500+ Mbps

Data Acquisition & Recording

Using COTS Equipment

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Overview

COTS RACEway equipment is well suited to 500+ Mbps acquisition & recording

ANSI Standard extension of VME

Provides a switched fabric of 160 Mbyte/sec board-to-board connections in a VME environment

Off the shelf acquisition, I/O memory & DSP products available from various vendors

There are many examples of RACEway-based high-throughput systems

HRS-2000 - Buffered HIPPI controller for 500 Mbps ID-1 recorders

200 Mbyte/second radar data acquisition system

High-rate, multi-channel analog data capture system

What makes RACEway an excellent real-time data acquisition architecture?

High-performance in real-world applications

Scalable, determinstic performance

Availability of wide range of products

Ability to integrate seamlessly with standard VME products

RACEway Technology

Switched fabric interconnect in a VME system

Each RACEway-ready board has a 160 MB/sec connection to a crossbar switch (the Interlink)

Multiple 160 Mbyte/second board-to-board channels can operate simultaneously

Interlink dynamically manages the board-to-board connections

RACEway benefits in real-time systems

Scalable bandwidth - available internal bandwidth increases with the # of boards in the system

Deterministic performance - communication channels can be dedicated to high-priority tasks

High useable throughput - 80 to 90 % of theoretical bandwidth achieved in real-world systems

System level interconnect - available for heterogeneous processors, memory, and I/O

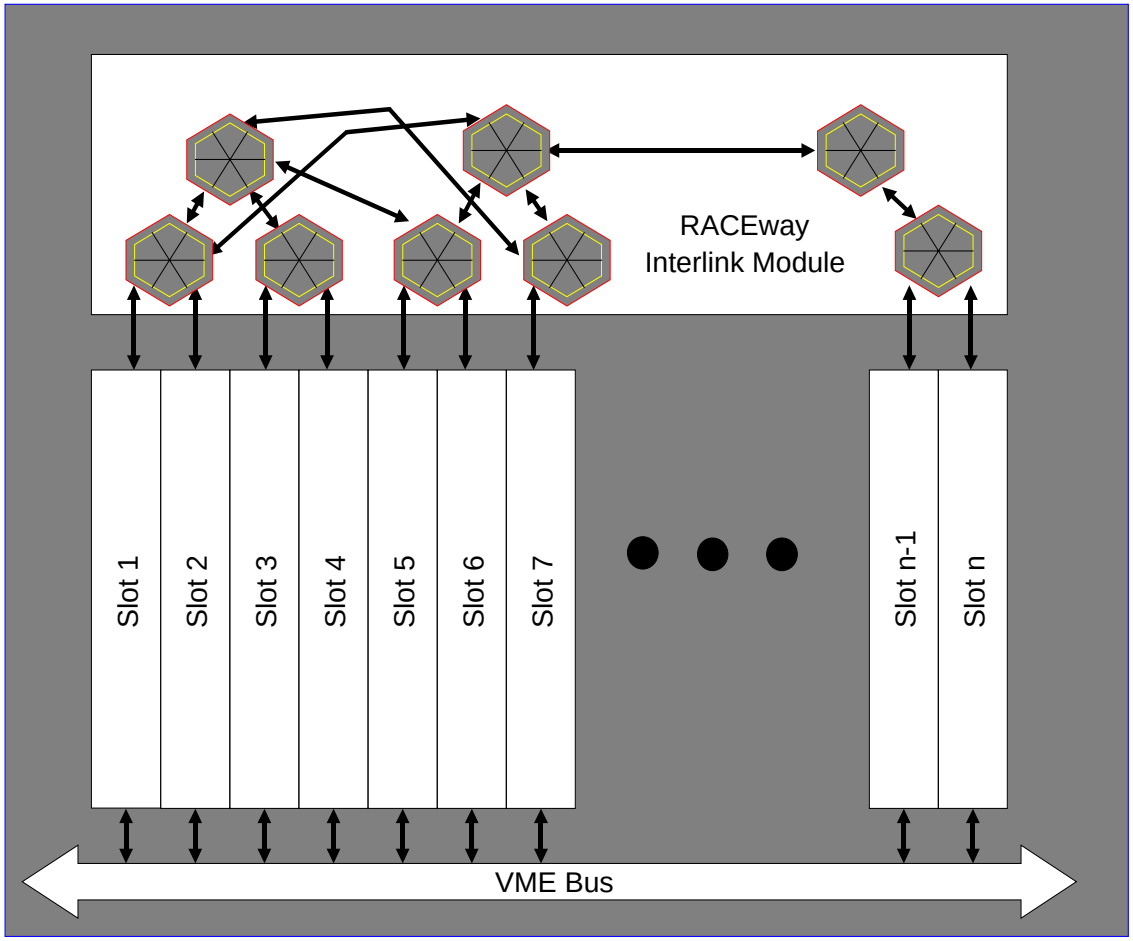
Compatiblity with VME (ANSI/VITA 5-1994)

