

Thunder CFW Physical Appliance Specifications

Firewall Performance	Thunder 940 CFW	Thunder 1040 CFW	Thunder 3040 CFW
Throughput	5 Gbps	20 Gbps	30 Gbps
Layer 4 CPS	240K	450K	550K
Concurrent Sessions	8 Million	24 Million	32 Million
FW Rules	8K	12K	16K
Secure Web Gateway Performance^{*1,2}			
SSLi Throughput	0.5 Gbps	1.5 Gbps	2.5 Gbps
SSLi CPS	RSA: 500 ECDHE: 300	RSA: 4K ECDHE: 3K	RSA: 8K ECDHE: 4.5K
IPsec Performance^{*2}			
IPsec Throughput	3 Gbps	8 Gbps	10 Gbps
IPsec Tunnels	2K	2K / 5K ^{*2}	5K
IKE Gateways	2K	2K / 5K ^{*2}	5K
Network Interfaces			
		Hardware Bypass Model	
1GE (BASE-T)	5	5	1 + 4 (Bypass)
1GE Fiber (SFP)	0	0	0
1/10 GE Fiber (SFP+)	4 ¹⁵	4 ¹⁵	4 ¹⁵
25 GE Fiber (SFP28)	0	0	2 (Optical Bypass) ¹⁶
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port		Ethernet Mgmt Port, RJ-45 Console Port, Lights Out Management
Hardware Specifications			
Processor	Intel Communications Processor	Intel Communications Processor	Intel Xeon 4-core
Memory (ECC RAM)	8 GB	8 GB ¹³ / 16 GB	16 GB
Storage	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software
TLS/SSL Security Acceleration	Software	Hardware on S models (2 options) ¹⁷	Hardware on S model
Dimensions (inches)	1.75 (H) x 17.5 (W) x 17.25 (D)	1.75 (H) x 17.5 (W) x 17.25 (D)	1.75 (H) x 17.5 (W) x 17.45 (D)
Rack Units (Mountable)	1U	1U	1U
Unit Weight	14 lbs/16 lbs (RPS)	15 lbs/17 lbs (RPS)	20.6 lbs
Power Supply (DC option available)	Single 750W ¹⁴	Single 750W ¹⁴	Dual 600W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz		
Power Consumption (Typical/Max) ¹³	60W / 80W	80W / 110W	180W / 240W
Heat in BTU/hour (Typical/Max) ¹³	205 / 273	273 / 376	615 / 819
Cooling Fan	Removable Fans	Removable Fans	Hot Swap Smart Fans
Operating Ranges	Temperature 0° - 40° C Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC ¹⁷ , BSMI, RCM ¹⁷ RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software		

Thunder CFW Physical Appliance Specifications (Cont.)

	Thunder 3350-E CFW	Thunder 3350 CFW	Thunder 3350S CFW
Firewall Performance			
Throughput	30 Gbps	40 Gbps	50 Gbps
Layer 4 CPS	550K	750K	1.4 Million
Concurrent Sessions	32 Million	40 Million	64 Million
FW Rules	16K	32K	64K
Secure Web Gateway Performance^{*1,2}			
SSLi Throughput	3 Gbps	3 Gbps	5.5 Gbps
SSLi CPS	RSA: 8K ECDHE: 4.5K	RSA: 8K ECDHE: 4.5K	RSA: 20K ECDHE: 10K
IPsec Performance^{*2}			
IPsec Throughput	10 Gbps	15 Gbps	24 Gbps
IPsec Tunnels	5K	10K	20K
IKE Gateways	5K	10K	20K
Network Interfaces			
1 GE (BASE-T)	6	6	6
1 GE Fiber (SFP)	2	2	2
1/10 GE Fiber (SFP+)	8 + 4 ⁵	4 ⁵	8 + 4 ⁵
25 GE Fiber (SFP28)	0	4	0
40 GE Fiber (QSFP+)	0	4	0
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port		
Hardware Specifications			
Processor	Intel Xeon 8-core	Intel Xeon 8-core	Intel Xeon 14-core
Memory (ECC RAM)	16 GB	32 GB	64 GB
Storage	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software
TLS/SSL Security Acceleration	Hardware	Hardware	Hardware
Dimensions (inches)	1.75 (H) x 17.5 (W) x 18 (D)	1.75 (H) x 17.5 (W) x 18 (D)	1.75 (H) x 17.5 (W) x 18 (D)
Rack Units (Mountable)	1U	1U	1U
Unit Weight	18 lbs	18 lbs	18 lbs
Power Supply (DC option available)	Dual 750W RPS	Dual 750W RPS	Dual 750W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz		
Power Consumption (Typical/Max) ^{*3}	151W / 205W	165W / 238W	175W / 222W
Heat in BTU/hour (Typical/Max) ^{*3}	516 / 700	564 / 831	598 / 758
Cooling Fan	Hot Swap Smart Fans		
Operating Ranges	Temperature 0° - 40° C Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software		

