BROCADE SERVERIRON ADX 1000, 4000, AND 10000 SWITCHES

Application Delivery

Application Delivery Controllers for Next-Generation Data Centers

HIGHLIGHTS

- Delivers industry-leading price-performance value per rack unit and per watt of power, with up to 70 Gbps of Layer 4-7 throughput, 14 million DNS queries per second, 16 million Layer 4 transactions per second, 224,000 SSL transactions per second, and 120 million SYN/sec of DoS attack protection
- Provides dedicated custom processors for packet acceleration, IP traffic security/protection, and application acceleration with complete separation of data and management operations
- Leverages content switching policies/rules to inspect, transform, and optimize the delivery of enterprise applications from Microsoft, SAP, Oracle, and IBM
- Provides plug-in support for leading in-frastructure orchestrators and enterprise application management tools
- Offers advanced functions such as Global Server Load Balancing, Transparent Cache Switching, Firewall Load Balancing, and multiple high-availability options
- Maximizes flexibility with a future-ready chassis featuring modules that scale to 16x10 Gbps fiber ports, application expansion modules, and the industry's highest core density with up to 32 dedicated application processor cores
- Provides the industry's only 1U application delivery controller with licensable application processors and 10 GbE ports

Brocade® ServerIron® intelligent application delivery and traffic management solutions have led the industry for over a decade, helping to mitigate costs and prevent losses by optimizing business-critical enterprise and service provider applications with high availability, security, multisite redundancy, acceleration, and scalability—in more than 3000 of the world's most demanding organizations.

Brocade has introduced the next generation of Application Delivery Controllers (ADCs) designed to meet growing demand for application connectivity, virtualization, and operating efficiency. These new solutions include:

- ServerIron ADX 1000
- ServerIron ADX 4000
- ServerIron ADX 10000

ServerIron ADX switches provide industry-leading Layer 2 - 7 switching performance, enabling highly secure and scalable application service infrastructures. The switches efficiently distribute application services by measuring server connection load and response time, providing visibility and manageability of application performance, and service delivery.

As a result, applications run more efficiently and with higher availability—streamlining operations, increasing business agility, and significantly reducing costs.

HIGHEST-PERFORMANCE LAYER 4-7 SWITCHING

ServerIron ADX switches manage traffic using packet information beyond the traditional Layer 2 and 3 headers, connecting client requests to the most available servers based on the results of various Layer 4 and Layer 7 information.

These intelligent Layer 4-7 application switches transparently support most TCP- or UDP-based application by providing specialized acceleration and load balancing of network infrastructure and services, and host-offload features for Web services. ServerIron ADX switches also provide a reliable line of defense by securing servers and applications against many types of intrusion and attacks without sacrificing performance.

All ServerIron ADX switches forward traffic flows based on Layer 4-7 definitions, and provide industry-leading performance for higher-layer application switching functions. Superior content switching capabilities include customizable rules—based on URL, HOST, and other HTTP headers—as well as cookies, XML, and application content.

BROCADE

REDUCED OWNERSHIP COSTS

ServerIron ADX switches simplify server farm management and application upgrades by enabling organizations to easily remove resources and insert them into the pool—helping to minimize Total Cost of Ownership (TCO). The switches uniquely provide a single platform that can reduce network load and extend server farm network design and scalability. They accomplish this by combining a high-performance Layer 4-7 packet processing architecture with the highest available throughput via 1 Gigabit Ethernet and 10 Gigabit Ethernet (GbE) connectivity.

In addition, ServerIron ADX switches provide hardware-assisted, standards-based network monitoring for all application traffic flows, improving manageability and security for network and server resources. To enable real-time problem detection, extensive and customizable service health check capabilities monitor Layer 2, 3, 4, and 7 connectivity, along with service availability and server response. If a problem arises, client requests are automatically redistributed to other servers capable of delivering optimum service. This approach helps keep applications up and running smoothly.

To optimize application availability, ServerIron ADX switches support many high-availability options, with real-time session synchronization between two ServerIron ADX switches available to protect against session loss during outages. As one device shuts down, the second device transparently resumes control of client traffic with minimal or no loss to existing sessions or connectivity. Organizations can use synchronization capabilities to simplify the management of two ServerIron ADX switches deployed in high-availability mode, minimizing network downtime caused by configuration errors.

