Intel® IXS1000 Media Signal Processor

High-density Voice over Packet communications solution for next-generation networks

Intel® Internet Exchange Architecture

Product Description

The Intel® IXS1000 media signal processor is a carrier-class, digital system-on-a-chip that employs Voice over Packet (VoP) technology to deliver high-quality voice, fax, and data communications over next-generation optical networks. With the IXS1000 solution, carriers are able to move voice traffic from circuit-switched networks to more efficient, packet-based Voice over IP (VoIP) and Voice over ATM (VoATM) networks.

A high-density solution for carrier-class voice gateway and multi-service switch applications, the IXS1000 media signal processor aggregates hundreds of time division multiplex (TDM) channels, performs voice/fax-processing and telephony functions on each channel, then creates and transmits voice packets. The IXS1000 architecture has been optimized for high-density, multi-channel voice processing; it incorporates multiple DSP cores, a control processor, a high-speed internal bus and memory-movement engine, and intelligent I/O interfaces that can collect, format, and transfer data very efficiently.

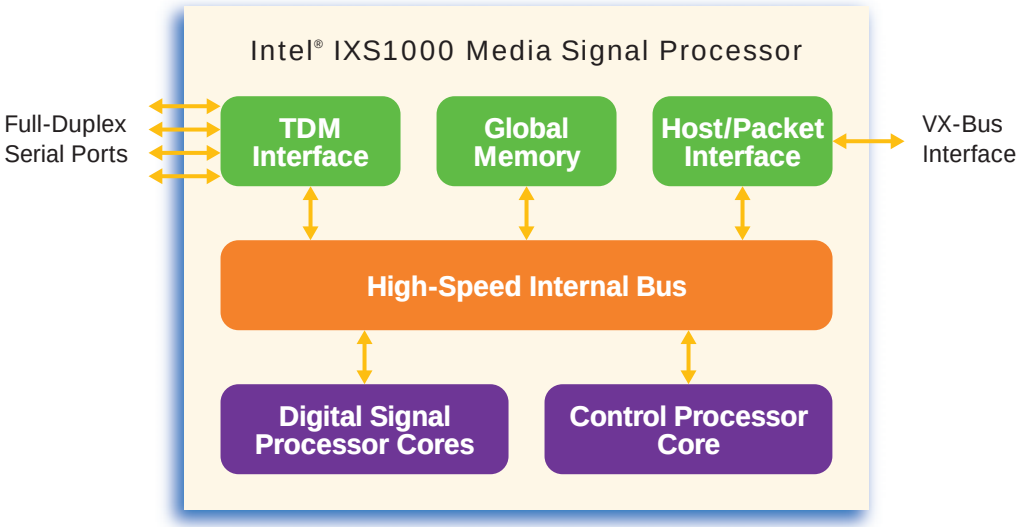
The on-chip control processor performs global device control and channel management functions, which offload the system host processor and increase overall system performance. The control processor manages all internal processing and I/O activities, and communicates with the system host processor using a simple message-based protocol and application programming interface (API).

The IXS1000 integrates on-chip memory in a small form-factor package that provides one of the highest channel capacities per square inch in the industry. The device's on-chip memory and optimized architecture reduce its overall power consumption, resulting in the low-power consumption per channel that is critical for high-density applications.

Flexible Programming and Provisioning

The IXS1000 integrates voice-processing firmware for industry-standard voice codecs, as well as G.168-compliant echo-cancellation firmware that provides robust performance for up to 128 ms echo tail length. The firmware includes key telephony functionality such as fax/data tone detection and pass-through, dual tone multi-frequency (DTMF) signaling, call-progress tone generation, and silence suppression.

Each channel can be independently configured for voice compression format, echo cancellation tail length, and key telephony functionality. The IXS1000 includes a complete ITU-T industry-standard Group III fax-relay solution with support for T.38 real-time fax over packet networks, and up to 14,400 bps fax modems. Intel also provides a simple message-based API for configuring the IXS1000 and establishing channels for processing voice, fax, and data calls. Network developers can easily upgrade IXS1000 firmware in the field to increase their products' time-in-market and meet evolving communication standards. The IXS1000 can also help service providers expand their differentiated voice, video and data service offerings over a converged packet-based network.



