

### Thunder CFW Physical Appliance Specifications

	Thunder <b>840</b> CFW	Thunder <b>940</b> CFW	Thunder <b>1040</b> CFW	Thunder <b>3040</b> CFW	
<b>Firewall Performance</b>					
Throughput	5 Gbps	5 Gbps	20 Gbps	30 Gbps	
Layer 4 CPS	200K	240K	450K	550K	
Concurrent Sessions	8 Million	8 Million	24 Million	32 Million	
FW Rules	8K	8K	12K	16K	
<b>Secure Web Gateway Performance<sup>*1*2</sup></b>					
SSLi Throughput	0.5 Gbps	0.5 Gbps	1.5 Gbps	2.5 Gbps	
SSLi CPS	RSA (1K): 500 RSA (2K): 300	RSA: 500 ECDHE: 300	RSA: 4K ECDHE: 3K	RSA: 8K ECDHE: 4.5K	
<b>IPsec Performance<sup>*2</sup></b>					
IPsec Throughput	1.5 Gbps	3 Gbps	8 Gbps	10 Gbps	
IPsec Tunnels	2K	2K	2K / 5K <sup>*2</sup>	5K	
IKE Gateways	2K	2K	2K / 5K <sup>*2</sup>	5K	
<b>Network Interface</b>					
			<b>Hardware Bypass Model</b>		
1 GE (BASE-T)	5	5	5	1 + 4 (Bypass)	6
1 GE Fiber (SFP)	0	0	0	0	2
1/10 GE Fiber (SFP+)	2	4 <sup>*5</sup>	4 <sup>*5</sup>	4 <sup>*5</sup>	4
25 GE Fiber (SFP28)	0	0	0	2 (Optical Bypass) <sup>*6</sup>	0
Management Ports	Ethernet Mgmt. Port, RJ-45 Console Port				
<b>Hardware Specifications</b>					
Processor	Intel Communications Processor	Intel Communications Processor	Intel Communications Processor	Intel Xeon 4-core	
Memory (ECC RAM)	8 GB	8 GB	8 GB <sup>*3</sup> / 16 GB	16 GB	
Storage	SSD	SSD	SSD	SSD	
Hardware Acceleration	Software	Software	Software	Software	
TLS/SSL Security Processor	Software	Software	2 options <sup>*7</sup>	Yes	
Dimensions (inches)	1.75 (H) x 17.0 (W) x 12 (D)	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	1U	
Unit Weight	8.8 lbs	14 lbs/16 lbs (RPS)	15 lbs/17 lbs (RPS)	20.6 lbs	
Power Supply (DC option available)	Single 150W (AC only) 100 - 240 VAC, 50-60Hz	Single 750W <sup>*4</sup>	Single 750W <sup>*4</sup>	Dual 600W RPS 80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz	
Power Consumption (Typical/Max) <sup>*3</sup>	57W / 75W	60W / 80W	80W / 110W	180W / 240W	
Heat in BTU/hour (Typical/Max) <sup>*3</sup>	195 / 256	205 / 273	273 / 376	615 / 819	
Cooling Fan	Single Fixed 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, TUV, CB, VCCI, CCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC <sup>*7</sup> , BSMI, RCM <sup>*7</sup>   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.)

