intel®

CLIENT GRAPHICS HIGHLIGHTS

SOLID-STATE DRIVES HIGHLIGHTS

DESKTOP HIGHLIGHTS

MOBILE HIGHLIGHTS

SERVER HIGHLIGHTS

Intel® Product Quick Reference Matrix

Q2 2012 NON-NDA SUPPLEMENT

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

Client Graphics Highlights

ENHANCED BUILT-IN VISUALS[1]—BUILT FOR MAINSTREAM DESKTOP AND MOBILE PC USERS

Intel® Built-In Visuals provide superb visual performance for sharper images, richer color, and lifelike video and audio. Watch movies and Internet videos in high definition, play popular casual and mainstream game titles, and get full support for Microsoft* Windows* 7 and Windows* 8. Enhanced Intel Built-In Visuals are available on the 3rd generation Intel® Core™ processor family.

	Processor	3rd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
FEATURE	**BENEFIT**		
Intel® Quick Sync Video	Saves valuable time for PC users who want to create and edit video, sync it to other devices, and share it—at home and on the Internet. Intel® Quick Sync Video uses dedicated media processing to accelerate video encoding. Users can also create and edit 3-D videos and convert their 2-D videos into 3-D at blazing speed and enjoy premium HD video conferencing at high quality.	Yes (Faster[2], new support for stereoscopic 3-D videos)	Yes
Intel® InTru™ 3D	Enjoy the ultimate 3-D visual experience—seamlessly from your PC. Now you can watch your favorite 3-D Blu-ray* movies using passive glasses or active shutter glasses all delivered in full 1080p resolution on your stereo 3-D over HDMI* 1.4.	Yes (New support for passive glasses)	Yes (Active shutter glasses only)
Intel® Clear Video HD Technology	Provides visual quality and color fidelity enhancements for spectacular 1080p HD playback and immersive Web browsing.	Yes (Quality enhancements)	Yes (Quality enhancements)
Intel® Wireless Display	Intel® Wireless Display lets you enjoy all of your personal content such as pictures, video, audio, and premium online content such as movies, TV, videos from YouTube*, Netflix*, and Hulu* on a big screen with a simple wireless connection.	Yes (Improved quality, video smoothness, and reduced latency. New support for 1080p stereoscopic content[3])	Yes (Full 1080p protected content support)
Intel® Insider™	Stream or download 1080p HD premium movies on your PC through participating distributor sites across the world. Enables users to purchase content and view later across multiple platforms using Ultraviolet* support.	Yes (New support for Ultraviolet* and view later. More content and storefronts)	Yes
Intel® HD Graphics	Intel® HD Graphics is built into the processor and delivers immersive mainstream gaming, 3-D experiences, and smooth and fast next-generation browser experience.	Yes (Intel® HD Graphics 2500 / 4000, support for DirectX* 11 games, a faster and smoother experience, and more games)	Yes (Intel® HD Graphics 3000 / 2000)[1]
Intel® Advanced Vector Extensions	Intel® Advanced Vector Extensions gives more computing power to application developers with a new 256-bit instruction set extensions to Intel® SSE.	Yes	Yes

INTEL® QUICK SYNC VIDEO

Intel® Quick Sync Video makes fast work of creating, editing, syncing, and sharing your videos—at home and online. Intel Quick Sync Video, built into 2nd and 3rd generation Intel® Core™ processors, delivers breakthrough hardware acceleration that lets you complete in minutes what used to take hours. Create DVDs or Blu-ray* discs, edit videos, convert video files for your portable media device, and convert videos for upload to your favorite social networking sites—all in a flash.

	Processor	3rd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
FEATURE	**BENEFIT**		
AVC HW Encode / Decode	Saves valuable time when creating and editing Blu-ray* discs, and other videos in H.264 format.	Yes	Yes
MPEG2 Encode / Decode	Saves valuable time when creating and editing DVDs, and other videos in MPEG2 format.	Yes	Yes
MVC HW Encode / Decode	Saves valuable time when creating and editing stereoscopic 3-D videos.	Yes	No

INTEL® CLEAR VIDEO HD TECHNOLOGY

Intel® Clear Video HD Technology delivers seamless video and brings imagery to life with rich, accurate colors when you are browsing the Web, watching videos, and enjoying your favorite HD programs. Intel Clear Video HD Technology in 2nd and 3rd generation Intel® Core™ processors lets you view images as they were meant to be seen.

