Intel® Core™ i7 Microprocessor

The Best Processor On The Planet

November 3, 2008
Highest Performing Processor on the Planet!

Be Creative  Play Games  Multitask with Ease
Architectural Leadership
Intel® Microprocessor Design Model

2 YEARS
Shrink/Derivative
“Presler” “Yonah” “Dempsey”

2 YEARS
New Microarchitecture
Intel® Core™ Microarchitecture

2 YEARS
Shrink/Derivative
“Penryn” Family

2 YEARS
New Microarchitecture
Nehalem

2 YEARS
Shrink/Derivative
“Westmere”

New Microarchitecture
“Sandy Bridge”

Intel® Core™ i7 are the first desktop processors to launch from the new Intel® Core™ processor family.

“Tick Tock” (Shrink) (Innovate)
45 nm Process Technology Hits Its Stride...

130 nm 2001
90 nm 2003
65 nm 2005
45 nm 2007

Intel® Core™ i7 2008

Intel® Core™ i7 Delivers On the Full Promise of 45 nm Process Technology
Performance Matters!

Desire for improved performance continues to drive PC purchasing.
Consumers Communicate, Game, and Edit*

Q: Primary Use For Home PC?

- Communicating With Friends, 42.5%
- Editing Personal Digital Media, 14.5%
- Gaming, 27.4%
- Listening To Music, 8.3%
- Watching Digital Video, 7.3%

* Source: IDC 2007

Gaming, Editing, High Def Continue To Grow In The Mainstream
The Highest Performing Processor on the Planet!
Intel® Core™ i7 processor family: What’s New

New processors (1Ku Pricing)
- Intel® Core™ i7-965 processor Extreme Edition (3.2GHz, 8MB L3 Cache, $999)
- Intel® Core™ i7-940 processor (2.93GHz, 8MB L3 Cache, $562)
- Intel® Core™ i7-920 processor (2.66GHz, 8MB L3 Cache, $284)

New Features
- 4 cores - 8 threads
- Integrated 3-ch DDR3 memory controller
- Intel® Hyper-Threading Technology
- Intel® Turbo Boost Technology
- 8 MB of Intel® Smart Cache
- Intel® QuickPath interconnect
- PCI Express* 2.0 for discrete graphics
Platform Ingredients

For high-performance consumer desktop PCs

- Intel® Core™ i7
- Intel® Core™ i7 Extreme Edition

+ Intel X58 Express Chipset with ICH10/10R

Flexibility for multiple graphic card configurations

Optional:
- Intel® Extreme Tuning Utility^ 
- Intel® Extreme Memory Profiles~
- Intel® High-Performance Solid State Drives˘

^This is a middleware utility; requires purchase of IXTU-enabled motherboard; utility supplied to user by 3rd party

~Requires user to own Intel XMP-ready DDR3 SDRAM DIMMs

˘Warning: altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional damage; and (v) affect system data integrity.

Intel has not tested, and does not warranty, the operation of the processor beyond its specifications.
Be Creative
More Memories in Less Time

Prepare more videos in less time

Using AutoMKV* you can quickly convert your videos from your DV Camcorder and create a high quality movie to send to your family and friends.

Time to convert a high quality movie in minutes

Lower is Better

- Intel® Core™ i7-965 processor Extreme Edition: 24
- Intel® Core™2 Extreme Processor QX9770: 33

The Intel® Core™ i7-965 processor helps you quickly deliver high quality movies for family and friends.

1 Extrapolation based on using AutoMKV* 0.95c on 720x480 video 416MB raw video and converting it into H.264 (253MB) for storage; movie length is 5 minutes

System Configurations and Disclaimers: Appendix

*Other names and brands may be claimed as the property of others.
More Movies in Less Time

Render more frames

Using 3ds Max® more quickly create the next award winning movie

Number of Frames Rendered in 30 minutes

Higher is Better

Intel® Core™ i7-965 processor Extreme Edition

69

Intel® Core™2 Extreme Processor QX9770

50

The Intel® Core™ i7-965 processor Extreme Edition helps you spend more time creating compelling movies

¹ Extrapolation based on 3ds Max® 2009 rendering single 1080p frame (1920x1080) that could be used in a 3D animated movie

System Configurations and Disclaimers: Appendix

*Other names and brands may be claimed as the property of others.
Play Games
Amazing Immersive Gaming

Intel® Core™ i7-965 processor Extreme Edition uses 8 threads to run Artificial Intelligence and Physics to make Games ACT and FEEL real.

