



THUNDER CGN

IPv4 PRESERVATION & IPv6 TRANSITION MANAGEMENT

The most advanced carrier-grade networking solution, A10 Thunder® CGN provides high-performance, highly transparent network address and protocol translation that allows service providers and enterprises to extend IPv4 network connectivity while simultaneously transitioning to IPv6 standards.

EXTEND IPv4 WHILE ENABLING IPv6

The award-winning A10 Thunder CGN proactively solves IPv4 address exhaustion to overcome the challenges associated with the rapid increase of IP address demands for internet-connected devices and BYOD roll out. Thunder CGN delivers advanced features to help service providers and enterprises extend IPv4 connectivity, transition to IPv6 and reduce TCO.

As network addressing and IPv6 transition architectures can vary greatly across and within an organization, customers need a solution that provides the broadest support

for industry standards and meets different IP address and protocol translation requirements simultaneously.

Thunder CGN enhances your infrastructure security and availability to ensure your applications remain addressable and operate transparently through address translation with multiple mechanisms, such as integrated DDoS protection for NAT pools and application layer gateways (ALG).

Built on A10's market-proven Advanced Core Operating System (ACOS®), Thunder CGN delivers performance scalability up to 300 Gbps and offers the broadest range of form factors (physical, virtual and bare metal) for deployment flexibility.

PLATFORMS



THUNDER CGN
Physical & SPE
Appliances



vTHUNDER CGN
Virtual Appliance



THUNDER CGN
Bare Metal

MANAGEMENT



HARMONY CONTROLLER
Centralized Analytics and
Management



FLEXPOOL
Capacity Pooling
License

TALK WITH A10

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BENEFITS



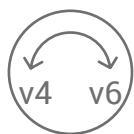
EXTEND IPv4 CONNECTIVITY

Solve IPv4 address exhaustion and extend the life of an IPv4 network infrastructure to ensure critical applications and services are always available and reliable.



REDUCE TCO

High performance in a compact form factor results in lower OPEX and CAPEX through efficient rack space usage, lower power consumption and reduced cooling requirements.



MANAGE IPv6 MIGRATION

Enable a smooth transition to IPv6 by supporting translation and tunneling between IPv4 and IPv6 networks. Various options, such as DS-Lite, 6rd, Lw4o6, NAT64/DNS64 and MAP, can run concurrently to allow network operators to phase in transition mechanisms as needed.



ENHANCE PROTECTION AND AVAILABILITY

Enhance your infrastructure security with NAT IP pool protection from large-scale DDoS attacks. Provide the highest connection reliability by using application layer gateways (ALG) and other important features such as high availability (HA) for hitless fail-over.



SCALE FOR IOT AND BYOD

The Internet of Things and BYOD adoption have enabled the rapid proliferation of internet-connected devices, depleting the available IPv4 address space. Plan to meet the demand for connectivity expansion and scale your infrastructure for growth to ensure service continuity.



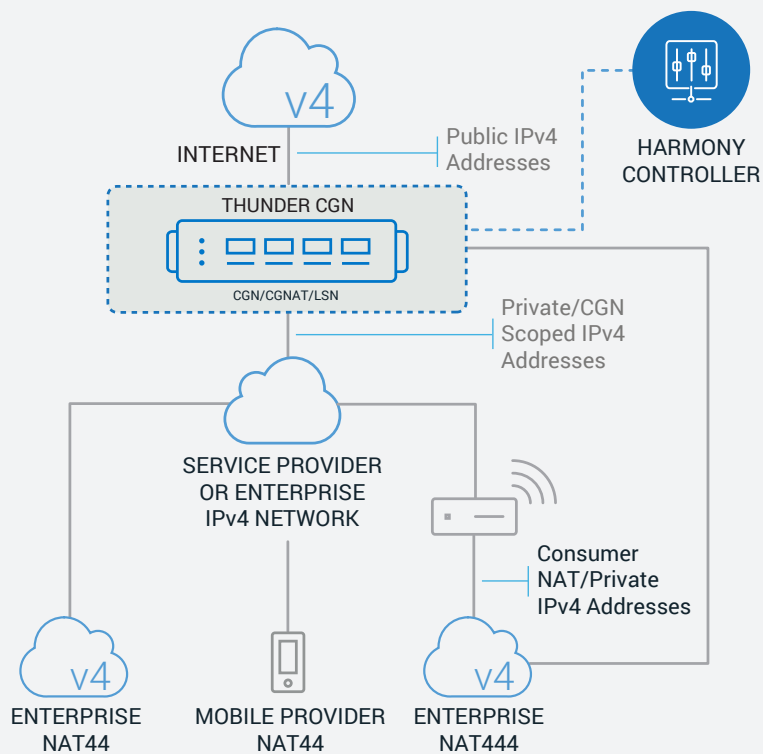
FLEXIBLE DEPLOYMENT OPTIONS

With physical, virtual and bare metal options, tailor Thunder CGN deployments to align with your software or hardware strategy, as needed.

