

## Highlights

### High Availability

Redundancy features, including hot-swappable power supplies, and redundant fan trays maximise the availability of your network

### Leaf-Spine, Top-of-Rack (ToR)

10G and 40G port combinations to accommodate the high bandwidth requirements of leaf-spine or ToR architecture deployments

### Open Network Switching

ONIE support provides added flexibility and scalability with option to installed preferred Network Operation System or activate pre-loaded D-Link OS



## DXS-5000-54S/SI

# 54-Port 10G/40G Enterprise Aggregation Switch

## Features

### High Availability and Reliability

- Variety of high-speed interface combinations to meet different network requirements
- Two AC hot-swappable power modules for 1+1 redundancy and load sharing
- Modular, N+1 hot-swappable fan design

### Data Center and SDN Virtualisation

- Wire-speed, ultra-low latency switching
- Variety of 10G and 40G interfaces for high-density availability and uplink options
- Front-to-back airflow
- Supports OpenFlow v1.0/1.3
- Supports Virtual eXtensible LAN (VXLAN) network virtualisation
- 802.1Qau, 802.1Qbb, 802.1Qaz Data Center Bridging (DCB) features

### Flexibility and Compatibility

- Preloaded with Open Network Install Environment (ONIE) and D-Link OS

### Convenient Management

- RJ-45/mini-USB console port
- Dedicated management port
- Industry-standard CLI

The D-Link DXS-5000-54S/SI 54-Port 10G/40G Enterprise Aggregation Switch features high port density, routing, and ultra-low latency, designed to be deployed as aggregation switches for enterprise as well as Top-of-Rack (ToR) or leaf-spine switches in data center applications. The DXS-5000-54S/SI switch offers a combination of high-capacity SFP+ and QSFP+ ports to accommodate the scale and requirements of enterprises and data centers. It deliver high performance, flexibility, fault tolerance, and advanced software features for maximum return on investment. With ONIE support, the DXS-5000-54S/SI provides the option for managing and expanding enterprise and data center infrastructures in a Software-defined Networking (SDN) environment.

## High Availability and Reliability

The DXS-5000-54S/SI features a modular fan and power supply design for a high availability architecture. The hot-swappable design means that fans and power supplies can be replaced without affecting switch operation. Load sharing enables both power supplies to evenly distribute load to increase reliability and lifetime. Meanwhile, 1+1 redundancy minimises downtime in case of a single power supply failure.

## Comprehensive Layer 2/3 Functionality

The DXS-5000-54S/SI features an extensive L2 and L3 feature set to meet the demands of enterprise applications. Layer 2 features include L2 switching, L2 multicast, advanced Quality of Service (QoS), and robust security features. Meanwhile, the DXS-5000-54S/SI offers advanced L3 routing for enterprise integration, including OSPF, BGP, Graceful Restart, Bidirectional Forwarding Detection (BFD), and L3 multicast.

### 54-Port 10G/40G Enterprise Aggregation Switch

#### Virtualisation and Data Center Features

VXLAN allows network administrators to deploy larger and more flexible VLAN architectures. Using a 24 bit ID, VXLAN greatly increases the number of simultaneous VLANs. Compared to the 4096 limit of traditional VLAN protocols, VXLAN enables the deployment of up to 16 million isolated logical networks across Layer 3 subnets, to accommodate the increasing scale of virtualised cloud environments.

Data Center Bridging (DCB) is an essential set of enhancements to Ethernet for networking in data center environments. The D-Link OS for the DXS-5000-54S/SI switch supports several core components of Data Center Bridging (DCB) such as IEEE 802.1Qbb, IEEE 802.1Qaz, IEEE 802.1Qau, and VXLAN. IEEE 802.1Qbb (Priority-based Flow Control) provides flow control on specific priority levels to ensure there is no data loss during network congestion. IEEE 802.1Qaz (Enhanced Transmission Selection) manages the allocation of bandwidth amongst different traffic classes. IEEE 802.1Qau (Congestion Notification) provides congestion management for data flows within network domains to avoid congestion.

