THUNDER CGN
High-Performance IPv4 Scaling and IPv6 Transition Technologies

Supported Platforms _____

Thunder CGN
physical appliance

Thunder SPE
physical appliance

Thunder HVA
hybrid virtual appliance

vThunder
virtual appliance

Thunder CGN
bare metal

aGalaxy
centralized management

Overview _____

A10 Thunder Series is a family of both hardware and software appliances ready to match any deployment need. Each Thunder Series form factor is powered by ACOS software, which brings efficiency with a unique combination of shared memory accuracy and efficiency, 64-bit scalability and advanced flow processing.

A10 Networks® Thunder® CGN product line of Carrier Grade Networking gateways provide high-performance, highly transparent address and protocol translation that allows enterprises and service providers to extend their IPv4 network connectivity, while simultaneously making the transition to IPv6. Thunder CGN is our premier CGN product line delivering performance scalability up to 155 Gbps, offering the broadest range of form factors (physical and software) and integrated distributed denial of service (DDoS) protection.

The Thunder CGN product line is built upon A10 Networks Advanced Core Operating System (ACOS®) platform—a Symmetric Scalable Multi-Core Processing (SSMP) software architecture that delivers high performance and a wide range of deployment options for enterprise and carrier networks.

- **Extend IPv4 connectivity:** Today's networks may be prepared to scale bandwidth capacity, but the rapid proliferation of Internet-connected devices has depleted the available IPv4 address space. Service providers, as well as enterprises, have to meet the demand for connectivity expansion, but an immediate transition to IPv6 is not a realistic option. Carrier Grade NAT (CGN/CGNAT) enables customers to extend connectivity with standards-based IPv4 translation, preserving their existing IPv4 address allocation and their investment in IPv4-based infrastructure. CGNAT allows organizations to extend the lifetime of their current IPv4-based infrastructure, save cost and gain time to plan their IPv6 transition strategy.

- **Broad transition options:** The Thunder CGN product line provides a wide choice of technologies that enable a smooth transition to IPv6 networks and devices as they are deployed. The IPv6 transition technologies ensure that an organization's applications and users can connect to the entire Internet, regardless of what IP version is used. There are many IPv6 transition technologies, which allow customers to serve different IPv6 network transition needs simultaneously. Interplay between the transition technologies on a single high-performance platform allows for cost-effective transition.

- **Application reliability:** The Thunder CGN product line provides the highest connection reliability by using application layer gateways (ALGs) and other important features to ensure that applications can remain addressable and operate transparently through address translation. High availability (HA) ensures that established sessions are maintained during failover and the end user is unaware that anything has happened. The high reliability of Thunder CGN provides organizations a cost-effective solution to meet service-level agreements (SLAs) and user satisfaction goals.

A10 Thunder CGN devices enable critical services in the most efficient hardware and software-based form factors. The Thunder CGN product line also ensures that your rack space is used efficiently. The combination of high performance in a small form factor results in lower OPEX through significant lower power usage and cooling requirements.

Features and Benefits

A10 Thunder CGN provides many advanced features for enterprises and carriers to extend IPv4 connectivity and to transition to IPv6 Internet connectivity. 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 addresses different address and protocol translation requirements simultaneously. The Thunder CGN product line provides a broad array of standards-compliant IPv4 extension and IPv6 transition technologies integrated within our high-performance, ACOS-based physical and software appliances.

Extend IPv4 Connectivity

The Thunder CGN product line provides advanced CGNAT functions to easily mitigate IPv4 address exhaustion and extend the life of an IPv4 network infrastructure. There are many features available within our CGNAT solution to meet the needs for organizations that are looking into CGNAT.

- **Advanced CGNAT functions:** CGNAT provides a standards-based mechanism to reclaim existing public IPv4 address

space, using address and port translation. This allows for a network where private addresses inside the network are translated using a pool of public, routable IP addresses on the outside network. The ratio of private to public IP addresses can be high, resulting in a significant amount of reclaimed public IPv4 address space. Performing CGNAT for many simultaneous users requires large amounts of computing and memory resources to maintain user state information. The A10 Thunder CGN product line leverages the highly efficient ACOS platform architecture, which provides high-performance CGNAT scaling in very efficient form factors. The Thunder CGN product line provides support for up to 256 million concurrent sessions in a single RU form factor, as well as unprecedented session setup and teardown rates. Competing solutions require a large chassis product with multiple application blades to achieve similar performance.