ServerIron ADX switches are simple to configure and manage using the Brocade Command Line Interface (CLI) or browser-based Graphical User Interface (GUI). The CLI uses well-known industry-standard syntax for fast, error-free configuration. The switches support Simple Network Management Protocol (SNMP) to allow device management through applications such as HP OpenView. Moreover, organizations can use Brocade IronView® Network Manager (INM) to monitor traffic, chart traffic, and perform comprehensive configuration management.

SERVERIRON ADX MODULES

Management Module SI-MM

SI-MM

ServerIron ADX management modules have a dual-core processor, one console port, and one USB port, along with space for an optional Application Expansion Module.

Application Switch Module SI-ASM8

SI-ASM8

Each Application Switch Module (ASM8) has four dual-core processors dedicated to processing application traffic. Up to four ASM8 modules can reside in the ServerIron ADX 10000 for a total of 32 cores.

Switch Fabric Module SI-SFM

SI-SFM

ServerIron ADX switch fabric modules provide up to 320 Gbps of switching capacity, providing scalability as I/O modules require more bandwidth.

Interface Modules

SI-12GC

Three ServerIron ADX line card configurations are available:

SI-12GC

12x1 Gbps copper (RJ45)

SI-12GF

12x10 Gbps fibre (SFP)

SI-12GF

SI-4XG

4x10 Gbps fibre (XFP)

SI-4XG

All line card packet processors support Layer 2-3 virtualization, and the ServerIron ADX chassis can scale to support even higher I/O in the future as modular 40 Gbps and 100 Gbps line card interfaces become available.

ADVANCED ARCHITECTURE

Compared to the leading competitive offering, ServerIron ADX switches provide indistry-leading throughput based on an advanced design that features complete physical and logical separation of the application, data, and management planes. In fact, the multichip, multicore, high-density application processing plane is designed for the industry's highest core density and performance upgradability.

This design utilizes modular hardware to accelerate application processing and to optimize the distribution and flow of internal traffic to a large number of processor cores. The high-speed switching fabric uniquely supports application processing, I/O, and management modules to maximize flexibility. The data plane provides high-density 10 Gbps support with hardware assist for linear session distribution across multiple application cores. In addition, the ServerIron ADX 4000 and 10000 chassis management modules accept a field-upgradable Application Expansion Module option for Secure Sockets Layer (SSL) acceleration, with additional modules for other functions planned for future release, while the fixed configuration ServerIron ADX 1000 is available with or without SSL acceleration functionality, and can be upgraded in the field through license activation, without removing the switches from the network.

FIXED CONFIGURATION FLEXIBILITY

Providing the best investment protection, the ServerIron ADX 1000 provides a high-density fixed 1U form factor that shares the full feature set with all ADX switches, and can be ordered in any of four configurations, with optional licensing to expand capacity from entry-level to higher-level configurations when required.

- Eight 1 GbE ports with a single application core
- Sixteen 1 GbE ports with two application cores
- Sixteen 1 GbE ports with four application cores
- Sixteen 1 GbE ports with four application cores and two 10 GbE ports, or
- Any combination of the above with SSL, or with Premium Software (includes GSLB, IPv6, and Layer 3 switching), or with both SSL and Premium Software

MASSIVE SCALABILITY

However, when large scale chassis reconfiguration or expansion is required, the unique design of the ServerIron ADX 4000 and 10000 provides a dedicated backplane to support application, data, and management functionality through specialized modules. The following model-interchangeable Field Replaceable Units (FRUs) are available (see sidebar).

CAPACITY ON DEMAND

All ServerIron ADX switches can be quickly upgraded in the field using software keys, allowing organizations to enable a full suite of hardware and software options when needed, without opening the switch cases. In particular, the ServerIron ADX 1000 fixed configuration can be purchased as an entry-level ServerIron ADX 1008-1, and can then be upgraded to any higher level, including the ServerIron ADX 1016-2, 1016-4, and 1216-4, fully supporting a "pay-as-you-grow" deployment strategy. The list of performance and capacity upgrades includes hardware features, such as additional processing cores with memory, SSL acceleration, as well as additional 1 GbE and 10 GbE ports, and Premium Software features that include Global Server Load Balancing (GSLB), IPv6, and Layer 3 switching.

