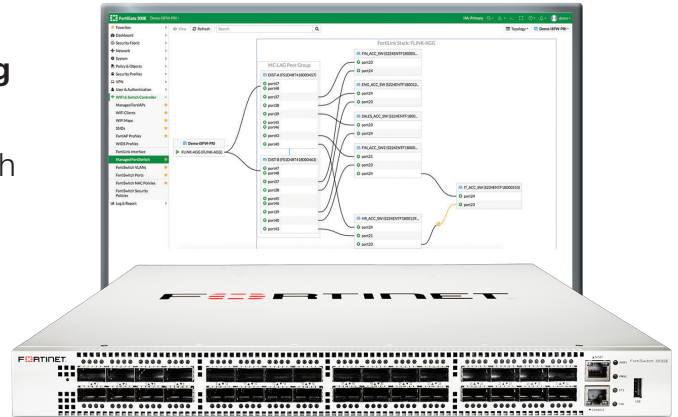# FURTINET®

FortiSwitch™ Data Center Series

FortiSwitch Data Center switches deliver a Secure, Simple, Scalable Ethernet solution with outstanding throughput, resiliency, and scalability. Virtualization and cloud computing have created dense high-bandwidth Ethernet networking requirements. FortiSwitch Data Center switches meet these challenges by providing a high performance 10 GE, 40 GE, or 100 GE capable switching platform, with a low Total Cost of Ownership. Ideal for Top of Rack server or firewall aggregation applications, as well as SD-Branch network core deployments, these switches are purpose-built to meet the needs of today's bandwidth intensive environments.

Security Fabric Integration through FortiLink

The FortiSwitch Data Center Series supports FortiGate management through FortiLink, extending the Fortinet Security Fabric to the Ethernet port level. This link allows the same policies configured and applied to FortiGate interfaces to be applied to the FortiSwitch Ethernet ports, reducing complexity and decreasing management cost. With network security and access layer functions enabled and managed through a single console, centralized policy management, including role-based access and control, are easy to implement and manage. Users or devices can be authenticated against the same database and have the same security policy applied regardless of how or where they connect to the network.

Product Offerings

FortiSwitch 1024D, 1048E, 3032D, and 3032E

Highlights

- High throughput Ethernet switch suitable for Top of Rack or large SD-Branch network deployments

- 1 GE, 10 GE, or 100 GE access ports, in a compact 1 RU form factor with 40 or 100 GE capable uplinks which includes breakout support for 2x50G, 4x25G, 4x10G, and 4x1G

- FortiGate management through FortiLink, enabling the Security Fabric

- Stackable up to 300 switches per FortiGate depending on model

- Dual hot swappable power supplies for redundancy

- Supports Wire-speed switching with both Store and Forward and Cut Through forwarding modes

Deployment

FortiLink Mode

FortiLink is an innovative proprietary management protocol that allows our FortiGate Security Appliance to seamlessly manage any FortiSwitch. FortiLink enables the FortiSwitch to become a logical extension of the FortiGate integrating it directly into the Fortinet Security Fabric. This management option reduces complexity and decreases management cost as network security and access layer functions are enabled and managed through a single console.
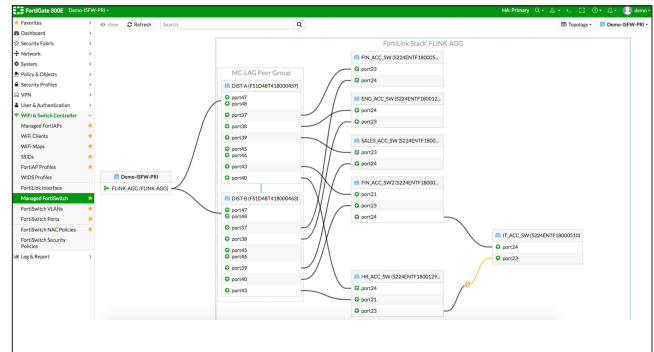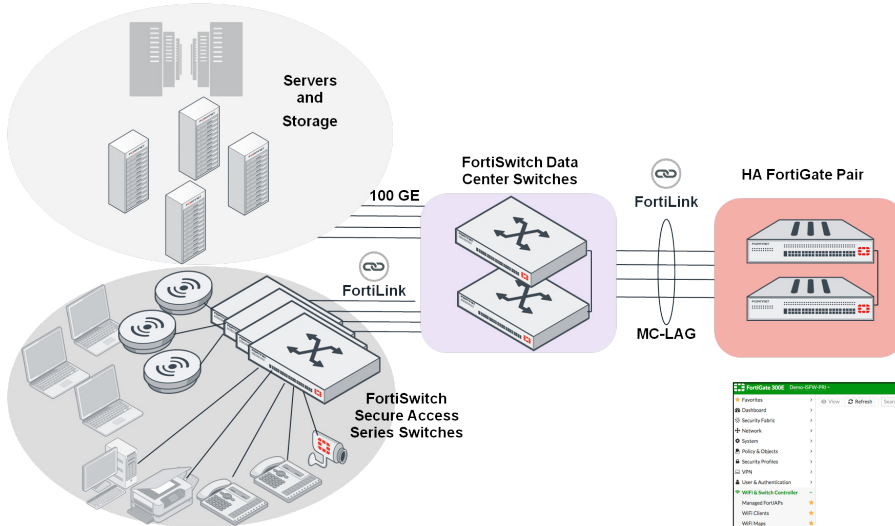
Standalone Mode

