Inspur I350AM4 Network Adapter

Whitepaper

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Introduction

Inspur I350AM4 Network Adapter is a Low cost, low power, 1 Gigabit Ethernet (1GbE) performance, optimized for server virtualization add-on NIC (Network Interface Card), which can support quad Gigabit Ethernet port and NC-SI(Network Control-Sideband Interface) function. The adapter also supports WOL(Wake on Lane), SR-IOV(Single Root I/O Virtualization) function and so on.

Overview

Inspur I350AM4 Network Interface card is designed to ensure Gigabit Network and ShareLink (Using data network port to get system management information through NC-SI). So it is PCIe X8 standard gold finger + PCIe X1 gold finger (NC-SI) structure, which also called CCNC (control convergence network cards) in Inspur.

Inspur I350AM4 technical specifications

The following table lists the specs of the Inspur I350AM4

Table 1. Specifications

Model	**Inspur I350AM4**
Form factor	PCIe low profile
Controller chip	Intel I350AM4 Gigabit Ethernet Controller
Host interface	PCIe 2.1 x4, RMII x1(NC-SI)
Port interface	Quad Gigabit Ethernet
Port connector	4x RJ45 CONN
NC-SI	Support

Management	NC-SI interface to an external manageability controller

Features

Ethernet Features: The Inspur I350AM4 Network adapter supports quad port gigabit Ethernet designs and IEEE* 802.3 auto-negotiation which controls the following four aspects: Speed、Duplex、MDIX and Flow-Control. The device complies with 1 Gb/s Ethernet IEEE 802.3, 802.3u, 802.3ab PHY specifications. It offers four fully-integrated gigabit Ethernet media access control (MAC) and physical layer (PHY) ports. The implementation of IEEE 1588 protocol and 802.1AS distribute common time to media devices.

External Interfaces provided:

PCIe v2.1 (2.5GT/s and 5GT/s) x4/x2/x1, called PCIe in this document;

MDI (Copper) standard IEEE 802.3 Ethernet interface for 1000BASE-T, 100BASE-TX, and 10BASE-T applications (802.3, 802.3u, and 802.3ab);

NC-SI (DMTF NC-SI) or SMBus for Manageability connection to BMC;

IEEE 1149.6 JTAG.

Performance Enhancements:

PCIe v2.1 TLP Process Hints (TPH);

UDP, TCP and IP Checksum offload;

SCTP receive and transmit checksum offload;

UDP and TCP Transmit Segmentation Offload (TSO);

IPv6 support for IP/TCP and IP/UDP receive checksum offload;

Tx TCP segmentation offload (IPv4, IPv6);

Intelligent interrupt generation;

Interrupt throttling control;

Legacy and Message Signal Interrupt (MSI) Modes;

Message Signal Interrupt Extension (MSI-X);

Receive Side Scaling (RSS) for Windows environment Scalable I/O for Linux environments (IPv4, IPv6, TCP/UDP;

Support for packets up to 9.5K Bytes (Jumbo Frames);

Low Latency Interrupts;

Header/packet data split in receive;

PCIe v2.1 TLP Processing Hint Requester;

Descriptor ring management hardware for Transmit and Receive;

Virtualization ready:

Next Generation VMDq support (8 VMs);

VM to VM Packet forwarding (Packet Loopback);

Support of up to 8 VMs per port (1 queue allocated to each VM);

Support for Simple VEPA;

Mirroring rules;

IEEE 802.1q advanced packet filtering;

IEEE 802.1q Virtual Local Area Network (VLAN) support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags;

MAC and VLAN anti-spoofing;

VF Promiscuous modes;

Support for PCI-SIG I/O SR-IOV (Direct assignment);

Flexible Port Partitioning: 32 Virtual Functions on Quad-port or 16 Virtual Functions on Dual-port;

Eight transmit (Tx) and receive (Rx) queue pairs per port;

Rx/Tx Round-Robin Scheduling;

Traffic Isolation and Traffic Steering;

Malicious driver detection;

Storm control;

Per-pool statistics, offloads, and jumbo frames support;

Independent Function Level Reset (FLR) for Physical and Virtual Functions.

Power saving features:

<1W S0-Max (state) 1000BASE-T Active 90oC (mode) <400mW S0-Typ (state) 100BASE-T Active (mode);

Advanced Configuration and Power Interface (ACPI) power management;

States and wake-up capability;

Active State Power Management (ASPM) Support;

Advanced Power Management (APM) wake-up functionality;

Low power link-disconnect state;

LAN disable function;

Full wake up support;

MAC Power Management controls;

Low Power Link Up - Link Speed Control;

Power Management Protocol Offload (Proxying);

PCIe v2.1 LTR;

DMA Coalescing for improved system power management;

EEE (IEEE802.3az) for reduced power consumption during low link utilization periods;

Smart Power Down (SPD) at S0 no link / Sx no link.

IEEE802.1AS - Timing and Synchronization:

IEEE 1588 Precision Time Protocol support;

Per-packet timestamp

Total Cost of Ownership (TCO):

IPMI BMC pass-thru;

Multi-drop NC-SI;

Internal BMC to OS and OS to BMC traffic support.

Additional product details:

17x17 (256 Balls) or 25x25 (576 Balls) PBGA package;

Estimated power: 2.8W (max) in dual port mode and 4.2W (max) in quad port mode;

Memories have Parity or ECC protection;

Support for Plug and play specification.

Server support

The following tables list the Inspur Server systems that are compatible.

MODEL	I350AM4	MODEL	I350AM4
SA5112M5	Y	NF5888M5	Y
NS5162M5	Y	NF8260M5	Y
NF5180M5	Y	NF8480M5	Y
SA5212M5	Y	NF5270M5	Y
NF5280M5	Y	NF5280M4	Y
NF5468M5	Y	NF5466M5	Y
NF5488M5	Y	NF8460M4	Y
NF5568M5	Y		

Operating environment

The I350AM4 Network Card adapter is supported in the following environment:

- 0℃ to 40℃
- Environment friendly: compliance to RoHS