RACEway implemented using the VME P2 connector A and C row pins (User Pins)

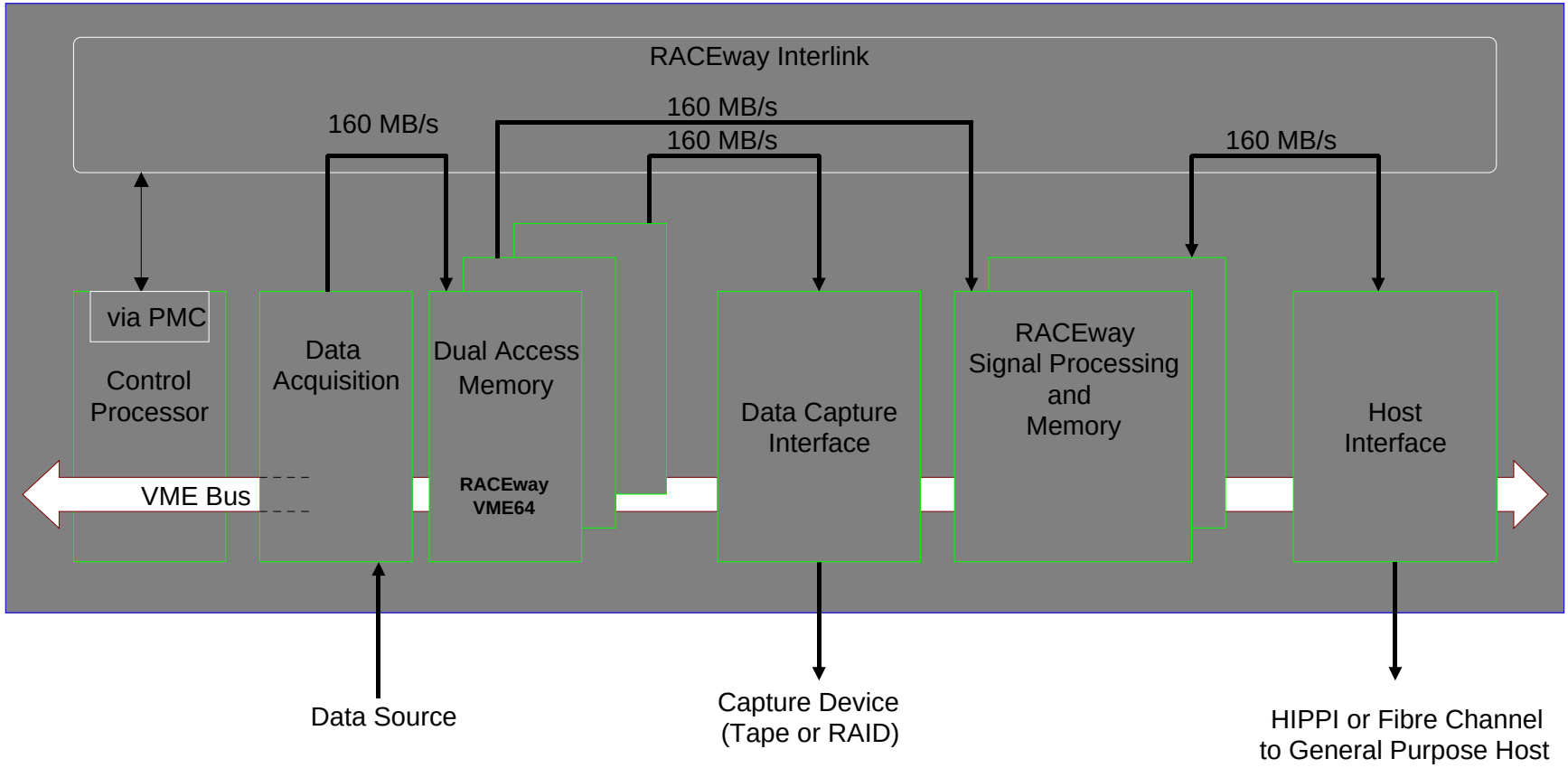
Interlink typically implemented as a P2 overlay

