

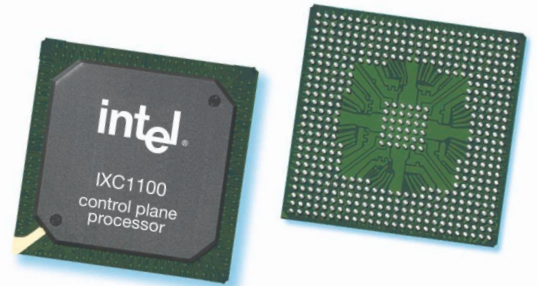


# Intel® IXC1100 Control Plane Processor

Intel in  
Communications

## Product Highlights

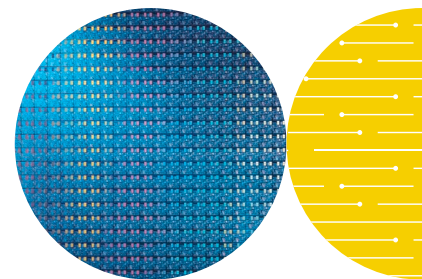
- High-performance, low-power Intel XScale® Core up to 533 MHz
  - ARM® V5TE architecture-compliant and application code-compatible with Intel® StrongARM® processors
  - 32-KB instruction cache and 32-KB data cache with 2-KB mini-data cache
  - Intel® Superpipelined RISC technology (7-stage integer, 8-stage memory)
- Two integrated 10/100 Base-T Ethernet MACs with Media Independent Interface (MII) for design flexibility and cost-effective wire-speed performance
- SDRAM controller supports from 8 to 256 Mbytes of SDRAM memory
- Integrated DMA controllers for PCI and Ethernet
- Sixteen GPIO pins
- Low system power consumption (1.0–1.5 Watt typical)
- USB version 1.1 device controller
- Two high-speed UARTS support 921 Kbaud each
- 33/66 MHz PCI 2.2 host and option interface for glueless connection of up to four devices
- Interrupt controller
- Debug port and standard JTAG interface
- Optimized development tools for the Intel XScale technology
- Optimized networking software protocol components for wireless base station, multi-service switch, Voice-over-Packet (VoP) media gateway and broadband applications
- Commercial (0° to 70° C) and extended temperature (-40° to 85° C) versions
- 492-pin PBGA (35 mm)



## Product Overview

Service providers and network operators are placing increasing emphasis on the deployment of new revenue-generating services, without incurring large investments for hardware replacement. As a result, fast time-to-market development and network interoperability have never been more important for telecommunications equipment manufacturers (TEMs). New generations of communications and networking equipment need to deliver the processing performance to handle new media-intensive network services at ever-faster wire speeds. To be competitive, communications equipment must be designed to enable cost-effective upgrades, helping service providers to minimize operating costs and maximize their return-on-investment.

The Intel® IXC1100 Control Plane Processor offers a choice of multiple clock speeds up to 533 MHz, with both commercial and extended temperature options. The Intel IXC1100 control plane processor feature set integrates an Intel XScale core, high-performance PCI interface, USB controller and two 10/100 Ethernet MACs. The control plane processor enables cost-effective implementations that extend the performance and flexibility of the processor into targeted markets.



The IXC1100 control plane processor extends the benefits of Intel XScale technology, including its rich set of development tools, to meet the processing needs of multi-service switches, VoP media gateways, wireless infrastructure, and other networking equipment.

### High Integration for Lower Cost

The IXC1100 control plane processor is a highly integrated, versatile single-chip processor designed to provide TEMs with greater design flexibility and help reduce system development costs. Features include an SDRAM controller, interrupt controller, GPIO ports, USB controller, PCI and Ethernet DMA controllers, two Ethernet MACs, UARTs, and a watchdog timer and general-purpose timers. A glueless connection to digital signal processor (DSP) chips, flash memory, and other devices is enabled by the 16-bit expansion bus interface. Both of the Ethernet MACs have industry-standard MII interfaces capable of supporting full-duplex data rates up to 100 Mbps. The processor provides memory support for up to 256 MB of 133-MHz SDRAM in two banks. DMA controllers provide two channels each for PCI and Ethernet. The 32-bit PCI 2.2 interface operates at 33 and 66 MHz and provides designers with a flexible connection for network processors, system backplanes, and ASICs. This high level of integration reduces system costs, saves board space, and simplifies system designs for line cards.

