

**ACCELERATED/PROGRAMMABLE**

6-port, 1 Gigabit Ethernet  
PCI-Express NIC  
video streaming acceleration IPv4  
and IPv6  
copper/fiber optic

LeWiz is the first company to produce a family of network interface cards (NIC) designed specifically for video over IP applications. The cards are targeted for a wide range of video applications on the Internet, cable TV networks (VOD), and enterprise or high speed embedded video applications.

LeWiz's iStream5206™ NIC enables standard servers to stream video over TCP/IP networks at full 6Gbps rates with minimal CPU intervention. LeWiz Customers have reported performance at 6Gbps line rate using only 4% processing speed of a single CPU in the server system whether over 1 or 1500 simultaneous 3.75Mbps streams. The iStream5206™ NIC features 6, 1Gbps ports on a x8 PCI-express card. The card is ideal for high speed, usage intensive video server applications where streaming of large data files to thousands of clients simultaneously is required.

LeWiz has designed this card for high performance and throughput. For each port, LeWiz has packed a dedicated streaming acceleration engine, a dedicated 1Gbps MAC with large, non-sharing FIFOs, and multiple DMA channels allowing simultaneous fetching of data and commands independently. Each port also has dedicated large data paths in each direction enabling the port to transfer data while processing video data in parallel, non-blocking. Each port has a cluster of processing engines forming multiple processing pipelines allowing further parallel and pipelined execution while streaming out. Designed for video applications, the board has a host of acceleration, timing features for MPEG2 or RTP video data streams and UDP transmission including full UDP/TCP checksum offload, and UDP/TCP auto-segmentation capabilities.

The iStream5206™ card's single-chip, high level of integration allows it to maintain low cost, low power consumption easily fitting into the budget and requirements of a short PCI-express card. Yet, its hardware and software are fully programmable and maintains the ease of use of a normal NIC that many engineers are familiar with. There are many built-in programmable functions allowing the card to be tuned (even out in the field) to be compatible with any peculiar network equipment the user may be encountered out in the field.

The iStream5206™ card comes with loadable device drivers for **Linux** and **Windows** operating systems. Developed for plug-n-play, no need for the users to recompile the driver or patching the kernel as typically required by other offload cards.

For OEMs and developers, LeWiz created specialized APIs and other features for its iStream5206™ NIC to enable the OEMs developing differentiated products & unique features. The iStream5206™ NIC is a member of LeWiz's family of advanced NIC products from 1Gbps to 10Gbps for the PCI-express bus. Customers using the iStream5206™ NIC can maintain compatibility with LeWiz's other products. See LeWiz's Talon and iStream NIC PCI-express products at: [www.LeWiz.com](http://www.LeWiz.com)

<b>Video Streaming features</b>	
6, 1Gbps ports	Can be Active/Active or Active/Passive ports
Stream with UDP or TCP protocol over IP	Support IPv4 and IPv6
Support over 10,000 simultaneous clients	Or standard 1500 streams at 3.75Mbps rate
Dynamic rate controllable per stream	Wide range of rate from Mbps to Kbps per stream. Allowing service providers to control streaming rate of video data vs. other data types
Ensure QoS for each receiving client	
Support MPEG or RTP video streaming	
Tracks timestamp of each video stream	
Tracks video sync of each video stream	
Build and stream out complete video packets	Using streaming engine, independent of the CPU
Minimize memory usage even at very large number of concurrent users	
Supports variable video length	
Dynamic variable buffer data length	Allows video streaming as soon as data is available
Support scattered video data	Video data can be spread out over any where in the 64-bit address space. Flexible for applications.
Contains programmable networking features	Allows field tuning, fitting with any unknown field equipment
Supports customization of video functions	Most flexible for user applications

