DATA SHEET

FortiDDoS™

Available in:

Appliance Virtual Machine

FortiDDoS 200F, 1500E, 1500E-DC, 1500F, 2000E, 2000E-DC, 2000F, and VM04/08/16

Distributed Denial of Service (DDoS) attacks remain a top threat to network security and have evolved in almost every way to do what they do best: shut down access to your vital online services.

Unlike intrusion and malware attacks, DDoS attackers have learned that they don't need to attack only end-point servers to shut you down. They attack any IP address that routes to your network: unused IP addresses, ISP link subnets, or Firewall/Proxy/WiFi Gateway public IP addresses.

CDN and DNS-based cloud mitigation cannot protect you from these attacks. What is the impact to your business if your users cannot reach cloud services because your firewall is DDoSed?

Sophisticated multi-vector and multi-layer DDoS attacks use direct and reflected packets where the spoofed, randomized source IP addresses are impossible to ACL. These attacks are increasingly common as Mirai-style code has morphed into many variants and has been commercialized by providers of "stresser" sites. Anyone can create large, anonymous attacks for a few dollars.

DDoS is not an everyday occurrence for security teams and they cannot be expected to understand the thousands of attack variants that target your network.

To combat these attacks, you need a solution that dynamically and automatically protects a large attack surface.

A Different and Better Approach to DDoS Attack Mitigation

FortiDDoS massively parallel machine-learning architecture delivers the fastest and most accurate DDoS attack mitigation available.

In place of pre-defined or subscription-based signatures to identify some attack patterns, FortiDDoS uses autonomous machine learning to build an adaptive baseline of normal activity from hundreds-of-thousands of parameters and then monitors traffic patterns against those baselines. Should an attack begin, FortiDDoS sees the deviation and immediately takes action to mitigate it, often from the first packet.

FortiDDoS monitors, responds, and reports on the mitigations it has performed, not attacks where your team or the vendor ERT/NoC must intervene.

Highlights

- 100% packet inspection for Layer 3, 4, and 7 DDoS attack identification and mitigation, simultaneously monitoring hundreds of thousands of parameters — a massively-parallel computing architecture
- 100% Machine Learning DDoS detection
- Completely invisible to attackers with no IP and no MAC addresses in the data path. FortiDDoS is not a routing or terminating Layer 3 device
- Continuous threat evaluation to minimize false positive detections
- Advanced DNS and NTP DDoS mitigation with advanced DTLS mitigation on F-Series
- Hybrid On-premise/Cloud mitigation available with Open Attack Signaling

HIGHLIGHTS

Powerful Parallel Architecture = Flexible, Autonomous Defenses

FortiDDoS protects you from known and "zero-day" attacks without creating local or downloading subscription signatures for mitigation. Other vendors try to conserve CPU real-time by inspecting a relatively small number of parameters at a low sample rate, unless and until an explicit signature is created. FortiDDoS' massively parallel architecture samples 100% of even the smallest packets, for over 230,000 parameters for each Protection Profile. This method allows FortiDDoS to operate completely autonomously, finding some attacks on the FIRST packet and all attacks within two seconds — broader and faster mitigation than any other vendor or method. There is no need to adjust settings, read pcaps, or add regex-style manual signatures or ACLs in the middle of attacks. While attacks are being mitigated, FortiDDoS continues to monitor all other parameters to instantly react to added or changed vectors.

The Resurgence of Botnets

Easily-compromised IoT devices have allowed Botnet attacks to rise again and massive IoT growth assures us they are here to stay. While individual devices have little power, large groups can generate record traffic. Attackers want to hide the real source IP addresses of botted devices so UDP, SYN, TCP Out-of-State (FIN/ACK/RST), DNS and Protocol direct and reflected floods using spoofed source IP addresses are back in vogue. Attackers can launch an unprecedented variety of simultaneous attack vectors. Small-packet floods stress routers, firewalls, and many DDoS appliances, preventing full inspection with unexpected results. FortiDDoS' 100% inspected small-packet rate is class-leading.

DNS-Based Attacks

Botnet-driven DNS attacks are popular because they can target any type of infrastructure or they can co-opt your DNS servers to attack others with reflected DDoS attacks. FortiDDoS is the only DDoS mitigation platform that inspects 100% of all DNS traffic in both directions, to protect against all types of DDoS attacks directed at, or from DNS servers. It validates over 30 different parameters on every DNS packet at up to 12 M Queries/second. Its built-in cache can offload the local server during floods. FortiDDoS's innovative DQRM feature stops inbound Reflected DNS attacks from the very first packet. Its Legitimate Query and DNS Allowlist features uniquely prevent your Authoritative DNS servers from becoming reflective attackers.

Security Fabric

FortiDDoS complements Fortinet's full suite of Security Fabric products, each of which uses purpose-built hardware with dedicated engineering and support resources to provide best-in-class focused protection. FortiDDoS displays system performance and mitigation activities in real-time on FortiOS Security Fabric Dashboards, providing a single-pane-of-glass view of DDoS threats and mitigations along with other Security Fabric products and partners.