The FortiSwitch has a native GUI and CLI interface. All configuration and switch administration can be accomplished through either of these interfaces. Available ReSTful API's offer additional configuration and management options.

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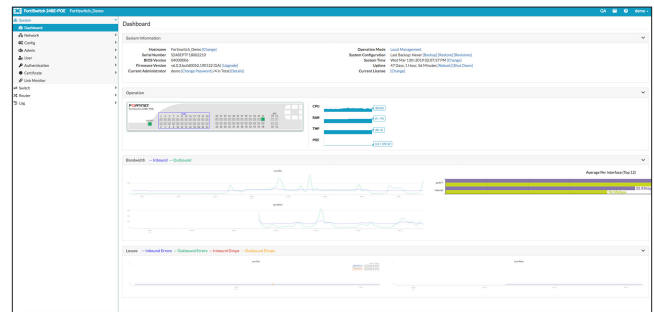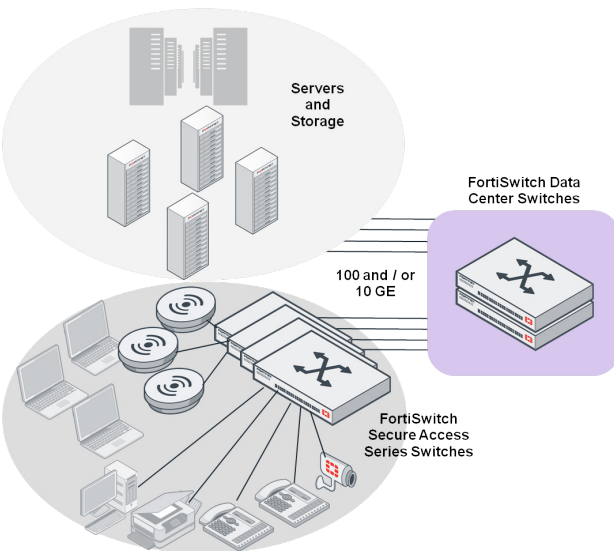
Hardware
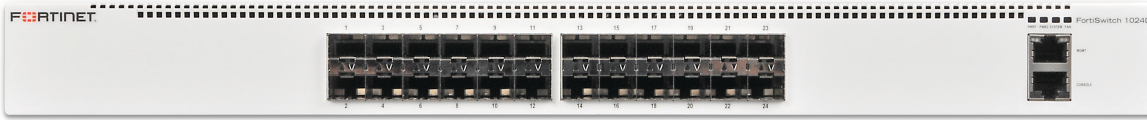
FortiSwitch 1024D — front