- **Advanced logging features:** Local governments often mandate that network operators can trace a user's connection details at a given moment in history, which can be complicated when scaling out large IPv4 CGNAT solutions. Thunder CGN offers many techniques to enhance the logging detail or reduce the volume of logs, in order to reduce logging infrastructure requirements. For example, there are log compression features that significantly reduce the amount of data needed to describe a log event. Deterministic or fixed Network Address Translation (NAT) makes it possible to virtually eliminate translation logs; the user details of a connection can easily be derived via a simple algorithm.

Architecture and Key Components

CGNAT deployment options

IPv6 translation options
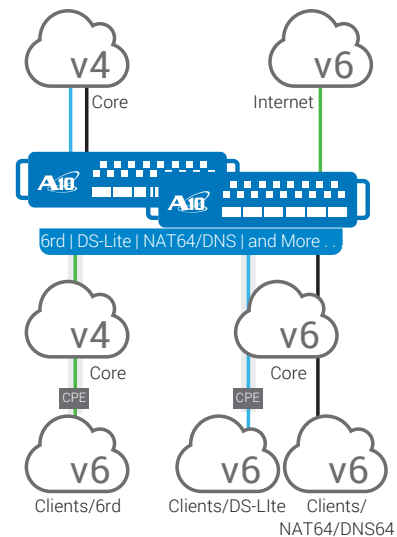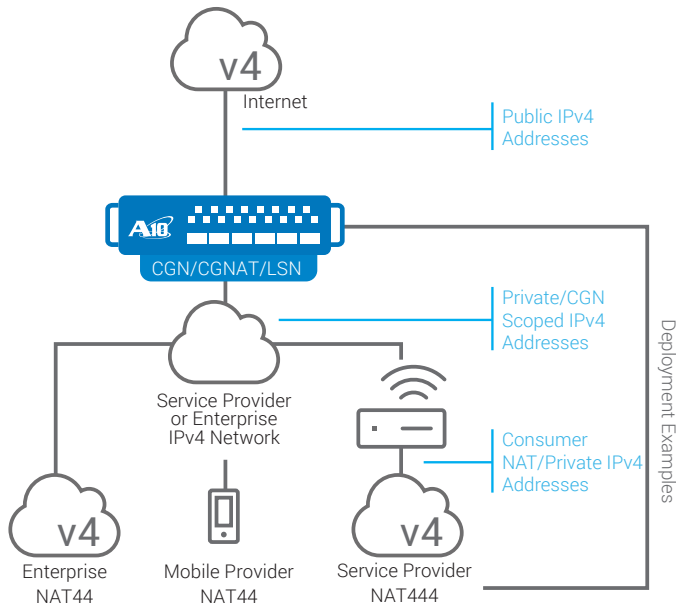
Broad Transition Options

Since IPv6 is not backwards 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) allow network operators to run an IPv6-only access network, while IPv4-only devices can still connect to the Internet using softwires (also referred to as tunnels) through the IPv6-only infrastructure. Light Weight 4 over 6 (LW4o6) or IPv6 Rapid Deployment (6rd) provide similar behavior, allowing alternate IP versions access through the network.

- **Ensure IPv6 client access to IPv4 content:** IPv6 was not built to be backward compatible with IPv4, complicating the deployment of IPv6 clients. NAT64/DNS64 solves this problem by allowing IPv6-only devices to access IPv4-only content, thus enabling clients to access the majority of the Internet today.

- **Interplay for phased transition:** Networks often require different transition technologies to be deployed simultaneously. Thunder CGN products ensure that you can deploy each transition technology concurrently, for example starting with CGNAT to immediately mitigate IPv4 address exhaustion, and then phasing in NAT64/DNS64 to enable IPv6 clients to access the IPv4 Internet, when you are ready.

Application 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:** Advanced CGNAT features such as Endpoint Independent Mapping (EIM) and hairpinning ensure predictable NAT behavior, and they provide a transparent end user experience. User quotas ensure that public IP port usage is fairly distributed between end users, and that viruses and malware, for example, can't exhaust the resources for other users.