Processor	3rd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
FEATURE — **BENEFIT**		
Blu-ray* Disc Playback — High-density optical disc format designed for the storage of data and high-definition video.	Yes	Yes
Blu-ray Stereo 3-D Disc Playback — Playback of Blu-ray* stereo 3-D content on your PC.	Yes	Yes
Intel® Clear Video HD Technology — Delivers enhanced high-definition video playback, sharper images, and precise color control.	Yes	Yes
DVD Upscaling — Provides high-quality DVD upscaling through Windows* 7.	Yes	Yes
HD Hardware Acceleration		
AVC / H.264, MPEG2, VC1 Decode — Enables smoother playback and longer battery life when viewing H.264, MPEG2, or VC1 DVD, Blu-ray, or streaming content.	Yes	Yes
Dual Video Decode — Enables Blu-ray picture-in-picture hardware acceleration.	Yes	Yes
HW Decode MFTs — Enables faster Windows 7 drag and drop transcoding for MPEG2, VC1, and H.264 content.	Yes	Yes
Video Sharpness / Detail		
Skin Tone Enhancement — Enhances skin tones to look more real and natural.	Yes	Yes
Total Color Control — Enables adjustment of saturation levels per base color for brighter, richer colors.	Yes	Yes
Auto Contrast Enhancement — Fixes underexposed or overexposed areas of your videos.	Yes	Yes
De-interlacing — Reduces static and motion artifacts, improving the clarity and stability of the video picture.	Advanced	Advanced
Sharpness Detail — Sharpens the image to provide finer detail and improved image quality.	Yes	Yes
Noise Reduction — Filters out unwanted noise to provide finer detail and cleaner images.	Yes	Yes
Film Mode Detection — Detects film cadence and recovers original film content to improve image quality.	Yes	Yes
Video Scaling / Panel Scalar — Provides high-quality scaling to view content clearly in non-native resolution.	Yes (8x8 polyphase)	Yes (8x8 polyphase)
Vibrant Color		
Deep Color and x.v.Color — Together, Deep Color and x.v.Color enable future HDTVs to display more natural, accurate, and vivid colors.	Yes	Yes
ProcAmp / Color Control — Enhances fine detail of video playback and allows for user control over brightness, contrast, and saturation.	Yes	Yes

DISPLAY AND AUDIO FEATURES COMPARISON

Connect to a wide range of digital displays and resolutions, including the latest digital interfaces such as HDMI* and DisplayPort*. In addition, 2nd generation Intel® Core™ processors support high-definition resolutions, including 720p, 1080i, and 1080p.

Processor	3rd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
FEATURE — **BENEFIT**		
New Control Panel — New look and feel, easier to use, with custom resolution settings.	Yes (Enhancements)	Yes
Maximum Display Resolution — Higher pixel resolutions allow the PC to show more image detail.	DisplayPort* 2560 x 1600, HDMI*, VGA	DisplayPort* 2560 x 1600, HDMI*, VGA
Display Support		
Independent Digital Displays — Allows a user to connect multiple displays to the PC.	3	2
HDMI* with HDCP — Provides a user-friendly, single-cable connector that enables transmission of superior, uncompressed digital video and audio, and 3-D Deep Color, premium audio, and auto lip-sync.	Version 1.4	Version 1.4
DisplayPort* with HDCP — Highly scalable and efficient display interface for the PC.	Version 1.1 (with audio)	Version 1.1 (with audio)
Embedded DisplayPort — Highly scalable and efficient display interface for notebooks.	Yes[4]	Yes (Mobile only)
LVDS — Low-voltage digital display interface.	Yes	Yes[5]
DVI with HDCP — Digital video interface that maximizes the visual quality of digital displays such as LCD displays and digital projectors.	Yes	Yes
VGA — Standard analog display interfaces, such as VGA, provide basic visual quality when connected to CRTs, LCDs, or HDTVs.	Yes	Yes
Audio Support		
Dolby* TrueHD, DTS* Premium Suite* — Supported on a significant number of Blu-ray* titles for the highest quality audio.	Yes	Yes

3-D FEATURES COMPARISON

Intel® Core™ processors with Intel® HD Graphics deliver a responsive, attractive 3-D visual experience for casual and mainstream PC games. When you buy a PC equipped with Intel HD graphics, you get a cost-effective solution with the performance for more gaming fun.