FortiSwitch 1024D — back

FortiSwitch 1048E — front

FortiSwitch 1048E — back

FortiSwitch 3032D — front

FortiSwitch 3032D — back

FortiSwitch 3032E — front

FortiSwitch 3032E — back

Features

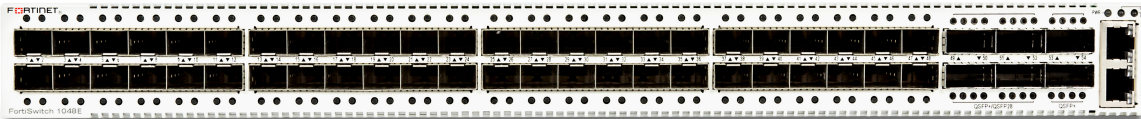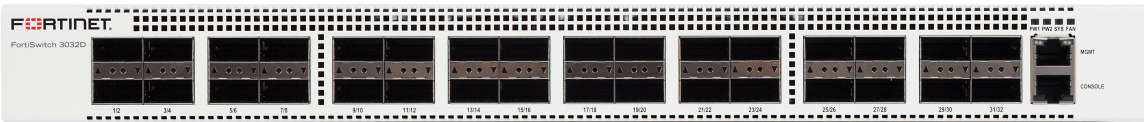|	FORTISWITCH D-SERIES FORTILINK MODE (WITH FORTIGATE)
Management and Configuration	
Auto Discovery of Multiple Switches	Yes
Number of Managed Switches per FortiGate	8 to 300 Depending on FortiGate Model (Please refer to admin-guide)
FortiLink Stacking (Auto Inter-Switch Links)	Yes
Software Upgrade of Switches	Yes
Centralized VLAN Configuration	Yes
Switch POE Control	Yes
Link Aggregation Configuration	Yes
Spanning Tree	Yes
LLDP/MED	Yes
IGMP Snooping	Yes
L3 Routing and Services	Yes (FortiGate)
Policy-Based Routing	Yes (FortiGate)
Virtual Domain	Yes (FortiGate)
Security and Visibility	
802.1x Authentication (Port-based, MAC-Based, MAB)	Yes
Syslog Collection	Yes
DHCP Snooping	Yes
Device Detection	Yes
MAC Black/While Listing	Yes (FortiGate)
Policy Control of Users and Devices	Yes (FortiGate)
UTM Features	
Firewall	Yes (FortiGate)
IPC, AV, Application Control, Botnet	Yes (FortiGate)
High Availability	
Support FortiLink FortiGate in HA Cluster	Yes
LAG support for FortiLink Connection	Yes
Active-Active Split LAG from FortiGate to FortiSwitches for Advanced Redundancy	Yes

	FORTISWITCH 1024D	FORTISWITCH 1048E	FORTISWITCH 3032D	FORTISWITCH 3032E
Layer 2				
Jumbo Frames	Yes	Yes	Yes	Yes
Auto-negotiation for port speed and duplex	Yes	Yes	Yes	Yes
IEEE 802.1D MAC Bridging/STP	Yes	Yes	Yes	Yes
IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)	Yes	Yes	Yes	Yes
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	Yes	Yes	Yes	Yes
STP Root Guard	Yes	Yes	Yes	Yes
Edge Port / Port Fast	Yes	Yes	Yes	Yes
IEEE 802.1Q VLAN Tagging	Yes	Yes	Yes	Yes
Private VLAN	Yes	Yes	Yes	Yes
IEEE 802.3ad Link Aggregation with LACP	Yes	Yes	Yes	Yes
Unicast/Multicast traffic balance over trunking port (dst-ip, dst-mac, src-dst-ip, src-dst-mac, src-ip, src-mac)	Yes	Yes	Yes	Yes
IEEE 802.1AX Link Aggregation	Yes	Yes	Yes	Yes
Spanning Tree Instances (MSTP/CST)	32/1	32/1	32/1	32/1
IEEE 802.3x Flow Control and Back-pressure	Yes	Yes	Yes	Yes
IEEE 802.1Qbb Priority-based Flow Control	Yes	Yes	Yes	Yes
IEEE 802.3u 100Base-TX	Yes	No	No	Yes
IEEE 802.3z 1000Base-SX/LX	Yes	Yes	Yes	Yes
IEEE 802.3ab 1000Base-T	Yes	Yes	No	Yes
IEEE 802.3ae 10 Gigabit Ethernet	Yes	Yes	Yes	Yes
IEEE 802.3 CSMA/CD Access Method and Physical Layer Specifications	Yes	Yes	Yes	Yes
Storm Control	Yes	Yes	Yes	Yes
MAC, IP, Ethertype-based VLANs	Yes	Yes	Yes	Yes
Virtual-Wire	Yes	Yes	Yes	Yes
Split Port	No	Yes	Yes	Yes

