

MosChip Secure NIC Solution

A PRODUCTION-READY SOLUTION TO ACCELERATE TIME TO MARKET

Secure NIC Reference Design

- > Turnkey hardware and software package
- > MosChip MCS1000 IPsec Processor
- > MosChip Windows and Linux Drivers

Turnkey hardware and software package for rapid development

The MCS1000 silicon and drivers enable OEMs and ODMs to quickly develop a PC-based Secure NIC product. The MCS1000 performs as a standard 10/100 NIC, but with the additional feature of hardware acceleration of the IPsec protocol. This is an all-in-one solution, where other accelerators require multiple cards (NIC and accelerator card) the MCS1000 enables a one board solution.

MosChip MCS1000 IPsec Processor

The MCS1000 is a highly integrated SoC with a 200MHz 32-bit ARM926EJ microprocessor core, hardware-based IPsec accelerator and three integrated MAC/PHY Ethernet interfaces. It is an ideal platform to develop a full-featured Secure 10/100 Ethernet Network Interface Card (NIC). The high integration keeps the Secure NIC BOM to a minimum.

MosChip Windows and Linux Drivers

The MCS1000 can be placed in any Windows or Linux-based platform and add up to three (3) Ethernet ports to the system. All hardware and software documentation is available from MosChip. No software development is required by the OEM/ODM. Drivers from MosChip are available for Windows and Linux. The Windows driver interfaces directly with the Windows crypto driver. In Linux the Openswan application is used.

MCS1000 Features

- > ARM926EJ 32-bit 200MHz CPU core
- > Hardware IPsec Accelerator
- > DES/3DES, AES, SHA1/2 and MD5
- > Three internal 10/100 Ethernet MAC/PHYs
- > 32-bit 33MHz PCI Interface



Secure Fiber NIC



Secure 3-Port NIC



Secure NIC

System Features

- > IPsec Task Offload
- > Works with Windows Crypto Driver and Linux
- > Up to 75 Security Associations
- > Copper and Fiber Interface

NIC Feature List

- **32-bit 33MHz PCI 2.2 interface**
- **Ethernet Interface (copper or fiber)**
 - Compliant with IEEE 802.3 Specification
 - Supports 10/100 Mb/s data transfer rates
 - Supports both full-duplex/half-duplex operations
 - Supports flow-control for full-duplex operation
- **Hardware offload engine**
 - IPSec task offloading, compliant with Microsoft NDIS Architecture (Windows). Secures sensitive data at wire speeds — with DES/3DES encryption, MD5 and SHA-1 hashing, RFC 2402 and RFC 2406 authentication, and up to 75 Security Associations
- **Ethernet Features**
 - Address filtering modes are
 - Unicast 48 bit address
 - 64 hash-filtered multicast addresses
 - Pass all multicast addresses
 - Promiscuous mode
 - Broadcast address
 - Optimized transmit and receive queues. Descriptor ring management hardware for transmit and receive.
 - IEEE 802.3x compliant flow control support with software controllable pause times and threshold values.

NIC Software

The MCS1000 has an internal ROM which enables internal booting of the device. The device can then be configured to accept commands from the PCI interface. The host system downloads the code to be executed by the MCS1000 via the driver and through the PCI interface. The custom driver (Win or Linux) performs all interaction between the MCS1000 and the host processor.

The Windows driver operates with the standard Ethernet and Crypto hooks found in Windows. The Linux driver operates with the Openswan application.

Technical Information

- Up to three (3) Ethernet ports (Copper) and one Ethernet port (Fiber)
- Full schematics, BOM, layout and Gerber files available
- Windows drivers for Win 2000, XP and 2004 Server (Royalty-Free)
- Linux driver for Openswan (source code provided)

Production-Ready Go to Market with MosChip



Secure 3-Port NIC

Secure NIC

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