FEATURE	BENEFIT	Processor: 3rd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
Video Memory	Memory for use by Intel® HD Graphics for video and graphics applications.	Up to 1.70 GB	Up to 1.70 GB
DirectX* Support	Standardized programming interface used in games as an interface to the system's graphics through Microsoft* Windows*.	DirectX* 11	DirectX* 10.1
OpenGL* Support	Standardized programming interface used by 2-D and 3-D graphics applications.	3.1	3.1
OpenCL* Support	Standard programming interface for accessing compute units in CPU and GPU.	1.1	No

For more information, visit

www.intel.com/technology/visualtechnology/index.htm
www.intel.com/content/www/us/en/architecture-and-technology/quick-sync-video/quick-sync-video-consumer.html
www.intel.com/technology/graphics/intelhd.htm
www.intel.com/technology/graphics/ctv.htm

[1] Built-in Visuals available on select SKUs only.

[2] Faster on select SKUS.

[3] New features available after launch.

[4] Supported on mobile and All-in-One desktop PCs.

[5] For desktops, only supported with the Intel® A57 Express Chipset.

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SOLID-STATE DRIVE HIGHLIGHTS

INTEL® HIGH-PERFORMANCE SATA SOLID-STATE DRIVES (SSD)

Intel® Solid-State Drives represent a revolutionary breakthrough that delivers a giant leap in storage performance. Unlike traditional hard disk drives, Intel SSDs have no moving parts, resulting in a quiet, cool, highly rugged storage solution that also offers faster system responsiveness.

Drawing from decades of memory engineering experience, and industry-leading, compute-quality NAND Flash memory manufacturing processes, Intel SSDs are designed to deliver outstanding performance for a wide range of computing applications. Intel SSDs also feature low-write amplification and a unique wear-leveling design for higher reliability, meaning Intel SSDs not only perform better, they last longer.

INTEL® SOLID-STATE DRIVE	INTEL® SSD 520 SERIES	INTEL® SSD 313 SERIES
Target Applications	**Performance SSD:** High-performance storage for 2nd or 3rd gen Intel® Core™ processor-based notebook and desktop PCs with a 6.0 Gb/s SATA interface.	**Optimized for Intel® Smart Response Technology:** Performance-boosting cache for traditional HDDs in a notebook or desktop PC. Requires select 6 or 7 Series Intel® Express Chipsets and Intel® Rapid Storage Technology Driver 10.5 or later.
SATA Interface	SATA 6.0 Gb/s	SATA 3.0 Gb/s
Form Factor	2.5" drive	2.5" drive / mSATA
Capacities	480 GB / 240 GB / 180 GB / 120 GB / 60 GB	24 GB / 20 GB
Random IOPs (4 KB)	Reads: up to 40K IOPs[1,2] (with a maximum 85K IOPs[1,2]) Writes: up to 70K IOPs[1,2]	Reads: up to 32K IOPS[2] Writes: up to 2.5K IOPS[2]
Sequential Bandwidth (Sustained MB/s)	Reads: up to 550 MB/s[1] Writes: up to 520 MB/s[1]	Reads: up to 200 MB/s Writes: up to 90 MB/s
Write Endurance (4 KB)	5 years minimum useful life with up to 20 GB/day written[2]	5 years minimum useful life with up to 20 GB/day written[2]
Works With: Intel® Data Migration Software Intel® SSD Toolbox	Yes Yes	Yes Yes
Warranty	Five year limited warranty	Three year limited warranty
Production Availability	OEM and Reseller Box: Now Retail Box: Q2 2012	Now
Roadmap Notes	Replaces Intel® SSD 510 Series	Replaces Intel® SSD 311 Series

