THUNDER ADC
Next-generation Application Delivery Controller

Supported Platforms

Thunder ADC
physical appliance

Thunder HVA
hybrid virtual appliance

vThunder
virtual appliance

Thunder ADC
bare metal

aGalaxy
centralized management

Overview

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

A10 Networks® Thunder® ADC product line of high-performance, next-generation application delivery controllers enable customers' applications to be highly available, accelerated and secure. Thunder ADC is our premium ADC product line, delivering up to 220 Gbps of throughput in a single appliance or 1.7 Tbps of throughput in a cluster, the broadest range of form factors (physical, virtual, Bare Metal, and hybrid), and with expanded system resources designed to support future feature needs.

The A10 Thunder ADC product line is built upon A10's Advanced Core Operating System (ACOS®) platform, with our Symmetric Scalable Multi-Core Processing (SSMP) software architecture that delivers high performance and a range of deployment options for dedicated, hosted or cloud data centers.

- **Application availability for customer satisfaction:** Enable your Web and key infrastructure servers to scale seamlessly to meet customer demand and ensure business continuity to maximize revenue and user satisfaction.
- **Application acceleration for efficient operations:** Provide fast and responsive service to your customers for competitive advantage and reduced infrastructure requirements for both application delivery and critical services, driving down CAPEX and OPEX.
- **Security for compliance and risk reduction:** Protect against advanced and emerging attacks for uninterrupted operations, brand protection, and revenue loss while meeting required regulatory compliance obligations for Payment Card Industry Data Security Standard (PCI DSS) and other regulations.

A10 Thunder ADC delivers critical services in the most efficient hardware and software models. With its data center-efficient design and compact form factor, Thunder ADC minimizes your rack space, power consumption, and cooling costs.

While the Thunder ADC platform provides a rich set of application and security services out-of-the-box, it also supports open and standards-based programmability, which allows developers to rapidly integrate custom and off-the-shelf services with Thunder ADC. The A10 Harmony™ architecture combines open programmability, policy enforcement, and telemetry to deliver the next generation of application networking.

Features and Benefits

Whether you are an enterprise, service provider or Web giant, A10 Thunder ADC offers key benefits to make your data center applications available, accelerated and secure.

Application Availability

Highly available applications and data centers: Advanced server load balancing (SLB) and global server load balancing (GSLB) ensure maximum uptime by detecting local and remote outages. Acting on advanced health checks, A10 Thunder ADC directs connections to active servers and data centers in a way that is transparent to the end user.

Next-generation cloud data center evolution: Equip your network for the next phase in network evolution with Infrastructure-as-a-Service (IaaS) capabilities. Benefit from integration of software defined networks (SDNs) with overlay networking (VXLAN and NVGRE), cloud orchestration systems (OpenStack, Microsoft SCVMM, Cisco ACI, and more), network functions virtualization (NFV) using vThunder virtual appliances, and enable service chaining and traffic insertion.

Fast deployment and proven application configuration and provisioning: Rapidly enable and deploy business critical applications with predefined smart templates for popular applications from Microsoft (Exchange, Skype for Business, SharePoint), Oracle and many more, to deploy in hours, not days or weeks.

Application Acceleration

Application acceleration for a better user experience and infrastructure utilization: Offload application infrastructure from CPU and memory intensive tasks to reduce costs. Techniques

include SSL offload (including offload of demanding 2048- and 4096-bit key operations ECDHE, and Perfect Forward Secrecy), HTTP compression, support for SPDY, TCP reuse, and RAM caching. Deliver a faster experience for your customers and reduced CAPEX and OPEX as your infrastructure scales efficiently without wasted compute cycles.

Virtualization for ADC and SLB consolidation: Choose the best option for your network to enable multi-tenancy. Maximize density with our Application Delivery Partitions (ADP), allowing you to configure up to 1,023 virtual ADCs on a single Thunder ADC appliance that support Layer 3 virtualization. Rapidly deploy pure software vThunder appliances or Hybrid Virtual Appliances (HVA) to provide strong isolation and complete resource isolation as required.

Full control and deep packet inspection (DPI) capabilities to solve complex problems: aFleX® TCL scripting provides granular traffic transformation capabilities to adjust traffic as needed for your applications. Additionally, advanced ADC capabilities enable the most common requirements to be met with specific preconfigured templates and capabilities, for example L7 URL switching.

Flexible management to optimize IT operations: Multiple management capabilities simplify operation tasks using the aGalaxy centralized management system to control any A10 Thunder device, whether pushing configurations, aFleX rules providing 100 percent coverage, backing up SSL keys and much more. Our aXAPI® REST-based API gives complete management control with custom scripting for homegrown management operations or integration into third-party management systems. Also, plug-ins and packages are available to be used with partners' management systems such as Microsoft SCVMM and others.