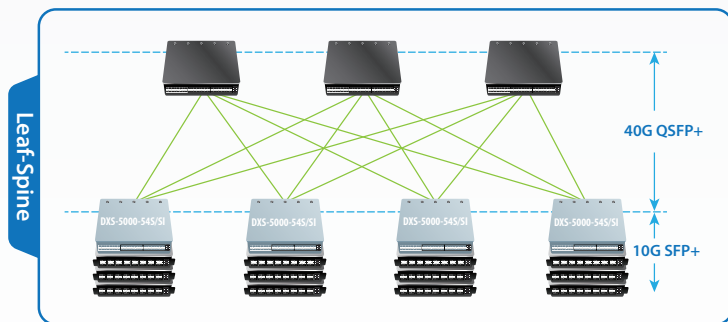
#### Bare Metal and Open Networking Switches

The DXS-5000-54S/SI support open networking, providing IT professionals with innovative third-party operating systems and software options. This lowers costs by separating software from hardware and increases network agility and flexibility. With support for standards-based tools and standards-based applications, open networking simplifies scalability and future-proofs the network.

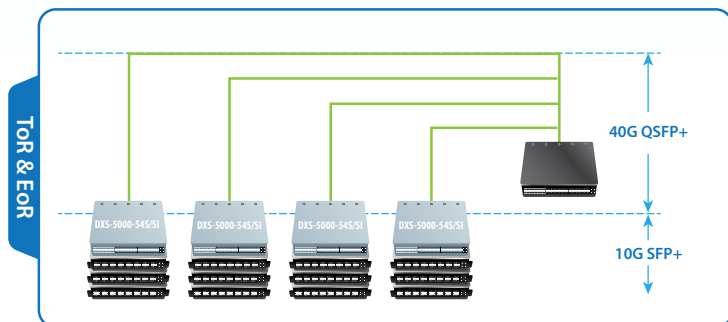
The DXS-5000-54S/SI is pre-loaded with Open Network Install Environment (ONIE). ONIE is an open source install environment that acts as an enhanced boot loader. This small Linux operating system allows administrators to install the network operating system(s) of choice as part of the data center provisioning process in the same manner that servers are provisioned. The ability to pick and choose software based on practical requirements eliminates the restrictions imposed by vendor-locked software environments.