The design flexibility enabled by the IXC1100 control plane processor is further enhanced by a comprehensive development platform, support for multiple operating systems, extensive development tools, and software codelets that work together to minimize time-to-market. The IXC1100 control plane processors provide TEMs with a choice of clock speeds including 266, 400, and 533 MHz, in both Commercial (0° to 70° C) and Extended Temperature (-40° to 85° C) ranges.

### Performance for Complex Control Plane Functions

Because of the rapid growth of increasingly complex traffic on wireline and wireless systems, TEMs need increasing amounts of performance and integration to handle the demanding computing requirements of control plane processing. The Intel XScale core of the IXC1100 processor enables a unique combination of high-speed performance and low power consumption. It integrates a 7-stage integer, 8-stage memory Intel Superpipelined core with integrated data and instruction caches to improve performance. Designed on Intel® 0.18-micron process technology, the Intel XScale core delivers extremely high MIPS/mWatt performance. At 533 MHz, the maximum power dissipation for the processor is 2.4W. This low power dissipation provides greater flexibility in the design of subsystems with tight power budgets and space constraints.

### Choice of Tools and Operating Systems for Rapid Development

To help reduce time-to-market and development costs, Intel and third-party vendors currently provide a broad range of tools and support for Intel XScale technology including compilers, linkers, debuggers, board support packages (BSPs), and professional software services support for OS porting assistance and networking protocol optimizations. The Intel XScale core is fully code-compatible with ARM V5T Thumb instructions and ARM V5E DSP extensions. It is also code compatible with Intel StrongARM processors. For added flexibility, the IXC1100 control plane processor is capable of supporting a variety of operating systems including Wind River® VxWorks® and the standard Linux® kernel. Third-party products are available for the IXC1100 control plane processor including Wind River Tornado® for VxWorks and the MontaVista® Linux Professional Edition. Multiple third-party vendors also provide application stacks and advanced development environment support.

### Development Platform for Faster Time-to-Market

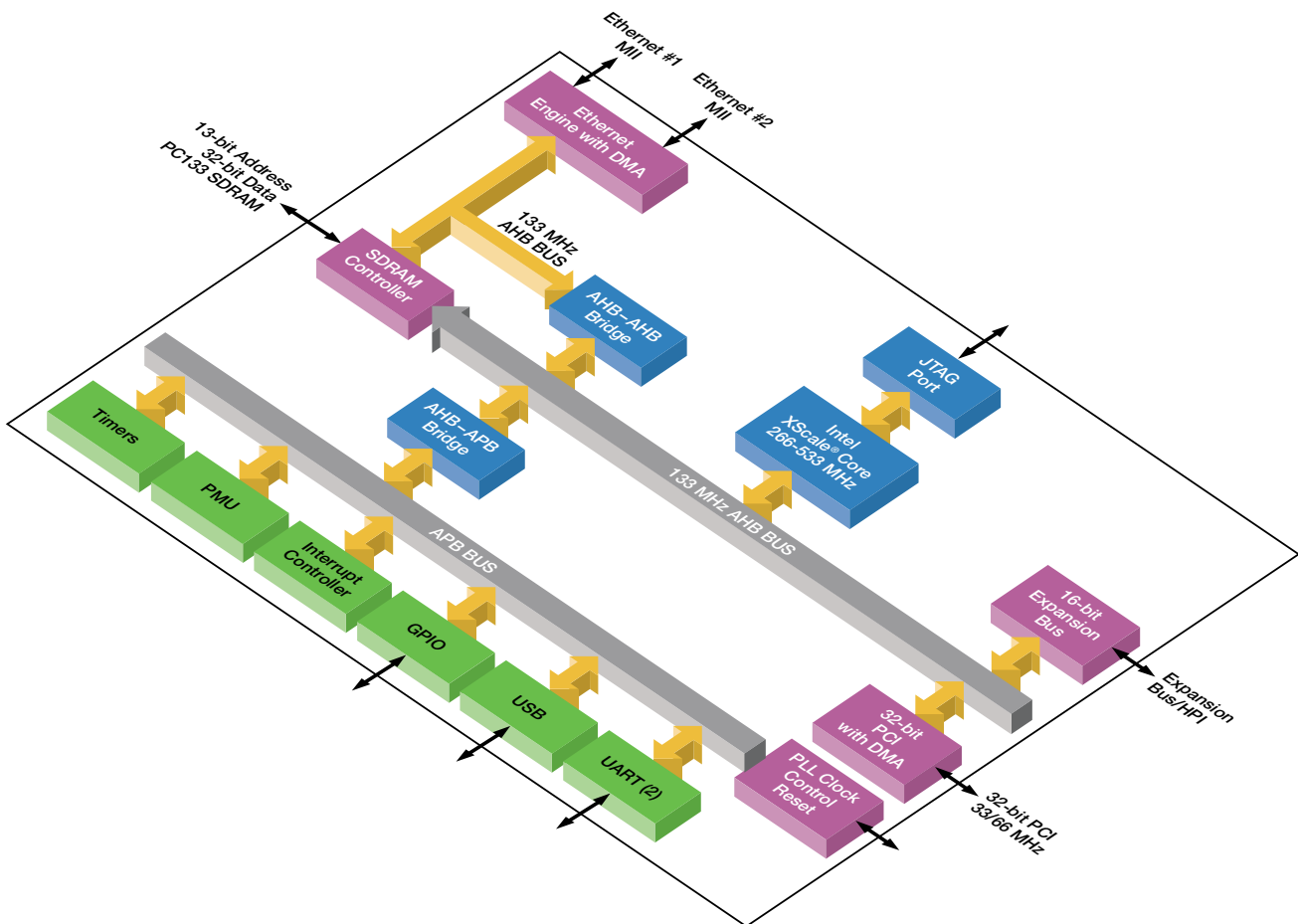
The Intel® IXDP425/IXCDP1100 Development Platform is a powerful tool for developing and verifying hardware and software for the IXC1100 control plane processor. Developers can use this platform to conduct rapid initial chip evaluation, chip performance evaluation, product development, prototyping, and system-level performance testing with the included control plane processor software developers kit (SDK).