- **Application Layer Gateways (ALGs):** For network operators, it is critical to ensure connectivity for all application services and users. ALGs within CGNAT ensure that protocols such as FTP, TFTP, RTSP, PPTP, SIP, ICMP, H.323, ESP, and DNS remain functional. Many legacy NAT implementations do not provide this level of transparency.

- **Stateful session synchronization (hitless failover):** When deployed in HA mode, the A10 Thunder CGN units synchronize active sessions, so when a failover occurs, the sessions will be maintained and end users will not be aware that a failover has occurred. This prevents users from having to restart a large download, for example, and increases user satisfaction.

In addition, Thunder CGN appliances offer integrated distributed denial of service (DDoS) protection for CGN devices offering public facing services to prevent huge volumes of multi-vector DDoS attack traffic. Integrated DDoS features are available on all A10 Thunder CGN appliances and specialized Thunder SPE appliances, which leverages a hardware-assisted Security and Policy Engine (SPE) to enforce security policies at ultra-high speed. Together, these CGN software and hardware features ensure maximum uptime of network resources to process subscriber traffic.

Product Description

A10 Thunder Series is a family of both hardware and software appliances ready to match any deployment need. Each Thunder Series form factor is powered by ACOS software, which brings efficiency with a unique combination of shared memory accuracy and efficiency, 64-bit scalability and advanced flow processing.

- **Thunder SPE Appliances:** The Thunder SPE appliances deliver ultra high-speed Security and Policy Enforcement and high-performance up to 155 Gbps for your most demanding application networking and security requirements. Thunder SPE appliances leverage A10's innovative Security and Policy Engine (SPE) to implement security and policy enforcement functions at higher speed, harnessing the power of advanced Flexible Traffic Acceleration (FTA) technology and high speed lookup capabilities. In addition, Thunder SPE is a future-proof design capable of enabling an expanded set of security and policy enforcements. All models are dual power supply-capable, feature solid-state drives (SSDs) and utilize no inaccessible moving parts for high availability. Thunder SPE appliances offer the best performance per rack unit coupled with high density interface 1 Gbps, 10 Gbps, 40 Gbps and 100 Gbps port options and the highest level "80 PLUS™ Platinum" certification for power supplies to ensure a green solution and reduce power consumption costs.

- **Thunder Hardware Appliances:** A10 Thunder CGN hardware appliances fits all size networks, with entry-level models starting at 30 Gbps and moving up to a 155 Gbps high-performance appliance for your most demanding requirements. All models are dual power supply-capable, feature solid-state drives (SSDs) and utilize no inaccessible moving parts for high availability. All models benefit from our Flexible Traffic Acceleration (FTA) technology, with select models featuring Field Programmable Gate Arrays (FPGA) for hardware optimized flow distribution, as well as switching and routing processors for high-performance network processing. Each appliance offers the best performance per rack unit and the highest level "80 PLUS™ Platinum" certification for power supplies to ensure a green solution and reduce power consumption costs. Coupled with high density 1 Gbps, 10 Gbps, 40 Gbps and 100 Gbps port options, the Thunder CGN appliances meet the highest networking bandwidth demands.

- **vThunder Virtual Appliances:** The vThunder line of virtual appliances is designed to meet the growing needs of organizations that require a flexible and easy-to-deploy IPv4 scaling and IPv6 transition solution running within a virtualized infrastructure. Each vThunder instance has the full set of CGNAT features that can run atop your choice of commodity hardware and also your choice of leading hypervisor, for example, VMware ESXi and KVM.

- **Thunder CGN for Bare Metal:** A10 Thunder CGN Bare Metal is a software platform featuring high-scale CGNAT and comprehensive IPv6 transition technologies. Designed to accelerate service agility, it leverages the same high-performance 64-bit architecture, the same advanced features and the familiar interface of ACOS that is running in the A10 Thunder CGN.

  By choosing A10 Thunder CGN Bare Metal, enterprises and carriers can take advantage of server performance upgrade when needed and avoid business disruptions due to IPv4/IPv6 compatibility issues.