Completely compatible with standard VME32 and VME64 systems

RACEway Switched Fabric in a VME Environment



Generic Real-Time RACEway System



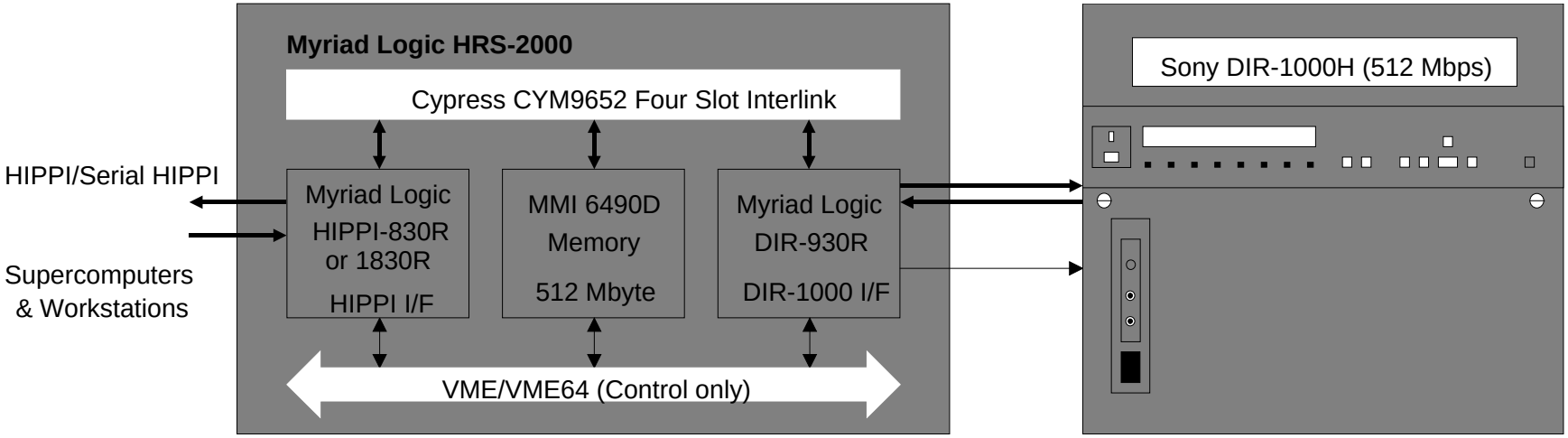
RACEway Products

Type	Description	Vendor*
Analog & Digital Input and Output	Analog to 150 MSamples/second	Apcom/Celerity Systems
	Analog to 400 MHz Digital Receivers	Echotek
	Analog, Digital to 30 Msamples/sec	Pentland
	Common Data Link	Myriad Logic (development)
Memory Boards	128 Mbyte to 2 Gbyte per board	Micro Memories
Digital Signal Processors	Intel I860	Mercury Computer Systems
	Power PC	Mercury Computer Systems
	SHARC	Mercury Computer Systems
	FPGA Preprocessors & FFT	Catalina Research
	TI 320C80	Mercury Computer Systems
	TI 320C40 & C80	Mizar
Single Board Computers (SBC)	Various via PMC sites on SBC	Cypress (PMC-RACEway bridge)
