EXAR
Powering Connectivity™

Data Reduction and Security Solutions

2011

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DATA REDUCTION AND SECURITY SOLUTIONS

Exar provides a comprehensive portfolio of Data Reduction and Security Solutions aimed at enabling more efficient compute, networking and storage platforms for a range of markets from SOHO to SMB to Enterprise environments.

Exar's PCIe based cards and processors provide hardware acceleration to offload computationally intensive encryption, compression, and deduplication operations from host processors. These power-efficient offload engines allow the host processor to dedicate more cycles to high value application software. Alternatively, when additional host processor cycles are not needed, hardware offload engines allow lower power, lower cost processors to be utilized.

MARKET ENVIRONMENT

The rapid proliferation of connected devices and increasingly larger data sets i.e. 'Big Data' has put an enormous strain on not only the network infrastructure, but the storage infrastructure.

These trends, coupled with the virtualization of compute, network and storage resources place a premium on the ability to efficiently utilize resources. This requires:

- Minimizing the footprint of data both at rest and in motion across the network (compression)
- Eliminating redundant data (deduplication)
- Securing critical corporate and sensitive personal data (encryption)

These challenges exist from basic consumer and SOHO environments to the largest enterprise data centers.

How Exar's solutions can benefit OEMs:

Hardware Offload
By performing operations in hardware, valuable host CPU resources can be utilized for their intended purpose: running applications

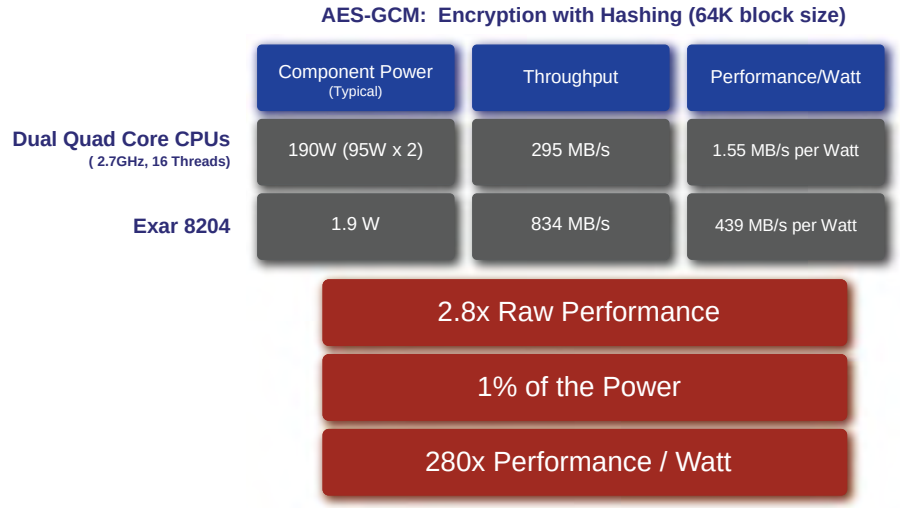
Performance and Scalability
Exar's hardware offload approach not only enables performance levels that exceed the highest performance software solutions, but also scales downward to address the needs of very cost-sensitive environments.

Power Efficiency
Performance per Watt is a key metric in almost any market today. The Exar solutions offer performance much higher than software approaches at a fraction of the power.

Data Integrity
The results of all encryption, hash, and compression operations performed by Exar processors are automatically checked to ensure no errors have occurred. Data is validated as it passes through the devices to ensure maximum data integrity.

Flexibility
Exar data reduction and security solutions offer a broad range of encryption, authentication/hashing, public key acceleration, and compression algorithms that can be user selected to address changing data center requirements.

Figure 1: Hardware Offload Performance per Watt



LOOKASIDE DATA REDUCTION AND SECURITY SOLUTIONS

Exar's processors and card products offload the computationally intensive tasks of compression, encryption, hashing, and public key operations from the host CPU. LookAside products use a PCI or PCI-Express interface and can operate either on blocks of data and/or Ethernet packets. This flexibility enables LookAside-based solutions for applications such as storage platforms requiring block formats as well as networking platforms requiring packet formats.

Exar's newest generation of processors, the 8200 series, as well as the cards based on them allow one or more operations to be performed on data in a single pass. The single pass architecture reduces latency and improves performance over software implementations.

Exar offers solutions ranging from 21 Mbytes/sec to 3.2 Gbytes/sec. Multiple devices can be used in parallel to increase performance further. The broad Exar portfolio provides solutions optimized for power, performance, and footprint to address a range of application environments and cost points. Exar's networking security portfolio includes support for multiple open source application software stacks, including OpenSSL, OpenVPN, strongSwan, and OpenSwan, enabling rapid integration, maximum performance, and highest efficiency.

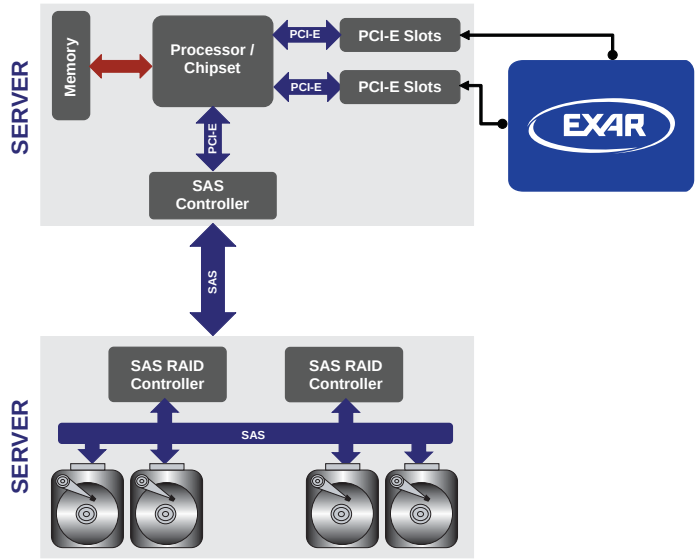
The products include a user friendly Software Developer's Kit (SDK) and development boards for rapid time to market. The SDK includes device drivers, sample application code, performance test applications and a well defined set of APIs. Using API calls, application software issues commands to the SDK to perform compression, encryption, hashing, or Public Key (PK) operations on data resident in system memory. Results of the operations are returned using DMA to system memory for further processing by the host application.

