be stacked together in a fail-safe star architecture. You can add units to reach maximum 168 Gigabit ports per stack. The switches are stacked together through high-speed stack cables that provide multiple Gigabit connections, allowing the entire stack to perform as a single IP entity. Users can easily see the ID number of switches stacked together from the 7-segment display on the front panel of each switch.

High Port-Density, High Performance

In a low profile rack-mount box, the DGS-3324SRi gives you 24 10/100/1000BASE-T Gigabit ports for 24 Gigabit connections on your existing Cat. 5 twisted-pair cable. In addition, it also gives you 8 SFP (mini GBIC) ports for flexible fiber connection. You can select to install optional transceiver modules in these slots for short, medium or long-distance fiber backbone attachment. *

* Use of the SFP will disable their corresponding built-in 10/100/1000BASE-T connections.

Redundant Power Support

Each switch in the stack can be connected to an external power supply for redundant power backup purposes. In case the built-in internal power supply fails, the redundant power supply unit will automatically provide all required power to ensure continuous operation.

Wire-speed IP Routing

The switch is designed for basic IP routing, with instant support for Windows, Unix and Internet environments. It provides wire-speed non-blocking switch fabrics with hardware-based packet filtering/forwarding. Packet routing is performed by on-board ASICs at speeds many times faster than CPU-based routers.

Seamless Integration

The DGS-3324SRi can be instantly integrated into any existing network for seamless integration of Layer 2 and Layer 3 packet switching. With multi-layer support for every port, you can flexibly segment the network into domains and sub-domains, using (1) subnet IDs and user IP numbers to route traffic, and (2) custom filters based on users' physical MAC addresses to filter extraneous traffic. On Layer 2, the DGS-3324SRi uses auto-learned and user-defined MAC addresses to discard and forward packets to the L2 switch stack. On Layer 3, the DGS-3324SRi looks at the user-specified routing table to route packets to their destinations on other L3 Stacking Masters on the fiber backbone.

Port Trunks for Aggregated Bandwidths

Port trunks supporting 802.3ad Link Aggregation standard allow up to 8 Gigabit ports to be combined together to create a multi-link load-sharing aggregated bandwidth. The DGS-3324SRi can support up to 32 port trunks per device.

DGS-3324SRi

Product Description

VLANs for Enhanced Security & Performance

VLANs improve security and bandwidth utilization by limiting the broadcast domains and confining intra-group traffic within their segments. To segment up the network, workstations supporting IEEE 802.1Q VLAN Tagging connected to the switch can be grouped into different Virtual LANs (VLANs). The switch also supports GVRP (GARP VLAN Registration Protocol) for automatic VLAN configuration distribution.

Advanced Network Access Management

Port-based and MAC-based (*) 802.1x features enable user authentication for each network access attempt. Port security features allow you to limit the number of MAC addresses per port in order to control the number of stations for each port. Static MAC addresses can be defined for each port to ensure only registered machines are allowed to access. By enabling both of these features, you can establish an access mechanism based on user and machine identities, as well as control the number of access stations.

Function available in next firmware release

Multi-layer Access Control List (ACL)

Access Control Lists (ACL) allow the network administrator to define policies on network traffic control. The switch supports comprehensive and multi-layer ACLs, providing a powerful tool for network management. For example, the switch can be set to block malicious bulk traffic from specific clients (based either on MAC or IP addresses). Or during a virus attack, the switch can be set to restrict its flooding based on a virus's unique pattern (TCP/UDP port number).

Advanced QoS Support

The switch supports not only Layer 2 802.1p Priority Queue control, but also a variety of ways to prioritize network packets. Multi-layer information from L2 to L4 can be used to classify packet priorities. This function support allows you to attach IP telephony devices or video servers to the switch to run delay-sensitive applications like video conference.

Flexible Transmission Scheduling

The switch supports 2 methods of packet transmission scheduling: Strict Priority Scheduling and Round-Robin. You can select to use Strict Priority Scheduling to strictly enforce your priority queues, or Round-Robin to address bandwidth limitations at peak time. Round-Robin allows each queue to be assigned a different percentage of the output port's bandwidth, so that lower-priority queues are not denied access to buffer space and port bandwidth.

IGMP Snooping for Broadcast Control

The switch listens to IGMP (Internet Group Management Protocol) messages to build mapping table and associate forwarding filters. It dynamically configures the switch ports to forward IP multicast traffic only to those ports associated with multicast hosts.