Thunder CFW Physical Appliance Specifications (Cont.)

Firewall Performance	Thunder 4440 CFW	Thunder 5440 CFW	Thunder 5840 CFW	Thunder 5840-11 CFW
Throughput	70 Gbps	90 Gbps	100 Gbps	100 Gbps
Layer 4 CPS	1.6 Million	2.6 Million	3.5 Million	3.5 Million
Concurrent Sessions	64 Million	128 Million	128 Million	128 Million
FW Rules	32K	64K	64K	64K / 128K ²
Secure Web Gateway Performance^{*1*2}				
SSLi Throughput	8 Gbps	15 Gbps	20 Gbps	25 Gbps
SSLi CPS	RSA: 22K ECDHE: 10K	RSA: 35K ECDHE: 20K	RSA: 50K ECDHE: 25K	RSA: 50K ECDHE: 28K
IPsec Performance^{*2}				
IPsec Throughput	30 Gbps	35 Gbps	50 Gbps	55 Gbps
IPsec Tunnels	10K	20K	20K	20K / 64K ²
IKE Gateways	10K	20K	20K	20K / 64K ²
Network Interfaces				
1/10 GE Fiber (SFP+)	24	24	24	48
40 GE Fiber (QSFP+)	4	4	4	0
100 GE Fiber (QSFP28)	0	0	0	4
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port, Lights Out Management			
Hardware Specifications				
Processor	Intel Xeon 6-core	Intel Xeon 12-core	Intel Xeon 18-core	Intel Xeon 18-core
Memory (ECC RAM)	32 GB	64 GB	64 GB	64 GB / 128 GB ²
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	2 x FTA-4	2 x FTA-4	2 x FTA-4	2 x FTA-4
TLS/SSL Security Acceleration	Hardware on S model	Hardware on S model	Hardware on S model	Hardware on S model
Dimensions (inches)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	1U
Unit Weight	32.5 lbs	32.5 lbs	32.5 lbs	34.3 lbs
Power Supply (DC option available)	Dual 1100W RPS	Dual 1100W RPS	Dual 1100W RPS	Dual 1500W RPS
Power Consumption (Typical/Max) ^{*3}	360W / 445W	360W / 445W	375W / 470W	550W / 760W
Heat in BTU/hour (Typical/Max) ^{*3}	1,229 / 1,519	1,229 / 1,519	1,280 / 1,604	1,877 / 2,594
Cooling Fan	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software			

Thunder CFW Physical Appliance Specifications (Cont.)