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Features

	FORTISWITCH 1024D	FORTISWITCH 1048E	FORTISWITCH 3032D	FORTISWITCH 3032E
Layer 3				
Static Routing (Hardware-based)	Yes	Yes	Yes	Yes
Routing Entries	16K	16K	16K	8K
L3 Host Entries	16K	32K	16K	32K
Dynamic Routing Protocols*	OSPFv2, RIPv2, VRRP, BGP, ISIS	OSPFv2, RIPv2, VRRP, BGP, ISIS	OSPFv2, RIPv2, VRRP, BGP, ISIS	OSPFv2, RIPv2, VRRP, BGP, ISIS
Multicast Protocols*	PIM-SSM	PIM-SSM	PIM-SSM	PIM-SSM
ECMP	Yes	Yes	Yes	Yes
Bidirectional Forwarding Detection (BFD)	Yes	Yes	Yes	Yes
DHCP Relay	Yes	Yes	Yes	Yes
IGMP Snooping	Yes	Yes	Yes	Yes
Security and Visibility				
Port Mirroring	Yes	Yes	Yes	Yes
Admin Authentication Via RFC 2865 RADIUS	Yes	Yes	Yes	Yes
IEEE 802.1x authentication Port-based	Yes	Yes	Yes	Yes
IEEE 802.1x Authentication MAC-based	Yes	Yes	Yes	Yes
IEEE 802.1x Guest and Fallback VLAN	Yes	Yes	Yes	Yes
IEEE 802.1x MAC Access Bypass (MAB)	Yes	Yes	Yes	Yes
IEEE 802.1x Dynamic VLAN Assignment	Yes	Yes	Yes	Yes
MAC-IP Binding	Yes	Yes	Yes	Yes
sFlow	Yes	Yes	Yes	Yes
ACL	Yes, 2K entries	Yes, 8K entries	Yes, 2K entries	Yes, 6K entries
IEEE 802.1ab Link Layer Discovery Protocol (LLDP)	Yes	Yes	Yes	Yes
IEEE 802.1ab LLDP-MED	Yes	Yes	Yes	Yes
DHCP-Snooping	Yes	Yes	Yes	Yes
Dynamic ARP Inspection	Yes	Yes	Yes	Yes
Sticky MAC	Yes	Yes	Yes	Yes
High Availability				
Multi-Chassis Link Aggregation (MCLAG)	Yes	Yes	Yes	Yes
Quality of Service				
IEEE 802.1p Based Priority Queuing	Yes	Yes	Yes	Yes
IP TOS/DSCP Based Priority Queuing	Yes	Yes	Yes	Yes
Management				
IPv4 and IPv6 Management	Yes	Yes	Yes	Yes
Telnet / SSH	Yes	Yes	Yes	Yes
HTTP / HTTPS	Yes	Yes	Yes	Yes
SNMP v1/v2c/v3	Yes	Yes	Yes	Yes
SNTP	Yes	Yes	Yes	Yes
Standard CLI and web GUI interface	Yes	Yes	Yes	Yes
Software download/upload: TFTP/FTP/GUI	Yes	Yes	Yes	Yes
Managed from FortiGate	Yes	Yes	Yes	Yes
Support for HTTP REST APIs for Configuration and Monitoring	Yes	Yes	Yes	Yes
Services				
IEEE 1588 PTP (Transparent Clock)	No	Yes	Yes	Yes