Hybrid On-premise/Cloud DDoS Mitigation

While FortiDDoS can mitigate any DDoS attack to the limit of the incoming bandwidth, large attacks can saturate incoming links, forcing ISP routers to drop good traffic. FortiDDoS's open and documented Attack Signaling API allows our Security Fabric partners to provide you a choice of best-in-class hybrid CPE/cloud DDoS mitigation when attacks threaten to congest upstream resources. FortiDDoS inspects incoming GRE clean traffic from cloud DDoS providers to ensure continuity of logging and reporting, and complete threat mitigation. FortiDDoS on-premise appliances can also provide your ISP with Flowspec scripts to support diversion and multi-parameter blocking of attack traffic.

Always-On Inline vs. Out-of-Path Mitigation

Many hosting providers, MSSPs, and ISPs are moving away from out-of-path detection, diversion, and scrubbing as too limited and too slow for important infrastructure. Netflow-based detection and mitigation monitor a few different attack types. Because of that, mitigations can be overly-broad, blocking all UDP traffic when an unmonitored UDP Reflection port is attacking, for example. With Google services and all conferencing services like Zoom and Teams using UDP, this situation is not conducive to business continuity.

FortiDDoS mitigates more than 150 attack events, many with depth. For example, FortiDDoS monitors more than 10 000 possible UDP Reflection ports, blocking the attacking port, not all UDP.

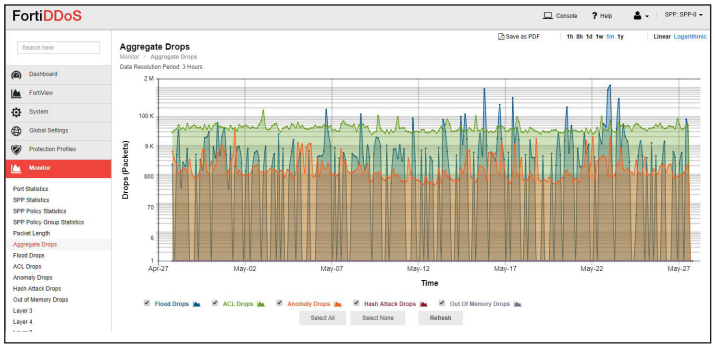
Studies are showing that 75% of DDoS attacks last less than 15 minutes. Customers are also seeing multi-vector attacks, attacks that sequentially change vectors and pulsed attacks that start and stop frequently. FortiDDoS begins mitigating in less than two seconds and its massively-parallel detection and mitigation ensures multi-vector, sequential and pulsed attacks are seen and stopped with no user intervention.

All FortiDDoS models offer High Availability and all models offer Optical Bypass (to 100 GE) to ensure network continuity in the event of system failures.

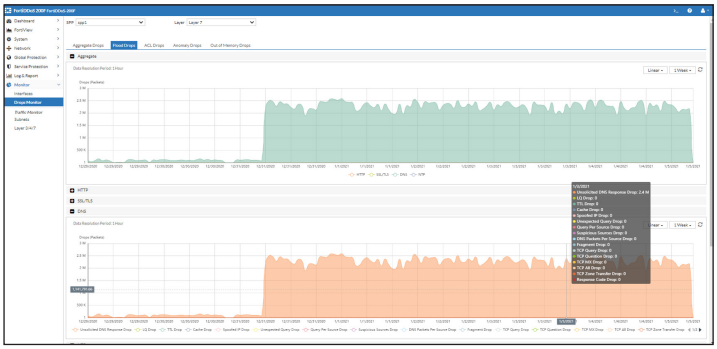
FEATURES

100% Machine Learning Detection	FortiDDoS doesn't rely on signature files that need to be updated with the latest threats so you're protected from both known and unknown "zero-day" attacks. No "threat-protection" subscriptions required. Saves OPEX.
Massively Parallel Architecture	Parallel architecture provides 100% packet inspection with bidirectional detection and mitigation of Layer 3, 4, and 7 DDoS attacks even at the smallest packets sizes. Get the performance you pay for.
Continuous Attack Evaluation	Minimizes the risk of "false positive" detection by reevaluating the attack to ensure that "good" traffic isn't disrupted. Less management time needed.
Advanced DNS Protection	FortiDDoS provides 100% inspection of all DNS Query and Response traffic up to 12 million QPS, for protection from a broad range of DNS-based volumetric, application and anomaly attacks. DNS Reflection floods are stopped from the FIRST packet.
Advanced NTP Protection (selected models)	FortiDDoS provides 100% inspection of all NTP Query and Response traffic up to 6 million QPS. NTP Reflection floods are stopped from the FIRST packet.
Continuous Learning	With continuous background learning and minimal configuration, FortiDDoS will automatically build normal traffic and resources behavior profiles saving you time and IT management resources.
Autonomous Mitigation	No operator intervention required for any type or size of attack.
Hybrid On-premise/Cloud Support	Open, documented API allows integration with third-party cloud DDoS mitigation providers for flexible deployment options and protection from large-scale DDoS attacks.
Fortinet Security Fabric Integration	Single-pane visibility of attack mitigation and network performance reduces management and improves response time (on selected models).
RESTful API	FortiDDoS can be integrated into almost any environment through its RESTful API.
Central Manager	FortiDDoS-CM (for B-/E-Series) is available for users with multiple geographically dispersed FortiDDoS units. One management screen for all devices with single sign-on.