	Thunder 6440 CFW	Thunder 7440 CFW	Thunder 7440-11 CFW	Thunder 7650 CFW
Firewall Performance				
Throughput	150 Gbps	220 Gbps	220 Gbps	370 Gbps
Layer 4 CPS	3.5 Million	6.5 Million	6.5 Million	8 Million
Concurrent Sessions	256 Million	256 Million	256 Million	384 Million
FW Rules	128K	128K	128K	128K
Secure Web Gateway Performance^{*1,2}				
SSLi Throughput	22 Gbps	25 Gbps	25 Gbps	N/A
SSLi CPS	RSA: 40K ECDHE: 15K	RSA: 45K ECDHE: 20K	RSA: 45K ECDHE: 20K	N/A
IPsec Performance^{*2}				
IPsec Throughput	65 Gbps	70 Gbps	70 Gbps	N/A
IPsec Tunnels	64K	64K	64K	N/A
IKE Gateways	64K	64K	64K	N/A
Network Interfaces				
1/10 GE Fiber (SFP+)	48	48	48	0
40 GE Fiber (QSFP+)	4	4	0	0
100 GE Fiber (QSFP28)	0	0	4	16
Management Ports	Ethernet Mgmt. Port, RJ-45 Console Port, Lights Out Management			
Hardware Specifications				
Processor	2 x Intel Xeon 10-core	2 x Intel Xeon 18-core	2 x Intel Xeon 18-core	2 x Intel Xeon 24-core
Memory (ECC RAM)	128 GB	128 GB	128 GB	192 GB
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	3 x FTA-4	3 x FTA-4	3 x FTA-4	2 x FTA-5
TLS/SSL Security Acceleration	Hardware on S model	Hardware on S model	Hardware on S model	N/A
Dimensions (inches)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)	2.625 (H) x 17.5 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	1.5U
Unit Weight	36 lbs	35.7 lbs	35.7 lbs	41.5 lbs
Power Supply (DC option available)	Dual 1100W RPS	Dual 1100W RPS	Dual 1500W RPS	Dual 1500W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz			
Power Consumption (Typical/Max) ^{*3}	480W / 550W	690W / 820W	784W / 950W	864W / 1,091W
Heat in BTU/hour (Typical/Max) ^{*3}	1,638 / 1,877	2,355 / 2,798	2,676 / 3,242	2,949 / 3,722
Cooling Fan	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM RoHS, FIPS 140-2 ^{*4}	FCC Class A, UL, CE, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software			

Hardware specifications and performance numbers are subject to change without notice, and may vary depending on configuration and environmental conditions. As for network interface, it's highly recommended to use A10 Networks qualified optics/transceivers to ensure network reliability and stability.

^{*1} Tested in single appliance SSLi deployment with maximum SSL option. Cipher "TLS_RSA_WITH_AES_256_GCM_SHA384" with RSA 2K keys are used for RSA cases, "TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256" with EC P-256 and RSA 2K keys are used for PFS case.
^{*2} With maximum SSL | ^{*3} With base model. Number varies by SSL model | ^{*4} Optional RPS available | ^{*} 5 10Gbps speed only | ^{*6} Fixed SFP+ optical ports with dual rate (10GBASE-SR and 100GBASE-SX) | ^{*} 7 Hardware Bypass model comes equipped with the hardware TLS acceleration
[^] Certification in process | + FIPS model must be purchased