* Requires 'Advanced Features' License

RFC Compliance

RFC and MIB Support*	
BFD	**MIB**
RFC 5880: Bidirectional Forwarding Detection (BFD)	RFC 1724: RIPv2-MIB
RFC 5881: Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)	RFC 1850: OSPF Version 2 Management Information Base
RFC 5882: Generic Application of Bidirectional Forwarding Detection (BFD)	RFC 2233: The Interfaces Group MIB using SMIv2
BGP	RFC 2618: Radius-Auth-Client-MIB
RFC 1771: A Border Gateway Protocol 4 (BGP-4)	RFC 2620: Radius-Acc-Client-MIB
RFC 1965: Autonomous System Confederations for BGP	RFC 2674: Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN extensions
RFC 1997: BGP Communities Attribute	
RFC 2545: Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing	RFC 2787: Definitions of Managed Objects for the Virtual Router Redundancy Protocol
RFC 2796: BGP Route Reflection - An Alternative to Full Mesh IBGP	RFC 2819: Remote Network Monitoring Management Information Base
RFC 2842: Capabilities Advertisement with BGP-4	RFC 2932: IPv4 Multicast Routing MIB
RFC 2858: Multiprotocol Extensions for BGP-4	RFC 2934: Protocol Independent Multicast MIB for IPv4
RFC 4271: BGP-4	RFC 3289: Management Information Base for the Differentiated Services Architecture
RFC 6286: Autonomous-System-Wide Unique BGP Identifier for BGP-4	RFC 3433: Entity Sensor Management Information Base
RFC 6608: Subcodes for BGP Finite State Machine Error	RFC 3621: Power Ethernet MIB
RFC 6793: BGP Support for Four-Octet Autonomous System (AS) Number Space	RFC 6933: Entity MIB (Version 4)
RFC 7606: Revised Error Handling for BGP UPDATE Messages	**OSPF**
RFC 7607: Codification of AS 0 Processing	RFC 1583: OSPF version 2
RFC 7705: Autonomous System Migration Mechanisms and Their Effects on the BGP AS_PATH Attribute	RFC 1765: OSPF Database Overflow
RFC 8212: Default External BGP (EBGP) Route Propagation Behavior without Policies	RFC 2328: OSPF version 2
	RFC 2370: The OSPF Opaque LSA Option
RFC 8654: Extended Message Support for BGP	RFC 2740: OSPF for IPv6
DHCP	RFC 3101: The OSPF Not-So-Stubby Area (NSSA) Option
RFC 2131: Dynamic Host Configuration Protocol	RFC 3137: OSPF Stub Router Advertisement
RFC 3046: DHCP Relay Agent Information Option	RFC 3623: OSPF Graceful Restart
RFC 7513: Source Address Validation Improvement (SAVI) Solution for DHCP	RFC 5340: OSPF for IPv6 (OSPFv3)
IP/IPv4	RFC 5709: OSPFv2 HMAC-SHA Cryptographic Authentication
RFC 3168: The Addition of Explicit Congestion Notification (ECN) to IP	RFC 6549: OSPFv2 Multi-Instance Extensions
RFC 5227: IPv4 Address Conflict Detection	RFC 6845: OSPF Hybrid Broadcast and Point-to-Multipoint Interface Type
RFC 5517: Cisco Systems' Private VLANs: Scalable Security in a Multi-Client Environment	RFC 6860: Hiding Transit-Only Networks in OSPF
RFC 7039: Source Address Validation Improvement (SAVI) Framework	RFC 7474: Security Extension for OSPFv2 When Using Manual Key Management
IP Multicast	RFC 7503: OSPF for IPv6
RFC 2362: Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification	RFC 8042: CCITT Draft Recommendation T.4
RFC 2710: Multicast Listener Discovery (MLD) for IPv6 (MLDv1)	RFC 8362: OSPFv3 Link State Advertisement (LSA) Extensibility
RFC 4541: Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches	**OTHER**
	RFC 2030: SNTP
RFC 4605: Internet Group Management Protocol (IGMP)/Multicast Listener Discovery (MLD)-Based Multicast Forwarding ("IGMP/MLD Proxying")	RFC 3176: InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks
RFC 4607: Source-Specific Multicast for IP	RFC 3768: VRRP
IPv6	RFC 3954: Cisco Systems NetFlow Services Export Version 9
RFC 2464: Transmission of IPv6 Packets over Ethernet Networks: Transmission of IPv6 Packets over Ethernet Networks	RFC 5101: Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of Flow Information
RFC 2474: Definition of the Differentiated Services Field (DS Field) in the and IPv6 Headers (DSCP)	RFC 5798: VRRPv3 (IPv4 and IPv6)
RFC 2893: Transition Mechanisms for IPv6 Hosts and Routers	**RADIUS**
RFC 4213: Basic Transition Mechanisms for IPv6 Hosts and Router	RFC 2865: Admin Authentication Using RADIUS
RFC 4291: IP Version 6 Addressing Architecture	RFC 2866: RADIUS Accounting
RFC 4443: Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification	RFC 5176: Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)
RFC 4861: Neighbor Discovery for IP version 6 (IPv6)	
RFC 4862: IPv6 Stateless Address Auto configuration	
RFC 5095: Deprecation of Type 0 Routing Headers in IPv6	**RIP**
RFC 6724: Default Address Selection for Internet Protocol version 6 (IPv6)	RFC 1058: Routing Information Protocol
RFC 7113: IPv6 RA Guard	RFC 2080: RIPng for IPv6
RFC 8200: Internet Protocol, Version 6 (IPv6) Specification	RFC 2082: RIP-2 MD5 Authentication
RFC 8201: Path MTU Discovery for IP version 6	RFC 2453: RIPv2
IS-IS	RFC 4822: RIPv2 Cryptographic Authentication
RFC 1195: Use of OSI IS-IS for Routing in TCP/IP and Dual Environments	**SNMP**
RFC 5308: Routing IPv6 with IS-IS	RFC 1157: SNMPv1/v2c
MIB	RFC 2571: Architecture for Describing SNMP
RFC 1213: MIB II parts that apply to FortiSwitch 100 units	RFC 2572: SNMP Message Processing and Dispatching
RFC 1354: IP Forwarding Table MIB	RFC 2573: SNMP Applications
RFC 1493: Bridge MIB	RFC 2576: Coexistence between SNMP versions
RFC 1573: SNMP MIB II	
RFC 1643: Ethernet-like Interface MIB	