Broadcast Storm Control

To limit too many broadcast/multicast flooding in the network, broadcast/multicast storm control is configured to screen excessive traffic. Threshold values are available to control the rate limit for each port. Packets are discarded if the respective count exceeds the configured upper threshold in a given time interval. The possible range of upper threshold is from 0 to 255k packets per second.

Port Mirroring

This function allows you to mirror adjacent ports for the purpose of analyzing incoming and outgoing packets where packet patterns can be studied.

802.1D Compatible & 802.1w Rapid Spanning Tree

For mission critical environments with multiple switches supporting STP, you can configure the stack of switches with a redundant backup bridge path, so transmission and reception of packets can be guaranteed in event of any fail-over switch on the network.

Multiple Management Interfaces

SNMP v.1, v.2c, v.3 network management with single IP address per stack is supported. RMON monitoring and SYSLOG are provided for effective central management. The switch also provides a Command Line Interface (CLI) and a Web-based GUI. CLI enables quick system configuration for administrators familiar with command line operation. The embedded Web-based interface allows you to easily access the switch from anywhere on the network and troubleshoot it in real-time. You can, for example, browse the MAC address table via the Web browser and perform searching to identify the location of any workstation. Port utilization graphs provide real-time traffic monitoring and diagnostic information.

Features

- Multi-layer L2/L3 packet switching
- 24 10/100/1000BASE-T Gigabit ports
- 8 combo SFP (mini GBIC)
- Stacks up to 6 DGS-3224SR switch
- Up to 168 Gigabit ports per stack
- Fail-safe star stacking architecture
- Redundant power supply support
- 160 Gbps switching fabric
- IP routing supporting RIP-1, RIP-2, OSPF routing protocols, DVMRP, PIM Dense mode
- Auto MDI/MDIX uplink for all twisted-pair ports
- 4K 802.1Q VLANs, IGMP snooping, eight 802.1p Priority Queues, port mirroring
- Multi-layer ACL and DiffServ QoS

- Administrator-definable port security
- 802.3ad Link Aggregation port trunks of up to 8 Gigabit ports
- Broadcast storm control
- 802.3x Flow Control
- Jumbo frame support
- 802.1D compatible and 802.1w Rapid Spanning Tree for redundant backup bridge paths
- Single IP address management per stack, SNMP v.1, v.2c, v.3 support, RMON monitoring, SYSlog, web-based management, Telnet, CLI through console port
- 802.1x port-based/MAC-based access control
- Per-port bandwidth control

DGS-3324SRi

Technical Specifications

Hardware

Device Ports
- 24 auto-sensing 10/100/1000BASE-T ports (front panel)
- 8 combo SFP (mini GBIC) ports (front panel)
- 6 10Gbps stacking ports (rear panel)
- 1 RS-232 console port (front panel)

Unit Stacking
6 DGS-3224SR stackable switches and 1 DGS-3324SRi Stacking Master

Stacking Architecture
Star

Port Standard/Function Support
- IEEE 802.3 10BASE-T/802.3u 100BASE-TX/802.3ab 1000BASE-T
- ANSI/IEEE 802.3 NWay auto-negotiation
- IEEE 802.3x Flow Control
- Auto MDI/MDIX
- Port mirroring

SFP (Mini GBIC) Support
- IEEE 802.3z 1000BASE-LX (DEM-310GT transceiver)
- IEEE 802.3z 1000BASE-SX (DEM-311GT transceiver)
- IEEE 802.3z 1000BASE-LH (DEM-314GT transceiver)
- IEEE 802.3z 1000BASE-ZX (DEM-315GT transceiver)

Diagnostic LEDs
Per device:
- Power On/Off
- Master
- Console (login/POST status)
- RPS in use
Per 10/100/1000BASE-T port:
- 1000Mbps speed, 10/100Mbps speed
- Link
Per SFP port:
- Link/Activity
Per stacking port:
- Link/Activity

7-Segment Display
To display unit ID in the stack

Software

IP Routing
- IP v4 support
- IP Fragmentation support
- IP multi-netting
- Routing protocols supported:
  Static routing
  RIP-1, RIP-2
  OSPF v.2

VLAN
- IEEE 802.1Q Tagged VLAN
- GARP/GVRP
- Asymmetric VLAN *
- Number of VLANs: 4K static VLANs (max.) *
- Multiple IPs per VLAN

