DATA SHEET

Thunder CGN

IPv4 Preservation and IPv6 Transition Management

A10 Thunder® Carrier Grade Networking (CGN), provides high-performance CGNAT with protocol translation that allows service providers and enterprise to extend IPv4 investment 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 CGNAT features to help service providers and enterprises extend IPv4 connectivity, transition to IPv6 and reduce TCO, while supporting network and infrastructure transformation to cloud-native, 5G, and edge technologies.

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 advanced functionality across the broadest range of form factors - container, virtual, bare metal and physical - with performance up to 370 Gbps.

Platforms

Physical and SPE Appliances

Virtual Appliance

Bare Metal

Container

Related Products

Harmony Controller
Centralized Analytics and Management

FlexPool
Capacity Pooling License

Talk with A10

A10networks.com/cgn

Benefits

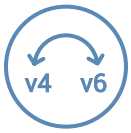
Extend IPv4

Investment

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, reduced cooling requirements, and automated tools for efficient management and operations.



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.

Secure

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

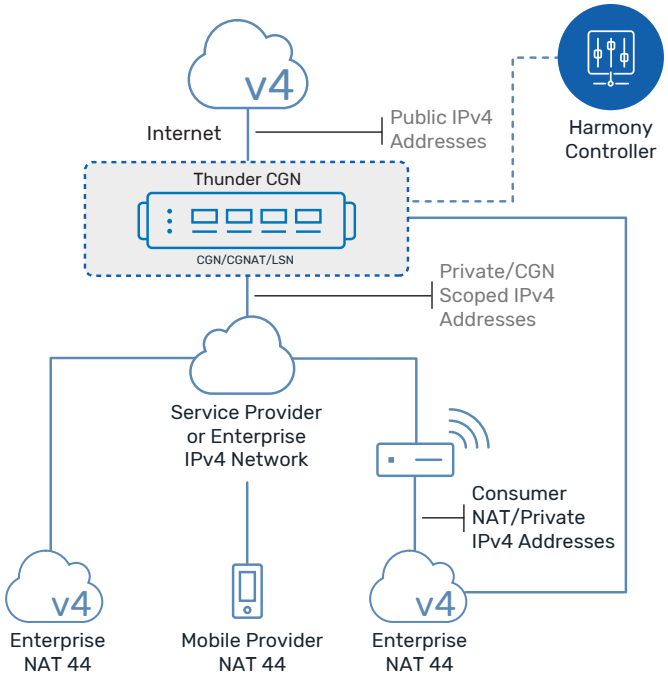
With physical, virtual, bare metal and container options, tailor Thunder CGN deployments to align with your software or hardware strategy, as needed for enterprise and service provider environments (fixed, mobile or multi-access edge compute (MEC)).

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.

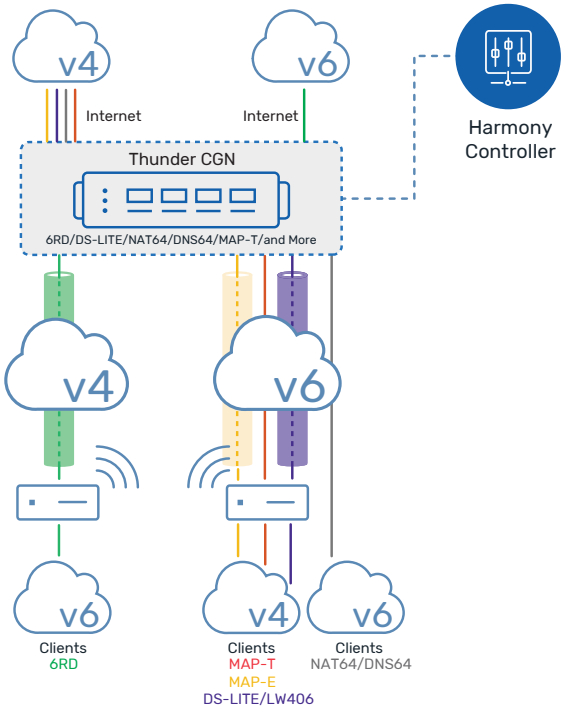
Reference Architectures

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 Migration Options



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

Features

Extend IPv4 Investment

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

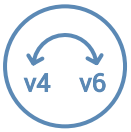
Gain a standards-based mechanism to reclaim existing public IPv4 address space. CGNAT scales networks to overcome IPv4 exhaustion with high-performance, highly transparent address and protocol translation, providing NAT44(4) and ALGs to support network growth and a seamless user experience.