PERFORMANCE & SCALABILITY

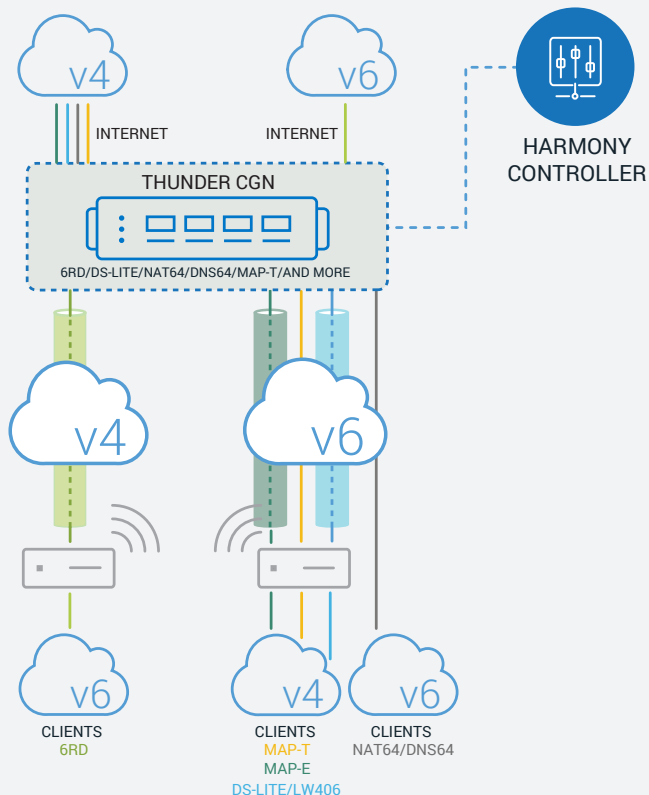
The award-winning Thunder CGN product line — with an industry-leading performance of 300 Gbps and 512 million concurrent sessions in a single appliance — offers up to 2.5 times the performance of the competition with less than half the data center footprint.

REFERENCE ARCHITECTURES



CARRIER-GRADE NAT DEPLOYMENT OPTIONS

Use A10 Thunder CGN to leverage a standards-based mechanism – carrier-grade network address translation (CGNAT), large-scale NAT (LSN), NAT444 or NAT44 – to reclaim existing IPv4 space.



IPv6 TRANSLATION OPTIONS

A10 Thunder CGN delivers IPv6 transition technologies, including prevalent protocol connectivity and interplay for phased IPv4-to-IPv6 transitions.

FEATURES



EXTEND IPv4 CONNECTIVITY

Carrier-grade network address translation (CGNAT) extends the service life of an IPv4 infrastructure, allows time to plan for an IPv6 transition and ultimately reduces cost by avoiding disruptions to business operations.

ADVANCED CGNAT FUNCTIONS

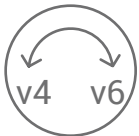
Gain a standards-based mechanism to reclaim existing public IPv4 address space. CGNAT scales networks to overcome IPv4 exhaustion with high-performance, highly transparent address and protocol translation, providing NAT44(4) and ALGs to support network growth and a seamless user experience.

MILLIONS OF CONCURRENT SESSIONS

Thunder CGN supports up to 512 million concurrent sessions with unprecedented setup and teardown rates in a compact form factor. Competing solutions require a large-chassis product with multiple application blades to achieve similar performance.

ADVANCED LOGGING

Gain comprehensive logging options to meet stringent compliance and government mandates. Enhance logging detail and use log compression features and techniques, such as deterministic or fixed NAT, to reduce log volumes and logging infrastructure requirements.



BROAD IPv6 TRANSITION OPTIONS

Since IPv6 is not backward compatible with IPv4, various solutions are available to achieve full connectivity, regardless of source or destination IP protocol.

PREVALENT PROTOCOL CONNECTIVITY

Transition technologies, such as Dual-Stack Lite (DS-Lite) or Light Weight 4 over 6 (Lw4o6), allow network operators to run an IPv6-only core network, while IPv4-only devices can still connect to the internet using softwires (or tunnels) through the IPv6-only infrastructure. IPv6 Rapid Deployment (6rd) provides similar behavior, allowing IPv6 access through an IPv4 network. MAP-T is a translation technique that builds on the Address plus Port method of stateless NAT to translate packets between IPv4 and IPv6 networks.