* RFC and MIB supported by FortiSwitch Operating System. Check feature matrix in administration guide for model specific support.

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Specifications

	FORTISWITCH 1024D	FORTISWITCH 1048E
Hardware Specifications		
Total Network Interfaces (Proposed)	24x GE/10 GE SFP+ ports	48x GE/10 GE SFP+ ports and 6x 40 GE QSFP+ ports or 4x 100 GE QSFP28 ports
10/100/1000 Service Ports	1	1
RJ-45 Serial Console Port	1	1
Form Factor	1 RU Rack Mount	1 RU Rack Mount
System Specifications		
Switching Capacity (Duplex) *	480 Gbps	1760 Gbps
Packets Per Second (Duplex) 64 bytes	714 Mpps	1518 Mpps
Mac Address Storage	128 K	144 K
Network Latency	< 800ns	< 800ns
VLANs Supported	4 K	4 K
IPv4/IPv6 Routing	Yes	Yes
Link Aggregation Group Size	Up to 24	Up to 48
Total Link Aggregation Groups	Up to number of ports	Up to number of ports
Queues/Port	8	8
Packet Buffers	9 MB	12 MB
DRAM	2 GB	8 GB
NAND	128 MB	128 MB
Dimensions		
Height x Depth x Width (inches)	1.71 x 18.11 x 17.26	1.69 x 18.11 x 17.26
Height x Depth x Width (mm)	43.5 x 460 x 438.5	43 x 460 x 438.5
Weight	17.62 lbs (8 kg)	18.96 lbs (8.6 kg)
Environment		
Power Required	100–240V AC, 50–60 Hz	100–240V AC, 50–60 Hz
Power Consumption (Maximum)	up to 140 W	up to 181.7 W
Power Supply	Dual hot swappable AC	Dual hot swappable AC
Heat Dissipation	369.87 BTU/h	620.4 BTU/h
Operating Temperature	32–104°F (0–40°C)	32–113°F (0–45°C)
Storage Temperature	-13–158°F (-25–70°C)	-4–158°F (-20–70°C)
Humidity	10–90% RH non-condensing	10–90% RH non-condensing
Air Flow	Front to back	Front to back
Mean Time Between Failures	> 10 years	> 10 years
Certification and Compliance		
	FCC, CE, RCM, VCCI, BSMI, UL, CB, RoHS2	
Warranty		
Fortinet Warranty	Limited lifetime** warranty on all models	

* Full line rate with minimum packet size of 427bytes on FS-1048E
** Fortinet Warranty Policy: http://www.fortinet.com/doc/legal/EULA.pdf