- **Thunder Hybrid Virtual Appliances (HVA):** Offering you the combined flexibility of a virtual appliance and the power of the performance optimized hardware appliances, A10 Thunder HVA appliances enable multi-tenancy with multiple vThunder virtual appliances running on dedicated, turnkey hardware appliances with a high density of instances that are strongly isolated from each other, each with its own dedicated ACOS instance and dedicated compute resources. All vThunder CGN instances are included within the HVA appliance.

Additional management options are also available to enhance your Thunder Series infrastructure, and the A10 aGalaxy® line of hardware or software appliances centrally manage all Thunder hardware and software appliances for streamlined operations, resulting in reduced OPEX.

Thunder CGN Hardware Appliance Specifications Table

	Thunder 3030S	Thunder 3230(S)	Thunder 3430(S)
Throughput	30 Gbps	30 Gbps	42 Gbps
Packets Per Second	6 million	20 million	35 million
Setups Per Second	1.1 million	1.8 million	2.1 million
Full TCP Connections Per Second	437k	891k	1 million
Concurrent Sessions	64 million	64 million	128 million
Application Delivery Partitions (ADP) L3V	64	64	127
Network Interface			
1 GE Copper	6	0	0
1 GE Fiber (SFP)	2	4	4
1/10 GE Fiber (SFP+)	4	4	4
40 GE Fiber (QSFP+)	0	0	0
Management Interface	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes
Console Port	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes
Processor	Intel Xeon 4-core	Intel Xeon 4-core	Intel Xeon 6-core
Memory (ECC RAM)	16 GB	16 GB	32 GB
Hardware Acceleration			
64-bit Linear Decoupled Architecture	Yes	Yes	Yes
Flexible Traffic Acceleration	Software	1 x FTA-4 FPGA	1 x FTA-4 FPGA
Switching/Routing	Software	Hybrid*2	Hybrid*2
Power Consumption (Typical/Max)*1	131W / 139W	190W / 240W	210W / 260W
Heat in BTU/hr (Typical/Max)*1	447 / 474	648 / 819	717 / 887
Power Supply (DC option available)	Dual 600W RPS	Dual 600W RPS	Dual 600W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 − 60 Hz		
Cooling Fan	Hot Swap Smart Fans		
Dimensions	1.75 in (H), 17.5 in (W), 17.45 in (D)	1.75 in (H), 17.5 in (W), 17.15 in (D)	1.75 in (H),17.5 in (W), 17.15 in (D)
Rack Units (Mountable)	1U	1U	1U
Unit Weight	20.1 lbs	23 lbs	23 lbs
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM, EAC, FAC | RoHS, FIPS 140-2*3	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM, NEBS | RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM, NEBS | RoHS, FIPS 140-2^|*3
Standard Warranty	90-day Hardware and Software		

*1 With base model. Number varies by SSL model | *2 No dedicated hardware but FTA-4 FPGA handles select switching/routing functions | *3 FIPS model must be purchased |
^ Certification in process | +Optional RPS

Thunder CGN Hardware Appliance Specifications Table (continued)

	Thunder 4430(S)	Thunder 5330(S)	Thunder 5430(S)-11
Throughput	38 Gbps	78 Gbps	77 Gbps
Packets Per Second	39 million	47 million	50 million
Setups Per Second	2.1 million	3.1 million	3.1 million
Full TCP Connections Per Second	1 million	1.2 million	1.6 million
Concurrent Sessions	128 million	128 million	256 million
Application Delivery Partitions (ADP) L3V	127	127	1,023
Network Interface			
1 GE Copper	0	0	0
1 GE Fiber (SFP)	0	0	0
1/10 GE Fiber (SFP+)	16	8	16
40 GE Fiber (QSFP+)	4	0	4
Management Interface	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes
Console Port	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes
Processor	Intel Xeon 6-core	Intel Xeon 10-core	Intel Xeon 10-core
Memory (ECC RAM)	32 GB	32 GB	64 GB
Hardware Acceleration			
64-bit Linear Decoupled Architecture	Yes	Yes	Yes
Flexible Traffic Acceleration	1 x FTA-3 FPGA	1 x FTA-4 FPGA	2 x FTA-3 FPGA
Switching/Routing	Hardware	Hybrid[2]	Hardware
Power Consumption (Typical/Max)[1]	266W / 319W	210W / 260W	288W / 345W
Heat in BTU/hr (Typical/Max)[1]	908 / 1,088	717 / 887	983 / 1,178
Power Supply (DC option available)	Dual 600W RPS	Dual 600W RPS	Dual 600W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 – 60 Hz		
Cooling Fan	Hot Swap Smart Fans		
Dimensions	1.75 in (H), 17 in (W), 24.6 in (D)	1.75 in (H), 17.5 in (W), 17.15 in (D)	1.75 in (H), 17 in (W), 24.6 in (D)
Rack Units (Mountable)	1U	1U	1U
Unit Weight	25.2 lbs	23 lbs	25.6 lbs
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM | RoHS, FIPS 140-2[^][3]	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, NEBS | RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM | RoHS
Standard Warranty	90-day Hardware and Software		