IPv6 CLIENT ACCESS TO IPv4 CONTENT

IPv6 was not built to be backward compatible with IPv4, complicating the deployment of IPv6 clients. Available with Thunder CGN, NAT64/DNS64 solves this problem by allowing IPv6-only devices to access IPv4-only content.

INTERPLAY FOR PHASED TRANSITION

Deploy transition technologies concurrently to enable a full transition lifecycle. For example, start with CGNAT to mitigate IPv4 address exhaustion and phase in NAT64/DNS64 to enable IPv6 clients to access IPv4 content.

FEATURES



ENSURE APP ACCESSIBILITY & RELIABILITY

Even though the OSI network layer principle should ensure separation between the application and network behavior, this is not always the case. Many applications rely on network transport information to operate, which can lead to problems when just the network portion is translated. Connection reliability is also crucial for applications that need to be available at all times.

CGNAT TRANSPARENCY

Facilitate predictable NAT behavior and provide transparent end-user experiences with advanced CGNAT features, such as Endpoint Independent Mapping (EIM), Endpoint Independent Filtering (EIF) and hairpinning. User quotas ensure that public IP port usage is fairly distributed between end-users and that viruses and malware, for example, can't exhaust resources for other users.

ALG PROTOCOL SUPPORT

It is critical for network operators to maintain connectivity for all application services and users, while ensuring application integrity. ALGs see to it that protocols – such as FTP, TFTP, RTSP, PPTP, SIP, ICMP, H.323, ESP, MGCP and DNS – remain functional. Many legacy NAT implementations do not provide this level of transparency.

STATEFUL SESSION SYNCHRONIZATION

Build non-stop operations with high-availability (HA) session synchronization. When deployed in HA mode, Thunder CGN maintains active sessions during fail-over to provide seamless user experience and ensure that end-users will be unaware of any failures or connection terminations. This prevents users from having to restart a large download, for example, and increases user satisfaction.

INTEGRATED DDOS PROTECTION

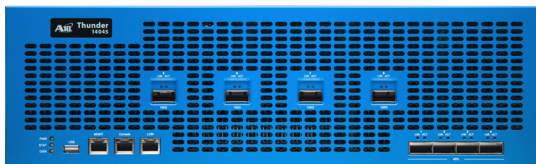
Secure NAT IP pools and prevent huge volumes of multi-vector DDoS attack traffic with integrated DDoS protection. Thunder SPE models provide additional hardware acceleration for policy enforcement. Offer maximum uptime of network resources to process subscriber traffic and avoid service interruptions.

THUNDER
14045 CGN
BY THE NUMBERS

300
Gbps

512M
Concurrent
Sessions

20M
Setups
Per Second



1,023
Application Delivery
Partitions

8M
Full TCP
Connections Per Second

MANAGEMENT & INTEGRATION

Thunder CGN deployments can be customized with centralized device management and integration into third-party frameworks, as needed. Software-based Thunder CGN options enable rapid deployment and flexible operation alongside the high-performance hardware options available.



GLOBAL MANAGEMENT

ANALYTICS-DRIVEN*

Gain subscriber and network services visibility with A10 Harmony™ Controller for Thunder CGN. Leverage traffic and security analytics to detect anomalous trends and get customizable alerts based on configurable metrics. Centrally configure and manage policies across services in a multi-cloud environment. Simplify capacity planning, improve service reliability and increase operational efficiency to reduce TCO of the overall solution.

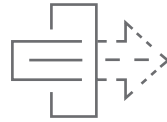
Thunder CGN can also be integrated in DevOps processes by using the aXAPI RESTful API for full control and automation.



READY

FOR SDN & NFV

Build a truly open platform to implement on-demand provisioning and integrate with OpenStack, SDN fabrics and NFV/MANO frameworks.



HYPERVERSOR

SOFTWARE SUPPORT

For virtual deployments, vThunder provides the full set of CGNAT features that run atop leading hypervisors – such as VMware ESXi, KVM and Microsoft Hyper-V – on your choice of virtualized infrastructure.