#### Deployment Scenarios

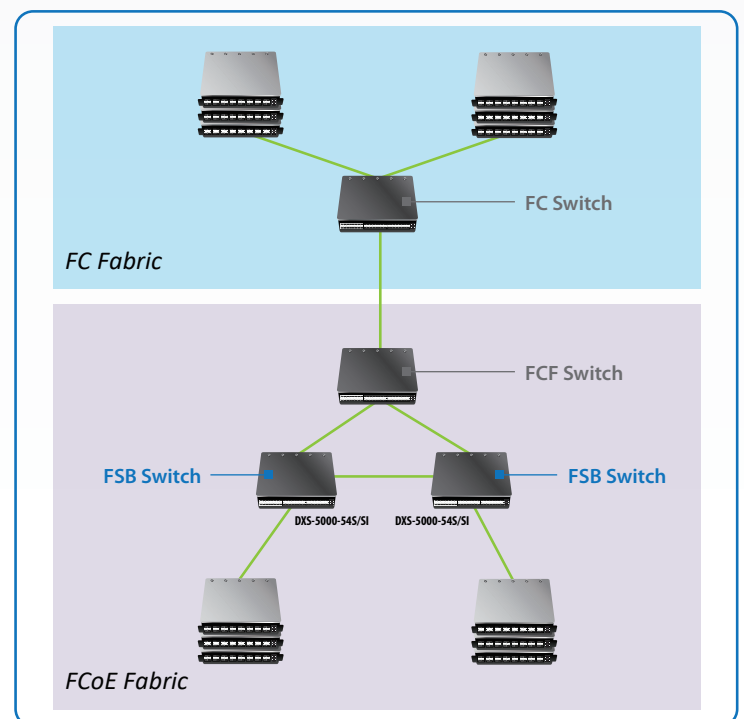
##### Leaf-Spine Configuration



##### Top of Rack (ToR) / End of Row (EoR) Configuration



##### Fibre Channel over Ethernet (FCoE) Configuration



**54-Port 10G/40G Enterprise Aggregation Switch**

Technical Specifications	
General	DXS-5000-54S/SI
Interfaces	<ul style="list-style-type: none"> <li>• 48 x 10G SFP+ ports</li> <li>• 6 x 40G QSFP+ ports</li> <li>• 1 x USB 2.0 port</li> </ul>
Console Port	<ul style="list-style-type: none"> <li>• 1 x mini-USB console port</li> </ul>
OOB Management Port	<ul style="list-style-type: none"> <li>• 1 x 10/100/1000BASE-T RJ-45 port</li> </ul>
Performance	
Switching Capacity	<ul style="list-style-type: none"> <li>• 1.44 Tbps</li> </ul>
Max. Forwarding Rate	<ul style="list-style-type: none"> <li>• 1,071 Mpps (1.071 Bpps)</li> </ul>
Packet Buffer Memory	<ul style="list-style-type: none"> <li>• 12 MB</li> </ul>
MAC Address Table	<ul style="list-style-type: none"> <li>• 288K</li> </ul>
Physical	
Power Input	<ul style="list-style-type: none"> <li>• 1+1 redundant power supply design</li> <li>• Input: 100 to 240 V AC, 50/60 Hz</li> </ul>
Maximum Power Consumption	<ul style="list-style-type: none"> <li>• 295 W</li> </ul>
Heat Dissipation (Max.)	<ul style="list-style-type: none"> <li>• 1006.58 BTU/hr</li> </ul>
Fans	<ul style="list-style-type: none"> <li>• 4 x fans</li> </ul>
Acoustics	<ul style="list-style-type: none"> <li>• Max: 74 dB</li> <li>• Min: 62 dB</li> </ul>
Dimensions (W x D x H)	<ul style="list-style-type: none"> <li>• 440 x 406 x 44 mm (17.32 x 16 x 1.73 inch)</li> </ul>
Weight	<ul style="list-style-type: none"> <li>• 9 kg (19.8 lbs)</li> </ul>
Operating Temperature	<ul style="list-style-type: none"> <li>• 0 to 45 °C (32 to 113 °F)</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 to 70 °C (-40 to 158 °F)</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• 5% to 95% RH, non-condensing</li> </ul>
Storage Humidity	<ul style="list-style-type: none"> <li>• 5% to 95% RH, non-condensing</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 205,000 hours</li> </ul>
Certifications	
Safety	<ul style="list-style-type: none"> <li>• cULus</li> <li>• CCC</li> <li>• BSMI</li> <li>• CB</li> <li>• CE</li> </ul>
EMI/EMC	<ul style="list-style-type: none"> <li>• FCC/IC</li> <li>• CCC</li> <li>• CB</li> <li>• CE</li> <li>• BSMI</li> </ul>