ADX ARCHITECTURE BENEFITS

ServerIron ADX switches are based on a unique architecture that supports scalability and expansion to meet growing application traffic switching requirements:

- **High-performance, modular design:** A choice of models starting with the compact 1U ServerIron ADX 1000 to the highly scalable ServerIron ADX 4000 and 10000 series with 320 Gbps of switching bandwidth
- **Redundant power supplies:** Support for redundant, hot-swappable power supplies on all models—front-serviceable on the ServerIron ADX 4000 and 10000
- **Completely modular chassis:** Expansion slots for management, application switching, switch fabric, line interface, and fan modules to increase performance and port density
- **Dual management modules:** The ADX 10000 chassis can be configured with an additional management module to provide backup
- **Upgradable to hardware-assisted SSL acceleration:** Optional mezzanine service modules to add integrated and scalable hardware SSL acceleration
- **Reliability:** A resilient switching and routing foundation with advanced support for RIP 2, OSPF 2 and 3 (IPv6), VRRP, and VRRP-E
- **Flexible connectivity options:** Expansion from 12 to 48 GbE ports in mixed copper/fiber combinations, or up to 16 10 GbE XFP ports

APPLICATION OPTIMIZATION

ServerIron ADX switches support a wide range of IP and Web traffic management applications by providing the following capabilities:

- **Efficient Server Load Balancing (SLB):** Distributes IP-based application flows and transparently balances traffic among multiple servers while continuously monitoring server, application, and content health to increase reliability and availability.
- **Intelligent application content inspection and switching:** Provides a powerful ability to create rules, policies, and configurations to perform application traffic management operations (at both Layer 4 and Layer 7) including server and application load balancing, health monitoring, inspection, switching, redirection, persistence and content transformation.
- **Disaster recovery and Global Server Load Balancing (GSLB):** Distributes services transparently across multiple sites and server farm locations, balancing traffic on a global basis while monitoring site, server, and application health. By directing clients to the best site for the fastest content delivery, ServerIron ADX switches increase application availability and reduce bandwidth costs. Moreover, site-level redundancy and fast transparent failover facilitate disaster recovery.
- **Robust application security:** Shields server farms and applications from wire-speed multi-Gigabit-rate Denial of Service (DoS), Distributed DoS (DDoS), virus, and worm attacks, while serving legitimate application traffic at peak performance.
- **Application infrastructure agility:** Application Performance Predictive Load Balancing provides an application response time predictor for balancing load, a companion capability to Application Resource Broker.
- **Enterprise applications:** Supports enterprise environments running IP- and Web-based and popular applications such as Oracle, BEA Web Logic, IBM WebSphere, PeopleSoft, SAP, Microsoft SharePoint, and Siebel. ServerIron ADX switches enable load balancing and persistence to improve availability, security, and performance.
- **Financial protocols:** Financial Information eXchange (FIX) protocol support provides Layer 4-7 switching and application delivery services for financial services applications.
- **IPv6 Gateway:** Provides simultaneous support for both IPv4 and IPv6 real servers behind a single IPv6 VIP, for simplified, rapid data center migration.
- **High-availability application switching:** Utilizes active-standby mode, whereby the standby ServerIron ADX switch assumes control and preserves the state of existing sessions in the unlikely event the primary application delivery device fails. In active-active mode, both ServerIron ADX switches work simultaneously and provide a backup for each other while supporting stateful failover.
- **HTTP Multiplexing (server connection offload):** Increases server performance, availability, response time, and security by offloading connection management from the servers. Using persistent HTTP 1.0 and 1.1 connections to the server, ServerIron ADX switches stream a large number of client connections to very few server connections. Connection offload enables the servers to dedicate resources for high-performance application content delivery.
- **Connection rate limiting:** Protects server farms by controlling the rate of new connections or simultaneous connections on a per-client basis, thereby guarding against malicious attacks from high-bandwidth users.
- **High-performance access control:** Uses policy-based server load balancing to restrict access to specific applications from a given address or subnet.
- **Application redirection:** Uses HTTP redirect to send traffic to a remote server farm if the requested service or content is not available on the local server farm.
- **Hardware SSL acceleration:** ServerIron ADX 4000 and 10000 management modules accept an optional Application Expansion module upgrade to accelerate SSL transactions, and the ServerIron ADX 1000 is also optionally available with SSL acceleration.
- **Advanced firewall and security device load balancing:** Increases firewall and perimeter security performance by distributing Internet traffic loads across multiple firewalls and other perimeter security appliances. This approach overcomes scalability limitations, increases throughput, and improves resiliency by eliminating perimeter security devices—such as firewalls, anti-virus gateways, VPN devices, and intrusion appliances—as single points of failure.
- **Transparent Cache Switching (TCS):** Balances Web traffic across multiple caches, eliminating the need to configure each client browser, improving Internet response time, decreasing WAN access costs, and increasing overall Web caching solution resiliency. ServerIron ADX switches improve service availability by implementing cache health checking, redirecting client requests to the best available cache server or directly to the origin server in the event of a cache farm failure.

