

### Thunder CGN Physical Appliance Specifications

Performance	Thunder 940 CGN	Thunder 1040 CGN	Thunder 3040 CGN
Throughput	10 Gbps	20 Gbps	30 Gbps
Full TCP Connections Per Second	120K	300K	500K
Concurrent Sessions	16 Million	32 Million	64 Million
Application Delivery Partitions (ADP)	32	32	64
<b>Network Interfaces</b>			
1 GE (BASE-T)	5	5	6
1 GE Fiber (SFP)	0	0	2
1/10 GE Fiber (SFP+)	4 <sup>4</sup>	4 <sup>4</sup>	4
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port		Ethernet Mgmt Port, RJ-45 Console Port, Lights Out Management
<b>Hardware Specifications</b>			
Processor	Intel Communication Processor	Intel Communication Processor	Intel Xeon 4-core
Memory (ECC RAM)	8 GB	8 GB	16 GB
Storage	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software
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 16lbs (RPS)	15 lbs 17 lbs (RPS)	20.6 lbs
Power Supply (DC option available)	Single 750W <sup>2</sup>	Single 750W <sup>2</sup>	Dual 600W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 - 60 Hz		
Power Consumption (Typical/Max) <sup>1</sup>	60W / 80W	80W / 110W	180W / 240W
Heat in BTU/Hour (Typical/Max) <sup>1</sup>	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, BSMI, RCM   RoHS	FCC Class A, UL, CE, CB, VCCI, CCC, KCC, BSMI, RCM   RoHS
Standard Warranty	90-Day Hardware and Software		

# Thunder CGN Physical Appliance Specifications (Cont.)

Performance	Thunder <b>3350-E</b> CGN	Thunder <b>3350</b> CGN	Thunder <b>3350S</b> CGN
Throughput	30 Gbps	40 Gbps	50 Gbps
Full TCP Connections Per Second	500K	900K	1.5 Million
Concurrent Sessions	64 Million	96 Million	128 Million
Application Delivery Partitions (ADP)	64	127	1,023
<b>Network Interfaces</b>			
1 GE Copper	6	6	6
1 GE Fiber (SFP)	2	2	2
1/10 GE Fiber (SFP+)	8 + 4*4	4*4	8 + 4*4
25 GE Fiber (SFP28)	0	4	0
40 GE Fiber (QSFP+)	0	4	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
Memory (ECC RAM)	16 GB	32 GB	64 GB
Storage	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software
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) <sup>1</sup>	151W / 205W	165W / 238W	175W / 222W
Heat in BTU/Hour (Typical/Max) <sup>1</sup>	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 CGN Physical Appliance Specifications (Cont.)

Performance	Thunder <b>4440</b> CGN	Thunder <b>5440</b> CGN	Thunder <b>5840</b> CGN	Thunder <b>5840-11</b> CGN
Throughput	78 Gbps	100 Gbps	115 Gbps	115 Gbps
Full TCP Connections Per Second	1.6 Million	2.2 million	3 Million	3 Million
Concurrent Sessions	128 Million	256 Million	256 Million	256 Million
Application Delivery Partitions (ADP)	127	1,023	1,023	1,023
<b>Network Interfaces</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, Lights Out Management			
<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
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	2 x FTA-4	2 x FTA-4	2x FTA-4	2x FTA-4
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>1</sup>	360W / 445W	360W / 445W	375W / 470W	550W / 760W
Heat in BTU/Hour (Typical/Max) <sup>1</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, 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 CGN Physical Appliance Specifications (Cont.)

Performance	Thunder <b>6440</b> CGN	Thunder <b>7440</b> CGN	Thunder <b>7440-11</b> CGN	Thunder <b>7650</b> CGN
Throughput	150 Gbps	220 Gbps	220 Gbps	370 Gbps
Full TCP Connections Per Second	3 Million	5 Million	5 Million	8 Million
Concurrent Sessions	256 Million	256 Million	256 Million	384 Million
Application Delivery Partitions (ADP)	1,023	1,023	1,023	1,023
<b>Network Interfaces</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, Lights Out Management			
<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
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>*1</sup>	480W / 550W	690W / 820W	784W / 950W	864W / 1,091W
Heat in BTU/hour (Typical/Max) <sup>*1</sup>	1,638 / 1,877	2,365 / 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 <sup>*3</sup>	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.