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.



Comprehensive IPv4 to 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 IPv6 Migration

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.

Ensure App Accessibility and 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.

Management and 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 and Analytics

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 and NFV

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

Hypervisor

Software Support

For virtual deployments, vThunder provides the full set of CGNAT features that run on top 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 on top 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.

Cloud Native

5G, Edge, Cloud Deployments

Thunder CGN can be deployed in a container-native environment such as Docker and Kubernetes. This helps the organization build a flexible and efficient cloud-native development platform.

Real-time Actionable Insights

Analytics-driven CGN Dashboard

Thunder CGN with Harmony Controller provides 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.

Thunder CGN Physical Appliance Specifications

Performance	Thunder 940 CGN	Thunder 1040 CGN	Thunder 3350-E 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
Network Interfaces			
1 GE Copper	5	5	6
1 GE Fiber (SFP)	0	0	2
1/10 GE Fiber (SFP+)	4*4	4*4	8 + 4*4
25 GE Fiber (SFP28)	0	0	0
40 GE Fiber (QSFP+)	0	0	0
100 GE Fiber (QSFP28)	0	0	0
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port		
Hardware Specifications			
Processor	Intel Communication Processor	Intel Communication Processor	Intel Xeon 8-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 18(D)
Rack Units (mountable)	1U	1U	1U
Unit Weight	14 lbs 16 lbs (RPS)	15 lbs 17 lbs (RPS)	18 lbs
Power Supply (DC option available)	Single 750W*2	Single 750W*2	Dual 750W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 – 60 Hz		
Power Consumption (typical/max)*1	60W / 80W	80W / 110W	151W / 205W
Heat in BTU/Hour (typical/max)*1	205 / 273	273 / 376	516 / 700
Cooling Fan (front-to-back airflow)	Removable Fans	Removable Fans	Hot Swap Smart Fans
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS
Standard Warranty	90-day Hardware and Software		

Thunder CGN Physical Appliance (cont.)

Performance	Thunder 3350 CGN	Thunder 3350S CGN	Thunder 4440 CGN
Throughput	40 Gbps	50 Gbps	78 Gbps
Full TCP Connections per Second	900K	1.5 Million	1.5 Million
Concurrent Sessions	96 Million	128 Million	128 Million
Application Delivery Partitions (ADP)	127	1,023	127
Network Interfaces			
1 GE Copper	6	6	0
1 GE Fiber (SFP)	2	2	0
1/10 GE Fiber (SFP+)	4*4	8 + 4*4	24
25 GE Fiber (SFP28)	4	0	0
40 GE Fiber (QSFP+)	4	0	4
	0	0	0
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port		Ethernet Mgmt Port, RJ-45 Console Port, Lights Out Management
Hardware Specifications			
Processor	Intel Xeon 8-core	Intel Xeon 14-core	Intel Xeon 6-core
Memory (ECC RAM)	32 GB	64 GB	32 GB
Storage	SSD	SSD	SSD
Hardware Acceleration	Software	Software	2 x FTA-4
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 30 (D)
Rack Units (mountable)	1U	1U	1U
Unit Weight	18 lbs	18 lbs	32.5 lbs
Power Supply (DC option available)	Dual 750W RPS	Dual 750W RPS	Dual 1100W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 – 60 Hz		
Power Consumption (typical/max)*1	165W / 238W	175W / 222W	360W / 445W
Heat in BTU/Hour (typical/max)*1	564 / 831	598 / 758	1,229 / 1,519
Cooling Fan (front-to-back airflow)	Hot Swap Smart Fans		
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS, FIPS 140-2*3	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS
Standard Warranty	90-day Hardware and Software		

Thunder CGN Physical Appliance (cont.)