**54-Port 10G/40G Enterprise Aggregation Switch**

Software Features (D-Link OS)		
L2 Features	<ul style="list-style-type: none"> <li>• MAC address table               <ul style="list-style-type: none"> <li>• Up to 288K entries</li> </ul> </li> <li>• 802.3ad Link Aggregation               <ul style="list-style-type: none"> <li>• Max. 64 groups per device</li> <li>• Max. 32 ports per group</li> </ul> </li> <li>• Spanning Tree Protocol (STP)               <ul style="list-style-type: none"> <li>• 802.1D STP</li> <li>• 802.1w RSTP</li> <li>• 802.1s MSTP</li> </ul> </li> <li>• BPDU Filter/Guard</li> <li>• Loop Guard</li> <li>• TCN Guard</li> <li>• Root Guard</li> </ul>	<ul style="list-style-type: none"> <li>• Supports 802.3x Flow Control</li> <li>• Jumbo frame               <ul style="list-style-type: none"> <li>• Up to 9 Kb</li> </ul> </li> <li>• Port mirroring               <ul style="list-style-type: none"> <li>• Supports One-to-One, Many-to-One</li> <li>• Supports mirroring for Tx/Rx/Both</li> <li>• Supports up to 4 mirroring groups</li> </ul> </li> <li>• Flow mirroring               <ul style="list-style-type: none"> <li>• Supports Rx mirroring</li> </ul> </li> <li>• VLAN mirroring</li> <li>• RSPAN</li> <li>• Loopback Detection (LBD)</li> </ul>
L2 Multicast Features	<ul style="list-style-type: none"> <li>• IGMP Snooping               <ul style="list-style-type: none"> <li>• IGMP Snooping v1/v2/v3</li> <li>• IGMP Fast Leave</li> </ul> </li> <li>• Supports up to 256 IGMP groups</li> <li>• Per-VLAN IGMP Snooping</li> <li>• IGMP Snooping Querier</li> </ul>	<ul style="list-style-type: none"> <li>• MLD Snooping               <ul style="list-style-type: none"> <li>• MLD Snooping v1/v2</li> <li>• Supports up to 256 MLD groups</li> <li>• Per-VLAN MLD Snooping</li> <li>• MLD Snooping Querier</li> </ul> </li> </ul>
L3 Features	<ul style="list-style-type: none"> <li>• IP interfaces               <ul style="list-style-type: none"> <li>• Supports 128 IP interfaces</li> </ul> </li> <li>• ARP               <ul style="list-style-type: none"> <li>• Supports 6K ARP entries</li> <li>• Supports 256 static ARP entries</li> </ul> </li> <li>• IPv6 Neighbor Discovery (ND)               <ul style="list-style-type: none"> <li>• Supports up to 2560 ND entries</li> <li>• Supports up to 32 static ND entries</li> </ul> </li> <li>• Gratuitous ARP</li> </ul>	<ul style="list-style-type: none"> <li>• VRRP v2</li> <li>• UDP Helper</li> <li>• ICMP Router Discovery Protocol (IRDP)</li> <li>• Equal-Cost Multi-Path (ECMP)</li> <li>• IPv6 Tunneling               <ul style="list-style-type: none"> <li>• 6to4</li> <li>• GRE</li> </ul> </li> <li>• IPv4/IPv6 Loopback interface</li> </ul>
L3 Routing	<ul style="list-style-type: none"> <li>• Static routing               <ul style="list-style-type: none"> <li>• Max. 64 IPv4 entries</li> <li>• Max. 64 IPv6 entries</li> <li>• Supports Equal-Cost-Multi-Path Route (ECMP)</li> </ul> </li> <li>• OSPF               <ul style="list-style-type: none"> <li>• OSPF v2/v3</li> <li>• Stub/NSSA Area</li> <li>• OSPF Passive Interface</li> <li>• Text/MD5 authentication</li> <li>• Supports Equal-Cost-Multi-Path Route (ECMP)</li> </ul> </li> <li>• Supports 12K hardware routing entries shared by IPv4 and IPv6</li> <li>• Supports 20K hardware L3 forwarding entries shared by IPv4 and IPv6</li> </ul>	<ul style="list-style-type: none"> <li>• IPv4/IPv6 Default Route</li> <li>• Null Route</li> <li>• Route Preference</li> <li>• Route Redistribution</li> <li>• Graceful Restart (GR) for OSPF</li> <li>• Grace Restart (GR) Helper for RIP</li> <li>• Bidirectional Forwarding Detection (BFD) for OSPF</li> <li>• BGP               <ul style="list-style-type: none"> <li>• BGP4/BGP4+</li> <li>• Max. 256 BGP neighbors</li> <li>• Supports MD5 authentication</li> </ul> </li> <li>• Policy-based Route (PBR)</li> </ul>
L3 Multicast Features	<ul style="list-style-type: none"> <li>• IGMP v1/v2/v3</li> <li>• MLD v1/v2</li> <li>• DVMRP v3</li> <li>• PIM-SSM</li> </ul>	<ul style="list-style-type: none"> <li>• SSM Mapping for IPv4/IPv6</li> <li>• PIM-SM IPv4/IPv6</li> <li>• PIM-DM IPv4/IPv6</li> <li>• IGMP/MLD proxy</li> </ul>
VLAN	<ul style="list-style-type: none"> <li>• 802.1Q</li> <li>• Port-based VLAN</li> <li>• Multicast VLAN (ISM VLAN for IPv4/IPv6)</li> <li>• Private VLAN</li> </ul>	<ul style="list-style-type: none"> <li>• Double VLAN (Q-in-Q)</li> <li>• VLAN groups               <ul style="list-style-type: none"> <li>• Max. 4K VLAN groups</li> <li>• Max. 1~4093 VLAN IDs</li> </ul> </li> </ul>
Security	<ul style="list-style-type: none"> <li>• Broadcast/unicast/multicast control</li> <li>• SSH               <ul style="list-style-type: none"> <li>• Supports v1/v1.5/v2.0</li> <li>• Supports IPv4/IPv6 access</li> <li>• Configurable TCP port number</li> </ul> </li> <li>• Port security               <ul style="list-style-type: none"> <li>• Supports up to 600 MAC addresses per port</li> </ul> </li> <li>• DoS attack prevention</li> </ul>	<ul style="list-style-type: none"> <li>• IP Source Guard</li> <li>• DHCP Snooping</li> <li>• IPv6 Snooping</li> <li>• DHCP Server Screening</li> <li>• Dynamic ARP Inspection (DAI)</li> <li>• IPv6 Route Advertisement (RA) Guard</li> <li>• Duplicate Address Detection (DAD)</li> <li>• BPDU Attack Protection</li> </ul>