NEW	PRODUCT NAME	CAPACITY	PRODUCT CODE	PRODUCT DESCRIPTION	PACKAGE TYPE	PACKAGE CONTENTS	QUANTITY PER BOX
✓	Intel® SSD 520 Series	480 GB	SSDSC2CW480A310	25nm MLC / 2.5" / 9.5mm	OEM box	SSD only	1
			SSDSC2CW480A3K5	25nm MLC / 2.5" / 9.5mm	Reseller box	SSD with desktop installation kit[3]	1
		240 GB	SSDSC2CW240A310	25nm MLC / 2.5" / 9.5mm	OEM box	SSD only	1
			SSDSC2CW240A3K5	25nm MLC / 2.5" / 9.5mm	Reseller box	SSD with desktop installation kit[3]	1
		180 GB	SSDSC2CW180A310	25nm MLC / 2.5" / 9.5mm	OEM box	SSD only	1
			SSDSC2CW180A3K5	25nm MLC / 2.5" / 9.5mm	Reseller box	SSD with desktop installation kit[3]	1
		120 GB	SSDSC2CW120A310	25nm MLC / 2.5" / 9.5mm	OEM box	SSD only	1
			SSDSC2CW120A3K5	25nm MLC / 2.5" / 9.5mm	Reseller box	SSD with desktop installation kit[3]	1
		60 GB	SSDSC2CW060A310	25nm MLC / 2.5" / 9.5mm	OEM box	SSD only	1
			SSDSC2CW060A3K5	25nm MLC / 2.5" / 9.5mm	Reseller box	SSD with desktop installation kit[3]	1
✓	Intel® SSD 313 Series	24 GB	SSDMAEXC024G01	25nm SLC / mSATA	OEM Box	SSD only	1
			SSDSA2VP024G01	25nm SLC / 2.5" / 7.0mm	OEM Box	SSD only	1
		20 GB	SSDMAEXC020G01	25nm SLC / mSATA	OEM Box	SSD only	1
			SSDSA2VP020G01	25nm SLC / 2.5" / 7.0mm	OEM Box	SSD only	1

For more information, visit the Intel Reseller Center Web site at **www.intel.com/go/channelssd**

[1] Performance values vary by capacity.

[2] IOPs and endurance specifications are for client-based workloads.

[3] Desktop installation kit contents: SATA power and signal cables, 3.5-inch desktop drive bay to 2.5-inch SSD adapter bracket, screws, installation guide, and warranty documentation.

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intel® Desktop Highlights

COMPARING THE INTEL® CORE™ PROCESSOR FAMILY FOR ENTHUSIASTS
DECIDE WHAT'S IMPORTANT TO YOUR CUSTOMERS (AND TO YOU)

| IVY BRIDGE[1] 3RD GENERATION INTEL® CORE™ PROCESSOR	SANDY BRIDGE-E[1] INTEL® CORE™ PROCESSOR
Recommend Usages • Gaming and media transcoding with Intel® HD Graphics • Mainstream overclocking[2] (K SKUs only)	**Recommend Usages** • Best discrete graphics option for gaming • Heavily-threaded media editing
Why? • Intel's best mainstream processor performance • Intel® Quick Sync Video (transcoding acceleration) • Potential for higher maximum air-cooled overclocking[2] frequency (K SKUs only)	**Why?** • 4 cores / 8 threads provide 6 cores / 12 threads upgrade path • Full support for two PCI Express* x16 graphics cards • Largest cache size of any Intel® processor • Four-channel memory and larger maximum memory capacity
Intel® Technology Provider Program Benefits • Offer Intel's newest microarchitecture • Socket longevity (Sandy Bridge[1] + Ivy Bridge[1])	**Intel® Technology Provider Program Benefits** • Higher margin potential through system customization and premium MB offerings
Processor Intel® Core™ i7-3770K processor[2] (4 cores / 8 threads) Intel Core i7-3770 processor (4 cores / 8 threads) Intel Core i7-3770S processor (4 cores / 8 threads) Intel® Core™ i5-3570K processor[2] (4 cores / 4 threads) Intel Core i5-3550 processor (4 cores / 4 threads) Intel Core i5-3450 processor (4 cores / 4 threads) Intel Core i5-3450S processor (4 cores / 4 threads)	**Processor** Intel® Core™ i7-3960X processor[2] (6 cores / 12 threads) Intel Core i7-3930K processor[2] (6 cores / 12 threads) Intel Core i7-3820 processor (4 cores / 8 threads)
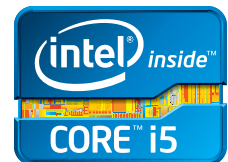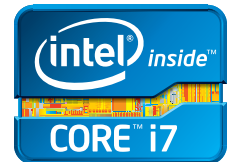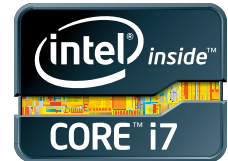
INTEL® DESKTOP PROCESSORS

NEW	PROCESSOR NAME	PRODUCT CODE	CLOCK SPEED	INTEL® TURBO BOOST TECHNOLOGY[3]	MEMORY SPEED	CACHE	PACKAGE
✓	Intel® Core™ i7-3770K processor[2]	BX80637i73770K	3.50 GHz	3.90 GHz	1600 MHz	8 MB L3 shared	LGA1155
✓	Intel Core i7-3770 processor	BX80637i73770	3.40 GHz	3.90 GHz	1600 MHz	8 MB L3 shared	LGA1155
✓	Intel® Core™ i5-3570K processor[2]	BX80637i53570K	3.40 GHz	3.80 GHz	1600 MHz	6 MB L3 shared	LGA1155
✓	Intel Core i5-3550 processor	BX80637i53550	3.30 GHz	3.70 GHz	1600 MHz	6 MB L3 shared	LGA1155
✓	Intel Core i5-3450 processor	BX80637i53450	3.10 GHz	3.50 GHz	1600 MHz	6 MB L3 shared	LGA1155