Performance	Thunder 5440 CGN	Thunder 5840 CGN	Thunder 5840-11 CGN	Thunder 5960 CGN
Throughput	100 Gbps	115 Gbps	115 Gbps	300 Gbps
Full TCP Connections per Second	2 milion	3 Million	3 Million	2.3 Million
Concurrent Sessions	256 Million	256 Million	256 Million	256 Million
Application Delivery Partitions (ADP)	1,023	1,023	1,023	127*6
Network Interfaces				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	0	0	0	0
1/10 GE Fiber (SFP+)	24	24	48	0
25 GE Fiber (SFP28)	0	0	0	4
40 GE Fiber (QSFP+)	4	4	0	0
100 GE Fiber (QSFP28)	0	0	4	4
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port, Lights Out Management			Ethernet Mgmt Port, RJ-45 Console Port
Hardware Specifications				
Processor	Intel Xeon 12-core	Intel Xeon 18-core	Intel Xeon 18-core	Intel Xeon 36-core
Memory (ECC RAM)	64 GB	64 GB	64 GB	128 GB
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	2 x FTA-4	2x FTA-4	2x FTA-4	Software
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 (W) x 24 (D)
Rack Units (mountable)	1U	1U	1U	1U
Unit Weight	32.5 lbs	32.5 lbs	34.3 lbs	25.1 lbs
Power Supply (DC option available)	Dual 1100W RPS	Dual 1100W RPS	Dual 1500W RPS	Dual 550W RPS
	80 Plus Platinum Efficiency, 100 - 240 VAC, 50 – 60 Hz			
Power Consumption (typical/max)*1	360W / 445W	375W / 470W	550W /760W	361W / 451W
Heat in BTU/Hour (typical/max)*1	1,229 / 1,519	1,280 / 1,604	1,877 / 2,594	1,232 / 1,539
Cooling Fan (front-to-back airflow)	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI^, RCM | RoHS
Standard Warranty	90-Day Hardware and Software			

Thunder CGN Physical Appliance (cont.)

Performance	Thunder 6440 CGN	Thunder 7440 CGN	Thunder 7440-11 CGN	Thunder 7650 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*5
Application Delivery Partitions (ADP)	1,023	1,023	1,023	1,023
Network Interfaces				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	0	0	0	0
1/10 GE Fiber (SFP+)	48	48	48	0
25 GE Fiber (SFP28)	0	0	0	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
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)*1	480W / 550W	690W / 820W	784W / 950W	864W / 1,091W
Heat in BTU/Hour (typical/max)*1	1,638 / 1,877	2,355 / 2,798	2,676 / 3,242	2,949 / 3,722
Cooling Fan (front-to-back airflow)	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, KCC, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS, FIPS 140-2^*3	FCC Class A, UL, CE, UKCA, CB, VCCI, 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.

All CGN products are also available in CFW license. For firewall and hierarchical traffic control use cases, CFW product line is required.

*1 With base model. Number varies by SSL model | *2 Optional RPS | *3 FIPS model must be purchased | *4 10 Gbps speed only | *5 Capacity can be increased (doubled) from ACOS 5.2.1-P7/ 6.0.1 onward | *6 To be increased to 1,023 in an upcoming patch release scheduled in Q4 2023 | ^ Certification in process

Thunder CGN SPE Physical Appliance Specifications

Performance	Thunder 5845 CGN	Thunder 7445 CGN	Thunder 7655S CGN	Thunder 14045 CGN Dual Modules
Throughput	115 Gbps	220 Gbps	370 Gbps	300 Gbps
Full TCP Connections per Second	3 Million	5 Million	8 Million	8 Million
Concurrent Sessions	256 Million	256 Million	384 Million*2	512 Million
Selective Dynamic Filter Rate [PPS]^	166 Million	332 Million	500 Million	450 Million
Selective Dynamic Filter Hardware Entries (IPv4/IPv6)	256K / 128K	256K / 128K	512K / 256K	512K /256K
Application Delivery Partitions	1,023	1,023	1,023	1,023
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 (CFP or QSFP28)
Management Ports	Ethernet Mgmt Port, RJ-45 Console Port+, Lights Out Management			
Hardware Specifications				
Processor (Intel Xeon)	18-core	2 x 18-core	2 x 28-core	4 x 18-core
Memory (ECC RAM)	64 GB	128 GB	384 GB	512 GB
Storage	SSD	SSD	SSD	SSD
Hardware Acceleration	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)	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	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)*	585W / 921W	784W / 1,078W	1,121W / 1,300W	1,700W / 2,000W
Heat in BTU/Hour (typical/max)*	1,997 / 3,143	2,676 / 3,679	3,826 / 4,436	5,801 / 6,825
Cooling Fan (front-to-back airflow)	Hot Swap Smart Fans			
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%			
Regulatory Certifications	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS	FCC Class A, UL, CE, UKCA, CB, VCCI, BSMI, RCM | RoHS, FIPS 140-2*1	FCC Class A, UL, CE, UKCA, CB, VCCI, CQC, 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.

^ 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.
*1 FIPS model must be purchased and FIPS certification is in process | *2 Capacity can be increased (doubled) from ACOS 5.2.1-P7/ 6.0.1 onward

A10 Thunder on Dell Technologies OEM Solution Bundle Specs.