### 54-Port 10G/40G Enterprise Aggregation Switch

<p>Authentication, Authorisation, Accounting (AAA)</p>	<ul style="list-style-type: none"> <li>• 802.1X authentication</li> <li>• Supports port-based access control</li> <li>• Supports host-based access control</li> <li>• Identity-driven policy assignment               <ul style="list-style-type: none"> <li>• Dynamic VLAN assignment</li> <li>• QoS assignment</li> <li>• ACL assignment</li> </ul> </li> <li>• Guest VLAN</li> <li>• RADIUS authentication</li> </ul>	<ul style="list-style-type: none"> <li>• TACACS+ authentication</li> <li>• MAC-based Access Control (MAC)               <ul style="list-style-type: none"> <li>• Supports port/host-based access control</li> <li>• Compatible with RADIUS server authentication</li> </ul> </li> <li>• Authentication for management access</li> <li>• Privilege level for management access</li> <li>• Authentication database failover</li> <li>• RADIUS/TACACS+ accounting</li> </ul>
<p>Quality of Service (QoS)</p>	<ul style="list-style-type: none"> <li>• Max. of 8 priority queues per port</li> <li>• Queue handling               <ul style="list-style-type: none"> <li>• Strict Priority (SP)</li> <li>• Weighted Deficit Round Robin (WDRR)</li> </ul> </li> <li>• Congestion control               <ul style="list-style-type: none"> <li>• Weighted Random Early Detection (WRED)</li> </ul> </li> <li>• Bandwidth control               <ul style="list-style-type: none"> <li>• Queue-based bandwidth control; min. granularity of 1% of the port speed</li> </ul> </li> <li>• Three Color Marker               <ul style="list-style-type: none"> <li>• Two Rate Three Color Marker (trTCM)</li> <li>• Single Rate Three Color Marker (srTCM)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Class of Service (CoS)               <ul style="list-style-type: none"> <li>• Switch port</li> <li>• Outer 802.1p priority</li> <li>• ToS/IP preference</li> <li>• DSCP</li> </ul> </li> <li>• Policy Map               <ul style="list-style-type: none"> <li>• Remark 802.1p priority</li> <li>• Remark ToS/DSCP</li> <li>• Rate limiting</li> </ul> </li> </ul>
<p>Data Center Features</p>	<ul style="list-style-type: none"> <li>• Open Network Install Environment (ONIE)</li> <li>• FCoE Initialization Protocol (FIP) Snooping</li> <li>• 802.1Qau Congestion Notification (CN)</li> <li>• 802.1Qbb Priority-based Flow Control (PFC)</li> <li>• 802.1Qaz Enhanced Transmission Selection (ETS)</li> </ul>	<ul style="list-style-type: none"> <li>• Data Center Bridging Exchange (DCBX)</li> <li>• OpenFlow v1.3</li> <li>• Open API</li> <li>• Supports Puppet/Chef</li> <li>• Virtual eXtensible Local Area Network (VXLAN)</li> </ul>
<p>Access Control List (ACL)</p>	<ul style="list-style-type: none"> <li>• MAC Access List based on:               <ul style="list-style-type: none"> <li>• 802.1p priority mask</li> <li>• VID mask</li> <li>• Source/destination MAC address mask</li> <li>• Ether Type mask</li> </ul> </li> <li>• IP Access List based on:               <ul style="list-style-type: none"> <li>• Source/destination IP address mask</li> <li>• IP preference/ToS mask</li> <li>• TCP/UDP port number mask</li> </ul> </li> <li>• IPv6 Access List based on:               <ul style="list-style-type: none"> <li>• Source/destination IP address mask</li> <li>• TCP/UDP port number mask</li> </ul> </li> <li>• CPU interface filtering               <ul style="list-style-type: none"> <li>• Max. 1023 rule entries</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Time-based ACL</li> <li>• Max. ACL entries:               <ul style="list-style-type: none"> <li>• Max. ingress ACL entries: 16K</li> <li>• Max. egress ACL entries: 16K</li> <li>• Max. number of access control lists: 100</li> <li>• Max. VLAN access maps: 24</li> <li>• Max. ACL rule entries: 1K:</li> </ul> </li> </ul>
<p>Management</p>	<ul style="list-style-type: none"> <li>• Industry-standard CLI</li> <li>• Telnet server for IPv4/IPv6 access</li> <li>• TFTP client for IPv4/IPv6</li> <li>• FTP client for IPv4/IPv6</li> <li>• Secure FTP (SFTP) client for IPv4/IPv6</li> <li>• Multiple images</li> <li>• Dual configurations</li> <li>• SNMP               <ul style="list-style-type: none"> <li>• Supports SNMP v1/v2c/v3</li> <li>• Supports IPv4/IPv6</li> </ul> </li> <li>• SNMP traps</li> <li>• System log for IPv4/IPv6 Syslog server</li> <li>• Command logging</li> <li>• SMTP</li> <li>• RMON v1               <ul style="list-style-type: none"> <li>• Supports 1/2/3/9 groups</li> </ul> </li> <li>• DHCP/BOOTP Client support for IPv4/IPv6 DHCP/BOOTP server</li> <li>• DHCP Relay               <ul style="list-style-type: none"> <li>• Supports IPv4/IPv6</li> <li>• Option 82</li> <li>• Supports user-defined TLV for Option 82</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Event log</li> <li>• DNS client</li> <li>• SNMPv4</li> <li>• LLDP/LLDP-MED</li> <li>• CDP</li> <li>• UDLD</li> <li>• sFlow v5</li> <li>• DHCP auto-configuration</li> <li>• DHCP auto-image</li> <li>• Flash file system</li> <li>• DNS client for IPv4/IPv6</li> <li>• Debug command</li> <li>• Password recovery/encryption</li> <li>• Supports IPv4/IPv6 Ping/Traceroute</li> </ul>