HIGHER INFRASTRUCTURE ROI

With their intelligent application-aware load balancing and content switching capabilities, ServerIron ADX switches significantly improve application and server farm performance while increasing availability, security, scalability, and resource utilization. Key benefits include:

- **Improved infrastructure utilization:** ServerIron ADX switches perform highly customizable real-time health checks, dynamically monitoring the ability of servers to optimize performance and transparently reacting to server farm congestion by distributing client traffic loads to the most available servers. Intelligent content switching maximizes server utilization and performance by eliminating the need to replicate content and application functions on every server.
- **Increased server availability:** ServerIron ADX switches can be deployed in multiple high-availability modes with stateful session synchronization and failover to extend availability even through switch failures.
- **Robust security:** Through specialized embedded logic, the switches reliably protect against many forms of DoS and DDoS attacks at industry-leading data rates of up to 120 million attacks per second. sFlow technology is also embedded to deliver wire-speed 'always-on' network monitoring capabilities to sFlow collectors, complementing the protection services available via IPS solutions from Brocade security partners.
- **Massive scalability:** ServerIron ADX switches allow the use of multiple servers with load balancing and failover, eliminating downtime during server farm and application upgrades.
- **Faster ROI:** ServerIron ADX switches provide high ROI for application and server infrastructure in a short timeframe, supporting significantly higher application traffic and user loads on existing infrastructure by maximizing server resource utilization. With support for server connection offload, the switches reduce connection management overhead, freeing up resources for application processing and improving overall server farm performance and capacity.

SITE REDUNDANCY AND SCALABILITY

ServerIron ADX 1000, 4000, and 10000 series switches can redirect client traffic geographically among multiple sites based on availability, load, and response time. These switches also measure client/server proximity as defined by round-trip delay and geographic location. All these features can work in conjunction with the network's existing Domain Name Server (DNS) servers, minimizing network disruption when implementing GSLB.

The switches continually monitor multiple sites to detect any changes in servers or services due to varying health and traffic conditions. Configurable site load thresholds enable organizations to align health checking parameters with each site's server and service capabilities.

In addition, ServerIron ADX switches use geographic site selection to keep requests within continental domains. Continuous application traffic monitoring helps create a dynamic knowledge base that enables more intelligent GSLB methodologies and site selection criteria. ServerIron ADX GSLB provides the following key functions:

- Acts as a DNS proxy to transparently intercept and modify the DNS responses, thereby directing users to the best site
- Leverages existing DNS servers and minimizes disruption to the existing DNS environment
- Provides continuous site monitoring to detect changes in site health conditions
- Provides configurable settings to fine-tune individual site load thresholds
- Monitors and selects sites by measuring site, server, and application responsiveness
- Adds an evolutionary knowledge base that enables more intelligent site selection as more clients access the site

In addition, ServerIron ADX switches provide a multisite redundancy solution with Virtual IP (VIP) Route Health Injection. This capability matches VIP and server health with intelligent route propagation to the Internet through standards-based routing protocols. This approach provides business continuity to IP applications that do not rely on DNS for service name resolution.

SIMPLIFIED MANAGEMENT AND CONFIGURATION

Organizations can manage and configure ServerIron ADX switches by using Brocade Network Advisor (BNA), a flexible, powerful, industry-standard command-line interface (CLI) and comprehensive web element manager (web GUI) for device configuration in the following areas:

- Real server creation
- Virtual server creation
- Real-to-virtual server binding management
- Virtual/real server and port management
- Layer 4-7 (CSW) switching support
- SSL acceleration support
- VLAN management and port assignment
- IP address configuration
- sFlow network monitoring
- Standard ACL support
- ServerIron ADX dashboard and front panel view
- ServerIron ADX statistics
- High-availability configuration
- Server health monitoring

SERVER HEALTH MONITORING

The unique ServerIron ADX architecture includes a dedicated processor for health monitoring and device management. This design significantly increases server reliability and efficiency to improve overall service availability. ServerIron ADX switches provide highly customizable application-specific health monitoring to help organizations quickly determine any degradation or failure of application servers—and to redirect clients to alternative resources. The frequency of health monitoring messages is user-configurable per server and per application port.