Architecture and Key Components
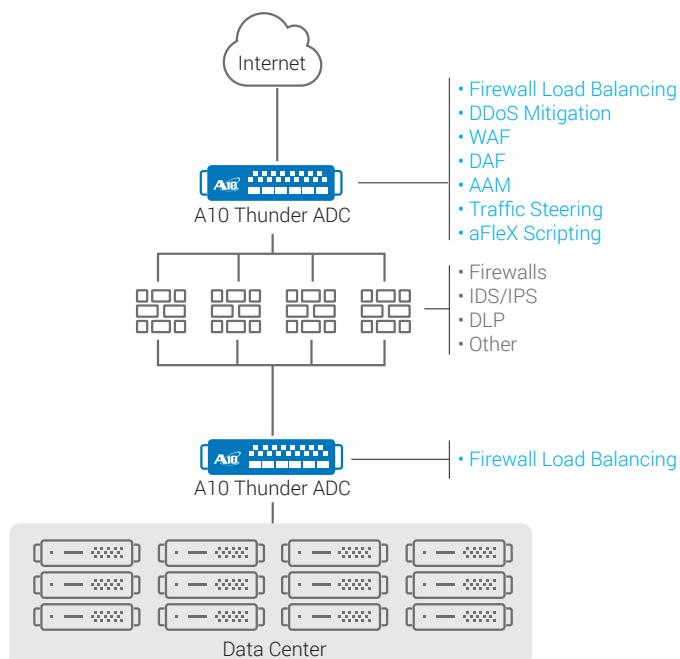
DMZ security device scaling, offload and acceleration
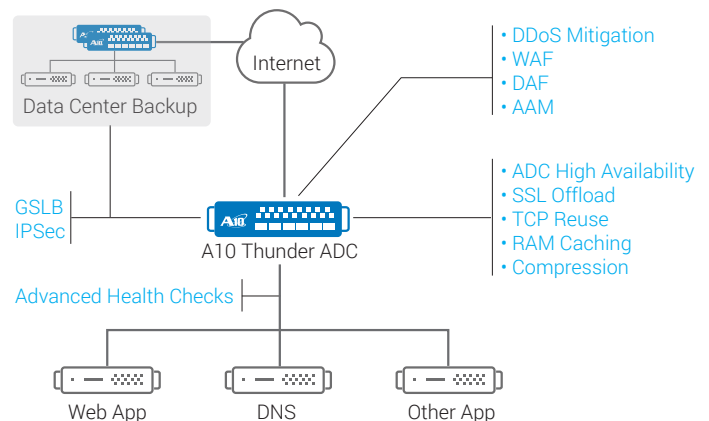
Application delivery example for Web, DNS and other services

🔒 Security

Enhance your data center security: Our ICSA-certified web application firewall (WAF) guards Web servers against the critical Open Web Application Security Project (OWASP) top ten threats facing web-based application servers, while our DNS application firewall (DAF) gives advanced protection against domain name system (DNS) infrastructure exploitation, with granular application rules for query behavior and mitigation methods such as rate limiting.

Enhance, scale and optimize your existing DMZ security infrastructure: With our appliances supporting up to 220 Gbps per device, firewall load balancing (FWLB) enables existing security products to scale seamlessly.

Protect against the latest emerging threats: As threats emerge, the A10 Thunder ADC enables your network to be ready with effective countermeasures. DDoS protection is standard in all appliances, and with FPGA FTA-based models, protection can be enabled for the highest volume attacks against application servers. The FPGA mitigates common volumetric attacks, while general purpose CPUs can be used to mitigate more sophisticated low and slow and application attacks such as Slowloris and HTTP floods.

Stop data breaches with A10 Threat Intelligence: Cybercriminals use automation to execute large-scale attacks and evade corporate defenses. The A10 Threat Intelligence Service, an optional subscription for Thunder ADC, provides a near real-time feed of malicious IP addresses to identify automated attacks and prevent data loss. Aggregating IP reputation data from over three dozen sources, A10 Threat Intelligence Service enables Thunder ADC to block inbound or outbound threats before malicious users can steal data or disrupt access.

Streamline authentication and authorization: With Application Access Management (AAM), Thunder ADC can authenticate users and enforce access policies. With support for a wide array of authentication protocols, including OCSP, SAML, RADIUS, LDAP and Kerberos, Thunder ADC enables customers to centralize authentication management and reduce operating costs, while leveraging SAML 2.0 and AAM enables Single Sign-On for a superior user experience.

⚙ Management

Comprehensive and scalable management: The A10 Thunder ADC devices feature an array of options to simplify and automate management tasks to reduce administration overhead and ensure complex tasks can be done accurately the first time. To complement the industry standard CLI Web GUI, our RESTful API (aXAPI) can be used to integrate with third party or custom management consoles, to efficiently operate one or more Thunder ADC appliances. For larger deployments, our optional aGalaxy centralized management system ensures routine tasks can be performed at scale, across multiple physical, virtual or hybrid Thunder appliances, regardless of physical location.

Thunder ADC supports granular role-based access control, enabling you to create users and groups and grant read-only or read/write privileges for specific partitions or management interfaces. To scale load balancing capacity, aVCS (virtual chassis system) allows multiple appliances to operate as one, with a single management point for all appliances in the virtual chassis.

A10 Harmony

With the A10 Harmony architecture, Thunder ADC automates policy enforcement, improves visibility, and accelerates service integration. Thunder ADC customers can take advantage of A10 Harmony architecture to rapidly provision application networking services and effectively manage and monitor their deployments.