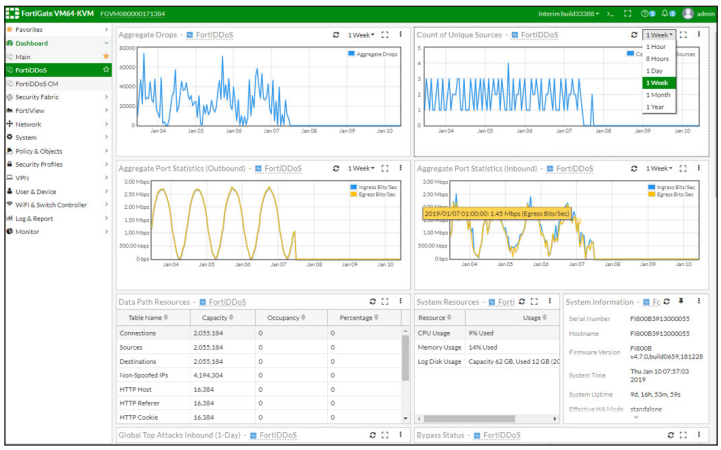
REPORTING



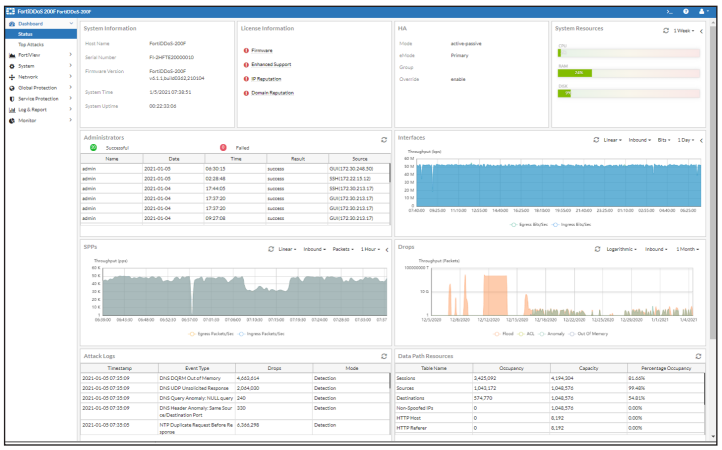
Aggregate Drops L3-L7 (B/E)



DNS Attacks (F)



FortiOS Security Fabric Dashboard (B/E)



Dashboard (F)

FORTIDDOS FEATURES*

Packet Inspection Technology

- 100% Packet Inspection
- Full IPv4/IPv6 Support to single IP addresses
- Machine learning for Predictive, Heuristic, Adaptive Analysis
- Deep Packet Inspection
- TCP State knowledge to instantly mitigate out-of-state attacks
- DNS Monitoring to instantly mitigate DNS Reflected attacks
- NTP Monitoring to instantly mitigate NTP reflection attacks (E/F)
- Complete invisibility with no MAC nor IP addresses in the data path
- Massively parallel processing for multiple simultaneous attack vectors

Behavioral Threshold

- Machine-learning thresholds for millions of L3–L7 parameters
- Automatic adaptive thresholds estimation for critical L3, L4, and L7 parameters

100% Anomaly Inspection

- L3/L4/L7 HTTP Headers
- DNS Header and Payload
- TCP State and Transition Anomalies
- NTP Header and Payload (E/F)

Layer 3 Attack Mitigation

- Protocol Floods (all 256 monitored)
- Fragment Floods (TCP/UDP/Other Protocols)
- Source Floods (up to 24M monitored)
- FortiGuard IP Reputation Subscription
- Full L3-L7 IP-inside-GRE Inspection

Layer 4 Attack Mitigation

- TCP Ports (all 65k)
- UDP Ports (all 65k)
- TCP / UDP Service Ports (>10,000)
- ICMP Type/Codes (all 65k)
- SYN, SYN/Destination with line-speed validation, SYN/Source
- **First-packet** TCP State flood mitigation
- Slow Connections
- L4 Aggressive Connection Aging

HTTP Attack Mitigation

- HTTP URL, Referer, Cookie, Host, User Agent
- HTTP METHOD Floods (all 8 METHODS +Total Methods/Source)
- SSL Renegotiation
- L7 Aggressive Aging
- Protocol Anomalies (F)
- Cypher Anomalies (F)
- GET/POST Client Validation (F)

Attack Mitigation

- **First-packet** DNS (B/E/F) and NTP (E/F) Response Flood mitigation (DQRM/NRM)
- DNS / NTP Header/payload/state anomalies
- DNS Query / MX / ALL / ZT / fragment / per-Source Floods
- DNS Response Code Flood mitigation
- NTP Request / Response / Response-per-Destination Floods
- DNS Query Source validation, Unexpected Query, Legitimate Query
- DNS Query TTL validation
- DNS Response cache under flood
- DNS Resource Record ACLs
- DNS Domain Reputation Subscription
- NTP Amplified Reflected Mode 7(monlist) and Mode 6 (varlist) Response Flood **First-packet** mitigation

* Note: Not all features are supported by all platforms. Features that are not universal will show the platform letter designation, e.g. B/E/F for B-Series, E-Series, or F-Series.