In conjunction with Application Resource Broker, ServerIron ADX health monitoring is instrumental in providing the basis for provisioning decisions in enterprise private cloud infrastructures. Fine-grained historical reporting of concurrent connections and response times provides a basis for the decision engine to alert the administrator when limits are exceeded. Historical data is also used to invoke new virtual application instances where logging and trending helps to reduce errors and improve predictability and reliability for truly dynamic cloud services.

APPLICATION RESOURCE BROKER

Working in tandem with ServerIron ADX, Brocade Application Resource Broker is an infrastructure software component for IT operations seeking a simplified solution to enable on-demand application resources within IT datacenters. It ensures application performance by dynamically adding and removing application resources (virtual machines) based on real-time monitoring of application resource responsiveness and traffic load information from ServerIron ADX and infrastructure capacity information from server infrastructures. The programmable decision engine within Application Resource Broker compares this application experience information versus threshold rules that are pre-configured. When thresholds are exceeded, Application Resource Broker initiates provisioning actions to ensure necessary and appropriate application resources are available to meet Service Level Agreements (SLAs).

ServerIron ADX with Application Resource Broker also automatically associates various application services to their respective virtual machines, collecting historical application-centric performance statistics to enable true application-level operational visibility. Application Resource Broker directly supports VMware environments through a vSphere Client Plug-in, and can leverage real-time application response monitoring capabilities of any ServerIron ADX in the network to deliver immediate and impactful provisioning adjustments in response to fluctuating demand. This helps ensure consistent and reliable application responsiveness between end users and the application infrastructure.

This unique Brocade technology helps organizations reduce or eliminate the high-cost and inefficiency of provisioning for peak load across multiple applications, simultaneously preventing missed SLAs due to under-provisioning. Application Resource Broker streamlines management with application-centric views and helps ensure resiliency in the delivery of those services. Typical accrued savings include reduced cost of intervention to rectify capacity planning and application SLA issues; reduced power, cooling, and space to service existing traffic demands; and a more efficient infrastructure that can absorb the delivery of additional new business projects or increases in traffic without additional capital expense. ServerIron ADX with Application Resource Broker is a key enabler for on-demand virtualized or shared IT infrastructure.

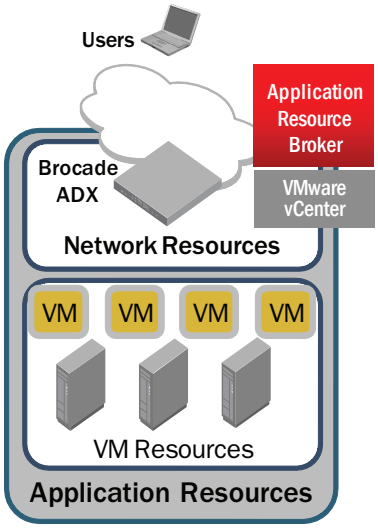

Figure 2a.
ServerIron ADX with Application Resource Broker (ARB) monitors network and infrastructure resources

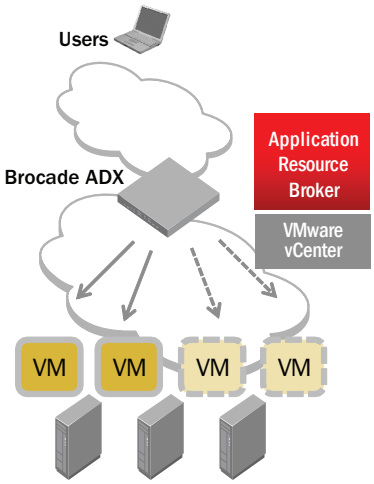

Figure 2b.
ARB Initiates provisioning and immediate use of additional application resources to meet traffic demand

