

Storage Accelerator Boards with 450Gbps Throughput and PCIe Gen5 x16 Interface Connectivity

STORAGE ACCELERATOR BOARDS

	Series	Throughput	Interface
MxL8817	Panther V	450Gbps	PCIe Gen5 x16
MxL8807	Panther III	200Gbps	PCIe Gen4 x16
MxL8805	Panther III	100Gbps	PCIe Gen4 x8, Gen3 x16
MxL8803	Panther III	50Gbps	PCIe Gen3x8

MARKET REQUIREMENTS

- Faster dataset delivery
- High-performance analytics
- Improved workload accuracy
- Quicker access to larger dataset
- Simple accesses to all dataset levels
- Power data from edge to cloud

PANTHER PROVIDES

- Fastest response times
- Highest data reduction ratios
- Data temperature transitioning
- Enhanced deduplication hit rates
- Single pass compression / encryption / MaxHash / data protection / RTV
- FIPS compliant with complete NSA Suite B Security
- End-to-end data protection
- Real-time verification (RTV)
- Software backup on all operations
- Six 9's Reliability

APPLICATIONS

- Enterprise / hyperscale data center
- Hyperconverged infrastructure
- Converged infrastructure
- Primary storage
- Un/structured storage
- Digital library media
- Block / file / object storage
- Software-defined storage (SDS)
- All-flash / hybrid storage
- NVMe SSD storage arrays

Delivers Ultra-Low Latency & Breakthrough Data Reduction



The Need for Data

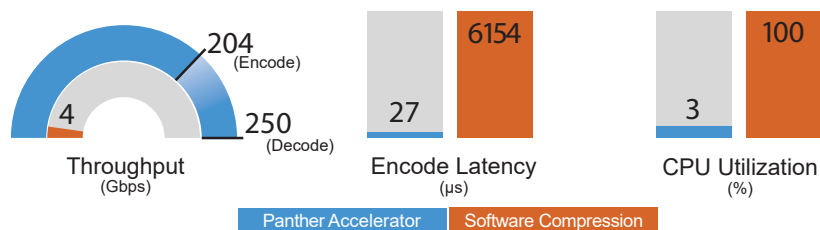
Around the world, there is an ever-increasing demand to securely store larger amounts of data. Additionally, everyone wants instant access to their data. Today's data storage solutions face the challenge of meeting these demands while increasing workload result accuracy, lowering capital expenditures, and improving reliability.

The Panther Solution

Panther addresses these challenges and more by delivering simultaneous breakthrough data reduction, encryption, data protection, and enhanced deduplication enablement with MaxHash. With Panther, storage solutions offer 12:1 data reduction, a full suite of security, and CAPEX cost reduction while providing ultra-reliable data protection.

The Panther Storage Accelerator's powerful data reduction technology intelligently offloads the CPU by providing multiple independent parallel data processing unit transform engines. Panther opens all tiers of storage, including All-Flash-Array and NVMe, to their full bandwidth potential with no CPU or software limitations.

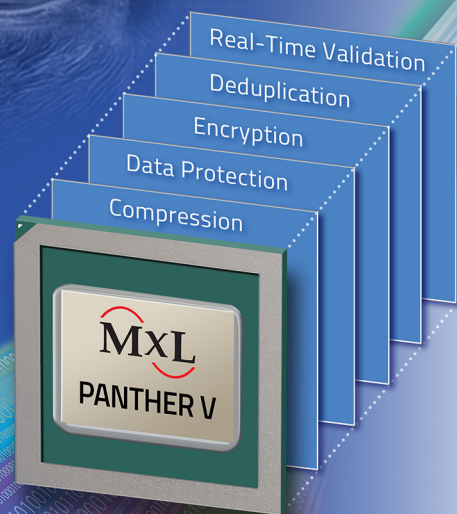
Panther vs. Software (Direct CPU Core) Compression



Packet Size 32KB: XP10 Encode, Padding, AES-CBC Encryption



Panther Storage Accelerators



Optimized Acceleration Architecture

Panther is an ideal solution for larger datasets (big data) and fast dataset applications like data warehouse and big table. Its flexible compression algorithms enable simple data temperature transition, optimizing access latency for hot, warm, and cold data. When combined with Panther Class of Service, traffic handling can be prioritized for provisioning, enforcing service agreements or ultrafast access to hot data reads.