By extending the benefits of Intel XScale technology, including its rich set of development tools, to meet the processing needs of multi-service switches, VoP media gateways, wireless infrastructure, and other equipment, the Intel IXC1100 control plane processor helps equipment manufacturers meet the growing customer demand for flexible network service provisioning capabilities at lower cost.

**Features**

**Benefits**

Intel XScale® core at 266, 400, and 533 MHz	Provides high performance, scalability, and low power
Highly integrated, versatile single-chip	Smaller packaging enables board space savings and reduced system costs
Intel® IXC1100 Control Plane Performance Primitives	Enable increased control plane-specific performance of TCP/UDP/IP checksum calculations, CRC7 computations, Hash table and P-Trie searches
Low power consumption: 2.4W (max.) at 533 MHz	Provides design flexibility in implementations with limited power budgets and space-constrained environments
Development platform and tools	Supports faster time-to-market and simplifies development
Commercial and extended temperature options	Design and reuse flexibility
Control Plane Signaling Software Protocols	Reduces time-to-market, with lower cost of ownership and higher system performance
16-bit expansion bus	Provides design and reuse flexibility through glueless support for a variety of flash memory and system peripherals



**Block diagram of the Intel® IXC1100 control plane processor: a highly integrated, versatile single-chip processor designed to provide TEMs with greater design flexibility and help reduce system development costs.**

## Intel Advantage

Intel is a leading supplier of communications building blocks, adding value at many levels of integration. Through continuous innovations and advancements in connectivity and processing in the network, Intel is delivering, along with its customers and developer community, a wide choice of solutions that enable faster time-to-market, longer time-in-market, and increased revenue opportunity.

## Product Ordering Information

Item	Order Number
Intel® IXC1100 Control Plane Processor, 266 MHz	FWIXC1100BB
Intel® IXC1100 Control Plane Processor, 400 MHz	FWIXC1100BC
Intel® IXC1100 Control Plane Processor, 533 MHz	FWIXC1100BD
Intel® IXC1100 Control Plane Processor, 266 MHz Extended Temperature	GWIXC1100BBT
Intel® IXC1100 Control Plane Processor, 400 MHz Extended Temperature	GWIXC1100BCT
Intel® IXC1100 Control Plane Processor, 533 MHz Extended Temperature	GWIXC1100BDT
Intel® IXDP425/IXCDP1100 Control Plane Processor Development Platform	KIXDP425BD

## Intel Access

Network Processor Home Page	<a href="http://intel.com/go/networkprocessors">http://intel.com/go/networkprocessors</a>
Networking and Communications Home Page	<a href="http://intel.com/netcomms">http://intel.com/netcomms</a>
Other Intel Support: Technical Documentation Center	<a href="http://intel.com/go/techdoc">http://intel.com/go/techdoc</a>
General Information Hotline	800 628-8686 or 916 356-3104 5 am–5 pm PST

For more information, visit the Intel Web site at: [developer.intel.com](http://developer.intel.com)

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