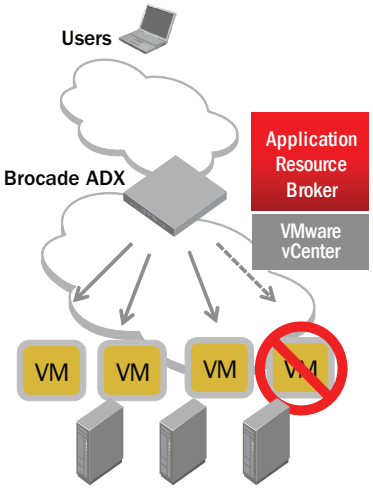

Figure 2c.
Application resources are de-provisioned when traffic demand subsides

BROCADE SERVERIRON ADX SPECIFICATIONS

Platform	ServerIron ADX 1000	ServerIron ADX 4000	ServerIron ADX 10000
Maximum number of application cores	4	16	32
Maximum system memory	8 GB	32 GB	64 GB
DNS queries/sec (fast stateless)	1,750,000	7,000,000	14,000,000
Layer 4 connections/sec (HTTP 1.0)	200,000	800,000	1,600,000
Layer 4 transactions/sec (HTTP 1.1)	2,000,000	8,000,000	16,000,000
Layer 7 connections/sec (HTTP 1.0)	90,000	360,000	720,000
Layer 7 transactions/sec (HTTP 1.1)	150,000	600,000	1,200,000
Layer 4 aggregate throughput	9 Gbps	35 Gbps	70 Gbps
Layer 7 aggregate throughput	9 Gbps	35 Gbps	70 Gbps
Maximum numbrer of Gigabit Ethernet ports	16 (CU)	24 (CU or SFP)	48 (CU or SFP)
Maximum number of 10 Gigabit Ethernet ports (XFP)	2 (XFP)	8 (XFP)	16 (XFP)
Hardware-based DDoS protection (packets/sec)	15,000,000	60,000,000	120,000,000
Hardware-based SYN-flood protection (SYN/sec)	15,000,000	60,000,000	120,000,000
Maximum number of SSL transactions/sec (TPS)[1]	28,000	112,000	224,000
Maximum SSL bulk throughput	1.8 Gbps	7 Gbps	13 Gbps
Maximum number of concurrent SSL connections[2]	64,000	256,000	512,000
Maximum number of concurrent connections	16,000,000	64,000,000	128,000,000
Maximum number of concurrent session entries	32,000,000	128,000,000	256,000,000
Maximum number of VIPs	1,024	4,096	4,096
Maximum number of real servers	4,096	16,384	16,384
Maximum number of real server ports	8,192	32,768	32,768
Layer 3 switching capabilities	OSPFv2 & v3, RIPv2, VRRP/E	OSPFv2 & v3, RIPv2, VRRP/E	OSPFv2 & v3, RIPv2, VRRP/E
Physical dimensions	1.7" h × 17.5" w × 18.1" d 4.3 cm × 44.3 cm × 45.8 cm	7.0" h × 17.5" w × 17.5" d 17.7 cm × 44.3 cm × 44.5 cm	17.4" h × 17.5" w × 17.5" d 35.5 cm × 44.3 cm × 44.5 cm
Weight	37.5 lbs fully loaded (17.0 kg)	54.0 lbs fully loaded (24.5 kg)	92.5 lbs fully loaded (42.0 kg)
Maximum power requirements	390 Watts	952 Watts	1920 Watts
Warranty	1-year hardware, 90-day software, upgrades to higher levels available		

[1] The net SSL performance is a function of the number of application cores in the system. However, the maximum possible SSL performance from a single SSL module is 112,000 TPS and 7 Gbps of bulk throughput.
[2] Maximum SSL concurrent connections is based on a maximum of 16,000 SSL connections per application processor core

Load Balancing Methods

Least Connections, Round Robin, Weighted, Enhanced Weighted, Weighted Round Robin, Dynamic Weighted (SNMP based), Response Time Predictor

Server Health Checks

Layer 2-4 health checks for TCP and UDP ports; Layer 7 health checks for many well-known ports, port profiles, port policies, element health checks, health check policies

Layer 2/Layer 3 Capabilities

32,000 MAC addresses, 802.1d Spanning Tree Protocol, 802.1w Rapid Spanning Tree Protocol, LACP, trunk server/switch, VLANs. IPv4/IPv6: static routing, dynamic routing - RIPv2, OSPFv2 & v3, VRRP/E

Protocol Support

TCP, UDP, HTTP, SSL, Telnet, SSHv2, FTP, TFTP, SNMP v1, 2, and 3, SMTP, IMAP4, POP3, LDAP, DNS, WTS, SIP, NNTP, RADIUS, MMS, RTSP, VRRP/E

Standards Compliance

802.3, 10 BaseT, 802.3z 1000 BaseSX, 802.1q VLAN Tagging, 802.3u 100 BaseT, 100 BaseFX, 802.3z 1000 BaseLX, 802.1d Bridging, 802.1w RSTP, 802.1ad Link Aggregation

Network Management

SSHv2, Telnet, SNMP v1, 2, and 3, sFlow, integrated CLI, Web-based GUI, Brocade Network Advisor (BNA)

Safety Compliance

- EN 60950-1:2001/IEC 60950-1:2001
- EN 60825-1:1994
- CAN/CSA C22.2 No. 60950-1-03
- UL 60950-15% to 95% (relative, non-condensing)
- CE Safety Low Voltage Directive 2006/95/EC