Panther lowers capital storage costs by delivering both improved storage capacity and \$/GB savings. In addition, its single pass execution provides faster dataset delivery enabling high performance analytics with improved workload results. It also offers built-in, end-to-end real-time verification (RTV) of all transforms, assuring data integrity and eliminating data loss.

Encode / Decode Throughput

The Panther V storage accelerator delivers exceptional performance with a combined encode/decode throughput of up to 450Gbps, making it a standout solution for high-speed data processing environments. It supports a maximum encode throughput of 200Gbps and a maximum decode throughput of 450Gbps, enabling real-time data transformation with minimal latency.

450Gbps

PCIe Gen5x16

Panther Storage Accelerator Performance

Decompression / Compression Algorithms	<ul style="list-style-type: none">■ 4:1 Compression: Level 9 Deflate, GZIP, and ZLIP■ 5:1 Compression: XP10■ LZS/eLZS
New Class of Deduplication	<p>Enablement MaxHash™ (3:1)</p> <ul style="list-style-type: none">■ Block: Data Block Size■ Slice: Decouples Data & Hash Size■ Multi: Multiple Hash Simultaneous w/Offset■ Skip-Field: Skip non-Data
Authentication and Deduplication MaxHash Algorithms	<ul style="list-style-type: none">■ SHA-1 (160)■ SHA2 (224/256/384/512)■ HMAC-SHA-1, HMAC-SHA-2■ AES-GMAC, AES-XCBC-MAC
NSA Suite B Encryption / Decryption Algorithms	<ul style="list-style-type: none">■ AES-CBC, AES-GCM, AES-CTR, AES-ECB (128, 192, or 256 bit keys)■ AES-XTS (256 or 512 bit keys)
Integrated Data Protection	NVMe DP, T10-DIF, T10-DEX
Best-in-Class Data Integrity	Real-Time Validation

Panther Unleashes the True Power of Data Storage

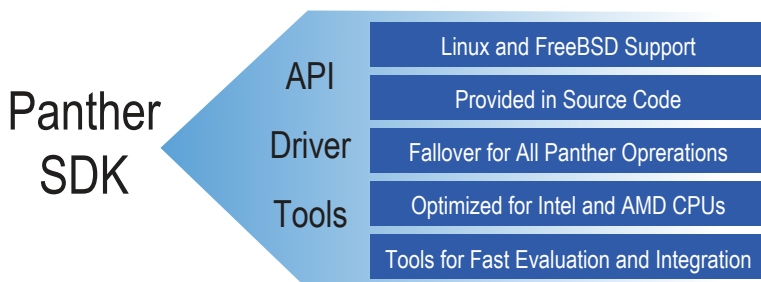
Panther delivers ultra-low latency, 450Gbps throughput, data reduction, and security acceleration for enterprise and hyperscale data centers and results in unprecedented performance, scalability, high availability, resiliency, and capacity optimization.

- **Accelerate the Speed of Storage:** Panther delivers simultaneous breakthrough compression performance and security capability that enables 12:1 data compression allowing storage solutions to not only store 1/12th the data, but also allow users to access, process, and transfer data 12 times faster.
- **Enable Intelligent Storage:** Panther's 450Gbps throughput and ultra-low latency enable quicker access to big data, allowing higher performance data analysis to deliver better workload accuracy.
- **Lower Capital Storage Expenses (CAPEX):** The exclusive MaxHash provides independent hash block size and programmable offset to enhance deduplication hit rates resulting in improved effective storage capacity and \$/GB savings.
- **Integrate Faster:** Feature-rich software development kit (SDK) contains API, drivers, and source code for easy incorporation with end application software and software-defined storage (SDS).
- **Meet Six 9's Reliability:** Built-in, end-to-end data protection, real-time verification (RTV) of all transforms, NVMe protection, and in-line CRCs/parity assure data integrity and eliminate data loss.

Rich Software Ecosystem Packages

MaxLinear provides a feature-rich software development kit (SDK) containing API, drivers, and source code for easy incorporation with end-application software and software-defined storage (SDS). They are focused on intelligent CPU offloading, reduced overhead for lowest latency, and full-feature failover for highest system reliability and zero down time.