POLICY ENFORCEMENT	TELEMETRY	SECURE & OPEN
• Operational Simplicity • Reduce TCO • Automation	• Visibility and Control • Health Checks • Proactive Maintenance • Troubleshooting	• Open APIs • Autonomous Security • SDN, NFV Integration • Third-party Integration

Product Description

A10 Thunder ADC Product Line

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

- **Thunder ADC Hardware Appliances:** The A10 Thunder ADC line of appliances fits all size networks with entry-level models starting at 5 Gbps and moving up to a 220 Gbps high-performance appliance for your most demanding requirements. All models are dual power supply-capable, feature solid-state drives (SSDs) and use 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 (FPGAs) for hardware optimized FTA processing; this provides highly

Thunder ADC's integrated Web application firewall has achieved WAF certification from ICSA Labs. ICSA Labs testing and certification ensures that Thunder ADC performs as intended to secure application services from exploitation and attack.

ICSA**labs**
CERTIFIED WEB APPLICATION FIREWALL

scalable flow distribution and distributed denial of service (DDoS) protection capabilities. Select models include dedicated security processors for SSL offload, switching and routing processors for high-speed network processing, and lights-out management (LOM) support for out-of-band monitoring and management. 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 GbE, 10 GbE, 40 GbE, and 100 GbE port options, Thunder ADC meets the highest networking bandwidth demands.

- **vThunder Virtual Appliances:** The vThunder® ADC line of virtual appliances is designed to meet the growing needs of organizations requiring a flexible and easy-to-deploy application delivery and server load balancer solution running within a virtualized infrastructure or public cloud service. Each vThunder instance has a full set of features that can run atop your choice of commodity hardware and also your choice of leading hypervisor; for example, VMware ESXi, Microsoft Hyper-V, and KVM. vThunder ADC for Amazon Web Services (AWS) and Microsoft Azure are also available for cloud deployment, powered by our aCloud® services.

- **Thunder ADC for Bare Metal:** This family of high-performance software appliances provide complete ADC functionality that is tied to a dedicated server. With no need for an intervening hypervisor, the resulting throughput of up to 40 Gbps of Layer 7 traffic processing is optimized. As with vThunder, the Bare Metal option eases installations. Large enterprise, service providers and Web hosting operations are ideal environments that can leverage the flexibility afforded by Bare Metal.

- **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. The fact that each instance can use dedicated SSL security processor technology with Single Root I/O Virtualization (SR-IOV) to offload and accelerate SSL sessions is a key hardware advantage. All vThunder ADC instances are included within the HVA appliance.

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

A10 Networks Harmony Architecture*
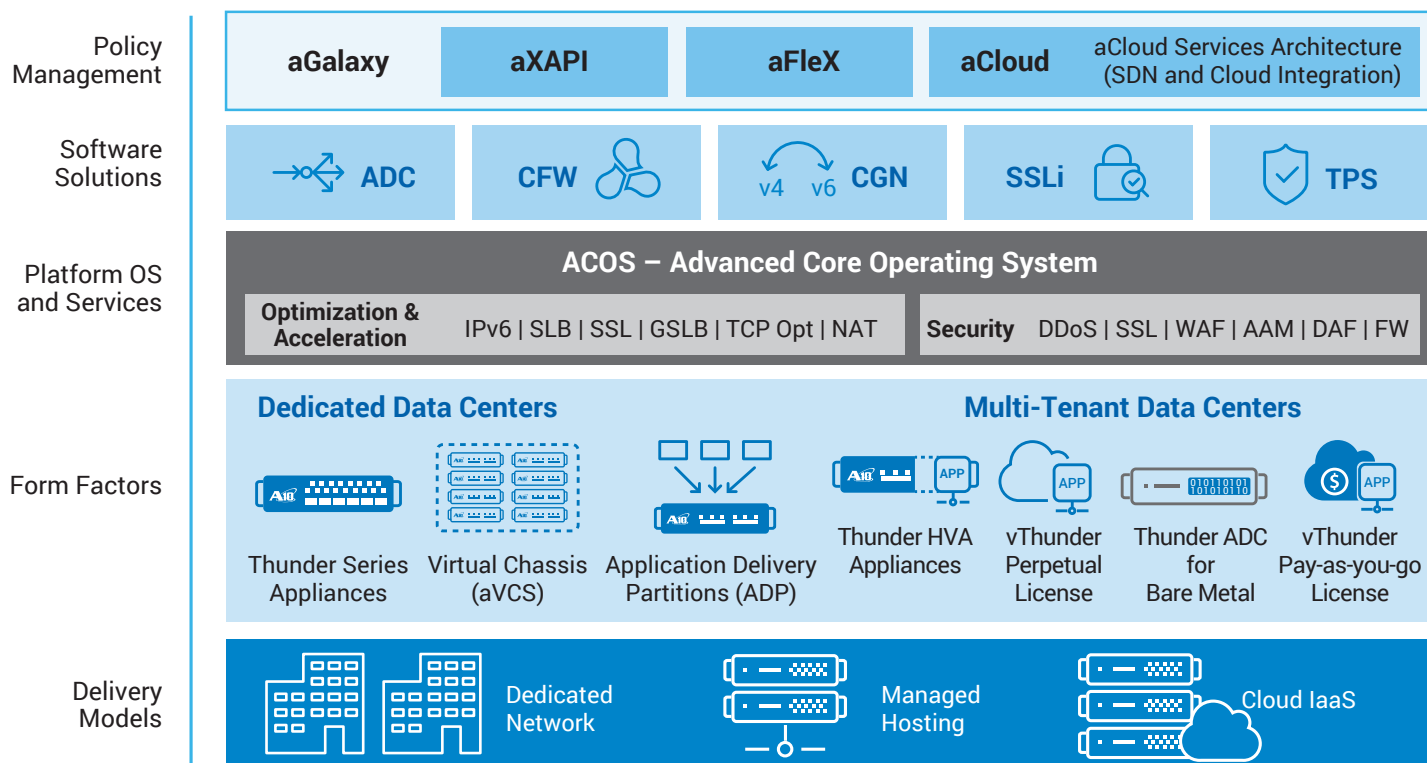
Thunder ADC Hardware Appliance Specifications Table