EMI Compliance

- FCC Part 15, Subpart B (Class A)
- EN 55022 (CE mark) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1
- EN55024 (CE mark) (Immunity) Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)

Power Supply

ADX 1000 series	• AC input rating: 100 to 240V, 50/60 Hz, 6.0 A max. • AC operating voltage range: 85 to 264V, 50/60 Hz • DC input rating: –48V, 15.0 A • DC operating range: –40 to –60 Vdc
ADX 4000/10000 series	• AC input rating: 100 to 240V, 50/60 Hz, 16.0 A max. per power supply • AC operating voltage range: 90 to 264V, 50/60 Hz • DC input rating: –48V, 30.0 A max. per power supply • DC operating range: –40 to –60 Vdc

Environment

Temperature	Operating: 0°C /32°F to 40°C/104°F (dry bulb) Storage: -25°C/-9°F to 70°C /158°F (dry bulb)
Humidity	Operating: 5% to 90% (relative, non-condensing) Storage: 5% to 95% (relative, non-condensing)
Altitude	Operating: 0 - 6,600 ft (0 - 2,012 m) maximum Storage: 15,000 ft (4,500 m) maximum

Mounting Options

19" Universal EIA (Telco) rack, or tabletop

APPLICATION DELIVERY INFRASTRUCTURE COMMUNITY

The Brocade Application Delivery Infrastructure (ADI) community focuses on Brocade ServerIron products and related partner technologies, providing a new resource for discussions, solutions, information, education, and implementation guidance for application and networking professionals to enable real-time resolution of current application delivery challenges.

Current and prospective customers and partners can easily leverage the collective knowledge and experience of the Brocade ADI community via a Web 2.0 social networking site. There they will find the latest information and a broad array of use cases, along with configuration scripts, examples, and impartiality they can depend on.

Learn more at http://community.brocade.com/adi.

BROCADE GLOBAL SERVICES

Brocade offers a broad portfolio of professional and customer support services to help organizations deploy and maintain highly efficient and resilient IP networking infrastructures. These services cover the lifecycle of assessment, design, and implementation to help organizations develop the best architecture to meet their unique requirements.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include education, support, and services.

For more information, contact a Brocade sales partner or visit www.brocade.com.

BROCADE SERVERIRON ADX 1000, 4000, AND 10000 PART NUMBER ORDERING INFORMATION

ADX 1000 Fixed Platform

SI-1008-1	Base 1U configuration with 8-port 10/100/1000 Base-T (RJ45), one application processor with 2 GB memory, one management processor with 2 GB memory, one AXP Application Acceleration Processor, one PAX Process Acceleration Engine, and one AC power supply
SI-1016-2	Base 1U configuration with 16-port 10/100/1000 Base-T (RJ45) and two application processors with 4 GB memory
SI-1016-4	Base 1U configuration with 16-port 10/100/1000 Base-T (RJ45) and four application processors with 8 GB memory
SI-1216-4	Base 1U configuration with 16-port 10/100/1000 Base-T (RJ45), dual 10 GbE XFP ports, and four application processors with 8 GB memory
SSL	SSL acceleration will be activated in any ServerIron ADX 1000 order configuration by adding the -SSL suffix to the existing part number listed above
RPS9	500-watt AC power supply for ServerIron ADX 1000
RPS9-DC	500-watt -48V DC power supply for ServerIron ADX 1000

ADX 4000 and 10000 Chassis Platform

SI-10000	ServerIron ADX (10U) chassis with two 1200-watt AC power supplies, two switch fabric modules, and one SI-10-FAN
SI-4000	ServerIron ADX (4U) chassis with one 1200-watt AC power supply, one switch fabric module, and one SI-4-FAN
SI-10000-DC	ServerIron (10 RU) Chassis with 2 1200W DC Power Supplies, 2 Switch Fabric Modules, and 1 SI-8-FAN
SI-4000-DC	ServerIron (4 RU) Chassis with 1 1200W DC Power Supply, 1 Switch Fabric Module, and 1 SI-4-FAN
SI-4000-ASM4-P12-B	ServerIron (4U) chassis with one SI-ASM4, one SI-MM, Premium Software, one SI-12GF with eight Copper SFPs, two 1200-watt AC power supplies, one switch fabric module, and one SI-4-FAN
SI-4000-ASM8-P12-B	ServerIron (4U) chassis with one SI-ASM8, one SI-MM, Premium Software, one SI-12GF with eight Copper SFPs, two 1200-watt AC power supplies, one switch fabric module, and one SI-4-FAN

