Compression and Security Acceleration Card

DX2040-SX4

EXAR

High Performance Scalable Solutions for Data Analytics, Storage and Networking

Exar's DX2040-SX4 compression and security acceleration card delivers unprecedented compression and security performance to OEMs in the data analytics, storage, and cloud security markets. The DX2040-SX4 provides 30 gigabits/sec of simultaneous compression, encryption, and hashing while supporting up to 40,000 operations/sec of RSA (2048 bit key size). The DX2040-SX4 value proposition includes best in class compression ratios at maximum throughput, delivering compression ratios that are comparable with gzip level 9 while sustaining the full 30 gigabits/sec of device throughput.

Connecting to the host with an eight lane PCI Express 3.0 interface (four-bit lane electrical interface), the DX2040-SX4 offloads the host from CPU-intensive compression, encryption, and public key algorithms, providing the processing power of hundreds of enterprise class x86 CPU cores at much lower power and cost. The DX2040-SX4 Class of Service provides multiple command queues to prioritize traffic, enabling OEMs to avoid over provisioning and enforce service level agreements for performance critical applications. The DX2040-SX4 incorporates Single Root I/O Virtualization (SR-IOV) to support virtualized environments, integrating 128 virtual functions.

The DX2040-SX4 includes a user friendly Software Development Kit (SDK) which includes a wide range of features for enhanced performance, advanced management and monitoring, and high reliability and availability, and the SDK is API-compatible with Exar's DX1700 and DX1800 families of compression and security acceleration cards. In addition, the DX2040-SX4 has been integrated with AltraHD, Exar's hardware accelerated compression solution for Hadoop, as well as Exar's hardware accelerated OpenSSL package.

The DX2040-SX4 is available in a compact low profile, half length form factor, enabling easy integration and deployment across a wide range of platforms.

Key Benefits

The DX2040-SX4 leading edge compression engine minimizes the data footprint while maximizing performance, delivering a multitude of benefits. Costly I/O bottlenecks for both storage and networking are removed or minimized, enabling maximum system throughput at minimum latency.

Storage and data analytics applications benefit from higher bandwidth disk I/O and higher storage capacity. Data encryption and hashing are also supported in addition to compression without suffering penalties in either performance or latency.

The DX2040-SX4 supports a wide range of encryption, authentication, and public key algorithms for networking security, providing all required support for IPsec and SSL/TLS/DTLS, including high performance public key processing, which enables the secure infrastructure needed to support the high transaction throughput required by cloud and web-based applications. Security features also include support for the elliptic curve cryptography (ECC) algorithms and Suite B.

Target Applications

The DX2040-SX4's high performance, scalability, and low power addresses the requirements for a variety of enterprise applications, including data warehouses, Hadoop clusters, storage arrays, application delivery controllers, WAN optimization appliances, security gateways, and hardware security modules.
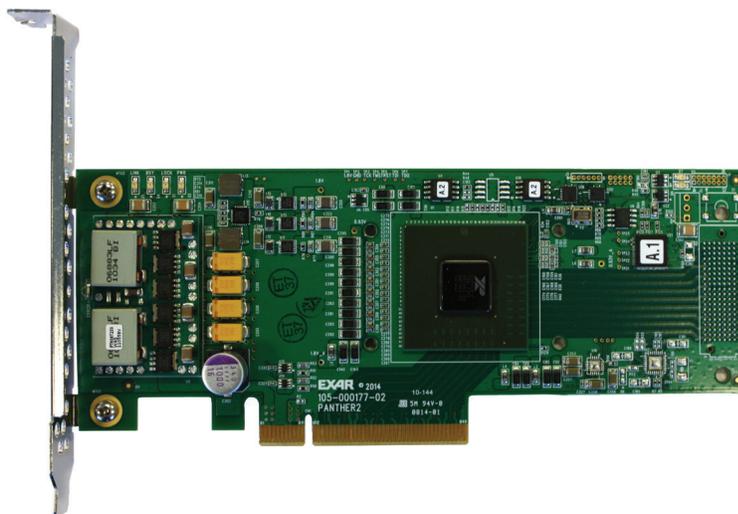
DX2040-SX4
PCIe Compression and Security Acceleration Card

DX2040-SX4

EXAR

High Performance Scalable Solutions for Data Analytics, Storage and Networking

Feature Summary

Category	Key Features
Compression	• gzip, zlib, Deflate, eLZS, LZS
Encryption / Decryption	• AES (128, 192, 256): CBC, GCM, CTR, ECB, F8 • 3DES, DES, ARC4
Hashing	• MD5, SHA-1, SHA-2 (224, 256, 384, 512)
Authentication	• HMAC-MD5, HMAC-SHA-1, HMAC-SHA-2 (224, 256, 384, 512), GMAC (AES), XCBC MAC, CMAC, SSL 3.0 MAC
Public Key	• RSA, DH, (Up to 4K bits), DSA ECDH and ECDSA (P-192 to P-521)
Random Numbers	• Hardware RNG • SP800-90 DRBG
Class of Service	• 8 Class Queues for Comp/Encr/Hash • 4 Class Queues for PK operations
Virtualization	• SR-IOV with support for 128 Virtual Functions (VFs)
Reliability	• Automatic failover upon error detection • Real time transform verification
Host Interface	• PCIe 3.0 (x8) physical, PCIe 3.0 (x4) electrical interface

Category	Key Features
Card Dimensions	• Length: 16.77 cm (6.60 inches) • Height: 6.89 cm (2.71 inches)
Bracket Dimensions	• Full height: 1.84 x 7.92 cm (0.73 x 4.73 in) • Low profile: 1.84 x 7.92 cm (0.73 x 3.12 in)
Safety Certifications	• USA: UL60950-1, 2nd Edition • European Community: EN 60950-1, Low voltage directive 2006/95/EC • Canada:cUL CSA C22.2 No 60950-1-03
EMI and EMC Certifications	• USA: FCC Part 15, Class A • Canada: ICES-003[A], NMB-003 [A] • European Community: EN55022:2006, EN55024:1998 • Japan: VCCI V-3/2008.04, Class A • Taiwan: BSMI CNS13438:95(2006) Class A • New Zealand/Australia: AS/NZS CISPR22 • Korea: KCC KN22/KN24
Material Safety	• RoHS-6, REACH
Required Airflow	• 200 linear feet per minute
Temperature and Humidity	• Operating: 0 to 55C; 10% to 90% RH non-condensing • Storage: -10 to 70C; 5% to 95% RH non-condensing
Operating System Support	• RHEL 7.2, SLES 11, Ubuntu 14, 9
System Software Support	• AltraHD, OpenSSL

DX2040-SX4 Summary

Part Number	Maximum Performance Compression/Encryption/Hash	Maximum Performance RSA 2048 bit ops/sec	Power Consumption (max)
DX2040-SX4	30 Gbit/sec/ 3.75 Gb/sec	40K	< 25W

www.exar.com