	Thunder 840	Thunder 930	Thunder 1030S	Thunder 3030S	Thunder 3230(S)
Application Throughput (L4/L7)	5 Gbps / 5 Gbps	5 Gbps / 5 Gbps	10 Gbps / 10 Gbps	30 Gbps / 30 Gbps	30 Gbps / 30 Gbps
Layer 4 CPS	200k	200k	450k	750k	1.5 million
Layer 4 HTTP RPS	1 million	1 million	2 million	3 million	7.5 million
Layer 7 CPS (1:1)[1]	50k	50k	150k	250k	420k
SSL CPS (1024/2048)	2k / 500	1.9k / 400	25k / 7k	47k / 14k	54k[4] / 52k[4]
DDoS Protection (SYN Flood) SYN/Sec	1.7 million	2 million	4 million	7.5 million	55 million
Application Delivery Partitions (ADP) L3V	32	32	32	64	64
Network Interface					
1 GE Copper	5	6	6	6	0
1 GE Fiber (SFP)	0	2	2	2	4
1/10 GE Fiber (SFP+)	2	2	2	4	4
40 GE Fiber (QSFP+)	0	0	0	0	0
Management Interface	Yes	Yes	Yes	Yes	Yes
Lights Out Management	No	No	Yes	Yes	Yes
Console Port	Yes	Yes	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes	Yes	Yes
Processor	Intel Communication Processor	Intel Xeon 2-core	Intel Xeon 4-core	Intel Xeon 4-core	Intel Xeon 4-core
Memory (ECC RAM)	8 GB	8 GB	8 GB	16 GB	16 GB
Hardware Acceleration					
64-bit Linear Decoupled Architecture	Yes	Yes	Yes	Yes	Yes
Flexible Traffic Acceleration	Software	Software	Software	Software	1 x FTA-4 FPGA
Switching/Routing	Software	Software	Software	Software	Hybrid[6]
SSL Security Processor ('S' Models)	N/A	N/A	Single	Single	Dual
Power Consumption (Typical/Max)[5]	57W / 75W	66W / 76W	98W / 108W	131W / 139W	190W / 240W
Heat in BTU/hour (Typical/Max)[5]	195 / 256	225 / 259	334 / 369	447 / 474	648 / 819
Performance Per Watt (PPW)[2][5]	2,667	2,632	4,167	5,396	6,250
Power Supply (DC Option Available)	Single 150W (AC only)	Single 600W+	Single 600W+	Dual 600W RPS	Dual 600W RPS
	100 - 240 VAC 50-60Hz	80 Plus Platinum efficiency, 100 - 240 VAC, Frequency 50 – 60 Hz			
Cooling Fan	Single Fixed Fan	Hot Swap Smart Fans			
Dimensions	1.75 in (H), 17.0 (W), 12 in (D)	1.75 in (H), 17.5 in (W), 17.45 in (D)			1.75 in (H), 17.5 in (W), 17.15 in (D)
Rack Units (Mountable)	1U	1U	1U	1U	1U
Unit Weight	8.8 lbs	17.8 lbs 19.9 lbs (RPS)	18.0 lbs 20.1 lbs (RPS)	20.1 lbs	23 lbs
Operating Ranges	Temperature 0° - 40° C	Humidity 5% - 95%			
Regulatory Certifications	FCC Class A^, UL, CE^, TUV^, CB^, VCCI^, China CCC, BSMI^, RCM^	RoHS^	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP, BSMI, RCM, FAC	RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, MSIP BSMI, RCM, FAC	RoHS, FIPS 140-2[3]	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
Standard Warranty	90-day Hardware and Software				

[1] Layer 7 connections per second - measures number of new HTTP connections (1 HTTP request per TCP connection, without TCP connection reuse) within 1 second | [2] Layer 4 CPS per Watt (Max) | [3] For FIPS 140-2, FIPS models must be purchased | [4] With maximum SSL | [5] With base model. Number varies by SSL model | [6] No dedicated hardware but FTA-4 FPGA handles select switching/routing functions | ^ Certification in process | + Optional RPS available

Thunder ADC Hardware Appliance Specifications Table (continued)