System Configurations and Disclaimers: Appendix

*Other names and brands may be claimed as the property of others.
Multitask with Ease
Power to run multiple demanding applications ... at the same time

![Bar Chart]

Intel® Core™ i7 processor Extreme Edition has the power to let you create your next video blockbuster while piloting a simulated cross country flight.
Be More Productive
Do More!

You can use the power of the Intel® Core™ i7-965 processor Extreme Edition to quickly archive your photos using WinRAR*.

Number of Photos Archived in 30 minutes

Intel® Core™ i7-965 processor
Extreme Edition

Intel® Core™ i7-965 processor Extreme Edition

Intel® Core™2 Extreme processor QX9770

Higher is Better

1 Extrapolation based on WinRAR*. The workload consists of five high-resolution, 48-bit TIFF images whose file sizes are around 70MB each which are then compressed into a single ~297MB file for archiving.

System Configurations and Disclaimers: Appendix

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Highest Performing Processor on the Planet!

Incredible New Features
Intel® Core™ i7: Next Generation Micro-architecture

Energy efficient Performance
Intel Hyper-Threading Technology
45 nm High K+ Metal gate Transistors

Intel® Turbo Boost Technology
Dynamic power management
3x memory bandwidth
Best in class bandwidth with QPI

Industry’s First Dynamically Scalable Architecture
Integrated Power Gate

Integrated Power Switches turn individual cores on/off

- **Zero leakage power**
  - Transparent to OS
  - Reduces latency to wake a core
- **Novel process technology**
  - Package type
  - Low resistance metal layers in silicon
  - Ultra low leakage transistor to build switch
- **Modular/Scalable Clocking**
  - Cores, Memory System, I/O can run at independent voltage/frequency
Intel® Turbo Boost Technology

Power Gates
Zero power for inactive cores

No Turbo

Lightly Threaded Workload < TDP
Intel® Turbo Boost Technology

No Turbo

Power Gates
Zero power for inactive cores

Lightly Threaded Workload < TDP

Frequency (F)

Core 0
Core 1
Core 2
Core 3

Turbo Mode
In response to workload demand adds additional performance bins*

Frequency (F)

Core 0
Core 1

*Note: Turbo Mode activates additional performance bins based on workload demand.
Intel® Turbo Boost Technology

Dynamically Delivering Optimal Performance and Energy Efficiency

Power Gates
Zero power for inactive cores

Turbo Mode
In response to workload demand adds additional performance bins*

No Turbo
Lightly Threaded Workload < TDP

*performance bins
Intel® Core™ i7 Innovations: Dynamic Power Management

- Power gates
- Short entry/exit latencies for C states
- Broader operating voltage range
- "Dynamic only load line"

- Idle Cores use no power
- Available in all segments
- Improves scalability
- Provides lower power at same performance
Highest Performing Processor on the Planet!

- Be Creative
- Play Games
- Multitask with Ease
Create Professional Quality Videos and Images Faster!

Video Editing and Image Rendering Applications

Higher is Better

<table>
<thead>
<tr>
<th>Application</th>
<th>Intel® Core™2 Extreme Processor QX9770</th>
<th>Intel® Core™ i7-965 processor Extreme Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe* Premiere* Pro CS3</td>
<td>1.00</td>
<td>1.79</td>
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<tr>
<td>Sony* Vegas 8 Pro</td>
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<td>AutoMKV* 0.95c</td>
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<tr>
<td>CyberLink* Power Director 7</td>
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</table>

Ready, Set, ACTION!!
The Speed you need for Independent Film Makers!
Amazing Immersive Gaming

**Artificial Intelligence and Physics**

Intel® Core™ i7-965 processor Extreme Edition uses 8 threads to run Artificial Intelligence and Physics to make Games *ACT* and *FEEL* real.
The Intel® Core™ i7-965 processor Extreme Edition delivers higher performance on threaded games like Lost Planet.
Legal Notices and Important Information

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_numbers for details.

