



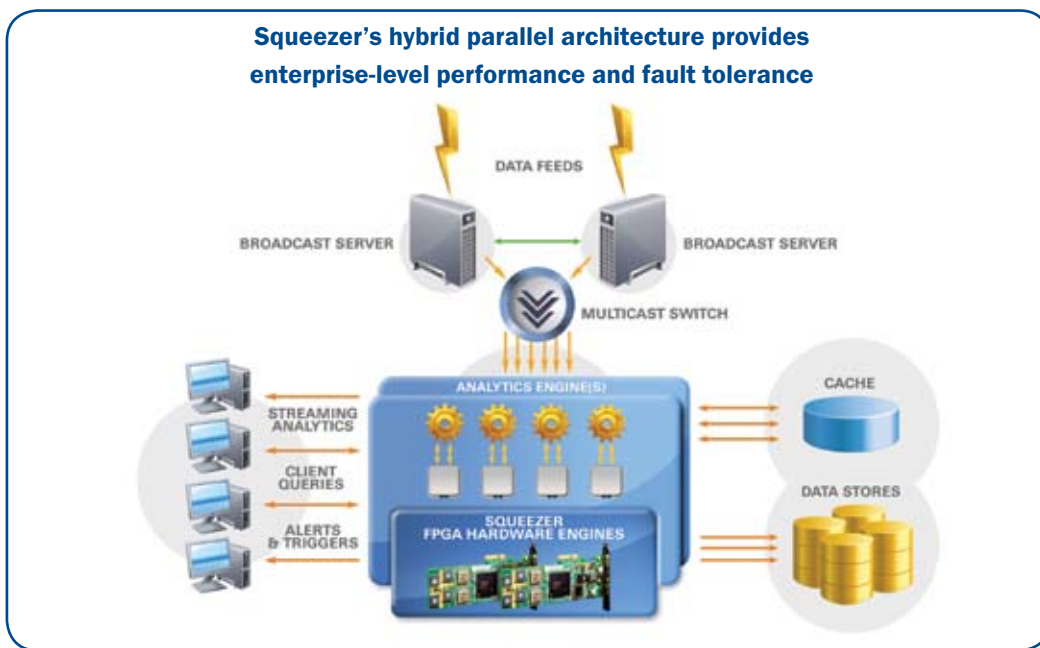
Hybrid Hardware/Software Architecture

- **Maximum data reduction**
minimizes storage-related costs by at least 75% with no performance penalty
- **Velocity's MegaTick Architecture expansion** delivers incredible throughput across
 - Multi-threads
 - Multi-cores
 - Multi-processors
 - Multi-servers
 - Multi-hardware compression engines
- **Dynamic multi-pathing compression** balances data access across multiple hardware compression engines for high performance and high availability
- **Multi-tiered failover policies** provide applications with fault-tolerance controls for full flexibility

The explosion in tick data growth has resulted in data storage and retrieval challenges for managing large amounts of market data. With financial institutions competing to offer clients more sophisticated trading tools, the ability to see and analyze more data than the competition is vital. Meeting real-time transaction and record-retention compliance requirements, such as for Reg NMS in the U.S. and MiFID in Europe, adds even further pressure to increase the amount of financial data stored.

Velocity Squeezer sets a new benchmark in price performance for the storage and retrieval of market data, allowing businesses to reduce storage-related operating and capital expenses, increase competitive trading advantages and improve audit capabilities. Squeezer is Vhayu's patent-pending hybrid solution, which integrates FPGA hardware and Vhayu Velocity to deliver at least 4x compression of all Velocity data, with no performance penalty and enterprise-level fault tolerance.

Software-only compression solutions can compress live data, but with a huge impact to application performance due to their high CPU utilization. Archival storage solutions have used hardware compression to store data offline for back up and restore applications.



Squeezer's unique hybrid approach takes full advantage of specially designed hardware compression engines to offload Velocity server resources, while integrating and expanding upon Velocity's MegaTick architecture for high performance of real-time updates and queries and maximum data reduction of all Velocity data.

Squeezer allows businesses to expand the amount of market data stored, monitored and managed to create better analytics, valuation models and strategies, and to identify additional opportunities and long-term financial trends. Furthermore, Squeezer significantly reduces the cost of deploying systems for compliance and trade cost analysis, which depends on storing rapidly growing volumes of data.



Key Advantages

- First hybrid compression solution to tightly integrate production application with FPGA hardware
- Patent-pending technology
- At least 4:1 compression of all Velocity data
- No performance penalty
 - Maximum performance
 - Huge performance win over software compression
- No impact on Velocity's enterprise-class fault tolerance
 - No single point of failure
 - No separate appliance required
- New benchmark in price performance for storage and retrieval of tick data
- Developed by leader in tick capture analysis and storage
- Significant reduction in carbon footprint created by tick data storage

Founded in 1998 by former Intel executives, Vhayu Technologies is a provider of real-time software that enables financial institutions to capture, analyze and store enormous amounts of streaming and historical data.

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Squeezer leverages a parallel pipe-lined architecture for concurrent compression, I/O and application usage, while reducing each data packet size by 4:1 for a dramatic decrease in the time it takes to store and retrieve market data. Squeezer also features dynamic multi-pathing compression, which balances data access across multiple Squeezer hardware compression engines in parallel, adding to its high performance and high availability capabilities.

Velocity Squeezer is the first hybrid compression solution to tightly integrate a production application with FPGA hardware. This hybrid approach allows Velocity to extend its unique architecture for leveraging the latest innovations in multi-core, multi-processor technology to the hardware compression engines for maximum parallelism. This results in high performance, scalability and enterprise-level fault tolerance, as well as maximum data reduction of all Velocity data.

Benefits

Velocity Squeezer helps Velocity customers:

- **Increase competitive trading advantages and audit capabilities by storing more data with no increase in storage-related costs**
 Store, monitor and manage additional financial feeds and/or extend historical retention of financial data. Meet real-time transaction and record-retention compliance requirements to prove best execution without the data storage and retrieval challenge
- **Lower storage-related operating and capital expenses**
 Reduce market data storage-related costs by at least 75%
- **Reduce environmental impact of data processing operations**
 Significantly reduce carbon footprint created by tick data storage

Squeezer Hardware Compression Engine Specifications

Specifications	Squeezer Hardware
Compression Algorithm	"Deflate" used in gzip/zlib
Server Support	Support for 64-bit Velocity Analytics Engine servers with one or more PCI-Express x4 slots
Bus Type	PCI Express 1.1 compliant (x4)
Error Handling	CRC32/Adler32 checksums and parity error checking for full protection against data corruption
Power Consumption	+3.3V: 1800 mA (Typ)/2.6 A (Max); 1.5V: 1.3A (Typ)/1.5 A (Max) (estimated)
Humidity Range	5% - 85% (non-condensing)
Operating Environment	Ambient temperature: 5-45° C
Dimensions	Form factor: low profile card* Length: 167.65 Height: 69.9 *Above dimensions do not include the mounting bracket