FORTIDDOS FEATURES*

Access Control Lists

FortiDDoS is the ONLY product in the industry that supports large ACLs in hardware with no performance degradation. While most DDoS attacks use spoofed source IP addresses, your existing Indicators of Compromise IP address and domain lists can be uploaded to FortiDDoS to offload other infrastructure.

- IP Reputation – Fortinet FortiGuard subscription
- IP/subnet Blocklist/ Allowlist
- Bulk IPv4 Blocklist Customer Upload (>1million addresses)
- Geolocation
- Enhanced BCP38 Source Address Validation/Local Address Anti-Spoofing (>2000 subnets) (B/E)
- Protocol, UDP, TCP, and other Protocol Fragments, DNS Fragment, L4 Port, ICMP Type/Code
- HTTP Methods, URLs, Hosts, Referrers, User Agents
- DNS Domain Reputation – Fortinet FortiGuard subscription (>250k Malicious Domains)
- DNS Bulk Domain Blocklist Customer Upload (>500k Domains)
- DNS Resource Record ACLs (256 RRs)
- IPv4/v6, Protocol, TCP/UDP Port, ICMP Type-Code, TCP/UDP/Other fragment ACL
- Flowspec ACL script generation

Comprehensive Reporting

- Filterable/Exportable Attack Log
- Summary Graphs and Logs for:
- Top Attacks / Top Attackers
- Top ACL Drops
- Top Attacked Subnets and IP Addresses
- Top Attacked Protocols
- Top Attacked TCP and UDP Ports
- Top Attacked ICMP Types/Codes
- Top Attacked URLs, HTTP Hosts, Referers, Cookies, User-Agents
- Top Attacked DNS Servers
- Top Attacked DNS Anomalies
- Physical Port, SPP, SPP Policy (subnet) and SPP Policy Group statistics: Mbps/pps and Drops graphing
- Custom, on-demand, on-schedule and/or on-Attack-Threshold reports in multiple formats
- Millions of built-in reporting graphs for real-time and forensic analysis

Centralized Event Reporting

- SNMP v2/v3 MIB and Traps
- Email Alerts and Reports
- Open RESTful API
- Syslog support for FortiAnalyzer, FortiSIEM and third-party servers
- FortiDDoS Central Manager centralized attack log and executive summary (B/E)

Audit Trails

- Login Audit Trail
- Configuration Audit Trail

Management

- Full TLS 1.3 Management GUI
- Full CLI
- Open RESTful API (B/E)
- RADIUS, LDAP, and TACACS+ Authentication including 2FA and Proxy
- Multi-Tenant MSSP Portal (B/E)
- Central Manager for multiple FortiDDoS
- Open Cloud Mitigation Signaling

* Note: Not all features are supported by all platforms. Features that are not universal will show the platform letter designation, e.g. B/E/F for B-Series, E-Series, or F-Series.