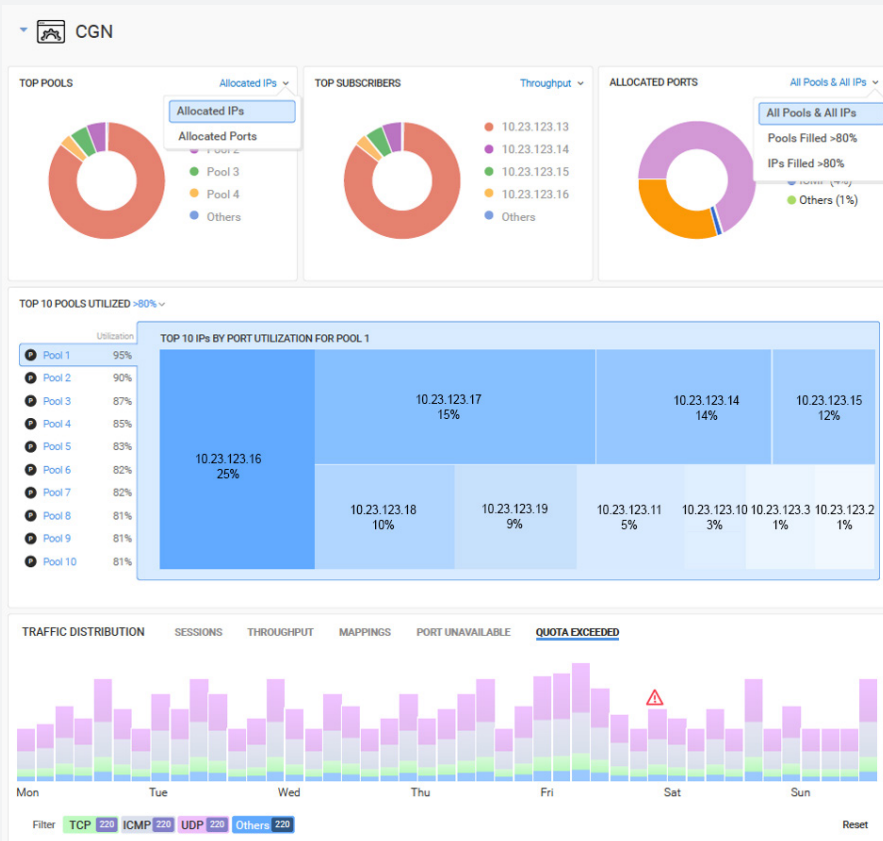
BARE METAL

HIGH-PERFORMANCE SOFTWARE

Thunder CGN for Bare Metal is a unique offering that allows service providers and enterprises to extend IPv4 connectivity and transition to IPv6. Build CGNAT software atop your choice of standardized COTS hardware for greater performance.

Gain direct and complete access to the underlying hardware and avoid the hypervisor overhead associated with virtualized solutions.

REAL-TIME ACTIONABLE INSIGHTS



ANALYTICS DRIVEN CGN TROUBLESHOOTING DASHBOARD*

Get real-time actionable insights on critical CGN services such as mapping distribution, NAT IP pool utilization, subscriber session insights, subscriber user quota alerts and more, for analysis and faster troubleshooting.

* Available in Q3 2018

THUNDER CGN PHYSICAL APPLIANCE

PERFORMANCE	THUNDER 840 _{CGN}	THUNDER 940 _{CGN}	THUNDER 1030S _{CGN}	THUNDER 1040 _{CGN}	THUNDER 3030S _{CGN}
Throughput	5 Gbps	10 Gbps	10 Gbps	20 Gbps	30 Gbps
Setups Per Second	350K	400K	800K	800K	1.1 Million
Full TCP Connections Per Second	120K	120K	300K	300K	437K
Concurrent Sessions	16 Million	16 Million	32 Million	32 Million	64 Million
Application Delivery Partitions	32	32	32	32	64
NETWORK INTERFACE					
1 GE Copper	5	5	6	5	6
1 GE Fiber (SFP)	0	0	2	0	2
1/10 GE Fiber (SFP+)	2	4	2	4	4
Management Ports	Ethernet Mgmt port, RJ-45 console port		1 x Ethernet Mgmt port, 1 x RJ-45 console port, 1 x Lights Out Management		
HARDWARE SPECIFICATIONS					
Processor	Intel Communication Processor	Intel Communication Processor	Intel Xeon 4-core	Intel Communication Processor	Intel Xeon 4-core
Memory (ECC RAM)	8 GB	8 GB	8 GB	8 GB	16 GB
Storage	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	Software	Software	Software	Software	Software
Dimensions (Inches)	1.75 (H) x 17 (W) x 12 (D)	1.75 (H) x 17.5 (W) x 17.25 (D)	1.75 (H) x 17.5 (W) x 17.45 (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	1U
Unit Weight	8.8 lbs	14 lbs 16lbs (RPS)	18.0 lbs 20.1 lbs (RPS)	15 lbs 17 lbs (RPS)	20.1 lbs
Power Supply (DC option available)	Single 150W (AC only)	Single 750W ²	Single 600W ⁺	Single 750W ²	Dual 600W RPS
	100 - 240 VAC, 50-60Hz		80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz		
Power Consumption (Typical/Max) ^{*1}	57W / 75W	60W / 80W	98W / 108W	80W / 110W	131W / 139W
Heat in BTU/Hour (Typical/Max) ^{*1}	195 / 256	205 / 273	334 / 369	273 / 376	447 / 474
Cooling Fan	Single Fixed Fan	Removable Fans	Hot Swap Smart 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 ¹ , RCM ¹ RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, CCC, KCC, BSMI, RCM, FAC RoHS, FIPS 140-2 ^{*3}	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI ¹ , RCM ¹ RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, CCC, KCC, BSMI, RCM, EAC, FAC RoHS, FIPS 140-2 ^{*3}
Standard Warranty	90-Day Hardware and Software				