Thunder CFW SPE Physical Appliance Specifications

	Thunder 5845 CFW	Thunder 7445 CFW	Thunder 7655 CFW	Thunder 14045 CFW Dual Modules
Firewall Performance				
Throughput	100 Gbps	220 Gbps	370 Gbps	300 Gbps
Layer 4 CPS	3.5 Million	6.5 Million	8 Million	8M
Concurrent Sessions	128 Million	256 Million	384 Million	512M
FW Rules	64K / 128K ²	128K	128K	128K
Secure Web Gateway Performance^{*1,2}				
SSLi Throughput	N/A	N/A	72 Gbps	N/A
SSLi CPS	N/A	N/A	RSA: 100K ECDHE: 70K	N/A
IPsec Performance²				
IPsec Throughput	N/A	N/A	100 Gbps	N/A
IPsec Tunnels	N/A	N/A	100K	N/A
IKE Gateways	N/A	N/A	100K	N/A
Network Interfaces				
1/10 GE Fiber (SFP+)	48	48	0	0
40 GE Fiber (QSFP+)	0	0	0	4
100 GE Fiber	4 (QSFP28)	4 (QSFP28)	16 (QSFP28)	4 (CFP2 or QSFP28)
Management Ports	Ethernet Mgmt. Port, RJ- 45 Console Port*, Lights Out Management			
Hardware Specifications				
Processor	Intel Xeon 18-core	2 x Intel Xeon 18-core	2 x Intel Xeon 28-core	4 x Intel Xeon 18-core
Memory (ECC RAM)	64 GB	128 GB	384 GB	512 GB
Storage	SSD	SSD	SSD	Yes
Hardware Acceleration	2 x FTA-4, SPE	3 x FTA-4, SPE	2 x FTA-5	8 x FTA-3, SPE
TLS/SSL Security Acceleration	N/A	N/A	Hardware	
Dimensions (inches)	1.75 (H) x 17.5 (W) x 30 (D)	1.75 (H) x 17.5 (W) x 30 (D)	2.625 (H) x 17.5 (W) x 30 (D)	5.3 (H) x 16.9 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1.5U	3U
Unit Weight	34.3 lbs	35.7 lbs	44.2 lbs	102 lb
Power Supply (DC option available)	Dual 1500W RPS	Dual 1500W RPS	Dual 1500W RPS	2+2 1100W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz			
Power Consumption (Typical/Max) ³	585W / 921W	784W / 1,078W	1,121W / 1,300W	1,700W / 2,000W
Heat in BTU/hour (Typical/Max) ³	1,997 / 3,143	2,676 / 3,679	3,826 / 4,436	5,801 / 6,825
Cooling Fan	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software			

Hardware specifications and performance numbers are subject to change without notice, and may vary depending on configuration and environmental conditions. As for network interface, it's highly recommended to use A10 Networks qualified optics/transceivers to ensure network reliability and stability.

*1 Tested in single appliance SSLi deployment with maximum SSL option. Cipher "TLS_RSA_WITH_AES_128_CBC_SHA" with RSA 2K keys are used.

*2 With maximum SSL | *3 With base model. Number varies by SSL model

+ Thunder 14045 comes with a splitter cable for console to provide access to both modules. | * Certification in process

vThunder CFW

Supported Hypervisors	VMware ESXi 5.5 or higher (VMXNET3, SR-IOV, PCI Passthrough) KVM QEMU 1.0 or higher (VirtIO, OvS with DPDK, SR-IOV, PCI Passthrough) Microsoft Hyper-V on Windows Server 2008 R2 or higher									
Hardware Requirements	See Installation Guide									
Standard Warranty	90-Day Software									
Bandwidth Licenses	Lab	200 Mbps	1 Gbps	4 Gbps	8 Gbps	10 Gbps	20 Gbps	40 Gbps	100 Gbps	FlexPool
VMware ESXi	●	●	●	●	●	●	●*1	●*1*2	●*2	●
KVM	●	●	●	●	●	●	●*1	●*1*2	●*2	●
Microsoft Hyper-V	●	●	●	●	●+					●
Feature Basis Throughput Guideline	ADC/CGN/FW: 200 Mbps-100 Gbps IPsec/SSL Insight (SWG) without hardware SSL/TLS acceleration: 200 Mbps – 8 Gbps									

*1 SR-IOV | *2 PCI Passthrough | + 8 Gbps license not recommended for Microsoft Hyper-V

Thunder CFW Container

Image Format	Docker
Operating System	Reference Operating System: - Ubuntu 16.04.3 LTS (Xenial Xerus) - RedHat Enterprise Linux version 7.6
System Requirements	Minimum requirement: - 1 or more data interface - 1 vCPU and 4 GB memory
Licenses (per instance)	BYOL Bandwidth License: Up to 100 Gbps FlexPool License: Up to 100 Gbps
Performance Reference*	Maximum throughput on a single Thunder container (24 vCPUs, shared polling mode off) 1510B: 180 Gbps 512B: 103 Gbps IMIX: 75 Gbps
Standard Warranty	90-Day Software

* Supermicro 7049GP-TRT with Intel Xeon Platinum 8160 CPU @ 2.10GHz and 2x Mellanox Connect X-5 NICs. Tested with UDP traffic for CGN service.

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