SPECIFICATIONS



	FortiDDoS 200F	FortiDDoS 1500F	FortiDDoS 2000F
Hardware Specifications			
LAN Interfaces Copper GE with built-in bypass	4	—	—
WAN Interfaces Copper GE with built-in bypass	4	—	—
LAN Interfaces SFP GE	2	—	—
WAN interfaces SFP GE	2	—	—
LAN interfaces LC (850 nm, GE) with built-in bypass	2	—	—
WAN interfaces LC (850 nm, GE) with built-in bypass	2	—	—
LAN Interfaces SFP+ 10 GE / SFP GE	—	2	2 (10GE ONLY)
WAN Interfaces SFP+ 10 GE / SFP GE	—	2	2 (10GE ONLY)
LAN Interfaces LC (850 nm, 10 GE) with built-in bypass	—	2	—
WAN Interfaces LC (850 nm, 10 GE) with built-in bypass	—	2	—
LAN Interfaces QSFP+ 40 GE	—	—	2
WAN Interfaces QSFP+ 40 GE	—	—	2
Passive Optical Bypass	—	—	8 Ports (2 links) 10/40 GE LR/ER/ZR
Storage	1× 480 GB SSD	1× 480 GB SSD	1× 960 GB SSD
Form Factor	1U Appliance	2U Appliance	2U Appliance
Power Supply	Dual AC Hot-Swappable	Dual AC Hot-Swappable	Dual AC Hot-Swappable
System Performance			
Maximum Inspected Throughput (Gbps)	8	30	76
Inspected Throughput (Enterprise Mix — Gbps)	8	30	76
Inspected Packet Throughput (Mpps)	8.8	28	60
Maximum Mitigation (Gbps/Mpps)	8 / 8.8	30 / 28	76/60
SYN Flood Mitigation (SYN In + Cookie Out) Mpps	5.7	16	21
Simultaneous TCP Connections (M)	4.2	16.7	33
Simultaneous Sources (M)	1	4	8
Session Setup/Teardown (kcps)	375	700	920
Latency (µs) Maximum/Typical	<50	<50	<50
DDoS Attack Mitigation Response Time	1st packet to <2 seconds	1st packet to <2 seconds	1st packet to <2 seconds
Advanced DNS/NTP Mitigation	DNS/NTP/DTLS	DNS/NTP/DTLS	DNS/NTP/DTLS
DNS/NTP Queries per second (M)	2 / 1	8 / 4	8/4
DNS/NTP Response Validation under Flood (M Responses/s)	2 / 1	8 / 4	8/4
Open Hybrid Cloud Mitigation Support	Yes	Yes	Yes
Central Manager	No	No	No
FortiOS Security Fabric Dashboard Integration	Yes	Yes	Yes
Environment			
Input Voltage AC	100–240V AC, 50–60 Hz	100–240V AC, 50–60 Hz	100-240V AC, 50-60Hz
Power Consumption (Average W / Maximum W)	117 / 152	333 / 433	333 / 433
Maximum Current AC	100V/1.5A, 240V/0.7A	100V/4.4A, 240V/1.9A	100V/4.4A, 240V/1.9A
Heat Dissipation (BTU/hr) / (kjoules/hr)	519 / 574	1477 / 1558	1477 / 1558
Operating Temperature	32–104°F (0–40°C)	32–104°F (0–40°C)	32–104°F (0–40°C)
Storage Temperature	-4–158°F (-20–70°C)	-4–158°F (-20–70°C)	-4 -158°F (-20 -70°C)
Humidity	5–90% non-condensing	5–90% non-condensing	5 to 90% non-condensing
Compliance			
Safety Certifications	FCC Class A Part 15, UL/CB/cUL, RCM, VCCI, CE		
Dimensions			
Height x Width x Length (inches)	1.77 × 17 × 21.7	3.5 × 17.24 × 22.83	2U - 3.5 × 17.24 × 22.83
Height x Width x Length (mm)	44 × 438 × 550	88.2 × 438 × 580	88.2 × 438 × 580
Weight lbs (kg)	21.2 lbs (9.6 kg)	19.8 lbs (9.0 kg)	19.8 lbs (9.0 kg)

SPECIFICATIONS

	FortiDDoS 1500E / 1500E-DC	FortiDDoS 2000E / 2000E-DC
Hardware Specifications		
LAN Interfaces Copper GE with built-in bypass	—	—
WAN Interfaces Copper GE with built-in bypass	—	—
LAN Interfaces SFP GE	—	—
WAN interfaces SFP GE	—	—
LAN Interfaces SFP+ 10 GE / SFP GE	8	8
WAN Interfaces SFP+ 10 GE / SFP GE	8	8
LAN Interfaces LC (850 nm, 10 GE) with built-in bypass	—	—
WAN Interfaces LC (850 nm, 10 GE) with built-in bypass	—	—
LAN Interfaces QSFP+ 40 GE or QSFP28 100 GE	2	2
WAN Interfaces QSFP+ 40 GE or QSFP28 100 GE	2	2
Passive Optical Bypass	8 Ports (2 links) 1/10/40/100 GE 1310nm	8 Ports (2 links) 1/10/40/100 GE 1310nm
Storage	1× 960 GB SSD	1× 960 GB SSD
Form Factor	2U Appliance	2U Appliance
Power Supply	Dual AC/DC Hot-Swappable	Dual AC/DC Hot-Swappable
System Performance		
Maximum Inspected Throughput (Gbps)	45	90
Inspected Throughput (Enterprise Mix — Gbps)	35	70
Inspected Packet Throughput (Mpps)	38	77
Maximum Mitigation (Gbps/Mpps)	280 / 420	280 / 420
SYN Flood Mitigation (SYN In + Cookie Out) Mpps	27	55
Simultaneous TCP Connections (M)	12	25
Simultaneous Sources (M)	12	25
Session Setup/Teardown (kcps)	>1500	>3000
Latency (µs) Maximum/Typical	<50/<10	<50/<10
DDoS Attack Mitigation Response Time	1st packet to <2 seconds	1st packet to <2 seconds
Advanced DNS/NTP Mitigation	DNS / NTP	DNS / NTP
DNS/NTP Queries per second (M)	4 / 3	7 / 6
DNS/NTP Response Validation under Flood (M Responses/s)	4 / 3	7 / 6
Open Hybrid Cloud Mitigation Support	Yes	Yes
Central Manager	Yes	Yes
FortiOS Security Fabric Dashboard Integration	Yes	Yes
Environment		
Input Voltage	100–240V AC, 50–60 Hz / 40-72V DC	100–240V AC, 50–60 Hz / 40-72V DC
Power Consumption (Average W / Maximum W)	314 / 580	314 / 580
Maximum Current	110VAC / 5.3A, 220VAC / 2.6A, 48VDC / 12A	110VAC / 5.3A, 220VAC / 2.6A, 48VDC / 12A
Heat Dissipation (BTU/hr) / (kjoules/hr)	2151 / 2269	2151 / 2269
Operating Temperature	32–104°F (0–40°C)	32–104°F (0–40°C)
Storage Temperature	-13–158°F (-25–70°C)	-13–158°F (-25–70°C)
Humidity	20–90% non-condensing	20–90% non-condensing
Compliance		
Safety Certifications	FCC Class A Part 15, UL/CB/cUL, RCM, VCCI, CE	
Dimensions		
Height x Width x Length (inches)	3.5 × 17.24 × 22.05	3.5 × 17.24 × 22.05
Height x Width x Length (mm)	88 × 438 × 560	88 × 438 × 560
Weight lbs (kg)	44.0 lbs (20.0 kg)	44.0 lbs (20.0 kg)