	Thunder 3430(S)	Thunder 4430(S)	Thunder 4440(S)	Thunder 5330(S)
Application Throughput (L4/L7)	42 Gbps / 42 Gbps	38 Gbps / 38 Gbps	80 Gbps / 80 Gbps	78 Gbps / 78 Gbps
Layer 4 CPS	2.5 million	2.7 million	2.9 million	3.1 million
Layer 4 HTTP RPS	12 million	12 million	15 million	15 million
Layer 7 CPS (1:1)*1	620k	620k	750k	770k
SSL CPS (1024/2048)	77k*4 / 75k*4	86k*4 / 84k*4	100k*4 / 95k*4	98k*4 / 96k*4
DDoS Protection (SYN Flood) SYN/Sec	55 million	55 million	166 million	112 million
Application Delivery Partitions (ADP) L3V	127	127	127	127
Network Interface				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	4	0	0	0
1/10 GE Fiber (SFP+)	4	16	24	8
40 GE Fiber (QSFP+)	0	4	4	0
Management Interface	Yes	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes	Yes
Console Port	Yes	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes	Yes
Processor	Intel Xeon 6-core	Intel Xeon 6-core	Intel Xeon 6-core	Intel Xeon 10-core
Memory (ECC RAM)	32 GB	32 GB	32 GB	32 GB
Hardware Acceleration				
64-bit Linear Decoupled Architecture	Yes	Yes	Yes	Yes
Flexible Traffic Acceleration	1 x FTA-4 FPGA	1 x FTA-3 FPGA	2 x FTA-4 FPGA	1 x FTA-4 FPGA
Switching/Routing	Hybrid*6	Hardware	Hardware	Hybrid*6
SSL Security Processor ('S' Models)	Dual or Quad	Dual or Quad	Dual or Quad	Dual or Quad
Power Consumption (Typical/Max)*5	210W / 260W	266W / 319W	360W / 445W	210W / 260W
Heat in BTU/hour (Typical/Max)*5	717 / 887	908 / 1,088	1,229 / 1,519	717 / 887
Performance Per Watt (PPW)*2|*5	9,615	8,464	6,517	11,923
Power Supply (DC Option Available)	Dual 600W RPS	Dual 600W RPS	Dual 1100W 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), 17.15 in (D)	1.75 in (H), 17 in (W), 24.6 in (D)	1.75 in (H), 17.5 in (W), 30 in (D)	1.75 in (H), 17.5 in (W), 17.15 in (D)
Rack Units (Mountable)	1U	1U	1U	1U
Unit Weight	23 lbs	25.2 lbs	32.5 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, NEBS	RoHS, FIPS 140-2^|*3	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^	RoHS	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, NEBS	RoHS
Standard Warranty	90-day Hardware and Software			

*1 Layer 7 connections per second - measures number of new HTTP connections (1 HTTP request per TCP connection, without TCP connection reuse) within 1 second | *2 Layer 4 CPS per Watt (Max) |
*3 For FIPS 140-2, FIPS models must be purchased | *4 With maximum SSL | *5 With base model. Number varies by SSL model | *6 No dedicated hardware but FTA-4 FPGA handles select switching/routing functions |
^ Certification in process | + Optional RPS available

Thunder ADC Hardware Appliance Specifications Table (continued)

	Thunder 5430(S)-11	Thunder 5440(S)	Thunder 5630(S)	Thunder 5840(S)
Application Throughput (L4/L7)	79 Gbps / 78 Gbps	100 Gbps / 100 Gbps	79 Gbps / 78 Gbps	115 Gbps / 113 Gbps
Layer 4 CPS	3.7 million	4 million	6 million	6.2 million
Layer 4 HTTP RPS	20 million	22 million	32.5 million	31 million
Layer 7 CPS (1:1)[*1]	790k	950k	1.5 million	1.5 million
SSL CPS (1024/2048)	111k[*4] / 110k[*4]	120k[*4] / 115k[*4]	180k[*4] / 174k[*4]	150k[*4] / 120k[*4]
DDoS Protection (SYN Flood) SYN/Sec	112 million	166 million	100 million	166 million
Application Delivery Partitions (ADP) L3V	1,023	1,023	1,023	1,023
Network Interface				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	0	0	4	0
1/10 GE Fiber (SFP+)	16	24	24	24
40 GE Fiber (QSFP+)	4	4	4	4
Management Interface	Yes	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes	Yes
Console Port	Yes	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes	Yes
Processor	Intel Xeon 10-core	Intel Xeon 12-core	Intel Xeon Dual 8-core	Intel Xeon 18-core
Memory (ECC RAM)	64 GB	64 GB	128 GB	64 GB
Hardware Acceleration				
64-bit Linear Decoupled Architecture	Yes	Yes	Yes	Yes
Flexible Traffic Acceleration	2 x FTA-3 FPGA	2 x FTA-4 FPGA	4 x FTA-2 FPGA	2x FTA-4 FPGA
Switching/Routing	Hardware	Hardware	Hardware	Hardware
SSL Security Processor ('S' Models)	Dual or Quad	Dual or Quad	2 x Dual, 2 x Quad or 4 x Quad	Dual or Quad
Hardware Security Module (HSM)	N/A	N/A	Single, Dual or Quad	N/A
Power Consumption (Typical/Max)[*5]	288W / 345W	360W / 445W	780W / 890W	375W / 470W
Heat in BTU/hour (Typical/Max)[*5]	983 / 1,178	1,229 / 1,519	2,661 / 3,037	1,280 / 1,604
Performance Per Watt (PPW)[*2|*5]	10,725	8,989	6,742	13,191
Power Supply (DC Option Available)	Dual 600W RPS	Dual 1100W RPS	2+2 1100W RPS	Dual 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 in (W), 24.6 in (D)	1.75 in (H), 17.5 in (W), 30 in (D)	5.3 in (H), 16.9 in (W), 28 in (D)	1.75 in (H), 17.5 in (W), 30 in (D)
Rack Units (Mountable)	1U	1U	3U	1U
Unit Weight	25.6 lbs	32.5 lbs	72 lbs / 76.5 lbs[*4]	32.5 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	FCC Class A^, UL^, CE^, TUV^, CB^, VCCI^, China CCC, BSMI^, RCM^	RoHS, FIPS 140-2^|*3	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, BSMI^, RCM^	RoHS
Standard Warranty	90-day Hardware and Software			