ADX 4000 and 10000 System Module Options

SI-MM	Management Module for ServerIron chassis series with Dual Core Processor with 2 GB memory per core
SI-SFM	Switch Fabric for ServerIron chassis series
SI-ASM4	Application Switch Module (ASM4) for ServerIron ADX 4000 chassis with four application processors and 2 GB memory per core (8 GB total), dual AXP application acceleration processors, and one PAX processor acceleration engine (may be upgraded with ADX-CH-LIC-ASM4-8 but cannot be ordered unbundled from SI-4000-ASM4-P12-B)
SI-ASM8	Application Switch Module (ASM8) for ServerIron chassis with 8 BPs (Application Processors) with 2 GB memory per core (16 GB Total), dual AXP Application Acceleration Processors, and one PAX Processor Acceleration Engine
SI-12GC	12-port 10/100/1000Base-T, RJ45 ServerIron chassis line card module
SI-12GF	12-port 1-GE SFP ServerIron chassis line card module
SI-4XG	4-port 10 GbE XFP ServerIron chassis line C ard module
SI-ACPWR	ServerIron Chassis 1200 Watt AC Power Supply
SI-DCPWR	ServerIron Chassis 1200 Watt (-48V) DC Power Supply
XSI-ASM4	Replacement ASM4
SI-4000-S	Spare ServerIron 4RU chassis with fan assembly (SI-4-FAN), no power supply, and no switch fabric
SI-10000-S	Spare ServerIron 10RU chassis with fan assembly (SI-10-FAN), no power supply, and no switch fabric
SI-4-FAN	ServerIron 4000 Chassis Fan Assembly
SI-10-FAN	ServerIron 10000 Chassis Fan Assembly

ADX 1000, 4000, and 10000 Connectivity Options

E1MG-SX	1000BASE-SX SFP optic, LC connector, MMF, 550m, optical monitoring-capable, SI-12GF line card modules only
E1MG-LX	1000BASE-LX SFP optic, LC connector, SMF, 5km, optical monitoring-capable, SI-12GF line card modules only
E1MG-TX	1000BASE-TX Mini-GBIC Copper, RJ-45 connector, 100m, SI-12GF line card modules only
10G-XFP-SR	850nm serial XFP optic, LC connector, MMF, 300m
10G-XFP-LR	1310nm serial XFP optic, LC connector, SMF, 10km

ADX 4000, and 10000 Application Expansion Module Options

SI-MM-SSL	ServerIron ADX Chassis Management module with integrated SSL Application Expansion module
SI-AEM-SSL	SSL Application Expansion module for ServerIron ADX Chassis Management module

ADX 1000, 4000, and 10000 Options

All ServerIron ADX 1000 fixed-configuration products and ServerIron ADX 4000 or 10000 chassis-based products can be ordered or upgraded with DC power supplies. In addition, all ServerIron ADX 1000 products support in-the-field license activation of additional processors, ports, acceleration hardware, and all ServerIron ADX products may be ungraded with premium software (Layer 3 switching, IPv6 and GSLB). For a complete list of options and upgrades, including available support options, see the Brocade price list.

ADX-1008-1-LIC-2PPLS	Upgrades 1008-1 to 1016-2, with an additional application core (totaling two) and eight additional 1 Gbps ports (total of 16 1Gbps ports), and also scales the number of VIPs and Reals
ADX-1016-2-LIC-4P	Upgrades 1016-2 to 1016-4, with two additional application cores (totaling four)
ADX-1016-2-LIC-4P10G	Upgrades 1016-2 to 1216-4, with two additional application core (totaling four), and makes two 10 Gbps ports operational
ADX-1016-4-LIC-10G	Upgrades 1016-4 to1216-4, and makes two 10 Gbps ports operational
ADX-1K-1-2-LIC-SSL	Upgrades SSL for 1008-1 and 1016-2
ADX-1K-4-LIC-SSL	Upgrades SSL for 1016-4 and 1216-4
ADX-CH-LIC-ASM4-8	Upgrades ASM4 license to ASM8
ADX-1K-LIC-PREM	Upgrades ServerIron ADX 1000 to PREM - L3, GSLB, IPv6
ADX-CH-LIC-PREM	Upgrades ServerIron ADX 4000 and 10000 chassis to PREM - L3, GSLB, IPv6

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