Available in future firmware upgrade

Priority Queues (CoS)
- Standard: IEEE 802.1p
- Number of queues: 8

Traffic Classification (CoS)
Can be based on user-definable application types:
- TOS
- Diffserv (DSCP)
- Port-based
- MAC address
- IP address
- TCP/UDP port number

Network Access Security
- Port security features
- 802.1x user authentication
- RADIUS client
- Multi-layer ACL based on:
  Port number
  TOS
  Diffserv (DSCP)
  MAC address
  IP address
  User-definable applications

Spanning Tree Protocol
- 802.1D Spanning Tree compatible
- 802.1w Rapid Spanning Tree

IP Multicast
- IGMP v.2 - DVMRP
- PIM Dense mode
- PIM Sparse mode *

Function supported in future firmware upgrade

Port Trunk
- Number of ports per trunk: 8 (max.)
- Number of trunks: 32 (max.)
- Operation mode: load sharing
- 802.3ad compatible Link Aggregation (LACP) *

Available in future firmware upgrade

Performance

Switch Fabric
160 Gbps

Transmission Method
Store-and-forward

IP Address Table
- 4 K host entries
- 4K LPM entries

MAC Address Table
16K entries per device

MAC Address Learning
- Dynamic entries: automatic update
- Static entries: user-defined

Packet Filtering/Forwarding Rates (half duplex)
1,488,100 pps per port (max.)

Forwarding Rate
35.7 Mpps (excluding stacking ports)

RAM Buffer
2MB per device

Jumbo Frame
9,216 bytes (max.)

Configuration & Management

Management Support
- SNMP v.1, v.2c, v.3 - Web-based management
- Web GUI traffic monitoring
- Web-based MAC address browsing
- CLI (command line interface)
- RMON monitoring
- Telnet server (up to 8 sessions)
- SYSLOG
- ACL
- DHCP/Bootp relay
- DNS relay

Routing Table
ARP table editing supports Delete of individual IP address learned by dynamic learning

DGS-3324SRi
Technical Specifications

MIBs
- MIB-II (RFC 1213)
- Bridge MIB (RFC 1493)
- RMON MIB (RFC 1757)
- 802.1p Priority Queues (RFC 2674)
- 802.1Q VLAN MIB (RFC 2674)
- IGMP MIB (RFC 2833)
- If MIB (RFC 2233)
- Ethernet-like MIB (RFC 1643)
- RIP MIB (RFC 1724)
- OSPF MIB (RFC 1850)
- CIDR MIB (RFC 2096)
- D-Link enterprise MIB

RMON Groups
1, 2, 3, 9 (Alarm, Statistics, History, Event)

IP Number Self-identification
Through DHCP client, Bootp client

Firmware Upgrade
TFTP

Console Port
DB-9 RS-232 DCE

Physical & Environmental
Power Input
100 to 120 VAC or 200 to 240 VAC, 50/60 Hz
Internal power supply

Redundant Power Backup Support
Connector to connect to external redundant power supply

Power Consumption
90 watts (max.)

Ventilation
- 40 x 40 mm DC fans x 2
- 60 x 60 mm DC fans x 1

Dimensions
441 x 207 x 44 mm (device only)
19-inch rack-mount width, 1 U height

Weight
3.15 kg (device only)

Operating Temperature
0° to 40 $^{\circ}$C

Storage Temperature
-25° to 55 $^{\circ}$C

Humidity
5% to 95% non-condensing

Emission (EMI)
- FCC Class A
- CE Class A

Safety
CSA International

Ordering Information

Stacking Master Gigabit Layer 3 Switch

DGS-3324SRi	24 10/100/1000BASE-T ports, 8 combo SFP (mini GBIC), redundant power support

Optional Stackable Layer 3 Switch

DGS-3324SR	24 10/100/1000BASE-T ports, 4 combo SFP (mini GBIC), redundant power support

Optional SFP Transceiver

DEM-310GT	SFP transceiver for 1000BASE-LX, single-mode fiber, max. distance 10km, 3.3V
DEM-311GT	SFP transceiver for 1000BASE-SX, multi-mode fiber, max. distance 550m, 3.3V
DEM-314GT	SFP transceiver for 1000BASE-LHX, single-mode fiber, max. distance 40km, 3.3V
DEM-315GT	SFP transceiver for 1000BASE-ZX, single-mode fiber, max. distance 80km, 3.3V

Optional Redundant Power Supply

DPS-500	140-watt redundant power supply
DPS-800	2-slot redundant power supply chassis
DPS-900	8-slot redundant power supply chassis

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Rev. 01S (Oct. 2003)