

Data Reduction and Protection Solutions for Enterprise Storage Applications

EXAR'S HIFN 9725 APPLIED SERVICES PROCESSOR (ASP)



The 9725 ASP powers Exar's Hifn Express DR 1600 series, the newest generation of advanced data reduction cards. The 9725 is now available for embedded storage applications that are geared toward assisting IT administrators with managing the exponential growth in data and supporting the dynamic IT infrastructure required to address an increasingly demanding business environment. Specifically, IT infrastructures need the flexibility to add resources or applications in a non-disruptive manner; provide high availability, security and data protection; support for virtualization; scalability and high performance; and have a small carbon footprint.

The 9725 provides power efficient hardware offload capabilities for data compression, encryption and deduplication for enterprise class storage applications. OEMs now have the ability to integrate these capabilities into platforms that require non-standard PCIe form factors or need to be embedded directly on a system's motherboard.

The 9725 with its new hardware and software architecture were designed to address the needs of the next generation data center and provide:

High performance

- Complete hardware offload frees up valuable CPU resources for other applications
- 1,800MB/sec throughput enables both in-line and post processing storage capacity optimization and encryption
- Hash, compress and encrypt in one pass
- Load balancing across multiple ASPs

High availability

- Unified API software architecture provides failover protection in case of device failure in a mixed environment
- All hardware functionality supported in software

Flexibility to select data reduction and level of security

- Advanced data reduction capabilities:
 - Compression: eLZS lossless compression
 - Hash acceleration for deduplication: SHA 256, SHA 160, MD5
- Security / encryption capabilities:
 - 256/512-bit key AES-XTS
 - 128/256-bit key AES GCM
 - AES-CBC plus HMAC-SHA160

End-to-end data protection

- Built-in functionality for detecting, isolating and preventing the propagation of corrupt data caused by silent disk errors, application interaction or memory errors
- Full internal data path integrity checking on device

Operational efficiency (reduced OpEx / CapEx)

- Enables storage capacity optimization: data reduction is typically 2:1 with compression; greater reductions are achievable with deduplication
- Reduces disk capacity requirements and purchases, reduces power consumption and footprint, lowers cooling requirements

New Unified API Software

- Simplifies system integration and reduces time to market

STORAGE SYSTEM APPLICATIONS

- 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



Hifn 9725
Advanced Data Reduction ASP

EXPRESS 9725	
KEY FEATURES	
Data Reduction Algorithms	eLZS and LZS
Encryption / Decryption	128/256-bit key AES-GCM, 256/512-bit key AES-XTS, AES-CBC plus HMAC-SHA160
Hashing for Deduplication	SHA256, SHA160 and MD5
Performance / Throughput	See table below
Performance Features	<ul style="list-style-type: none"> • Compression, hash and encryption in a single pass • Hash acceleration for deduplication • Up to a combined 4 ASICs or chips per system • Automatic load balancing • Hardware-assisted scatter gather (unlimited buffers) • 1,800 MB/sec
Ease of Use	New API simplifies integration and reduces time to market
Reliability and Service Features	<ul style="list-style-type: none"> • 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. • Thermal monitoring with IRQ • Status log to NVRAM • 64KB NVRAM accessible to application read/write

EXPRESS 9725	
ASIC SPECIFICATIONS	
Bus Interface	PCI Express x8 PCI Express Base Specification Rev. 1.1
Package	396-ball FCBGA
Package Dimensions	21 x 21 mm; 1 mm pitch
ENVIRONMENTAL SPECIFICATIONS	
Temperature and Humidity	Operating: 0°C/32°F to 55°C/131°F; 10% to 90% RH non-condensing Storage: -10°C/14°F to 70°C/158°F; 5% to 95% RH non-condensing
Material Safety	RoHS-6
OS SUPPORT AND HOST UTILITIES	
Host Utilities and Applications	Power-on Self Test (POST); DMA and ASIC configuration; error log configuration; decompression; demonstration and test applications
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

PRODUCT	ORDER NUMBER	PERFORMANCE	CAPABILITY		POWER CONSUMPTION	
			Compression	Encryption and Hash	Typical Watts	Maximum Watts
Express 9725	9725HG	1,800 MB/sec	✓	✓	7.56	12.17

Standard 1 Year Hardware Warranty



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