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit http://www.intel.com/performance/

Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. For more information including details on which processors support HT Technology, see http://www.intel.com/info/hyperthreading.

Intel® Turbo Boost Technology (Intel® TBT) requires a PC with a processor with Intel TBT capability. Intel TBT performance varies depending on hardware, software and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel TBT. For more information, see http://www.intel.com/pressroom/archive/releases/20080819comp.htm.

All products, computer systems, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice.

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System Configuration for the Intel® Core™ i7-965 processor Extreme Edition except SPEC* CPU2006*

**Configuration 1:** Intel® Core™2 Extreme Processor QX9770 (3.20GHz/1600 FSB /2x6 MB L2) Asus P5E3 Premium board, X48 chipset 2 channel Corsair CM3X1024-1600 C7DHXIN XMP @1.8V 2GB (2x1GB) DDR3-1600 7-7-7-20-1T (BIOS: 0402, INF:8.4.0.1016)

**Configuration 2:** Intel® Core™ i7-965 processor Extreme Edition (3.20GHz/6.4GT/s QPI/8MB L3) SMT ON/Turbo ON, Intel® DX58SO 3 channel (3x1GB) Samsung M378B2873DZ1-CF8 DDR3-1066 7-7-7-20 (BIOS: 2260B, INF:9.1.0.1007)

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**Important Read This**

Important. Read This

Note: These systems contain different amounts of memory. The purpose is to compare the fastest supported Intel® Core™2 Extreme Processor platform (2x1GB of DDR3-1600) versus the recommended configuration (3x1GB of DDR3-1066) for the Intel® Core™ i7-965 processor Extreme Edition platform.
System Configuration for the Intel® Core™ i7-940 processor except SPEC* CPU2006*

**Configuration 1:** Intel® Core™2 Quad processor Q9650 (3.00GHz/1333 FSB/2x6 MB L2) Asus P5E3 Premium board, X48 chipset 2 ch Corsair CM3X1024-1333 C7DHXIN XMP @1.8V 2GB (2x1GB) DDR3-1333 9-9-9-24-1T (BIOS: 0505, INF:8.4.0.1016)

**Configuration 2:** Intel® Core™ i7-940 processor (2.93GHz/4.8GT/s QPI/8MB L3) SMT ON/Turbo ON, Intel® DX58SO 3 ch (3x1GB) Samsung M378B2873DZ1-CF8 DDR3-1066 7-7-7-20 (BIOS: 2260B, INF:9.1.0.1007)

**Important Read This**

Note: These systems contain different amounts of memory. The purpose is to compare the fastest non Extreme version of the Intel® Core™2 Quad processor platform versus the fastest non Extreme version of the Intel® Core™ i7 processor platform.
System Configuration for the Intel® Core™ i7-920 processor except SPEC* CPU2006*

Configuration 1: Intel® Core™2 Quad processor Q9450 (2.66GHz/1333 FSB/2x6 MB L2) Asus P5E3 Premium board, X48 chipset 2 ch Corsair CM3X1024-1333 C7DHXIN XMP @1.8V 2GB (2x1GB) DDR3-1333 9-9-9-24-1T (BIOS: 0505, INF:8.4.0.1016)

Configuration 2: Intel® Core™ i7-920 processor (2.66GHz/4.8GT/s QPI/8MB L3) SMT ON/Turbo ON, Intel® DX58SO 3 ch (3x1GB) Samsung M378B2873DZ1-CF8 DDR3-1066 7-7-7-20 (BIOS: 2260B, INF:9.1.0.1007)

Important Read This

graphics (Graphics Driver: NV177.41), Windows* Vista* Ultimate 32bit. Note: These systems contain different amounts of memory. The purpose is to compare the Intel® Core™2 Quad processor platform versus the same frequency Intel® Core™ i7 processor platform.