SPECIFICATIONS

	FORTIDDOS-VM04	FORTIDDOS-VM08	FORTIDDOS-VM16
Hardware Specifications			
Hypervisor Support	VMware ESX/ESXi 6.x / 7.x with hardware-assisted virtualization (VT) enabled in the BIOS		
Throughput[1,3]	3 Gbps	5 Gbps	10 Gbps
Mitigation[2,3]	3 Gbps / 4 Mpps	5 Gbps / 6 Mpps	10 Gbps / 10 Mpps
Service Protection Profiles	4	8	16
vCPU Support	4	8	16
Network Interface Support	8 (4 bridged port-pairs). Interface speeds dependent on hardware.		
Memory Requirements	16 GB	16 GB	32 GB
Storage Requirements	Requires at least 200 GB		

[1] 1.7KB HTTP Response
[2] Rate for 100% inspection of 64 Byte packets
[3] Actual peformance will vary depending on underlying hardware. Performance results were observed using a bare-metal appliance with Intel(R) Xeon(R) W-3245 CPU @ 3.20GHz running VMware ESXI 7.0.0 and SR-IOV

NOTE: FortiDDoS VMs are not suitable for deployment in cloud service environments such as AWS, Azure, or Google Cloud. By design, FortiDDoS VMs (and appliances) have no IP addresses on the data ports and thus cannot be addressed in cloud environments. There is no way to direct traffic to them. VMs (and appliances) must be attached to physical links.

ORDER INFORMATION

Product	SKU	Description
FortiDDoS 200F	FDD-200F	DDoS Protection Appliance - 8 port-pairs DDoS Defence Ports, including 4 pairs x GE RJ45 with bypass protection, 2 pairs x GE LC SR MM with optical bypass protection, 2 pairs GE SFP (no bypass protection), 2x GE RJ45 Management Ports, dual redundant AC power supplies. Includes 480 GB SSD storage. >8 Gbps / 8.8 Mpps inspected Mitigation. Supports Advanced DNS and NTP DDoS attack mitigation.
FortiDDoS 1500F	FDD-1500F	DDoS Protection Appliance - 4 port-pairs DDoS Defence Ports, including 2 pairs x 10 GE SFP+ (or GE SFP) (no bypass protection) and 2 pairs x 10 GE LC SR MM ports with optical bypass protection, 2x GE RJ45 Management Ports, Dual redundant AC power supplies. Includes 480GB SSD storage. >30 Gbps / 28 Mpps inspected Mitigation. Supports Advanced DNS and NTP DDoS attack Mitigation.
FortiDDoS 1500E	FDD-1500E	DDoS Protection Appliance — 10 port-pairs DDoS Defence Ports, including 8 pairs x 10 GE SFP+ or GE SFP and 2 pairs x 40 GE QSFP+ or 100GE QSFP28 ports plus 2-link optical bypass module (1310nm), 2x GE RJ45 Management Ports, Dual AC Power Supply. Includes 960 GB SSD storage. >35 Gbps / 38 Mpps inspected Mitigation (280 Gbps Max Mitigation). Supports Advanced DNS and NTP DDoS attack mitigation.
FortiDDoS 1500E-DC	FDD-1500E-DC	DDoS Protection Appliance — 10 port-pairs DDoS Defence Ports, including 8 pairs x 10 GE SFP+ or GE SFP and 2 pairs x 40 GE QSFP+ or 100GE QSFP28 ports plus 2-link optical bypass module (1310nm), 2x GE RJ45 Management Ports, Dual DC Power Supply. Includes 960 GB SSD storage. >35 Gbps / 38 Mpps inspected Mitigation (280 Gbps Max Mitigation). Supports Advanced DNS and NTP DDoS attack mitigation.
FortiDDoS 2000F	FDD-2000F	DDoS Protection Appliance - 2 pairs x 10GE SFP+, 2 pairs 40GE QSFP+ 4 pairs (2 links) LR (1310 nm) optical bypass , 2x GE RJ45 Management Ports, Dual AC Power Supply. Includes 960GB SSD storage. Supports advanced DNS, NTP, DTLS mitigation.
FortiDDoS 2000E	FDD-2000E	DDoS Protection Appliance — 10 port-pairs DDoS Defence Ports, including 8 pairs x 10 GE SFP+ or GE SFP and 2 pairs x 40 GE QSFP+ or 100 GE QSFP28 ports plus 2-link optical bypass module (1310nm), 2x GE RJ45 Management Ports, Dual AC Power Supply. Includes 960 GB SSD storage. >70 Gbps / 77 Mpps inspected Mitigation (280 Gbps Max Mitigation). Supports Advanced DNS and NTP DDoS attack mitigation.
FortiDDoS 2000E-DC	FDD-2000E-DC	DDoS Protection Appliance — 10 port-pairs DDoS Defence Ports, including 8 pairs x 10 GE SFP+ or GE SFP and 2 pairs x 40 GE QSFP+ or 100GE QSFP28 ports plus 2-link optical bypass module (1310nm), 2x GE RJ45 Management Ports, Dual DC Power Supply. Includes 960 GB SSD storage. >70 Gbps / 77 Mpps inspected Mitigation (280 Gbps Max Mitigation). Supports Advanced DNS and NTP DDoS attack mitigation.
Virtual Machine	**SKU**	**Description**
FortiDDoS-VM04	FDD-VM04	DDoS Protection System - virtual appliance for all supported platforms. Supports up to 4 x vCPU cores, 8 x NIC Ports, 2 x MGMT Ports.
FortiDDoS-VM08	FDD-VM08	DDoS Protection System - virtual appliance for all supported platforms. Supports up to 8 x vCPU cores, 8 x NIC Ports, 2 x MGMT Ports.
FortiDDoS-VM16	FDD-VM016	DDoS Protection System - virtual appliance for all supported platforms. Supports up to 16 x vCPU cores, 8 x NIC Ports, 2 x MGMT Ports.