<sup>\*1</sup> With base model. Number varies by SSL model | <sup>\*2</sup> Optional RPS |  
<sup>\*3</sup> FIPS model must be purchased | <sup>\*4</sup> 10 Gbps speed only | <sup>^</sup> Certification in process

# Thunder CGN SPE Physical Appliance Specifications

	Thunder <b>4435</b> CGN	Thunder <b>5845</b> CGN	Thunder <b>7445</b> CGN	Thunder <b>7655S</b> CGN	Thunder <b>14045</b> CGN Dual Modules
<b>Performance</b>					
Throughput	38 Gbps	115 Gbps	220 Gbps	370 Gbps	300 Gbps
Full TCP Connections Per Second	1.4 Million	3 Million	5 Million	8 Million	8 Million
Concurrent Sessions	128 Million	256 Million	256 Million	384 Million	512 Million
Selective Dynamic Filter Rate [PPS] <sup>†</sup>	55 Million	166 Million	332 Million	500 Million	450 Million
Selective Dynamic Filter Hardware Entries (IPv4/IPv6)	256K / 128K	256K / 128K	256K / 128K	512K / 256K	512K / 256K
Application Delivery Partitions	1,023	1,023	1,023	1,023	1,023
<b>Network Interfaces</b>					
1/10 GE Fiber (SFP+)	16	48	48	0	0
40 GE Fiber (QSFP+)	0	0	0	0	4
100 GE Fiber	0	4 (QSFP28)	4 (QSFP28)	16 (QSFP28)	4 (CFP or QSFP28)
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port*, Lights Out Management				
<b>Hardware Specifications</b>					
Processor (Intel Xeon)	10-core	18-core	2 x 18-core	2 x 28-core	4 x 18-core
Memory (ECC RAM)	64 GB	64 GB	128 GB	384 GB	512 GB
Storage	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	FTA-3, SPE	2 x FTA-4, SPE	3 x FTA-4, SPE	2 x FTA-5, 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)	2.625 (H) x 17.5 (W) x 30 (D)	5.3 (H) x 16.9 (W) x 28 (D)
Rack Units (Mountable)	1U	1U	1U	1.5U	3U
Unit Weight	34.5 lbs	34.3 lbs	35.7 lbs	44.2 lbs	102 lb
Power Supply (DC option available)	Dual 1100W RPS	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) <sup>†</sup>	350W / 420W	585W / 921W	784W / 1,078W	1,121W / 1,300W	1,700W / 2,000W
Heat in BTU/Hour (Typical/Max) <sup>†</sup>	1,195 / 1,433	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, TUV, CB, VCCI, CCC, MSIP, BSMI, RCM, EAC, NEBS   RoHS	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, BSMI, RCM   RoHS	FCC Class A, UL, CE, 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.

<sup>†</sup> Packets per second. Hardware-based selective dynamic filtering feature is available on Thunder CGN SPE family |

\* With base model. Number varies by SSL model | + Thunder 14045 comes with a splitter cable for console to provide access to both modules.



# A10 Thunder on Dell Technologies OEM Solution Bundle Specifications

## Single Service Platform (SSP) Specifications

The SSP range consists of A10's cloud-ready software and purpose-built Dell Technologies hardware, with an inclusive license\*1 that has the capabilities of delivering Application Delivery Controller (ADC), SSL Insight (SSLi), and Carrier Grade Networking (CGN) solutions along with an expanded feature set of A10 capabilities.

Thunder CGN Performance	Dell Technologies VEP4600	Dell Technologies R640		Dell Technologies R740	
		10GE NIC Model	100GE NIC Model	10GE NIC Model	100GE NIC Model
Throughput	12 Gbps	30 Gbps	60 Gbps	60 Gbps	100 Gbps
Full TCP Connections Per Second	500K	1.5 Million	1.5 Million	2 Million	2 Million
Concurrent Sessions	50 Million	100 Million	100 Million	100 Million	100 Million
<b>Network Interfaces</b>					
1 GE (BASE-T)	6	2	2	2	2
1/10 GE Fiber (SFP+)	4	6	2	10	10
100 GE Fiber (QSFP28)	0	0	2	0	4
<b>Hardware Specifications</b>					
Processor	Intel Xeon 8-core	2 x Intel Xeon 20-core		2 x Intel Xeon 20-core	
Memory	16 GB	192 GB		192 GB	
Storage	SSD	2 x SSD		2 x SSD	
TLS/SSL Security Processor	Built-in	2 x Security card (PCIe)		2 x Dual-chip security card (PCIe)	
Power Supply	Single 230W Power Supply	Dual 750W Power Supply		Dual 2000W Power Supply	