*1 Layer 7 connections per second - measures number of new HTTP connections (1 HTTP request per TCP connection, without TCP connection reuse) within 1 second | *2 Layer 4 CPS per Watt (Max) | *3 For FIPS 140-2, FIPS models must be purchased | *4 With maximum SSL | *5 With base model. Number varies by SSL model | *6 No dedicated hardware but FTA-4 FPGA handles select switching/routing functions | ^ Certification in process | + Optional RPS available

Thunder ADC Hardware Appliance Specifications Table (continued)

	Thunder 6430(S)	Thunder 6440(S)	Thunder 6630(S)	Thunder 7440(S)
Application Throughput (L4/L7)	150 Gbps / 145 Gbps	160 Gbps / 150 Gbps	150 Gbps / 145 Gbps	220 Gbps / 200 Gbps
Layer 4 CPS	5.3 million	5.5 million	7.1 million	10.5 million
Layer 4 HTTP RPS	31 million	31 million	38 million	44 million
Layer 7 CPS (1:1)[*1]	1.35 million	1.4 million	1.6 million	2.8 million
SSL CPS (1024/2048)	134k[*4] / 130k[*4]	150k[*4] / 120k[*4]	190k[*4] / 174k[*4]	TBD
DDoS Protection (SYN Flood) SYN/Sec	223 million	332 million	223 million	332 million
Application Delivery Partitions (ADP) L3V	1,023	1,023	1,023	1,023
Network Interface				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	0	0	0	0
1/10 GE Fiber (SFP+)	16	48	12	48
40 GE Fiber (QSFP+)	4	4	0	4
100 GE Fiber (CXP)	0	0	4	0
Management Interface	Yes	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes	Yes
Console Port	Yes	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes	Yes
Processor	Intel Xeon Dual 8-core	Intel Xeon Dual 8-core	Intel Xeon Dual 12-core	Intel Xeon Dual 18-core
Memory (ECC RAM)	128 GB	128 GB	128 GB	128 GB
Hardware Acceleration				
64-bit Linear Decoupled Architecture	Yes	Yes	Yes	Yes
Flexible Traffic Acceleration	4 x FTA-3 FPGA	3 x FTA-4 FPGA	4 x FTA-3 FPGA	3 x FTA-4 FPGA
Switching/Routing	Hardware	Hardware	Hardware	Hardware
SSL Security Processor ('S' Models)	Quad	2 x Dual	2 x Dual, 2 x Quad or 4 x Quad	2 x Dual
Hardware Security Module (HSM)	N/A	N/A	N/A	N/A
Power Consumption (Typical/Max)[*5]	590W / 680W	480W / 550W	995W / 1,150W	690W / 820W
Heat in BTU/hour (Typical/Max)[*5]	2,013 / 2,320	1,638 / 1,877	3,395 / 3,924	2,355 / 2,798
Performance Per Watt (PPW)[*2][*5]	7,794	10,000	6,174	12,805
Power Supply (DC Option Available)	Dual 1100W RPS	Dual 1100W RPS	2+2 1100W RPS	Dual 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)	1.75 in (H), 17.5 in (W), 30 in (D)
Rack Units (Mountable)	1U	1U	3U	1U
Unit Weight	39 lbs	36 lbs	74.5 lbs / 78 lbs[*4]	36 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, NEBS	RoHS, FIPS 140-2[*3]	FCC Class A^, UL^, CE^, TUV^, CB^, VCCI^, China CCC^, BSMI^, RCM^	RoHS	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^, BSMI^, RCM^	RoHS, FIPS 140-2^[*3]
Standard Warranty	90-day Hardware and Software			

*1 Layer 7 connections per second - measures number of new HTTP connections (1 HTTP request per TCP connection, without TCP connection reuse) within 1 second | *2 Layer 4 CPS per Watt (Max) |
*3 For FIPS 140-2, FIPS models must be purchased | *4 With maximum SSL | *5 With base model. Number varies by SSL model | *6 No dedicated hardware but FTA-4 FPGA handles select switching/routing functions |
^ Certification in process | + Optional RPS available |