NEW	LOW-POWER PROCESSOR NAME	PRODUCT CODE	CLOCK SPEED	INTEL® TURBO BOOST TECHNOLOGY[3]	MEMORY SPEED	CACHE	PACKAGE
✓	Intel® Core™ i7-3770S processor	BX80637i73770S	3.10 GHz	3.90 GHz	1600 MHz	8 MB L3 shared	LGA1155
✓	Intel® Core™ i5-3450S processor	BX80637i53450S	2.80 GHz	3.50 GHz	1600 MHz	6 MB L3 shared	LGA1155
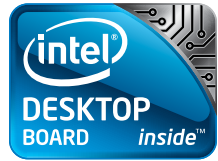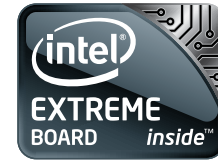
INTEL® DESKTOP BOARDS

INTEL® VISUAL BIOS — CONFIGURATION FRIENDLY, EASY TO USE

Exclusive to the latest Intel® Desktop Boards Extreme Series, Intel® Visual BIOS represents the next evolution of menu and setting controls found in traditional, text-based BIOS setup programs. Featuring animated transitions and graphic controls, Intel Visual BIOS offer users, from system builders to extreme overclockers, a configuration friendly and easy-to-use interface to manage PC boot and runtime capabilities. Critical system information such as processor speed, fan speed, boot order priority, and temperature are also readily accessible to customize. Intel Visual BIOS is available on the Intel® Desktop Board DZ77GA.

BOOST PERFORMANCE AND PRODUCTIVITY WITH BUNDLED SOFTWARE

Increase the performance and visual clarity of your games, install powerful security, manage your network and assets, and diagnose and repair your systems remotely. As part of your Intel Desktop Board purchase you receive bundled software and special downloads designed to do all of this and more. Protect against virus threats with solutions from McAfee* and ESET* Smart Security, increase PC manageability with Intel® Small Business Advantage, or turn your PC into a personal cloud with Splashtop*. Unlock your gaming potential with Razer* peripherals and Steam* online games, as well as maximize performance with the seamless GPU integration of Lucidlogix* Virtu* Universal. Also included is a suite of powerful Intel-developed tools to help you with tasks from overclocking to identity protection. These software bundles and special promotions are available only on genuine Intel® Desktop Boards.

Intel® Desktop Board	INTEL® DESKTOP BOARD DZ77GA	INTEL® DESKTOP BOARD DZ77BH	INTEL® DESKTOP BOARD DZ77SL	INTEL® DESKTOP BOARD DH77DF	INTEL® DESKTOP BOARD DH77KC	INTEL® DESKTOP BOARD DH77EB	INTEL® DESKTOP BOARD DB75EN
Series	Extreme	Media	Media	Media	Media	Media	Executive
Form Factor	ATX	ATX	ATX	Mini-ITX	ATX	MicroATX	MicroATX
Chipset	Intel® Z77 Express Chipset	Intel® Z77 Express Chipset	Intel® Z77 Express Chipset	Intel® H77 Express Chipset	Intel® H77 Express Chipset	Intel® H77 Express Chipset	Intel® B75 Express Chipset
What's NEW and Notable?	• Intel® Extreme Memory Profile supports overclocking beyond 1333 MHz[2] • Intel® Visual BIOS	• Lucidlogix* Virtu* GPU Virtualization Software	• Support for Intel® Z77 Express Chipset • Great performance for a budget conscious price	• Mini-ITX form factor for flexible designs	• DisplayPort*+ HDMI*+ DVI-I display output, supports dual independent display	• DisplayPort*+ HDMI*+ DVI-I display output, supports dual independent display	• Small Business Advantage • Extended Life Program • Supports Intel® Identity Protection Technology
Featured Intel® Technologies	• Intel® Smart Response Technology • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Core and graphics performance tuning	• Intel® Smart Response Technology • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Core and graphics performance tuning	• Intel® Turbo Boost Technology[3] • Intel® Hyper-Threading Technology[4] • Intel® Smart Response Technology • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Core and graphics performance tuning	• Intel® Turbo Boost Technology[3] • Intel® Hyper-Threading Technology[4] • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Intel® Smart Response Technology	• Intel® Turbo Boost Technology[3] • Intel® Hyper-Threading Technology[4] • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Intel® Smart Response Technology	• Intel® Turbo Boost Technology[3] • Intel® Hyper-Threading Technology[4] • Intel® Identity Protection Technology • Intel® Rapid Storage Technology, supports RAID 0, 1, 5, and 10 • Intel® Smart Response Technology	• Intel® Turbo Boost Technology[3] • Intel® Hyper-Threading Technology[4]

