

**ACCELERATED/PROGRAMMABLE**

6-port, 1 Gigabit Ethernet
PCI-Express Security NIC
Security Sniffer Acceleration
IPv4 and IPv6
copper/fiber optic

LeWiz's iDefend family of network interface cards (NIC) designed specifically for network security applications. The cards are targeted for a wide range of security appliances for LAN/WAN and data center environments from 1 to 10Gbps networks.

LeWiz's iDefend4306™ NIC enables standard PC systems to perform network security, packet sniffing, analysis, deep-packet inspection, and firewalling functions over TCP/IP networks at full 6Gbps rates with minimal CPU usage. The iDefend4306™ NIC features 6, 1Gbps ports on a short form x8 PCI-express card. Each port is capable of capturing network packets at full speed, performs network filtering against a set of programmable network policies, tracks the network packets arrival times and timestamp each packet with highly accurate timestamp. To optimize total system throughput and efficiency, the iDefend4306™ card can aggregate the Ethernet ports, forward and load balance the captured traffic to the system CPUs for processing. As programmable option for security cluster applications, the card can also redirect the captured traffic to designated remote network systems for further processing with load balancing control making efficient use of every systems in the enterprise-level security processing cluster. The card tracks the network statistics of each port to further assist software in network analysis and developers in debugging their system development.

LeWiz has designed this card for high performance, high throughput, fully programmable and highly flexible. The iDefend products' hardware and software are fully available for customer's customization. For each port, LeWiz has packed a dedicated filter 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 network packets. Each port has a cluster of processing engines forming multiple processing pipelines allowing further parallel and pipelined processing of security functions – maximizing throughput. In addition, the card also performs TCP/UDP/IP offload functions such as checksum offload, and auto-segmentation. It supports standard Ethernet frame (≤ 1500 bytes) or jumbo sizes.

The iDefend4306™ 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 or upgrade (even out in the field) to be compatible with any peculiar network equipment the user may be encountered out in the field. This lowers the risk for your deployment and ensures long usability for your equipment investment.

The iDefend4306™ 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 iDefend4306™ NIC to enable the OEMs developing differentiated products & unique features. The iDefend4306™ NIC is a member of LeWiz's family of advanced NIC products from 1Gbps to 10Gbps for the PCI-express bus. Customers using the iDefend4306™ NIC can maintain compatibility with LeWiz's other products. See LeWiz's Talon, iDefend and iStream NIC PCI-express products at: www.LeWiz.com

Security Processing/Performance features	
6, 1Gbps ports	Can be Active/Active or Active/Passive ports
Capture network packets at full rate over each port	Support IPv4 and IPv6
Capture in promiscuous or selected based on filters	
Capture packet of any size	Jumbo size supported
Filter acceleration	Hardware accelerated search & filter on packet to packet basis
Filter bad form network packets	
Filter of bad CRC, bad checksum	
Filter based on source IP, destination IP addresses	Allows symmetric, bi-directional filtering
Filter based on source/destination UDP/TCP ports	
Filter based on protocol field	
Filter with mask or wild card capability	
Option to timestamp each captured packet with high resolution timer (nano second accurate)	Important for financial and legal applications
Aggregate the captured traffic over multiple ports	Reduce processing overhead Multiply the network performance Monitor multiple nets or subnets with a single card/system
Load balance the captured traffic over multi-CPU's for processing	
Option to redirect the captured traffic to other destinations	Support clustered security systems
Load balance traffic to processing cluster systems	Optimize processing cluster's efficiency
Supports customization of customer specified security functions	Most flexible for user applications. Both hardware and software are customizable
Support fast path software	Lower latency, higher overall system performance
Full 64-bit addressing	

Flexibility/Reliability features	
Fully programmable	Allow tuning out in the field, shielded from unknown field equipment or field conditions.
Remote upgradeable	Lower support cost. Allow future value-added features to be added for your customers

Detailed Specifications:

Product part number	
iDefend4306-TX	6x1Gbps copper Ethernet
iDefend4306-SX	6x1Gbps SX fiber optic
iDefend4306-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	
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 5, 4	
A variety of kernel/OS are supported	
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

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