	Thunder <b>3350-E</b> CFW	Thunder <b>3350</b> CFW	Thunder <b>3350S</b> CFW	Thunder <b>3230</b> CFW	Thunder <b>3430</b> CFW
<b>Firewall Performance</b>					
Throughput	30 Gbps	40 Gbps	40 Gbps	25 Gbps	38 Gbps
Layer 4 CPS	550K	750K	1.4 Million	1.4 Million	2 Million
Concurrent Sessions	32 Million	40 Million	64 Million	32 Million	64 Million
FW Rules	16K	32K	64K	16K	32K
<b>Secure Web Gateway Performance<sup>*1*2</sup></b>					
SSLi Throughput	TBD	TBD	5.5 Gbps	3.5 Gbps	5.5 Gbps
SSLi CPS	TBD	TBD	RSA: 20K ECDHE: 10K	RSA: 12.5K ECDHE: 7K	RSA: 18K ECDHE: 10K
<b>IPsec Performance<sup>*2</sup></b>					
IPsec Throughput	10 Gbps	15 Gbps	24 Gbps	15 Gbps	30 Gbps
IPsec Tunnels	5K	10K	20K	5K	10K
IKE Gateways	5K	10K	20K	5K	10K
<b>Network Interface</b>					
1 GE (BASE-T)	6	6	6	0	0
1 GE Fiber (SFP)	2	2	2	4	4
1/10 GE Fiber (SFP+)	8 + 4 <sup>5</sup>	4 <sup>5</sup>	8 + 4 <sup>5</sup>	4	4
25 GE Fiber (SFP28)	0	4	0	0	0
40 GE Fiber (QSFP+)	0	4	0	0	0
Management Ports	Ethernet Mgmt. Port, RJ-45 Console Port				
<b>Hardware Specifications</b>					
Processor	Intel Xeon 8-core	Intel Xeon 8-core	Intel Xeon 14-core	Intel Xeon 4-core	Intel Xeon 6-core
Memory (ECC RAM)	16 GB	32 GB	64 GB	16 GB	32 GB
Storage	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software	FTA-4	FTA-4
TLS/SSL Security Processor	Yes	Yes	Yes	Yes	Yes
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)	1.75 (H) x 17.5 (W) x 17.15 (D)	1.75 (H) x 17.5 (W) x 17.15 (D)
Rack Units (Mountable)	1U	1U	1U	1U	1U
Unit Weight	18 lbs	18 lbs	18 lbs	23 lbs	23 lbs
Power Supply (DC option available)	Dual 750W RPS	Dual 750W RPS	Dual 750W RPS	Dual 600W RPS	Dual 600W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz				
Power Consumption (Typical/ Max) <sup>*3</sup>	151W / 205W	165W / 238W	175W / 222W	190W / 240W	210W / 260W
Heat in BTU/hour (Typical/Max) <sup>*3</sup>	516 / 700	564 / 831	598 / 758	648 / 819	717 / 887
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	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM, NEBS   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM, NEBS   RoHS
Standard Warranty	90-Day Hardware and Software				

# Thunder CFW Physical Appliance Specifications (Cont.)

	Thunder <b>4440</b> CFW	Thunder <b>5440</b> CFW	Thunder <b>5840</b> CFW	Thunder <b>5840-11</b> CFW
<b>Firewall Performance</b>				
Throughput	70 Gbps	90 Gbps	100 Gbps	100 Gbps
Layer 4 CPS	2.8 Million	3.5 Million	4.5 Million	4.5 Million
Concurrent Sessions	64 Million	128 Million	128 Million	128 Million
FW Rules	32K	64K	64K	64K / 128K <sup>2</sup>
<b>Secure Web Gateway Performance<sup>*1,2</sup></b>				
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
<b>IPsec Performance<sup>2</sup></b>				
IPsec Throughput	30 Gbps	35 Gbps	50 Gbps	55 Gbps
IPsec Tunnels	10K	20K	20K	20K / 64K <sup>2</sup>
IKE Gateways	10K	20K	20K	20K / 64K <sup>2</sup>
<b>Network Interface</b>				
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			
<b>Hardware Specifications</b>				
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 <sup>2</sup>
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 Processor	Yes	Yes	Yes	Yes
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
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz			
Power Consumption (Typical/Max) <sup>3</sup>	360W / 445W	360W / 445W	375W / 470W	550W / 760W
Heat in BTU/hour (Typical/Max) <sup>3</sup>	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, GS, CB, VCCI, CCC, KCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM   RoHS
Standard Warranty	90-Day Hardware and Software			