## Multi-tenant Virtual Platform (MVP) Specifications

A10 Thunder Multi-tenant Virtual Platform (MVP) on Dell Technologies is an advanced platform enabling multiple virtual instances or services on a single platform, with inclusive license\*1 that has the capabilities of delivering Application Delivery Controller (ADC), SSL Insight (SSLi), and Carrier Grade Networking (CGN) solutions along with an expanded feature set of A10 capabilities.

Performance with CGNAT	Dell Technologies R640		Dell Technologies R740	
	10GE NIC Model	100GE NIC Model	10GE NIC Model	100GE NIC Model
Throughput	32 Gbps	60 Gbps	56 Gbps	120 Gbps
Full TCP Connections Per Second	750K	850K	1.5 Million	1.5 Million
Concurrent Sessions	100 Million	220 Million	140 Million	220 Million
<b>Network Interfaces</b>				
1 GE (BASE-T)	2	2	2	2
1/10 GE Fiber (SFP+)	6	2	10	10
100 GE Fiber (QSFP28)	0	2	0	4
<b>Hardware Specifications</b>				
Processor	2 x Intel Xeon 20-core		2 x Intel Xeon 20-core	
Memory	192 GB		192 GB	
Storage	2 x SSD		2 x SSD	
TLS/SSL Security Processor	2 x Security card (PCIe)		2 x Dual-chip security card (PCIe)	
Power Supply	Dual 750W Power Supply		Dual 2000W Power Supply	

\*1 A10 Thunder on Dell Technologies OEM bundle solutions are licensed under the Convergent Firewall (CFW) license. Check with your A10 Networks sales representative for the latest information on full feature testing and validation.

All Thunder MVP performance specifications are aggregate number that use the following VM profiles:

- R640 10GE NIC model is tested with 4-VM profile (8 vCPUs, 16 GB memory, 30 GB storage, 16 SSL virtual functions (VFs) assigned on each vThunder)
- R640 100GE NIC model is tested with 4-VM profile (16 vCPUs, 32 GB memory, 30 GB storage, 8 SSL VFs assigned on each vThunder)
- R740 10GE and 100GE NIC model are tested with 8-VM profile (8 vCPUs, 16 GB memory, 30 GB storage, 16 SSL VFs assigned on each vThunder)

# Thunder CGN Virtual Appliance Specifications

## vThunder CGN

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	●	●	●	●	●+					●

\*1 SR-IOV

\*2 PCI Passthrough

+ 8 Gbps license not recommended for Microsoft Hyper-V

## Thunder CGN for Bare Metal

System Requirements	Minimum Hardware Requirement: Intel x86-based CPUs with minimum of 4 cores, 16 GB RAM, 80 GB of free disk space, 2 Ethernet interfaces (3 or more are recommended), Intel Network Adapters and drivers including igb, ixgbe, and i40e. For more details, see Installation Guide.
Reference Platforms	Cisco UCS, Dell PowerEdge, Ericsson Hyperscale Datacenter System (HDS), HP ProLiant and more
Bandwidth Licenses*	10 Gbps (4 cores), 20 Gbps (8 cores), 40 Gbps (14 cores) and 60 Gbps (24 cores) FlexPool (Up to 60 Gbps per Thunder CGN)
Standard Warranty	90-Day Software

\* Licenses are tied with maximum number of cores which can be allocated to ACOS.

# Thunder CGN Virtual Appliance Specifications (Cont.)

## Thunder CGN Container

Image Format	Docker
Operating System	<b>Reference Operating System:</b> <ul style="list-style-type: none"><li>• Ubuntu 16.04.3 LTS (Xenial Xerus)</li><li>• RedHat Enterprise Linux version 7.6</li></ul>
System Requirements	<b>Minimum Requirement:</b> <ul style="list-style-type: none"><li>• 1 or more data interface</li><li>• 1 vCPU and 4GB memory</li></ul>
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) <ul style="list-style-type: none"><li>• 1510B: 180 Gbps</li><li>• 512B: 103 Gbps</li><li>• IMIX: 75 Gbps</li></ul>
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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