<b>Performance features</b>	
Dedicated streaming engine per port	Performance without CPU utilization
Dedicated 1GigE MAC per port	High speed streaming
Support auto-segmentation of video packets	
Support auto-checksum UDP/TCP or IP	
Supports IPv4 or IPv6	Expandability, future proof
Dedicated DMA engines per port	Maximize bus bandwidth. Parallel execution
Manage multiple large video blocks per stream without CPU	Allowing a stream to feed video for a long time before needing more services
Multi-ring architecture	Parallel processing of control information with data information. Make efficient use of multi-CPU environment.
Supports multi-CPU cores, multi-threaded, highly parallelized systems	
Full 64-bit addressing	

## Detailed Specifications:

Product part number	
iStream5206-TX	6x1Gbps copper Ethernet
iStream5206-SX	6x1Gbps SX fiber optic
iStream5206-LX	6x1Gbps LX fiber optic
System interface	
Compliant PCI-Express Base Specification 1.1	
8 lanes PCI-express (PCI-E)	8 lane PCI-E physical but also works in with x8 or x16 connectors
Supports PCI-E advanced error logging	
Supports ECRC checking and generation	Enhance data integrity, system reliability
Data loading from serial EEPROM	Useful for OEMs requiring customized configurable product information
Each MAC has its own register set	Host system can control and examine status each MAC independently
Software support	
Loadable driver for Windows and Linux	No need to recompile the driver or the OS
None interference with existing applications	Existing software applications would run as is without modification or recompiling.
Windows Server 2003	32 and 64 bit
Windows XP	32 and 64 bit
Redhat Linux AS 4.0, 4.3	Full offload acceleration, both 64 and 32 bit version
Redhat Linux ES 4	Full offload acceleration, both 64 and 32 bit version
Novell SuSE LES 10, 9.0	Full offload acceleration, both 64 and 32 bit version
Fedora Core 5, 4	Full offload acceleration, both 64 and 32 bit version
CentOS	
IPv4 and IPv6	Fully compatible with IPv4 and IPv6

External network interfaces	
6, 1Gbps Ethernet ports per board	Great for streaming servers, data mirroring, or multi-zone networking using only 1 board and 1 system PCI-E slot
Cat5 copper or SX/LX Fiber	
Standard Cat5 copper cable	100m Cat5 copper
Standard SX fiber optic	500m, 850nm multi-mode
Standard LX fiber optic	10Km, 1310nm single mode
Networking features	
Port fail-over capability	Boost performance & Network redundancy. Enhance network system reliability – continue operating even during network down time.
Port bonding or aggregation	
Others	
Expansion FLASH, 512KByte per Ethernet port (optional)	Can act as a remote boot ROM or special purpose function code/data storage.
Physical size	
Length x Width	6.6 x 4.2 inches (short form)
Operating spec	
Uses standard voltages from PCI-express connector	12V, 3.3V
Operating temperature	0 – 55°C
Operating humidity	85% at +55°C
Recommended system requirements	
(The following is the minimum recommended system requirement. The board can work in many different environments including the configuration specified below. This is not a required environment for the board to function.)	
x86 or other CPUs with 1GHz speed, 32-bit or better	For example: Xeon, Opteron, XScale, PowerPC, MIPS, or others
1GByte of system memory	x8 PCI-express slot or better

Information in this document is provided solely to enable system implementers to use LeWiz products. There are no express or implied copyright or patent licenses granted hereunder based on the information in this document. These information are preliminary and subject to change without notice. LeWiz makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does LeWiz assume any liability arising out of the application or use of any of its products. LeWiz specifically disclaims any and all liability, including without limitation consequential or incidental damages. LeWiz's products are not designed, intended or authorized for use in life support equipment or any application where a failure can cause any bodily injury.

LeWiz, LeWiz Communications, the LeWiz logo, TalonXXXX, iDefendXXXX, iStreamXXXX, and MagicXXXX are trademarks and/or registered trademarks of LeWiz Communications, Inc. Other marks belong to their respective owners.

## LeWiz Communications, Inc.

1376 N. 4<sup>th</sup> Street, Suite 300

San Jose, CA 95112 USA

Phone: 408-452-9800 ext 109

Fax: 408-452-9805

[info@LeWiz.com](mailto:info@LeWiz.com)

[www.LeWiz.com](http://www.LeWiz.com)

© Copyright 2007-2008

All rights Reserved