# Thunder CFW Physical Appliance Specifications (Cont.)

	Thunder <b>6440</b> CFW	Thunder <b>7440</b> CFW	Thunder <b>7440-11</b> CFW	Thunder <b>7650</b> CFW
<b>Firewall Performance</b>				
Throughput	150 Gbps	220 Gbps	220 Gbps	370 Gbps
Layer 4 CPS	4.5 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
<b>Secure Web Gateway Performance<sup>*1*2</sup></b>				
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
<b>IPsec Performance<sup>2</sup></b>				
IPsec Throughput	65 Gbps	70 Gbps	70 Gbps	N/A
IPsec Tunnels	64K	64K	64K	N/A
IKE Gateways	64K	64K	64K	N/A
<b>Network Interface</b>				
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			
<b>Hardware Specifications</b>				
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 Processor	Yes	Yes	Yes	Yes
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) <sup>3</sup>	480W / 550W	690W / 820W	784W / 950W	864W / 1,091W
Heat in BTU/hour (Typical/Max) <sup>3</sup>	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, GS, CB, VCCI, CCC, BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM   RoHS, FIPS 140-2 <sup>1a</sup>	FCC Class A, UL, CE, GS, CB, VCCI, CCC <sup>4</sup> , KCC <sup>4</sup> , BSMI, RCM   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC <sup>4</sup> , KCC, BSMI <sup>4</sup> , RCM   RoHS
Standard Warranty	90-Day Hardware and Software			

The specifications, 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\_CBC\_SHA" with RSA 2K keys are used for RSA cases, "TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_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

<sup>1</sup> Certification in process | + FIPS model must be purchased

# Thunder CFW SPE Physical Appliance Specifications

	Thunder <b>4435</b> CFW	Thunder <b>5845</b> CFW	Thunder <b>7445</b> CFW	Thunder <b>14045</b> CFW Dual Modules
<b>Firewall Performance</b>				
Throughput	38 Gbps	100 Gbps	220 Gbps	300 Gbps
Layer 4 CPS	2.7 Million	4.5 Million	6.5 Million	8M
Concurrent Sessions	128 Million	128 Million	256 Million	512M
FW Rules	64K	64K / 128K <sup>2</sup>	128K	128K
<b>IPsec Performance<sup>2</sup></b>				
IPsec Throughput	20 Gbps	55 Gbps	70 Gbps	N/A
IPsec Tunnels	6K	20K / 64K <sup>2</sup>	64K	N/A
IKE Gateways	6K	20K / 64K <sup>2</sup>	64K	N/A
<b>Network Interface</b>				
1/10 GE Fiber (SFP+)	16	48	48	0
40 GE Fiber (QSFP+)	0	0	0	4
100 GE Fiber	0	4 (QSFP28)	4 (QSFP28)	4 (CFP2 or QSFP28)
Management Ports	Ethernet Mgmt. Port, RJ- 45 Console Port*			
<b>Hardware Specifications</b>				
Processor	Intel Xeon 10-core	Intel Xeon 18-core	2 x Intel Xeon 18-core	4 x Intel Xeon 18-core
Memory (ECC RAM)	64 GB	64 GB / 128GB <sup>2</sup>	128 GB	512 GB
Storage	SSD	SSD	SSD	Yes
Hardware Acceleration	FTA-3, SPE	2 x FTA-4, SPE	3 x FTA-4, SPE	8 x FTA-3, SPE
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)	5.3 (H) x 16.9 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	3U
Unit Weight	34.5 lbs	34.3 lbs	35.7 lbs	102 lb
Power Supply (DC option available)	Dual 1100W 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) <sup>3</sup>	350W / 420W	585W / 921W	784W / 1,078W	1,700W / 2,000W
Heat in BTU/hour (Typical/Max) <sup>3</sup>	1,195 / 1,433	1,997 / 3,143	2,676 / 3,679	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, TUV, CB, VCCI, CCC, MSIP, BSMI, RCM, EAC, NEBS   RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC*, BSMI, RCM   RoHS*	FCC Class A, UL, CE, GS, CB, VCCI, CCC*, BSMI, RCM   RoHS*	FCC Class A, UL, CE, GS, CB, VCCI, CQC, KCC, BSMI, RCM   RoHS
Standard Warranty	90-Day Hardware and Software			

The specifications, 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



# Thunder CFW Virtual Appliance Specifications

## vThunder CFW

Supported Hypervisors	VMware ESXi 5.0 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	●	●	●	●	●	●	● <sup>*1</sup>	● <sup>*1*</sup> 2	● <sup>*2</sup>	●
KVM	●	●	●	●	●	●	● <sup>*1</sup>	● <sup>*1*</sup> 2	● <sup>*2</sup>	●
Microsoft Hyper-V	●	●	●	●	● <sup>+</sup>					●
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 for Containers

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 4GB memory
Licenses	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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