Compression and Security Acceleration Card

DX2040

High Performance Scalable Solutions for Data Analytics, Storage, and Networking

Exar's DX2040 compression and security acceleration card delivers unprecedented compression and security performance to OEMs in the data analytics, storage, and cloud security markets. The DX2040 provides 40 gigabits/sec of simultaneous compression, encryption, and hashing while supporting up to 40,000 operations/sec of RSA (2048 bit key size). The DX2040 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 40 gigabits/sec of device throughput.

Connecting to the host with an eight lane PCI Express 3.0 interface, the DX2040 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 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 incorporates Single Root I/O Virtualization (SR-IOV) to support virtualized environments, integrating 128 virtual functions.

The DX2040 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 has been integrated with AltraHD, Exar's hardware accelerated compression solution for Hadoop, as well as Exar's hardware accelerated OpenSSL package.

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

Key Benefits

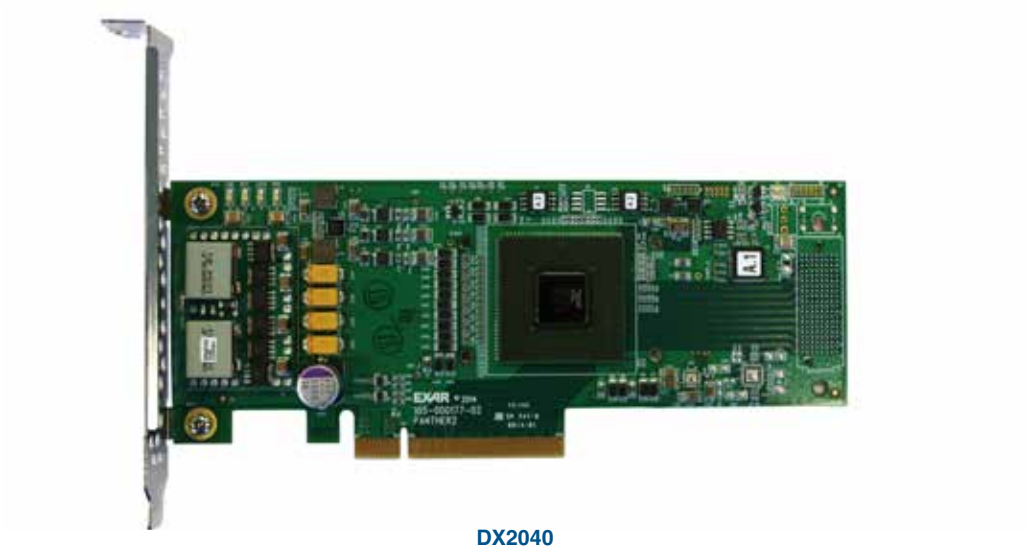
The DX2040 leading edge compression engine minimizes the data footprint while maximizing performance, delivering a multitude of benefits. Costly I/O bottlenecks for both storage and networking are removed or minimized, enabling maximum system throughput at minimum latency.

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 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'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
PCIe Compression and Security Acceleration Card

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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)

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 6, SLES 11, Ubuntu 14, FreeBSD 9
System Software Support	• AltraHD, OpenSSL

DX2040 Summary

Part Number	Maximum Performance Compression/Encryption/Hash	Maximum Performance RSA 2048 bit ops/sec	Power Consumption (max)
DX2040	40 Gbit/sec/ 5 GB/sec	40K	< 25W

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