*1 With base model. Number varies by SSL model | *2 No dedicated hardware but FTA-4 FPGA handles select switching/routing functions | *3 FIPS model must be purchased |
^ Certification in process | +Optional RPS

Thunder CGN Hardware Appliance Specifications Table (continued)

	Thunder 5630(S)	Thunder 6430(S)	Thunder 6630(S)
Throughput	76 Gbps	150 Gbps	155 Gbps
Packets Per Second	85 million	78 million	100 million
Setups Per Second	5.9 million	5.2 million	7.5 million
Full TCP Connections Per Second	3 million	2.6 million	3.2 million
Concurrent Sessions	256 million	256 million	256 million
Application Delivery Partitions (ADP) L3V	1,023	1,023	1,023
Network Interface			
1 GE Copper	0	0	0
1 GE Fiber (SFP)	4	0	0
1/10 GE Fiber (SFP+)	24	16	12
40 GE Fiber (QSFP+)	4	4	0
100 GE Fiber (CXP)	0	0	4
Management Interface	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes
Console Port	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes
Processor	Intel Xeon Dual 8-core	Intel Xeon Dual 8-core	Intel Xeon Dual 12-core
Memory (ECC RAM)	128 GB	128 GB	128 GB
Hardware Acceleration			
64-bit Linear Decoupled Architecture	Yes	Yes	Yes
Flexible Traffic Acceleration	4 x FTA-2 FPGA	4 x FTA-3 FPGA	4 x FTA-3 FPGA
Switching/Routing	Hardware	Hardware	Hardware
Power Consumption (Typical/Max)[1]	780W / 890W	590W / 680W	995W / 1,150W
Heat in BTU/hr (Typical/Max)[1]	2,661 / 3,037	2,013 / 2,320	3,395 / 3,924
Power Supply (DC option available)	2+2 1100W RPS	Dual 1100W RPS	2+2 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 − 60 Hz		
Cooling Fan	Hot Swap Smart Fans		
Dimensions	5.3 in (H), 16.9 in (W), 28 in (D)	1.75 in (H), 17.5 in (W), 30 in (D)	5.3 in (H), 16.9 in (W), 28 in (D)
Rack Units (Mountable)	3U	1U	3U
Unit Weight	72 lbs	39 lbs	74.5 lbs
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, TUV, CB, VCCI, MSIP^, EAC, FAC | RoHS, FIPS 140-2[*][3]	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM, EAC, FAC, NEBS | RoHS, FIPS 140-2[3]	FCC Class A, UL, CE, TUV, CB, VCCI, MSIP^, EAC, FAC | RoHS, FIPS 140-2[*][3]
Standard Warranty	90-day Hardware and Software		

[1] With base model. Number varies by SSL model | [2] No dedicated hardware but FTA-4 FPGA handles select switching/routing functions | [3] FIPS model must be purchased | ^ Certification in process | +Optional RPS