# DXS-5000-54S/SI

## 54-Port 10G/40G Enterprise Aggregation Switch

Optional Management Software	
DV-700-N25-LIC	• D-View 7 - 25 node license
DV-700-N250-LIC	• D-View 7 - 250 node license
DV-700-P10-LIC	• D-View 7 - 10 probe license
Optional 10G SFP+ Transceivers	
DEM-431XT	• 10GBASE-SR, multi-mode, OM1: 33 m/ OM2: 82 m/ OM3: 300 m (without DDM)
DEM-432XT	• 10GBASE-LR, single-mode, 10 km (without DDM)
Optional 40G QSFP+ Transceivers	
DEM-QX01Q-SR4	• 40GBASE-SR4, multi-mode, OM3: 100 m / OM4: 150 m
DEM-QX10Q-LR4	• 40GBASE-LR4, single-mode, 10 km
Optional 10G SFP+ Direct Attach Cables	
DEM-CB100S	• 10G SFP+ 1 m Direct Attach Cable
DEM-CB300S	• 10G SFP+ 3 m Direct Attach Cable
DEM-CB100QXS	• 40G QSFP+ 1 m Direct Attach Cable
DEM-CB300QXS	• 40G QSFP+ 3 m Direct Attach Cable



For more information: [www.dlink.com](http://www.dlink.com)

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