RAID Interfaces	SCSI	VMetro foundation with PMC
	Fibre Channel (50 Mbyte/sec)	Atlantic Aerospace
	Fibre Channel (100 Mbyte/sec)	Myriad Logic (June 1997)
		VMetro foundation with PMC

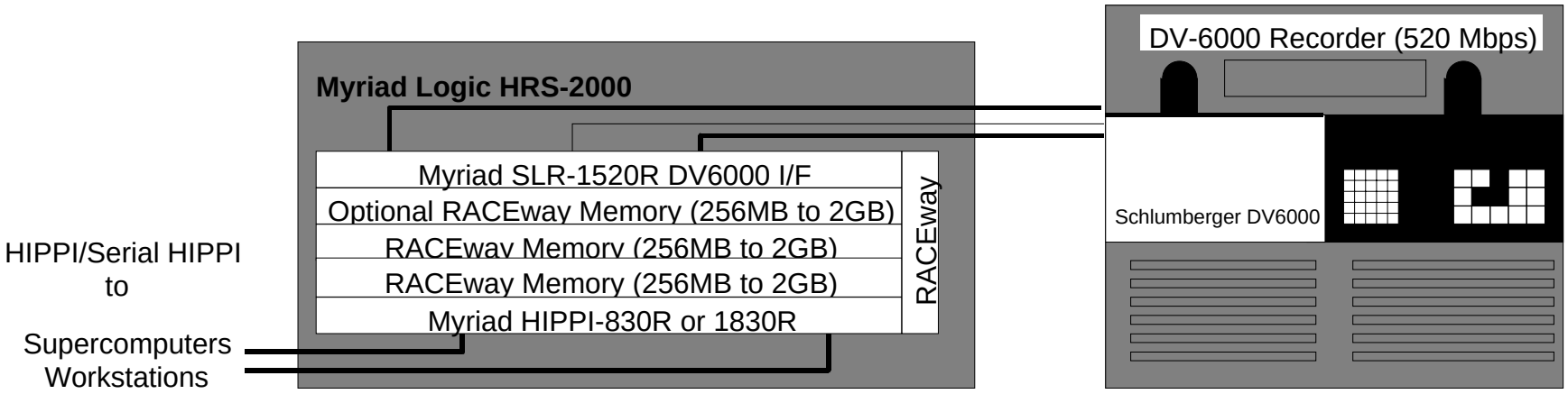
RACEway Products (Continued)

Type	Description	Vendor*
Communication Channels	HIPPI (100 Mbyte/sec)	Myriad Logic
Fiber Optic Communciations	Serial HIPPI (100 Mbyte/sec) 500 Mbaud	Myriad Logic Atlantic Aerospace
Instrumentation Recorder Interfaces	Ampex DCRsi (30 Mbyte/sec)	Myriad Logic
	Schlumberger ID-1 (60 Mbyte/sec)	Myriad Logic
	Sony ID-1 (64 Mbyte/sec)	Myriad Logic
Foundation Boards	PMC Carrier	VMetro
	General I/O Motherboard	Myriad Logic
Interlink Modules	4, 8, 12 Slot	Cypress, Mercury Computer Systems
Chip-sets	PCI to RACEway, FIFO to RACEway	Cypress, Mercury Computer Systems
Bridges	PMC	Mercury Computer Systems
	RACEway/PCI	Cypress