Thunder SPE Hardware Appliance Specifications Table

	Thunder 5435(S) SPE	Thunder 6435(S) SPE	Thunder 6635(S) SPE
Throughput	77 Gbps	155 Gbps	155 Gbps
Packets Per Second	50 million	100 million	100 million
Setups Per Second	3.5 million	7.5 million	7.5 million
Full TCP Connections Per Second	1.6 million	3.2 million	3.2 million
Concurrent Sessions	256 million	256 million	256 million
Selective Dynamic Filtering Rate [PPS]^	112 million	224 million	224 million
Selective Dynamic Filter Hardware Entries	256,000	256,000	256,000
Application Delivery Partitions (ADP) L3V	1,023	1,023	1,023
Network Interface			
1 GE Copper	0	0	0
1 GE Fiber (SFP)	0	0	0
1/10 GE Fiber (SFP+)	16	16	12
40 GE Fiber (QSFP+)	4	4	0
100 GE Fiber (CXP)	0	0	4
Management Interface	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes
Console Port	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes
Processor (Intel Xeon)	10-core	Dual 12-core	Dual 12-core
Memory (ECC RAM)	64 GB	128 GB	128 GB
Hardware Acceleration			
64-bit Linear Decoupled Architecture	Yes	Yes	Yes
Flexible Traffic Acceleration	2 x FTA-3+ FPGA	4 x FTA-3+ FPGA	4 x FTA-3+ FPGA
Security & Policy Engine	Hardware	Hardware	Hardware
Switching/Routing	Hardware	Hardware	Hardware
Power Consumption (Typical/Max)*	400W / 480W	620W / 710W	995W / 1,150W
Heat in BTU/hour (Typical/Max)*	1,365 / 1,638	2,116 / 2,423	3,395 / 3,924
Power Supply (DC option available)	Dual 1100W RPS	Dual 1100W RPS	2+2 1100W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 − 60 Hz		
Cooling Fan	Hot Swap Smart Fans		
Dimensions	1.75 in (H), 17.5 in (W), 30 in (D)	1.75 in (H), 17.5 in (W), 30 in (D)	5.3 in (H), 16.9 in (W), 28 in (D)
Rack Units (Mountable)	1U	1U	3U
Unit Weight	35.5 lbs	39 lbs	74.5 lbs
Operating Ranges	Temperature 0° - 40° C | Humidity 5% - 95%		
Regulatory Certifications	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, NEBS | RoHS, FIPS 140-2‡	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, NEBS | RoHS, FIPS 140-2‡	FCC Class A, UL, CE, TUV, CB, VCCI, EAC, FAC | RoHS
Standard Warranty	90-day Hardware and Software		