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ORDER INFORMATION

COMPATIBLE TRANSCEIVERS						
SKU	**Description**	**Fiber Mode/ Wavelength**	**FDD-200F**	**FDD-1500F**	**FDD-2000F Ports/Bypass**	**FDD-1500E / FDD-2000E Ports/Bypass**
FS-TRAN-FX	100Mb multimode SFP transceivers, -40/85c operation, 2km range for systems with SFP Slots and capable of 10/100Mb mode selection.	MM 850nm	N	N	N / N	N / N
FN-TRAN-DSL	VDSL2/ADSL2 SFP transceiver module, for all systems with SFP and SFP+ slots.	Copper	N	N	N/N	N / N
FN-TRAN-LX	1 GE SFP LX transceiver module for all systems with SFP and SFP/SFP+ slots.	SM 1310nm	Y	Y	N / N	Y / Y
FR-TRAN-ZX	1 G SFP transceivers, -40–85°C operation, 90 km range for all systems with SFP slots.	SM 1550nm	Y	Y	N / N	Y/ Y
FN-TRAN-SX	1 GE SFP SX transceiver module for all systems with SFP and SFP/SFP+ slots.	MM 850nm	Y	Y	N / N	Y / N
FR-TRAN-SX	1 GE SFP SX transceiver module, -40–85°C, over MMF, for all systems with SFP and SFP/SFP+ slots.	MM 850nm	Y	Y	N / N	Y / N
FN-TRAN-GC	1 GE SFP RJ45 transceiver module for all systems with SFP and SFP/SFP+ slots.	Copper	Y	Y	N / N	Y / N
FS-TRAN-GC	1GE SFP RJ45 transceiver module for FortiSwitch D Series with SFP and SFP/SFP+ slots	Copper	Y	Y	N / N	Y / N
FN-TRAN-SFP+LR	10 GE SFP+ transceiver module, long range for all systems with SFP+ and SFP/SFP+ slots.	SM 1310nm	N	Y	Y / Y	Y / Y
SP-CABLE-FS-SFP+1	10 GE SFP+ passive direct attach cable, 1 m for systems with SFP+ and SFP/SFP+ slots.	End-to-End	N	Y	Y / N	Y / N
SP-CABLE-FS-SFP+3	10 GE SFP+ passive direct attach cable, 3 m for systems with SFP+ and SFP/SFP+ slots.	End-to-End	N	Y	Y / N	Y / N
SP-CABLE-FS-SFP+5	10 GE SFP+ passive direct attach cable, 5 m for systems with SFP+ and SFP/SFP+ slots.	End-to-End	N	Y	Y / N	Y / N
SP-CABLE-FS-SFP+7	10 GE SFP+ passive direct attach cable, 7 m for systems with SFP+ and SFP/SFP+ slots.	End-to-End	N	Y	Y / N	Y / N
FN-TRAN-SFP+GC	10GE copper SFP+ RJ45 Fortinet Transceiver (30m range) for systems with SFP+ slots.	Copper	N	Y	Y / N	Y / N
SP-CABLE-ADASFP+	10 GE SFP+ active direct attach cable, 10 m/32.8 ft for all systems with SFP+ and SFP/SFP+ slots.	End-to-End	N	Y	Y / N	Y / N
FN-TRAN-SFP+SR	10 GE SFP+ transceiver module, short range for all systems with SFP+ and SFP/SFP+ slots.	MM 850nm	N	Y	Y / N	Y / N
FN-TRAN-SFP+ER	10Gbase-ER SFP+ transceivers for FortiSwitch and FortiGate, 1550nm. Single Mode. 40 km range for systems with SFP+ slots.	SM 1550nm	N	Y	Y / Y	Y / Y
FG-TRAN-SFP28-LR	25GE SFP28 transceiver module, long range for all systems with SFP28 slots.	SM 1310nm	N	N	N / N	N / N
FN-TRAN-SFP28-LR	25GE SFP28 transceiver module, long range for all systems with SFP28 slots.	SM 1310nm	N	N	N / N	N / N
FN-TRAN-SFP28-SR	25GE/10GE Dual Rate SFP28 transceiver module, short range for all systems with SFP28/SFP+ slots.	MM 850nm	N	N	N / N	N / N