Thunder SPE Hardware Appliance Specifications Table

	Thunder 4435(S) SPE	Thunder 5435(S) SPE	Thunder 6435(S) SPE	Thunder 6635(S) SPE
Application Throughput (L4/L7)	38 Gbps / 38 Gbps	78 Gbps / 77 Gbps	153 Gbps / 150 Gbps	150 Gbps / 145 Gbps
Layer 4 CPS	3.1 million	3.7 million	7.1 million	7.1 million
Layer 4 HTTP RPS	12 million	20 million	38 million	38 million
Layer 7 CPS (1:1)[*1]	660k	790k	1.6 million	1.6 million
SSL CPS (1024/2048)[*2]	120k / 65k	120k / 65k	170k / 135k	190k / 174k
DDoS Protection (SYN Flood) SYN/Sec	55 million	112 million	223 million	223 million
Application Delivery Partitions (ADP) L3V	1,023	1,023	1,023	1,023
Network Interface				
1 GE Copper	0	0	0	0
1 GE Fiber (SFP)	0	0	0	0
1/10 GE Fiber (SFP+)	16	16	16	12
40 GE Fiber (QSFP+)	0	4	4	0
100 GE Fiber (CXP)	0	0	0	4
Management Interface	Yes	Yes	Yes	Yes
Lights Out Management	Yes	Yes	Yes	Yes
Console Port	Yes	Yes	Yes	Yes
Solid-state Drive (SSD)	Yes	Yes	Yes	Yes
Processor (Intel Xeon)	10-core	10-core	Dual 12-core	Dual 12-core
Memory (ECC RAM)	64 GB	64 GB	128 GB	128 GB
Hardware Acceleration				
64-bit Linear Decoupled Architecture	Yes	Yes	Yes	Yes
Flexible Traffic Acceleration	1 x FTA-3+ FPGA	2 x FTA-3+ FPGA	4 x FTA-3+ FPGA	4 x FTA-3+ FPGA
Security & Policy Engine	Hardware	Hardware	Hardware	Hardware
Switching/Routing	Hardware	Hardware	Hardware	Hardware
SSL Security Processor ('S' Models)	Dual	Dual	Quad	2 x Dual, 2 x Quad or 4 x Quad
Power Consumption (Typical/Max)[*3]	350W / 420W	400W / 480W	620W / 710W	995W / 1,150W
Heat in BTU/hr (Typical/Max)[*3]	1,195 / 1,433	1,365 / 1,638	2,116 / 2,423	3,395 / 3,924
Performance Per Watt (PPW)[*4]	7,381	7,708	10,000	6,174
Power Supply (DC Option Available)	Dual 1100W RPS	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)	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	1U	3U
Unit Weight	34.5 lbs	35.5 lbs	39 lbs	74.5 lbs / 78 lbs[*2]
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, NEBS	RoHS, FIPS 140-2‡	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, EAC, NEBS	RoHS, FIPS 140-2‡	FCC Class A, UL, CE, TUV, CB, VCCI, China CCC, BSMI, RCM, EAC, NEBS	RoHS, FIPS 140-2‡	FCC Class A, UL, CE, TUV, CB, VCCI, EAC, FAC	RoHS
Standard Warranty	90-day Hardware and Software			

*1 Layer 7 connections per second - measures number of new HTTP connections (1 HTTP request per TCP connection, without TCP connection reuse) within 1 second | *2 With maximum SSL |
*3 With base model. Number varies by SSL model | *4 Layer 4 CPS per Watt (Max) | ‡ Certification in process and FIPS model must be purchased

Thunder HVA Products Specifications Table

	Thunder 3030S HVA	Thunder 3530S HVA
Throughput*	35 Gbps	100 Gbps
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‡, EAC‡, FAC‡	
Standard Warranty	90-day Hardware and Software	

* Performance varies by number of virtual machines running and hardware resources assigned | ‡ Certification in process

vThunder ADC Specifications Table

	vThunder ADC
Throughput	Up to 20 Gbps
Supported Hypervisors	VMware 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

vThunder ADC for Cloud Specifications Table

	vThunder for AWS	vThunder for Azure
Throughput	• vThunder for AWS Pre-installed License: up to 500 Mbps • vThunder for AWS BYOL (Bring Your Own License) Editions: up to 1 Gbps	• vThunder for Azure Pre-installed License: up to 500 Mbps • vThunder for Azure BYOL (Bring Your Own License) Editions: up to 500 Mbps
Image Format	Amazon AMI	Microsoft VHD
Licenses	vThunder for AWS Pre-installed License: • 10 Mbps • 50 Mbps • 100 Mbps • 200 Mbps • 500 Mbps vThunder for AWS BYOL Editions: • Lab/Developer • 200 Mbps • 1 Gbps	vThunder for Azure Pre-installed License: • 10 Mbps • 50 Mbps • 100 Mbps • 200 Mbps • 500 Mbps vThunder for Azure BYOL Editions: • Lab/Developer • 200 Mbps • 500 Mbps

Thunder ADC for Bare Metal Specifications Table

	Thunder ADC 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 840

Thunder 930

Thunder 1030S

Thunder 3030S

Thunder 3230(S)

Thunder 3430(S)

Thunder 4430(S)

Thunder 4440(S)

Thunder 5330(S)

Thunder 5430(S)-11

Thunder 5440(S)

Thunder 5630(S)

Thunder 5840(S)

Thunder 6430(S)

Thunder 6440(S)

Thunder 6630(S)

Thunder 7440(S)

Thunder4435(S) SPE

Thunder 5435(S) SPE

Thunder 6435(S) SPE

Thunder 6635(S) SPE

Thunder 3030S HVA

Thunder 3530S HVA

Detailed Feature List*

Application Delivery

- Comprehensive IPv4/IPv6 Support
- Advanced Layer 4/Layer 7 Server Load Balancing
  - Fast HTTP, Full HTTP Proxy
  - High-performance, template-based Layer 7 switching with header/URL/domain manipulation
  - Comprehensive Layer 7 application persistence support
  - FTP, DNS, FIX and more
- Comprehensive load balancing methods
  - Round Robin, Least Connections, Weighted RR, Weighted LC, Fastest Response, & more
- aFleX – deep packet inspection and transformation for customizable, application-aware switching
- Advanced Health Monitoring
  - Comprehensive Protocol Support – ICMP, TCP, UDP, HTTP, HTTPS, FTP, RTSP, SMTP, POP3, SNMP, DNS, RADIUS, LDAP, & more
  - Scriptable health check support using TCL, Python, Perl, and Bash
- High Availability – Active-Active, Active-Standby configurations
- SIP Load Balancing for VoIP
- STARTTLS support for Secure Email & LDAPS
- Spam Filter Support – high-speed application of very large black/white lists
- Firewall Load Balancing (FWLB)
- Global Server Load Balancing (GSLB)
- Transparent Cache Switching (TCS)
- Next Hop Load Distribution (NHLD) for load balancing multiple links
- Diameter AAA Load Balancing
- Database Load Balancing
- Internet Content Adaptation Protocol (ICAP) Support