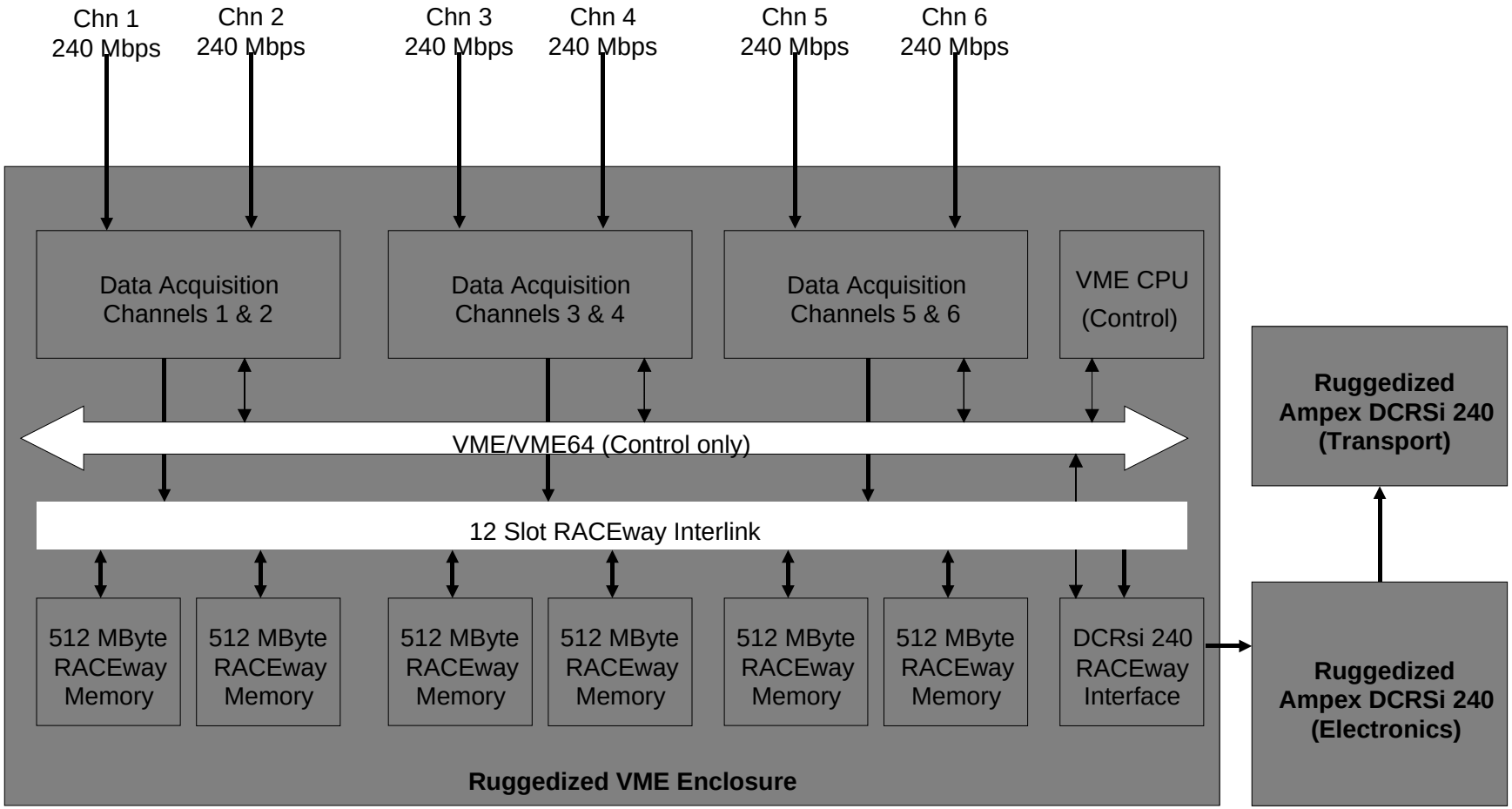
HRS-2000- HIPPI Interface for the Sony DIR-1000H



