Xyratex SL1

The Xyratex SL1 is a 32 bit / 33 MHz PCI card capable of monitoring two Gigabit Ethernet channels or one full duplex link. It can be attached in-line via taps or at a span port. The Card uses Small Form Factor pluggable MSA compatible optics.

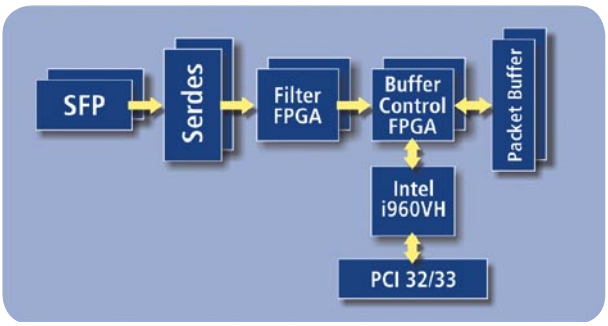
The Xyratex SL1 is ideal for OEMs that require:

- A cost effective PCI card with high-performance data streaming
- 2 GbE channels for 1 full duplex or 2 half duplex monitoring
- Packet classification and data management

The Xyratex SL1 is an advanced hardware engine designed specifically for high-speed streaming and analysis of network data for software applications that rely on real-time data flows. Unlike NIC cards, the Xyratex SL1 has sophisticated data management capabilities that reduce the amount of data uploaded to the host application and PC, increasing the performance of applications such as network analysis, performance monitoring and billing and intrusion detection.

High Performance Hardware

The Xyratex SL1 hardware is designed to accelerate the performance and efficiency of any application. It collects, processes and aggregates data real-time, non-intrusively at 100MB/s per channel - even under intense network utilization. The card employs state-of-the-art Field Programmable Gate Arrays (FPGA) that offload CPU intensive software tasks to the hardware engine. It includes Packet Buffers to cope with bursty or excessive traffic without packet loss and uses a performance optimized multi-packet DMA which is capable of fully utilizing the PCI bus bandwidth. In addition, the card provides hardware EtherStats counters for bytes, packets, distribution and errors.



Sophisticated Data Management

Xyratex implements innovative data management capabilities to free the application from the overhead of managing unwanted information. The Xyratex SL1 formats live data feeds, based on the application's requirements to identify, extract and prioritize only the required information. This enables the host application to analyze and act on data - real-time - regardless of network utilization and without the wait of sending post-capture data to a server.

Filtering and Pattern Matching

Network data is tagged with descriptors specific to the needs of the host application for real-time, line-rate parsing of data. Using a variety of comparators, Boolean Logic and packet offsets, the Xyratex SL1 looks deep into the packet to find specific patterns and packet features. Data is then filtered by packet so that only data pertinent to the software, such as error conditions, RMON statistics or specific application transactions, is processed. Additionally, filtered packets can be prioritized to ensure that no data is lost when traffic is heavy or bursty. This feature is especially useful for tracking application performance or customer network usage.

Slicing and Time Stamping

Slicing is another technique used to reduce the amount of data uploaded to the CPU, thus reducing the PCI bandwidth requirements. The Xyratex SL1 slices a portion of the packet header and/or payload so that the application analyzes and stores only the most relevant information. Slicing can be particularly useful when a link has a high proportion of Jumbo packets.

The Xyratex SL1 supports cross-card time stamping of conversations for up to 4 cards. Synchronized cards enable accurate tracking of application response time and real-time accounting of network usage. The card provides packet data (sliced or un-sliced) together with a descriptor which includes the packet timestamp. Optionally, cross card time stamping can lock into Global Positioning Systems (GPS). All packets are stored in timestamp sequence from the packet end timeframe.

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Technical Specification

Data Path Connections

- Two GbE ports
- Multi-Source Agreement SFP modules:
  - Multimode (SX) LC and MTRJ connector
  - Single mode (LX): LC connector
  - Copper (1000BASE-T): RJ45 (when available)

Hardware Features

- PCI Bus Interface
  - PCI 33MHz/32 bit
  - Universal card: supports 5V or 3.3V slots
- i960 VH processor 100MHz
  - DMA controller
  - PCI bridge function
- FPGA
  - FPGA field upgradeable via software
- SDRAM Packet Buffers
  - Packet Stream: 64MB per channel
- Cross channel connector
  - Inter-card timestamp synchronization

Functional Details

- Packet Streaming
  - Performance optimized data transfer process fully utilizing PCI bandwidth (100MB/s)
  - Separate or merged streams per link
  - Packet slicing between 4 & 64k bytes
  - Filtered or unfiltered Packet Stream
  - Descriptor generation including:
  - 10ns 46 bit native timestamp or PCAP UTC format timestamp or NDIS (100nS Increments) format timestamp
  - Wire packets length
  - Stored length
- Packet Filtering
  - 8 packet definitions combining 8 DLC address compares (12 bytes) and 8 32 byte pattern compares
  - Capable of FPGA upgrade to support up to 32 32-byte compares including: Packet pattern, Error types, packets between, to and from stations, protocol and size
- Statistics counters
  - RFC1757 RMON1 EtherStats counters
  - VLAN, ISL, Jumbo support

Software Features

- Drivers
  - NDIS 5 Miniport for Microsoft Windows 2000 & XP
  - Application level support
  - Linux, FreeBSD
- Zero copy transfers to application space
- Hardware assisted packet merging

Certifications

- FCC, Class A
- CE

Environmental

- Temperature
  - Operating: 0 to 50°C ambient
  - Storage: -25 to 60°C
- Humidity: 20 to 80% non-condensing

US and Canada

Tel: +1 408 894 0800

Fax: +1 408 894 0880

Europe Tel: +44 (0)118 967 0674

www.xyratex.com

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