Application Acceleration

- HTTP Acceleration and Optimization
  - HTTP Connection Multiplexing (also called TCP connection reuse)
  - RAM Caching
  - HTTP Compression
- WAN protocol support including Selective Acknowledgment, Fast Ramp, Client Keep alive, and Window Scaling
- HTTP Pipelining support
- SPDY protocol support

Security

- Web Application Firewall (WAF)
- DNS Application Firewall (DAF)
- Next-generation DDoS protection for servers and CGNAT pools
- Application Access Management (AAM)—SAML, Kerberos, NTLM, TDS SQL Logon, LDAP, RADIUS, Basic, OCSP stapling, HTML Form- based
- AAM RADIUS-based audit support
- Single sign-on (SSO) authentication relay
- Authentication for Microsoft SharePoint, Outlook Web Access, and other packaged and custom applications

- SSL Acceleration
  - SSL Offload
  - Support for all TCP Protocols – SSL Termination, SSL Bridging
    (SSL Initiation)
  - TLS 1.2 and 4096-bit SSL key support
  - Perfect Forward Secrecy (PFS) with Elliptic Curve Diffie-Hellman Exchange (ECDHE) and other Elliptic Curve Cryptography (ECC) ciphers
  - SSL Session ID Reuse
  - AES-NI, GCM and ECDHE ciphers for vThunder
- IP Anomaly Detection
- Connection Rate Limiting/Connection Limiting
- Bandwidth Rate Limiting per Source IP
- Dynamically add IPs to Black-White Lists

A10 Threat Intelligence Service**

- Dynamically updated threat intelligence feed

High Performance, Scalable Platform

- ACOS (Advanced Core Operating System)
  - Multi-core, Multi-CPU 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 (802.1Q)
- Trunking (802.1AX), LACP
- Access Control Lists (ACLs)
- Traditional IPv4 NAT/NAPT
- IPv6 NAPT
- Jumbo Frame support
- Hardware-accelerated VXLAN
- NVGRE

IPv6 Migration/IPv4 Preservation

- Full native IPv6 management and feature support
- SLB-PT (Protocol Translation), SLB-64 (IPv4<−>IPv6, IPv6<−>IPv4)
- Carrier Grade NAT (CGN/CGNAT), Large Scale NAT (LSN), NAT444, NAT44, NAT46
  - Integrated DDoS protection for NAT pools
- NAT64/DNS64, DS-Lite, 6rd, LW4o6
- ALG protocol support for protocols with dynamic ports like SIP
  and FTP

Management

- Dedicated management interface (Console, SSH, Telnet, HTTPS)
- Web-based Graphical User Interface (GUI) with Language Localization
- Industry-standard Command Line Interface (CLI) support
- Granular Role-based Access Control
- SNMP, Syslog, email alerts, NetFlow v9 and v10 (IPFIX), sFlow
- Port mirroring

- REST-style XML API (aXAPI) for all functions
- Local LDAP, TACACS+, RADIUS support
- Selectable number of CPUs for control processing

Virtualization

- aVCS (Virtual Chassis System)
- vThunder Virtual Appliance for VMware vSphere ESXi, Microsoft Hyper-V, KVM (with SR-IOV and Virtio support), Amazon Web Services (AWS) AMI, and Microsoft Azure VHD
- Multi-tenancy with Application Delivery Partitions (ADP)
  - Partition-based management
  - L3 virtualization
- Hypervisor acceleration and management integration

Carrier-grade Hardware

- Advanced hardware architecture
- Hardware-based SYN Cookies
- Hot swap Redundant Power Supplies (AC or DC)
- Smart Fans (hot swap)
- Solid-state drive (SSD)
- High Port Density
- 40 GE ports
- 100 GE ports
- Tamper detection
- Lights Out Management (LOM/IPMI)
- Hardware Security Module (HSM) option
- High performance security processor option

Certifications

Security and Capability Assurance Certifications*

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

*Features and certifications may vary by appliance
**Additional paid service

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.**

Corporate Headquarters

A10 Networks, Inc
3 West Plumeria Ave.
San Jose, CA 95134 USA
Tel: +1 408 325-8668
Fax: +1 408 325-8666
www.a10networks.com

Worldwide Offices

North America
sales@a10networks.com
Europe
emea_sales@a10networks.com
South America
latam_sales@a10networks.com
Japan
jinfo@a10networks.com
China
china_sales@a10networks.com

Hong Kong
HongKong@a10networks.com
Taiwan
taiwan@a10networks.com
Korea
korea@a10networks.com
South Asia
SouthAsia@a10networks.com
Australia/New Zealand
anz_sales@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.