Thunder CGN Physical Appliance (Cont.)

PERFORMANCE	THUNDER 3040CGN	THUNDER 3230CGN	THUNDER 3430CGN	THUNDER 4430CGN	THUNDER 4440CGN
Throughput	30 Gbps	30 Gbps	42 Gbps	38 Gbps	80 Gbps
Setups Per Second	1.1 Million	1.8 Million	2.1 Million	2.1 Million	2.5 Million
Full TCP Connections Per Second	437K	891K	1 Million	1 Million	1.1 Million
Concurrent Sessions	64 Million	64 Million	128 Million	128 Million	128 Million
Application Delivery Partitions	64	64	127	127	127
NETWORK INTERFACE					
1 GE Copper	6	0	0	0	0
1 GE Fiber (SFP)	2	4	4	0	0
1/10 GE Fiber (SFP+)	4	4	4	16	24
40 GE Fiber (QSFP+)	0	0	0	4	4
Management Ports	1 x Ethernet Mgmt port, 1 x RJ-45 console port, 1 x Lights Out Management				
HARDWARE SPECIFICATIONS					
Processor	Intel Xeon 4-core	Intel Xeon 4-core	Intel Xeon 6-core	Intel Xeon 6-core	Intel Xeon 6-core
Memory (ECC RAM)	16 GB	16 GB	32 GB	32 GB	32 GB
Storage	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	Software	FTA-4	FTA-4	FTA-3	2 x FTA-4
Dimensions (Inches)	1.75 (H) x 17.5 (W) x 17.45 (D)	1.75 (H) x 17.5 (W) x 17.15 (D)	1.75 (H) x 17.5 (W) x 17.15 (D)	1.75 (H) x 17.5 (W) x 24.6 (D)	1.75 (H) x 17.5 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	1U	1U
Unit Weight	20.1 lbs	23 lbs	23 lbs	25.2 lbs	32.5 lbs
Power Supply (DC option available)	Dual 600W RPS	Dual 600W RPS	Dual 600W RPS	Dual 600W RPS	Dual 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz				
Power Consumption (Typical/Max)*1	180W / 240W	190W / 240W	210W / 260W	266W / 319W	360W / 445W
Heat in BTU/Hour (Typical/Max)*1	615 / 819	648 / 819	717 / 887	908 / 1,088	1,229 / 1,519
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, KCC, BSMI, RCM, NEBS RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM, NEBS RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, CCC, KCC, BSMI, RCM RoHS, FIPS 140-2**3	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS, FIPS 140-2**3
Standard Warranty	90-Day Hardware and Software				

Thunder CGN Physical Appliance (Cont.)