Applications

Key applications for the IXS1000 media signal processor include:

- Next-generation packet-based Class 4 and Class 5 switches
- VoP trunking gateways for VoIP and VoATM networks
- Packet-based Mobile Switching Center equipment
- High-density broadband access gateways for xDSL, cable, and wireless networks
- High-density echo canceller systems

Support Collateral/Tools

Item	Description	Order Number
Product Brief	■ Intel® IXS1000 Media Signal Processor Product Brief	249666
Application Briefs	■ Intel® VoIP Reference Design Application Brief ■ Intel® VoATM Reference Design Application Brief	249669 249668
Data Sheet	■ IXS1000 Media Signal Processor Data Sheet	Contact local sales rep
API Programming Manuals	■ IXS1000 API Programming Manual ■ VoIP/VoATM Reference Design API Programming Manual	Contact local sales rep Contact local sales rep
Evaluation Board	■ Intel® IXSEB1000 Evaluation Board	Contact local sales rep
Reference Designs	■ VoIP and VoATM Subsystem Board Hardware and Software	Contact local sales rep

Features	Benefits
■ Embedded firmware and software for voice, fax, data, and telephony processing	■ Integrated solution for multiple services on a single-chip
■ All services and parameters fully programmable for each channel	■ Optimum design flexibility for multi-channel, multi-service applications
■ High channel density • Up to 240 voice channels	■ Increased system capacity, by up to 10x over current solutions for carrier-class implementations
■ Support for ITU-T standard voice and fax • G.711, G.726, G.723.1, G.729A/B voice codecs • V.17, V.29, V.27ter, V.21ch2 fax modems • T.38 real-time fax relay	■ Standards-based voice and fax processing that enables broad interoperability
■ Integrated on-chip SRAM	■ No external memory required ■ Reduced power consumption and board space
■ On-chip control processor	■ Highly integrated system-on-a-chip increases performance and reduces external components
■ Intelligent high-speed I/O interfaces • Mu-law/A-law PCM interface selectable per channel • Four serial port interfaces supporting up to 512 full-duplex TDM channels • 32-bit, 33 MHz VX-Bus parallel host/packet interface with little- and big-endian support	■ Programmable interface options for design and application flexibility
■ Advanced voice processing capabilities • G.168-compliant echo cancellation up to 128 ms tail length • Comfort Noise Generation, Voice Activity Detection, and silence suppression • Packet loss concealment and interpolation	■ Enhanced voice quality of service
■ Integrated telephony functionality • Fax/data modem tone detection and pass-through • DTMF detection and generation • MFR1, MFR2, and call-progress tones • Customizable tone processing capabilities	■ Multi-service capabilities and in-band signaling support for a complete and flexible implementation
■ IXS1000 messaging protocol and API	■ Simple message-based API eases system programming and offloads system host processor
■ 1.8V core and 3.3V I/O power supplies	■ Low-power operation
■ Small footprint BGA package	■ Conservation of valuable board space

Intel® Internet Exchange Architecture

Intel® Internet Exchange Architecture is an end-to-end family of high-performance, flexible and scalable hardware and software development building blocks designed to meet the growing performance requirements of today's networks. Based on programmable silicon and software building blocks, Intel® IXA solutions enable faster development, more cost-effective deployment and future upgradability of network and communications systems. Additional information can be found at www.intel.com/IXA.

Intel Access

Developer's Site	http://developer.intel.com
Intel® Internet Exchange Architecture Home Page	http://www.intel.com/IXA
Networking Components Home Page	http://developer.intel.com/design/network
Other Intel Support:	http://developer.intel.com/design/litcentr
Intel Literature Center	(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

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Order Number: 249666-001 Printed in USA/0501/MGS/CR