Applications

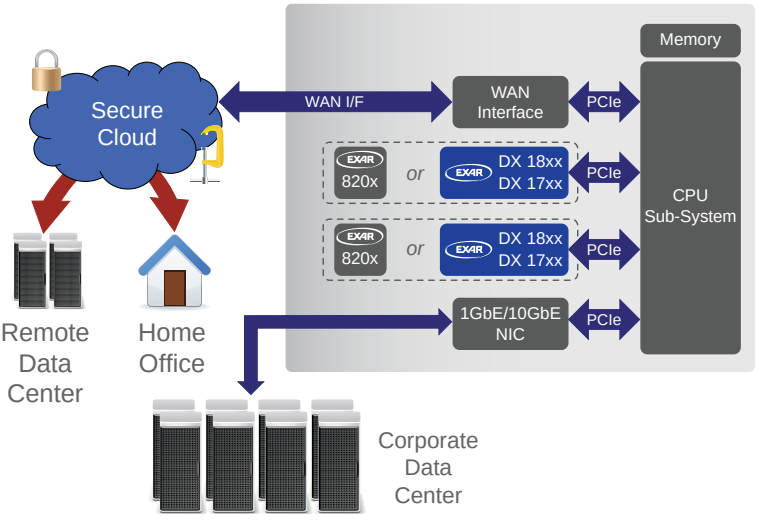
Storage
- Enterprise Network Attached Storage (NAS) Arrays
- Consumer/SOHO NAS Appliances
- Virtual Tape Libraries
- Deduplication Appliances
- Tape Backup Servers
- Remote Backup & Replication
- Direct Attached Storage (DAS)
- Storage Area Network (SAN)

Networking
- Layer 4-7 switches
- Carrier Network Security Equipment
- WAN Optimization Appliances
- VPN Gateway
- Application Delivery Appliance
- Wireless Backhaul Equipment
- Web Server Acceleration
- Smart Grid Appliance
- Key and Certificate Management

DAS



SSL or IPsec VPN Gateway



Express DR / DX Data Reduction and Security Cards

Part#	Performance	Compression	Encryption	Authentication/ Hash	Power	Interface	Public Key
DX 1710	100 MB/sec 800 Mb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	1.9W	x1 PCIe	✓
DX 1720	200 MB/sec 1.6 Gb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	2.0W	x4 PCIe	✓
DX 1730	400 MB/sec 3.2 Gb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	2.5W	x4 PCIe	✓
DX 1740	800 MB/sec 6.4 Gb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	3.3W	x4 PCIe	✓
DX 1825	1.6 GB/sec 12.8 Gb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA - 1/256/384, MD5	9.5W	x8 PCIe	✓
DX 1835	2.4 GB/sec 19.2 Gb/sec	LZS / eLZS GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA - 1/256/384, MD5	11.5W	x8 PCIe	✓
DX 1845	3.2 GB/sec 25.6 Gb/sec	LZS / eLZS GZ IP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA - 1/256/384, MD5	13.5W	x8 PCIe	✓

Note: All cards are Low Profile.

LookAside Data Reduction and Security Applied Services Processors

Part#	Performance	Compression	Encryption	Hash	Power	Package	Interface	IPsec	IP-Comp	Public Key
8204	800 MB/sec 6.4 Gb/sec	LZS / eLZS / GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	1.9W	15x15 HSBGA	x4 PCIe	✓	✓	✓
8203	400 MB/sec 3.2 Gb/sec	LZS / eLZS / GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	1.2W	15x15 HSBGA	x4 PCIe	✓	✓	✓
8202	200 MB/sec 1.6 Gb/sec	LZS / eLZS / GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	0.8W	15x15 HSBGA	x4 PCIe	✓	✓	✓
8201	100 MB/sec 800 Mb/sec	LZS / eLZS / GZIP	AES -CBC, -GCM, -CTR, -ECB, -GMAC, XCBC-MAC, -XTS 3DES	SHA-1 / 256 MD5	0.6W	15x15 HSBGA	x4 PCIe	✓	✓	✓
7956	70 MB/sec 560 Mb/sec	LZS	AES DES / 3DES	SHA-1 MD5	0.8W	22 x 22 LQFP	PCI 64 / 66			✓
7955	39 MB/sec 312 Mb/sec	LZS	AES DES / 3DES	SHA-1 MD5	0.64W	22 x 22 LQFP	PCI 64 / 66			✓
7954	21 MB/sec 168 Mb/sec	LZS	AES DES / 3DES	SHA-1 MD5	0.38W	22 x 22 LQFP	PCI 64 / 33			✓
7965	39 MB/sec 312 Mb/sec	LZS	AES DES / 3DES	SHA-1 MD5	0.6W	11x11 PFBGA	PCI 64 / 66			✓
7964	21 MB/sec 168 Mb/sec	LZS	AES DES / 3DES	SHA-1 MD5	0.3W	11x11 PFBGA	PCI 64 / 33			✓

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