PERFORMANCE	THUNDER 5330 CGN	THUNDER 5430-11 CGN	THUNDER 5440 CGN	THUNDER 5630 CGN	THUNDER 5840 CGN
Throughput	78 Gbps	77 Gbps	100 Gbps	76 Gbps	115 Gbps
Setups Per Second	3.1 Million	3.1 Million	5 Million	5.9 Million	7 Million
Full TCP Connections Per Second	1.2 Million	1.6 Million	2.2 Million	3 Million	3 Million
Concurrent Sessions	128 Million	256 Million	256 Million	256 Million	256 Million
Application Delivery Partitions	127	1,023	1,023	1,023	1,023
NETWORK INTERFACE					
1 GE Fiber (SFP)	0	0	0	4	0
1/10 GE Fiber (SFP+)	8	16	24	24	24
40 GE Fiber (QSFP+)	0	4	4	4	4
Management Ports	1 x Ethernet Management Port, 1 x RJ-45 Console Port				
HARDWARE SPECIFICATIONS					
Processor	Intel Xeon 10-core	Intel Xeon 10-core	Intel Xeon 12-core	2 x Intel Xeon 8-core	Intel Xeon 18-core
Memory (ECC RAM)	32 GB	64 GB	64 GB	128 GB	64 GB
Storage	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	FTA-4	2 x FTA-3	2 x FTA-4	4 x FTA-2	2 x FTA-4
Dimensions (Inches)	1.75 (H) x 17.5 (W) x 17.15 (D)	1.75 (H) x 17.5 (W) x 24.6 (D)	1.75 (H) x 17.5 (W) x 30 (D)	5.3 (H) x 16.9 (W) x 28 (D)	1.75 (H) x 17.5 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	3U	1U
Unit Weight	23 lbs	25.6 lbs	32.5 lbs	72 lbs	32.5 lbs
Power Supply (DC option available)	Dual 600W RPS	Dual 600W RPS	Dual 1100W RPS	2+2 1100W RPS	Dual 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz				
Power Consumption (Typical/Max)*1	210W / 260W	288W / 345W	360W / 445W	780W / 890W	375W / 470W
Heat in BTU/Hour (Typical/Max)*1	717 / 887	983 / 1,178	1,229 / 1,519	2,661 / 3,037	1,280 / 1,604
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, NEBS RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, CCC, KCC, BSMI, RCM RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, KCC*, EAC, FAC RoHS, FIPS 140-2**	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM RoHS
Standard Warranty	90-Day Hardware and Software				

Thunder CGN Physical Appliance (Cont.)

	THUNDER 5840-11 _{CGN}	THUNDER 6430 _{CGN}	THUNDER 6440 _{CGN}	THUNDER 6630 _{CGN}	THUNDER 7440 _{CGN}	THUNDER 7440-11 _{CGN}
PERFORMANCE						
Throughput	115 Gbps	150 Gbps	160 Gbps	155 Gbps	220 Gbps	220 Gbps
Setups Per Second	7 Million	5.2 Million	6.5 Million	7.5 Million	9 Million	9 Million
Full TCP Connections Per Second	3 Million	2.6 Million	2.8 Million	3.2 Million	5 Million	5 Million
Concurrent Sessions	256 Million	256 Million	256 Million	256 Million	256 Million	256 Million
Application Delivery Partitions	1,023	1,023	1,023	1,023	1,023	1,023
NETWORK INTERFACE						
1/10 GE Fiber (SFP+)	48	16	48	12	48	48
40 GE Fiber (QSFP+)	0	4	4	0	4	0
100 GE Fiber	4 (QSFP28)	0	0	4 (CXP)	0	4 (QSFP28)
Management Ports	1 x Ethernet Management Port, 1 x RJ-45 Console Port					
HARDWARE SPECIFICATIONS						
Processor	Intel Xeon 18-core	2 x Intel Xeon 8-core	2 x Intel Xeon 10-core	2 x Intel Xeon 12-core	2 x Intel Xeon 18-core	2 x Intel Xeon 18-core
Memory (ECC RAM)	64 GB	128 GB	128 GB	128 GB	128 GB	128 GB
Storage	SSD	SSD	SSD	SSD	SSD	SSD
Hardware Acceleration	2x FTA-4	4 x FTA-3	3 x FTA-4	4 x FTA-3	3 x FTA-4	3 x 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)	5.3 (H) x 16.9 (W) x 28 (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	3U	1U	1U
Unit Weight	34.3 lbs	39 lbs	36 lbs	74.5 lbs	35.7 lbs	35.7 lbs
Power Supply (DC option available)	Dual 1500W RPS	Dual 1100W RPS	Dual 1100W RPS	2+2 1100W RPS	Dual 1100W RPS	Dual 1500W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz					
Power Consumption (Typical/Max)* ¹	550W / 760W	590W / 680W	480W / 550W	995W / 1,150W	690W / 820W	784W / 950W
Heat in BTU/Hour (Typical/Max)* ¹	1,877 / 2,594	2,013 / 2,320	1,638 / 1,877	3,395 / 3,924	2,355 / 2,798	2,676 / 3,242
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, TUV, CB, VCCI, CCC, KCC, BSMI, RCM, EAC, FAC, NEBS RoHS, FIPS 140-2* ³	FCC Class A, UL, CE, GS, CB, VCCI, CCC, BSMI, RCM RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, KCC*, EAC, FAC RoHS, FIPS 140-2* ³	FCC Class A, UL, CE, GS, CB, VCCI, CCC, KCC, BSMI, RCM RoHS, FIPS 140-2* ³	FCC Class A, UL, CE, GS, CB, VCCI, CCC*, 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} With base model. Number varies by SSL model | ^{*2} Optional RPS | ^{*3} FIPS model must be purchased | * Certification in process