Note 1: Can be used in E-Series pluggable optical ports. NOT compatible with E-Series optical bypass module.

ORDER INFORMATION

COMPATIBLE TRANSCEIVERS						
SKU	**Description**	**Fiber Mode/ Wavelength**	**FDD-200F**	**FDD-1500F**	**FDD-2000F Ports/Bypass**	**FDD-1500E / FDD-2000E Ports/Bypass**
FG-TRAN-QSFP-4XSFP	40G/100G QSFP+/QSFP28 to SFP+/SFP28 Parallel Breakout MPO to 4xLC connectors, 1m reach, transceivers not included.	MM 850nm	N	N	N / N	N / N
FG-TRAN-QSFP-4SFP-5	40G/100G QSFP+/QSFP28 to SFP+/SFP28 Parallel Breakout MPO to 4xLC connectors, 5m reach, transceivers not included.	MM 850nm	N	N	N / N	N / N
FN-TRAN-QSFP+LR	40 GE QSFP+ transceivers, long range for all systems with QSFP+ slots.	SM 1310nm	N	N	Y / Y	Y / Y
FN-TRAN-QSFP+SR	40 GE QSFP+ transceivers, short range for all systems with QSFP+ slots.	MM 850nm	N	N	Y / N	Y / N
FG-TRAN-QSFP+SR-BIDI	40 GE QSFP+ transceiver, short range BiDi for systems with QSFP+ slots.	MM 850nm	N	N	Y / N	Y / N
SP-CABLE-FS-QSFP+1	40 GE QSFP+ passive direct attach cable, 1 m for systems with QSFP+ slots.	End-to-End	N	N	Y / N	Y / N
SP-CABLE-FS-QSFP+3	40 GE QSFP+ passive direct attach cable, 3 m for systems with QSFP+ slots.	End-to-End	N	N	Y / N	Y / N
SP-CABLE-FS-QSFP+5	40 GE QSFP+ passive direct attach cable, 5 m for systems with QSFP+ slots.	End-to-End	N	N	Y / N	Y / N
FG-TRAN-CFP2-LR4	100GE CFP2 transceivers, long range, over single mode fiber, for all systems with CFP2 Slots.	CP2-to-10xLC	N	N	N / N	N / N
FG-TRAN-CFP2-SR10	100GE CFP2 transceivers, 10 channel parallel fiber, short range for all systems with CFP2 Slots.	CP2-to-10xLC	N	N	N / N	N / N
FG-CABLE-SR10-SFP+	100G CFP2 Parallel Breakout MPO to 10xLC conectors, 1m reach, transceivers not included.	CP2-to-10xLC	N	N	N / N	N / N
FG-CABLE-SR10-SFP+5	100G CFP2 Parallel Breakout MPO to 10xLC conectors, 5m reach, transceivers not included.	CP2-to-10xLC	N	N	N / N	N / N
FN-TRAN-QSFP28-LR	100 GE QSFP28 transceivers, long range for all systems with QSFP28 slots.	SM 1310nm	N	N	N / N	Y / Y
FN-TRAN-QSFP28-SR	100 GE QSFP28 transceivers, 4 channel parallel fiber, short range for all systems with QSFP28 slots.	MM 850nm	N	N	N / N	Y / N
FN-TRAN-QSFP28-ER	100 GE QSFP28 transceivers, extended long range 20KM for all systems with QSFP28 Slots.	SM 1310nm	N	N	N / N	Y / Y
FN-TRAN-QSFP28-CWDM4	100 GE QSFP28 transceivers, LC connectors, 2KM for all systems with QSFP28 Slots.	SM CWDM	N	N	N / N	Y / Y

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