^ Packets per second. Hardware-based selective dynamic filtering feature is available on Thunder CGN SPE family. \| * With base model. Number varies by SSL model. \| ‡ Certification in process and FIPS model must be purchased. \| +Optional RPS
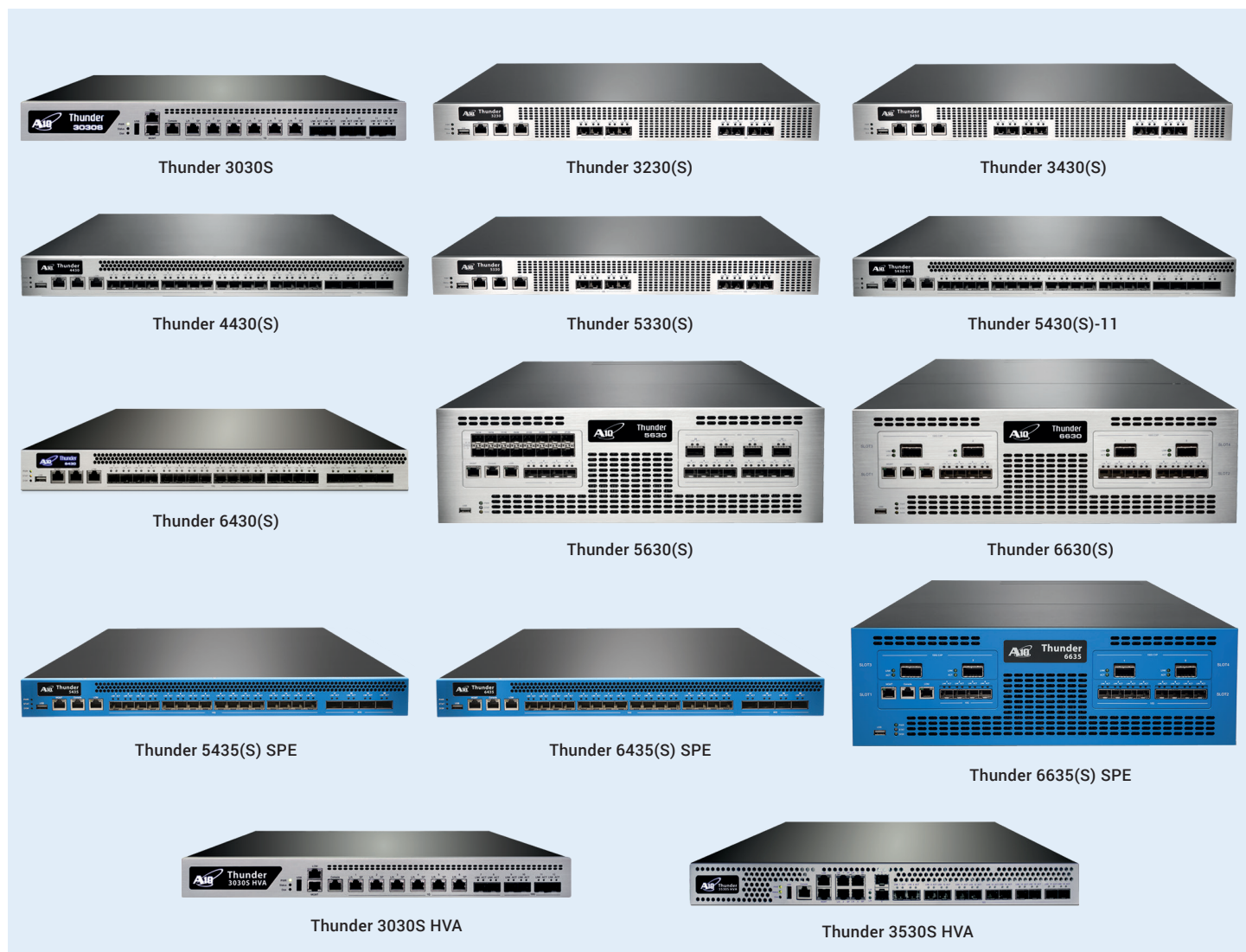
Thunder HVA Products Specifications Table

	Thunder 3030S HVA	Thunder 3530S HVA
vThunder Virtual Appliances Instances (Included)	8	40
Network Interface		
1 GE Copper	6	4
1 GE Fiber (SFP)	2	2
1/10 GE Fiber (SFP+)	4	12
Management Interface	Yes	Yes
Lights Out Management	Yes	Yes
Console Port	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes
Processor (Intel Xeon)	4-core	Dual 10-core
Memory (ECC RAM)	32 GB	128 GB
Hardware Acceleration		
64-bit Linear Decoupled Architecture	Yes	Yes
Flexible Traffic Acceleration	Software	Software
Switching/Routing	Software	Software
SSL Security Processor (SR-IOV enabled)	Single	Quad
Power Consumption (Typical/Max)	131W / 139W	380W / 476W
Heat in BTU/hr (Typical/Max)	447 / 474	1,297 / 1,624
Power Supply (DC option available)	Dual 600W RPS	Dual 750W RPS
	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 − 60 Hz	80 Plus Gold efficiency, 100 - 240 VAC, Frequency 50 − 60 Hz
Cooling Fan	Hot Swap Smart Fans	Hot Swap Smart Fans
Dimensions	1.75 in (H), 17.5 in (W), 17.45 in (D)	1.75 in (H), 17.25 in (W), 22.8 in (D)
Rack Units (Mountable)	1U	1U
Unit Weight	20.1 lbs	29.6 lbs
Operating Ranges	Temperature 0° - 40° C	Humidity 5% - 95%	
Regulatory Certifications	FCC Class A‡, UL‡, CE‡, TUV‡, CB‡, VCCI‡, China CCC‡, BSMI‡, RCM‡, GOST-R‡, FAC‡	
Standard Warranty	90-day Hardware and Software	