THUNDER CGN SPE PHYSICAL APPLIANCE

	THUNDER 4435 CGN	THUNDER 5435 CGN	THUNDER 5845 CGN	THUNDER 6435 CGN
PERFORMANCE				
Throughput	38 Gbps	77 Gbps	115 Gbps	155 Gbps
Setups Per Second	3 Million	3.5 Million	7 Million	7.5 Million
Full TCP Connections Per Second	1.4 Million	1.6 Million	3 Million	3.2 Million
Concurrent Sessions	128 Million	256 Million	256 Million	256 Million
Selective Dynamic Filter Rate [PPS] [†]	55 Million	112 Million	166 Million	224 Million
Selective Dynamic Filter Hardware Entries (IPv4/IPv6)	256K / 128K	256K / 128K	256K / 128K	256K / 128K
Application Delivery Partitions	1,023	1,023	1,023	1,023
NETWORK INTERFACE				
1/10 GE Fiber (SFP+)	16	16	48	16
40 GE Fiber (QSFP+)	0	4	0	4
100 GE Fiber	0	0	4 (QSFP28)	0
Management Ports	1 x Ethernet Management Port, 1 x RJ-45 Console Port, 1 x Lights Out Management			
HARDWARE SPECIFICATIONS				
Processor (Intel Xeon)	10-core	10-core	18-core	2 x 12-core
Memory (ECC RAM)	64 GB	64 GB	64 GB	128 GB
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	FTA-3, SPE	2 x FTA-3, SPE	2 x FTA-4, SPE	4 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)	1.75 (H) x 17.5 (W) x 30 (D)
Rack Units (Mountable)	1U	1U	1U	1U
Unit Weight	34.5 lbs	35.5 lbs	34.3 lbs	39 lbs
Power Supply (DC option available)	Dual 1100W RPS	Dual 1100W RPS	Dual 1500W RPS	Dual 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz			
Power Consumption (Typical/Max)*	350W / 420W	400W / 480W	585W / 921W	620W / 710W
Heat in BTU/Hour (Typical/Max)*	1,195 / 1,433	1,365 / 1,638	1,997 / 3,143	2,116 / 2,423
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, TUV, CB, VCCI, CCC, BSMI, RCM, NEBS RoHS	FCC Class A, UL, CE, GS, CB, VCCI, CCC*, BSMI, RCM RoHS^	FCC Class A, UL, CE, TUV, CB, VCCI, CCC, BSMI, RCM, NEBS RoHS
Standard Warranty	90-Day Hardware and Software			

THUNDER CGN SPE PHYSICAL APPLIANCE

	THUNDER 6635 CGN	THUNDER 7445 CGN	THUNDER 14045 CGN SINGLE MODULE	THUNDER 14045 CGN DUAL MODULE
PERFORMANCE				
Throughput	155 Gbps	220 Gbps	150 Gbps	300 Gbps
Setups Per Second	7.5 Million	9 Million	10 Million	20 Million
Full TCP Connections Per Second	3.2 Million	5 Million	4 Million	8 Million
Concurrent Sessions	256 Million	256 Million	256 Million	512 Million
Selective Dynamic Filter Rate [PPS]*	224 Million	332 Million	224 Million	450 Million
Selective Dynamic Filter Hardware Entries (IPv4/IPv6)	256K / 128K	256K / 128K	256K / 128K	512K / 256K
Application Delivery Partitions	1,023	1,023	1,023	1,023
NETWORK INTERFACE				
1/10 GE Fiber (SFP+)	12	48	0	0
40 GE Fiber (QSFP+)	0	0	4	4
100 GE Fiber	4 (CXP)	4 (QSFP28)	4 (CFP or QSFP28)	4 (CFP or QSFP28)
Management Ports	1 x Ethernet Management Port, 1 x RJ-45 Console Port*, 1 x Lights Out Management			
HARDWARE SPECIFICATIONS				
Processor (Intel Xeon)	2 x 12-core	2 x 18-core	2 x 18-core	4 x 18-core
Memory (ECC RAM)	128 GB	128 GB	256 GB	512 GB
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	4 x FTA-3, SPE	3 x FTA-4, SPE	4 x FTA-3, SPE	8 x FTA-3, SPE
Dimensions (Inches)	5.3 (H) x 16.9 (W) x 28 (D)	1.75 (H) x 17.5 (W) x 30 (D)	5.3 (H) x 16.9 (W) x 28 (D)	5.3 (H) x 16.9 (W) x 28 (D)
Rack Units (Mountable)	3U	1U	3U	3U
Unit Weight	74.5 lbs	35.7 lbs	80 lbs	102 lbs
Power Supply (DC option available)	2+2 1100W RPS	Dual 1500W RPS	2+2 1100W RPS	2+2 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz			
Power Consumption (Typical/Max)*	995W / 1,150W	784W / 1,078W	1,000W / 1,200W	1,700W / 2,000W
Heat in BTU/Hour (Typical/Max)*	3,395 / 3,924	2,676 / 3,679	3,412 / 4,095	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, EAC, FAC 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	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.