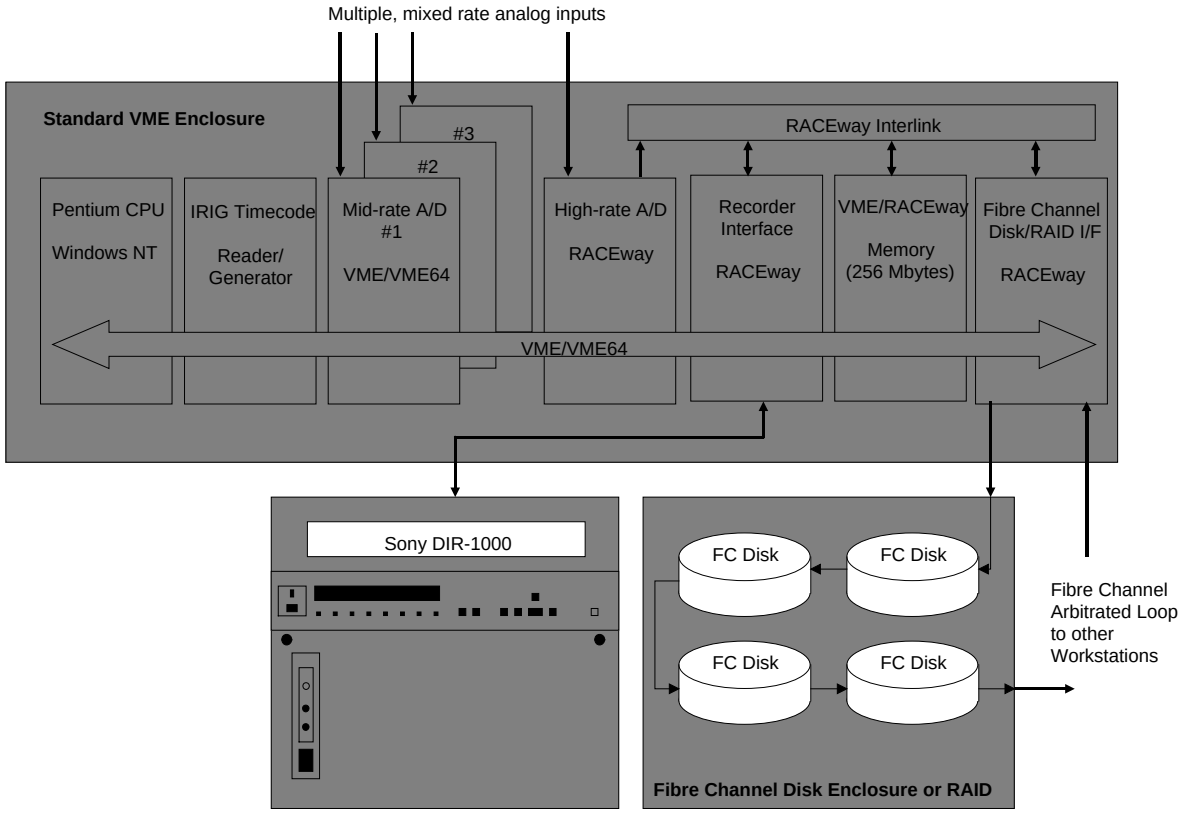
HRS-2000 Configured for the Schlumberger DV-6800