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
Network Interfaces					
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
Hardware Specifications					
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 ADC, SSLi and CGN solutions along with an expanded feature set of A10 capabilities.

Performance with CGNAT	Dell Technologies R640		Dell Technologies R740		Dell Technologies R760*2
	10GE NIC Model	100GE NIC Model	10GE NIC Model	100GE NIC Model	
Throughput	32 Gbps	60 Gbps	56 Gbps	120 Gbps	200 Gbps
Full TCP Connections per Second	750K	850K	1.5 Million	1.5 Million	3 Million
Concurrent Sessions	100 Million	220 Million	140 Million	220 Million	256 Million
Network Interfaces					
1 GE (BASE-T)	2	2	2	2	0
1/10 GE Fiber (SFP+)	6	2	10	10	0
25 GE Fiber (SFP28)	0	0	0	0	4
100 GE Fiber (QSFP28)	0	2	0	4	4
Hardware Specifications					
Processor	2 x Intel Xeon 20-core		2 x Intel Xeon 20-core		2 x Intel Xeon 24-core
Memory	192 GB		192 GB		256 GB
Storage	2 x SSD		2 x SSD		2 x SSD
TLS/SSL Security Processor	2 x Security card (PCIe)		2 x Dual-chip security card (PCIe)		2 x Hardware accelerator (PCIe)
Power Supply (DC option available)	Dual 750W Power Supply		Dual 2000W Power Supply		Dual 1400W 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. | *2 Available bandwidth license: 50, 100, 150, 200 Gbps. Maximum throughput performance depends on the license.

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)
- R760 is tested with 2-VM profile (32 vCPUs, 64 GB memory, 100GB storage assigned on each vThunder)

Thunder CGN Software Appliance Specifications

vThunder CGN	
Supported Hypervisors	VMware ESXi (VMXNET3, SR-IOV, PCI Passthrough), KVM QEMU (VirtIO, OvS with DPDK, SR-IOV, PCI Passthrough), Microsoft Hyper-V*3
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*3	●	●	●	●	●					●

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	Dell PowerEdge, Cisco UCS, 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

Thunder CGN 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 4GB memory
Licenses	BYOL Bandwidth License FlexPool License
Performance Reference**	Maximum throughout 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

*1 SR-IOV | *2 PCI Passthrough | *3 Hyper-V is supported in ACOS 4.x and 5.x release. 8 Gbps license is not recommended.
* Licenses are tied to the maximum number of cores that can be allocated to ACOS
** Supermicro 7049GP-TRT with Intel Xeon Platinum 8160 CPU @ 2.10GHz and 2x Mellanox Connect X-5 NICs. Tested with UDP traffic for CGNAT use case.

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, 464XLAT, DS-Lite, Lw4o6, 6rd, NAT46, NPTv6, MAP-E, MAP-T

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

- Thunder Virtual Appliance for VMware vSphere ESXi, Microsoft Hyper-V, and KVM (VirtIO, Open vSwitch with DPDK and SR-IOV)
- Bare metal deployment support
- Container deployment support
- Hypervisor acceleration and management integration
- A10 Thunder on Dell Technologies OEM Solution Bundle

Extensibility

- aVCS (Virtual Chassis System)
- Multi-tenancy with application delivery partitions (ADP)-based management
- Layer 3 - 7 virtualization

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*
- Security policy engine (SPE) enabling hardware acceleration for policy enforcement*
- CGN scale-out for “add-as-you-grow” capability

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)

Centralized Management and Analytics with Harmony Controller

- Device and configuration management (LSN LID, NAT pools etc.)
- Metrics for monitoring device health and performance
- Traffic insights through time series charts of traffic based on throughput, packet rates, protocol mapping
- Subscriber and session-level traffic insights with average number of subscribers and sessions, top subscribers by traffic volume/packets/sessions/errors, time series of concurrent/created/freed sessions.
- CGNAT insights through NAT pool utilization, top NAT IPs used within a pool, time series charts for port mapping by protocol (TCP/UDP/ICMP), user quota, user quota exceeded
- Application-level traffic insights** such as top applications by connections and volume, top application categories
- Security view with count of blacklisted NAT IPs, top blacklisted entries (IP:Port), TCP SYN cookie checks count (passed vs. failed), IP anomaly triggered packet drop count
- Session and error logs for ease of troubleshooting

* Features and certifications may vary by appliance.
** Requires additional license for application-level traffic visibility.

Learn More

About A10 Networks

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