[†] 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.

vTHUNDER CGN VIRTUAL APPLIANCE

vTHUNDER CGN

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
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

THUNDER CGN FOR BARE METAL

System Requirements	Minimum Hardware Requirement <ul style="list-style-type: none"> • 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, i40e and more
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)
Standard Warranty	90-Day Software

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

DETAILED FEATURE LIST

Features may vary by appliance.

IPv4 Preservation/IPv6 Transition

- Full-native IPv6 management and feature support
- Application Level Gateways (ALG) for FTP, TFTP, RTSP, PPTP, SIP, ESP, H.323, MGCP, ICMP, DNS
- Insert headers (X-Forwarded-For, X-Client-IP, X-MSISDN)
- Carrier-Grade NAT (CGN/CGNAT), Large-Scale NAT (LSN), NAT444, NAT44
- NAT64/DNS64, DS-Lite, Lw4o6, 6rd, NAT46, NPTv6, MAP-E

Integrated DDoS Protection

- IP Anomaly Filtering
- Selective Dynamic Filtering
- Connection Rate Limiting

High-Performance CGN Logging

- Up to 32 logging servers
- ASCII, HEX, Binary, RADIUS SYSLOG (RFC5424) or custom logging format
- Logging optimization (Port batching, Fixed-NAT, HEX, Binary logging)

Networking

- Integrated Layer 2/Layer 3
- Transparent Mode/Gateway Mode
- Routing – Static Routes, IS-IS (v4/v6), RIPv2/ng, OSPF v2/v3, BGP4+
- VLAN (802.1Q)

- Link Aggregation (802.1AX), LACP
- Access Control Lists (ACLs)
- Traditional IPv4 NAT/NAPT
- IPv6 NAPT
- Jumbo Frame support*
- Hardware-accelerated VXLAN*
- NVGRE

Management

- Dedicated on-box management interface (GUI, CLI, SSH, Telnet)
- SNMP, syslog, email alerts, NetFlow v9 and v10 (IPFIX), sFlow
- Port mirroring
- RESTful API (aXAPI)
- LDAP, TACACS+, RADIUS support
- Granular Role-based Access Control
- Configurable control CPU counts

Virtualization

- Scale-out cluster
- aVCS (Virtual Chassis System)*
- vThunder Virtual Appliance for VMware vSphere ESXi, Microsoft Hyper-V, and KVM (VirtIO, Open vSwitch with DPDK and SR-IOV)
- Multi-tenancy with Application Delivery Partitions (ADP)
 - Partition-based management
 - L3 virtualization
- Hypervisor acceleration and management integration

High-Performance, Scalable Platform

- Advanced Core Operating System (ACOS)
 - Linear application scaling
 - ACOS on data plane
- Linux on control plane
- Flexible traffic acceleration (FTA) for scalable flow distribution, common attack mitigation
 - Hardware FTA utilizing FPGAs

Carrier-Grade Hardware*

- Advanced hardware architecture
- Hot-swap Redundant Power Supplies (AC and DC)
- Smart Fans (hot swap)
- Solid-state drive (SSD)
- Tamper detection
- Lights Out Management (LOM/IPMI)
- 40 GbE and 100 GbE ports

Security and Capability Assurance Certifications*

- Common Criteria EAL 2+
- FIPS 140-2 Level 2
- Joint Interoperability Test Command (JITC)
- Network Equipment Building System (NEBS) compliance

* Features may vary by appliance.

DETAILED FEATURE LIST

Features may vary by appliance.

Visibility & Analytics with Harmony Controller

- Subscriber
 - Active sessions
 - Session opening and closing rates
 - TopN flow consuming subscribers
 - TopN bandwidth consuming subscribers
- CGN Services
 - Allocated Mappings
 - Mapping opening and freeing rates
 - Mapping distribution per protocol and per technology
- Mapping errors
- NAT IP pool utilization
- TopN pool consumption stats
- Session distribution per NAT technology
- Destination
 - Overall packet rate
 - Analytics on fragmented/malformed traffic
 - Flow open attempts from Internet

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