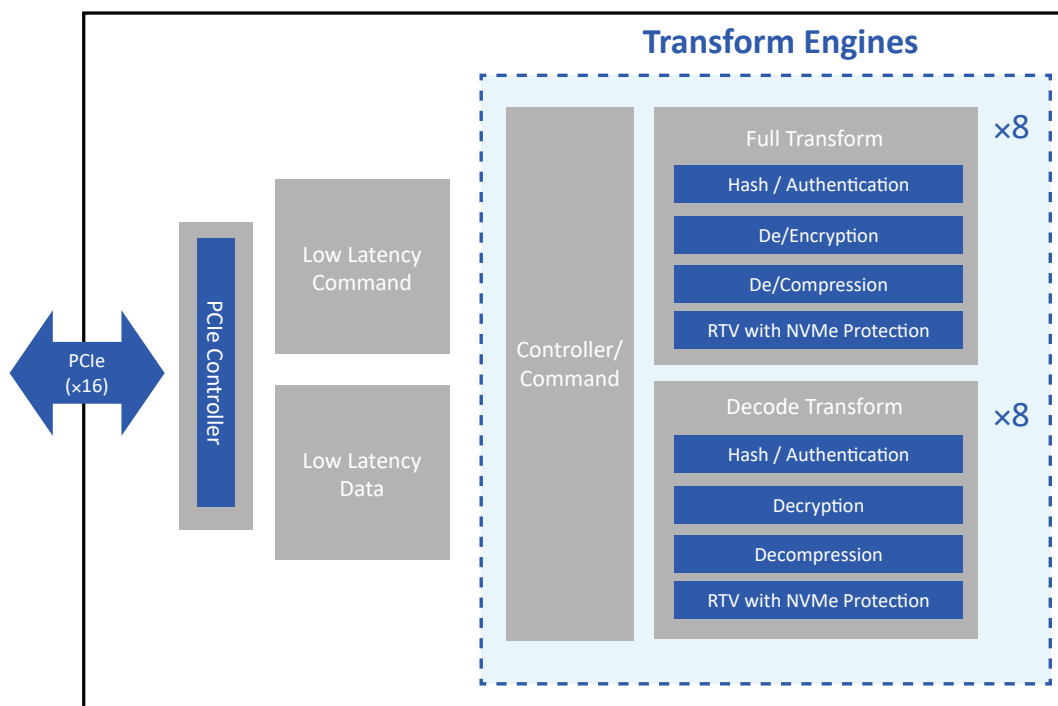
- Linux: Multi Distributions & Kernel versions
- FreeBSD 12.x / 13.x
- Provide source code for easy incorporation
- Plug & Play packages - No modification required
- Enhanced latency and throughput
- Backward compatibility



Meet **Six 9's** Reliability
Integrate Faster
Lower CAPEX
Accelerate the Speed of Storage
Enable **Intelligent** Storage

Panther Storage Accelerators

Panther Block Diagram



Panther Storage Accelerator Boards

Part Number	Interface	Max Encode Throughput (Gbps)	Max Decode Throughput (Gbps)	Combined Throughput Limit (Gbps)	Compression	Encryption	Authentication / Hash	Data Protection	Form Factor
MXL8817B-CA-B	PCIe Gen5 x16	200	450	450	<ul style="list-style-type: none"> Gzip zlib Deflate XP10 eLZS/LZS 	<ul style="list-style-type: none"> AES-CBC, AES-GCM, AES-CTR, AES-ECB (128, 192, or 256 bit keys) AES-XTS (256 or 512 bit keys) 	<ul style="list-style-type: none"> SHA-1/2 HMAC-SHA AES-GMAC, AES-XCBC-MAC 	<ul style="list-style-type: none"> NVMe-DP T10-DIF T10-DIX 	PCIe HHHH
MXL8807B-CA-B	PCIe Gen4 x16	200	200	200					
MXL8805B-CA-B	PCIe Gen4 x8 / Gen3 x16	100	100	100					
MXL8803B-CA-B	PCIe Gen3 x8	50	50	50					
MXL8817B-EA-B	PCIe Gen5 x16	200	450	450					OCP NIC 3.0 Ver 1.1 SFF
MXL8807B-EA-B	PCIe Gen4 x16	200	200	200					
MXL8805B-EA-B	PCIe Gen4 x8 / Gen3 x16	100	100	100					
MXL8803B-EA-B	PCIe Gen3 x8	50	50	50					

Note: Multiple Panther cards can be cascaded to obtain up to 3.2Tbps.



Corporate Headquarters:
 5966 La Place Court
 Suite 100
 Carlsbad, CA 92008
 Tel.: +1 (760) 692-0711
 Fax: +1 (760) 444-8598
www.maxlinear.com

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