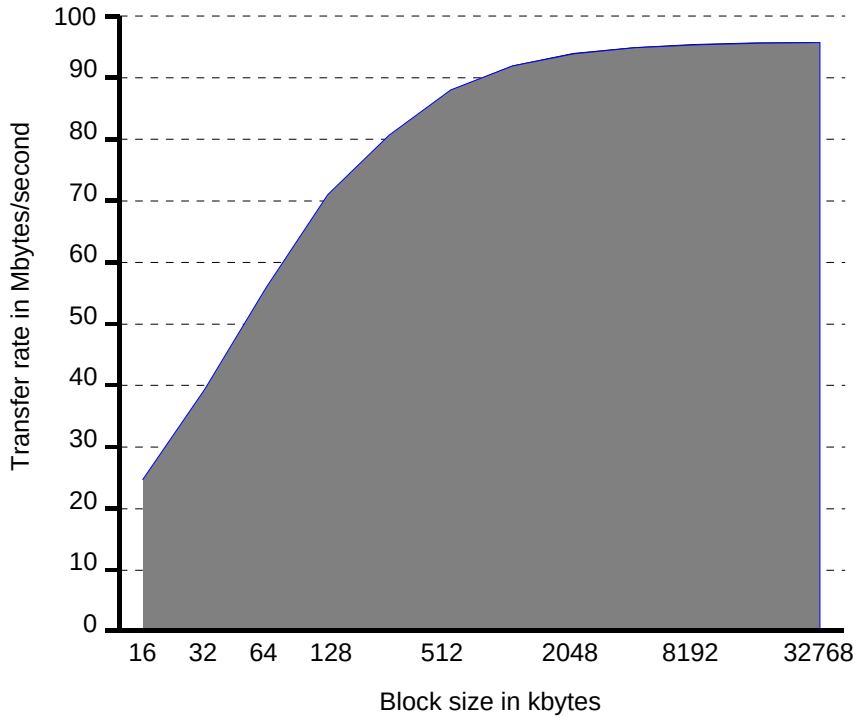
200 Mbyte/second Data Capture and Recording System



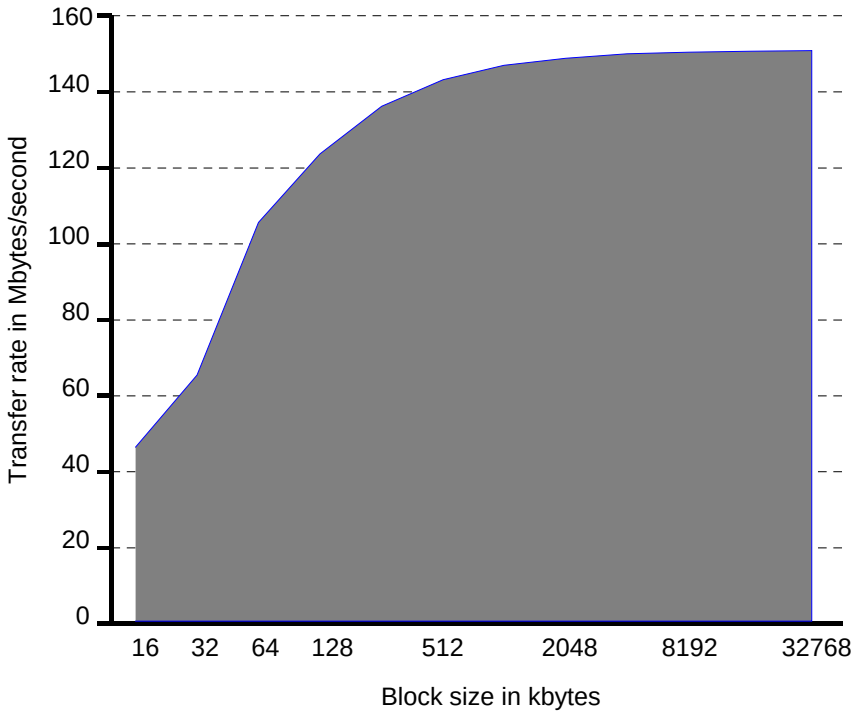
Multi-Channel Analog Capture and Record System



RACEway Benchmarks



HIPPI/RACEway Chassis to Chassis Throughput



RACEway Memory Board Throughput

Summary

RACEway - a superior technology for real-time data acquisition & recording

- Multiple 160 Mbyte/second point-to-point connections between boards
- Scalable performance
- Deterministic performance

Availablity of system components

- RACEway-ready DSP, memory, and I/O products
- Bridges to PCI
- Compatibility with VME SBCs, Enclosures, Application Specific Modules, and Anciliary equipment

Corporate Experience

- RACEway can be easily integrated into VME systems
- Virtually all SBCs and operating systems can be used
- Large body of experienced engineers familiar with VME (and therefore RACEway) environments