‡ Certification in process

vThunder Specifications

	vThunder CGN
Throughput	Up to 20 Gbps
Supported Hypervisors	VMware vSphere ESXi 4.1 or higher KVM 0.14 or higher Microsoft Hyper-V on Windows Server 2008 or higher
Hardware Requirements	See installation guide
Licenses	Versions vary by price, bandwidth and hypervisor. Lab/Developer Edition Production- Entry Level/Lab Editions: 200 Mbps and 1 Gbps Production − High-performance Editions: 4 Gbps, 8 Gbps, 10 Gbps and 20 Gbps
Standard Warranty	90-day Software

Thunder CGN for Bare Metal Specifications Table

	Thunder CGN for Bare Metal
Throughput	Up to 40 Gbps
System Requirements	Minimum Hardware Requirement • Intel x86-based CPUs with minimum of 4 cores and 16 to 24 GB RAM/core • 80 GB of available HDD capacity • ACOS supports a wide range of Intel chip sets and the following Intel drivers: e1000e, igb, ixgbe, and i40e Maximum CPU core support • 10 Gbps (4 cores), 20 Gbps (8 cores) and 40 Gbps (14 cores) Operating System • ACOS 4.1 and higher
Reference Platforms	Cisco UCS, Dell PowerEdge, Ericsson Hyperscale Datacenter System (HDS), HPE ProLiant and more. See installation guide for other reference platforms and details.
Licenses	10 Gbps, 20 Gbps and 40 Gbps
Standard Warranty	90-day Software

Thunder 3030S

Thunder 3230(S)

Thunder 3430(S)

Thunder 4430(S)

Thunder 5330(S)

Thunder 5430(S)-11

Thunder 6430(S)

Thunder 5630(S)

Thunder 6630(S)

Thunder 5435(S) SPE

Thunder 6435(S) SPE

Thunder 6635(S) SPE

Thunder 3030S HVA

Thunder 3530S HVA

Detailed Feature List*

High Performance, Scalable Platform
- ACOS (Advanced Core Operating System)
  - Multi-core Support
  - Linear Application Scaling
  - Linux on Control Plane
- ACOS on data plane

Networking
- Integrated Layer 2/Layer 3
- Transparent Mode/Gateway Mode
- Routing – Static Routes, IS-IS (v4/v6), RIPv2/ng, OSPF v2/v3, BGP4+
- VLAN
- Trunking
- Access Control Lists (ACLs)
- Basic Stateful Firewall
- Traditional IPv4 NAT/NAPT
- IPv6 NAPT

IPv4 Scaling/IPv6 Transition
- Full native IPv6 management and feature support
- Application Level Gateways (ALGs) 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-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)

Management
- Dedicated Management Interface (Console, SSH, Telnet, HTTPS)
- Web-based Graphical User Interface (GUI) with Language Localization
- Industry-standard Command Line Interface (CLI)
- SNMP, Syslog, Alerting
- Port mirroring
- REST-style XML API (aXAPI)
- RADIUS attributes in logs
- Policy from RADIUS

Virtualization
- aVCS (Virtual Chassis System)
- vThunder Virtual Appliance for VMware vSphere ESXi, Microsoft Hyper-V, XenServer and KVM (with SR-IOV and Virtio support)
- Multi-tenancy with Application Delivery Partitions (ADP)
  - Partition-based management
  - L2/L3 virtualization
- Hypervisor acceleration and management integration

Carrier-grade Hardware
- Advanced hardware architecture
- Lights Out Management (LOM/IPMI)
- Hot swap Redundant Power Supplies (AC and DC)
- Smart Fans (hot swap)
- Solid-state drive (SSD) and Compact Flash
- Error Correcting Code (ECC) memory
- 10 GE, 40 GE, and 100 GE ports

* Features and certifications may vary by appliance

About A10 Networks

A10 Networks is a leader in application networking, providing a range of high-performance application networking solutions that help organizations ensure that their data center applications and networks remain highly available, accelerated and secure. Founded in 2004, A10 Networks is based in San Jose, California, and serves customers globally with offices worldwide. For more information, visit: **www.a10networks.com.**

To learn more about the A10 Thunder Application Service Gateways and how it can enhance your business, contact A10 Networks at: **www.a10networks.com/contact** or call to talk to an A10 sales representative.