Applied Services Processor (ASP)

8200 Series

Scalable Data Reduction and Security Solutions For Storage and Networking Applications

8200 Series continues the proven line of Exar's compression and security processors for storage and networking applications

With the flexibility of LZS, eLZS, and Deflate compression, as well as a rich set of encryption and hashing/authentication algorithms, the 8200 series processors make an ideal fit for both storage and networking applications ranging from SOHO to Enterprise Markets. The 8200 series makes the perfect choice for off-loading computationally intensive tasks necessary to compress, deduplicate, and secure data in today's power conscious and performance hungry applications. The product line operates at a power consumption of less than 2 watts, delivers single pass encryption, compression, and authentication performance at multi-gigabit speeds, and includes the latest industry standard PCI-Express interface.

Ideal for Storage Applications

Today's storage applications can greatly benefit from the 8200's ability to both compress and encrypt data. By compressing data customers can optimize bandwidth utilization for cloud storage and increase primary storage capacity for latency sensitive applications like database warehousing. And through encryption, data-at-rest is secured and safe from theft or hacking.

In addition, the 8200 series offloads the hash function, thus accelerating and enabling real-time, in-line deduplication. Using deduplication techniques, only a single compressed copy need be stored, resulting in storage capacity optimization ratios that are an order of magnitude better than using data compression alone. Deduplication results in significantly lower acquisition and operational costs, including power, space, and cooling requirements. Deduplication combined with compression also reduces the amount of data that must be sent across a WAN for remote backups, replication, and disaster recovery.

Ideal for Networking Applications

The 8200 series processors perform the raw encryption, authentication, and compression necessary for multi-protocol packet processing for security protocols such as IPsec and SSL/TLS/DTLS, as well as compression protocols such as IPComp (LZS and Deflate). By performing single pass encryption, compression, and authentication at multi-gigabit speeds, the packet transformation process is greatly accelerated and the computational overhead of the host processor is significantly reduced.

In addition, the 8200's high-performance Public Key (PK) engine offloads the computationally expensive modular exponentiation operations associated with traditional RSA, DSA, DH, ECC operations with no loss of bulk processing performance.

Key features of the the 8200 series

- Performance and scalability
- Power and space efficiency
- High availability
- End-to-end data protection
- Software flexibility

STORAGE SYSTEM APPLICATIONS

- Consumer/SOHO Network-Attached Storage (NAS)
- Enterprise Network-Attached Storage (NAS)
- Direct-Attached Storage (DAS)
- Storage Area Network (SAN)
- Disk backup and archival servers, offering:
  - Data deduplication
  - Continuous Data Protection (CDP)
  - Snapshot and Replication
  - Disk-to-Disk (D2D)
  - Virtual Tape Library (VTL)
  - Content-Addressable Storage (CAS)
- Tape backup servers

NETWORK APPLICATIONS

- Unified Threat Management Appliance
- Enterprise Secure Router / VPN gateway
- Enterprise VPN Firewall
- Data Center Load Balancers
- Multi Service Switches
- Layer 4-7 switches
- Wireless Base Stations
- Radio Network Controllers
- Carrier Network Security
- WAN Optimization appliances

8200 Series
Data Reduction and Security ASP

Applied Services Processor (ASP)

8200 Series

Scalable Data Reduction and Security Solutions For Storage and Networking Applications

	8200 SERIES
KEY FEATURES	
Data Reduction Algorithms	• eLZS, LZS, GZIP (Deflate RFC 1951)
Encryption / Decryption	• AES (128, 192, 256) CBC, GCM, CTR, ECB, XTS-256, XTS-512 • 3DES, DES, ARC4
Authentication	• AES-GMAC, -XCBC-MAC • HMAC-SHA-1, -256; HMAC-MD5 • SSL3.0-MAC
Hashing for Deduplication	• SHA-1, SHA-256 • MD5
Public Key	• RSA and DH up to 8k-bits, DSA • ECDH and ECDSA (256-bit, 384-bit, 521-bit)
Random Numbers	• Hardware random number generator • ANSI X9.31 PRNG
Suite B Support	Broadest set of cryptographic algorithms for government applications • Top Secret: AES-GCM-256/AES-GMAC-256, SHA-384/HMAC-SHA-384, ECDSA-384, ECDH-384 • Secret (and below): AES-GCM-128/AES-GMAC-128, SHA-256/HMAC-SHA-256, ECDSA-256, ECDH-256
Open Source Network Security	• OpenSSL • OpenSwan
Performance / Throughput	See table below
Performance Features	• Compression, hash and encryption in a single pass • Hash acceleration for deduplication • Up to a combined 32 ASICs per system • Automatic load balancing • Hardware-assisted command chaining and scatter gather (unlimited buffers)
Ease of Use	• New SDK simplifies integration and reduces time to market • Intel QuickAssist API Support

	8200 SERIES
Power and Space Efficiency	• Fine grain power management ensures lowest real-time power consumption per command • Small form factor • No external memory required
Reliability and Service Features	• Software failover protection (All HW functionality) in case of device failure • End-to-end data integrity (On chip and off chip error detection) • Complete verification of compressed, encrypted and hash data • On Chip Temperature sensor
ASIC SPECIFICATIONS	
Bus Interface	• PCIe x1, x2, x4 • PCIe Spec. Rev. 2.0 compliant, Gen 1 speed (2.5 Gbps)
Package	196-ball HSBGA
Package Dimensions	15x15 mm; 1 mm pitch
ENVIRONMENTAL SPECIFICATIONS	
Temperature and Humidity	Available in Commercial and Industrial Temperature SKUs
Material Safety	Available in Leaded and Lead-Free (RoHS-6) Package options
OS SUPPORT AND HOST UTILITIES	
Host Utilities and Applications	• Power-on Self Test (POST) • DMA and ASIC configuration • Error log configuration • Demonstration and test application
Operating Systems Supported	• Windows Server 2003 R2 32/64 bit • Windows Server 2008 32/64 bit • Red Hat Enterprise Linux 4 32/64 bit • Red Hat Enterprise Linux 5 32/64 bit • Novell SUSE ELS 9 32/64 bit • Novell SUSE ELS 10 32/64 bit • OS Abstraction Layer allows easy porting to different Linux Kernel or custom O/S

Product Selector Guide

PRODUCT	PERFORMANCE (Refer to Note 2)			COMPRESSION			ENCRYPTION			HASH			PACKET PROCESSING ACCELERATION	POWER
Model No.	Mbps	MB/s	1k RSA, Ops/s	LZS	eLZS	GZIP	AES	DES, 3DES	ARC4	SHA-1, MD5	SHA-256	True Rng	IPsec, IPComp SSL/TLS	Typ (W)
8204	6,400	800	14,200	√	√	√	√	√	√	√	√	√	√ Note 1	2.10
8203	3,200	400	7,100	√	√	√	√	√	√	√	√	√	√ Note 1	1.50
8202	1,600	200	3,550	√	√	√	√	√	√	√	√	√	√ Note 1	1.10
8201	800	100	1,775	√	√	√	√	√	√	√	√	√	√ Note 1	0.95

Note 1: Raw crypto/compression performed on-chip; packet header/trailer manipulation performed in software at application level

Note 2: Refer to performance application note for specific performance results for each algorithm.

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