Specifications

	FORTISWITCH 3032D	FORTISWITCH 3032E
Hardware Specifications		
Total Network Interfaces (Proposed)	32x 40 GE QSFP+ ports	32x 40 GE / 100 GE QSFP+ / QSFP28 ports
10/100/1000 Service Ports	1	1
RJ-45 Serial Console Port	1	1
Form Factor	1 RU Rack Mount	1 RU Rack Mount
System Specifications		
Switching Capacity (Duplex) *	2560 Gbps	6400 Gbps
Packets Per Second (Duplex) 64 bytes	2858 Mpps	5952 Mpps
Mac Address Storage	288 K	40 K
Network Latency	< 800ns	< 1 us
VLANs Supported	4 K	4 K
IPv4/IPv6 Routing	Yes	Yes
Link Aggregation Group Size	Up to number of ports	Up to number of ports
Total Link Aggregation Groups	Up to number of ports	Up to number of ports
Queues/Port	8	8
Packet Buffers	12 MB	16 MB
DRAM	2 GB	8 GB
NAND	128 MB	128 MB
Dimensions		
Height x Depth x Width (inches)	1.71 x 18.11 x 17.26	1.69 x 18.11 x 17.26
Height x Depth x Width (mm)	43.5 x 460 x 438.5	43 x 460 x 438.5
Weight	19.40 lbs (8.8 kg)	19.34 lbs (8.77 kg)
Environment		
Power Required	100–240V AC, 50–60 Hz	100–240V AC, 50–60 Hz
Power Consumption (Maximum)	up to 387 W	up to 463.8 W
Power Supply	Dual hot swappable AC	Dual hot swappable AC
Heat Dissipation	656.83 BTU/h	1582.5 BTU/h
Operating Temperature	32–104°F (0–40°C)	32–104°F (0–40°C)
Storage Temperature	-13–158°F (-25–70°C)	-4–158°F (-20–70°C)
Humidity	10–90% RH non-condensing	10–90% RH non-condensing
Air Flow	Front to back	Front to back
Mean Time Between Failures	> 10 years	> 10 years
Certification and Compliance		
	FCC, CE, RCM, VCCI, BSMI, UL, CB, RoHS2	
Warranty		
Fortinet Warranty	Limited lifetime** warranty on all models	

* Full line rate with minimum packet size of 250bytes on FS-3032E, 194bytes on FS-3032D
** Fortinet Warranty Policy: http://www.fortinet.com/doc/legal/EULA.pdf

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Order Information

Product	SKU	Description
FortiSwitch 1024D	FS-1024D	Layer 2/3 FortiGate switch controller compatible switch with 24x GE/10 GE SFP/SFP+ slots. Dual AC power supplies.
FortiSwitch 1048E	FS-1048E	Layer 2/3 FortiGate switch controller compatible switch with 48x GE/10 GE SFP/SFP+ slots and 6x 40 GE QSFP+ or 4x 100 GE QSFP28. Dual AC power supplies.
FortiSwitch 3032D	FS-3032D	Layer 2/3 FortiGate switch controller compatible switch with 32x 40 GE QSFP+ slots. Dual AC power supplies.
FortiSwitch-3032E	FS-3032E	Layer 2/3 FortiGate switch controller compatible switch with 32x 100 GE QSFP28, Dual AC power supplies.
FortiSwitch Cloud Management License*	FC-10-WMSC1-190-02-DD	FortiSwitch Cloud Management License subscription 1 Year Contract.
FortiGate Cloud Management*	FC-10-0030E-131-02-DD	FortiGate Cloud Management, Analysis and 1 Year Log Retention.
Accessories		
FortiSwitch Advanced Features License	FS-SW-LIC-1000	SW License for FS-1000 Series Switches to activate Advanced Features.
	FS-SW-LIC-3000	SW License for FS-3000 Series Switches to activate Advanced Features.
AC Power Supply	FS-PSU-460	Spare AC power supply for FS-1048E/1024D
	FS-PSU-800	Spare AC power supply for FS-3032E

* When managing a FortiSwitch with a FortiGate via FortiGate Cloud, no additional license is necessary.

For details of Transceiver modules, see the Fortinet Transceivers datasheet.

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