For more information, visit **www.intel.com/go/desktopprocessors** and **www.intel.com/desktopboards**

[1] Ivy Bridge, Sandy Bridge-E, and Sandy Bridge are code names of Intel Corporation.

[2] Overclocking enabled. 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 heat or other damage; and (v) affect system data integrity. Intel has not tested, and does not warranty, the operation of the processor beyond its specifications.

[3] Intel® Turbo Boost Technology 2.0 requires a PC with a processor with Intel Turbo Boost Technology 2.0 capability. Intel Turbo Boost Technology 2.0 performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost for more information.

[4] Intel® 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 www.intel.com/info/hyperthreading

Please refer to the product quick reference matrix located on Intel® Reseller Center: www.intel.com/reseller

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_number for more information.

Intel® Desktop Boards may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request.
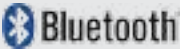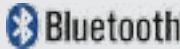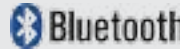
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INTEL® CENTRINO® WIRELESS

Intel® Centrino® wireless networking solutions enable network connectivity without wires for notebook PC platforms. Intel® products provide uncompromising performance, enhanced security, and scalability for fast, flexible connectivity at work, home, or on the road.

SEGMENT	SIMPLE CONNECTIVITY		DUAL-STREAM		ADVANCED FEATURES
Intel® Centrino® Wireless (Intel Code Name)	**Wireless-N 105** (Canyon Peak)	**Wireless-N 135** (Canyon Peak + Bluetooth*)	**Wireless-N 2200** (Marble Peak)	**Wireless-N 2230** (Jackson Peak 1)	**Advanced-N 6235** (Jackson Peak 2)
Speed Spatial Streams (Tx and Rx)	150 Mb/s (1x1)	150 Mb/s (1x1)	300 Mb/s (2x2)	300 Mb/s (2x2)	300 Mb/s (2x2)
Bands	Single Band – 2.40 GHz	Single Band – 2.40 GHz	Single Band – 2.40 GHz	Single Band – 2.40 GHz	Dual Band – 2.40 GHz and 5 GHz
Enterprise / SMB Features			Intel® PROSet for Windows* 7 Cisco* CCXv4	Intel® PROSet for Windows* 7 Cisco* CCXv4	Intel® PROSet for Windows* 7 Cisco* CCXv4
Intel® vPro™ Technology					✓
Intel® My WiFi 2.0 Technology	✓	✓	✓	✓	✓
Intel® Wireless Display			![intel WiDi Wireless Display]	![intel WiDi Wireless Display]	![intel WiDi Wireless Display]
Laplink* PCsync* Software	✓	✓	✓	✓	✓
Intel® Smart Connect Technology			✓	✓	✓
Bluetooth*		![Bluetooth]		![Bluetooth]	![Bluetooth]
Wi-Fi* Certification	![WiFi Certified bgn]	![WiFi Certified bgn]	![WiFi Certified bgn] dual-stream n	![WiFi Certified bgn] dual-stream n	![WiFi Certified abgn] dual-stream n
Order Codes 100 pieces 10 pieces	105BN.HMWG 105BN.HMWWB	135BN.HMWG 135BN.HMWWB	2200BN.HMWG 2200BN.HMWWB	2230BN.HMWG 2230BN.HMWWB	6235AN.HMWG 6235AN.HMWWB

For more information, visit **www.intel.com/go/wireless**

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NEW SERVER PROCESSOR PRODUCT FAMILIES

INTEL® XEON® PROCESSOR E5-2600 / E5-1600 PRODUCT FAMILIES[1]

IT organizations around the world are driving higher value into their businesses by virtualizing their data centers to reduce costs and adding automation to improve service levels, efficiency, and agility. Intel® Xeon® processor-based servers provide the foundation for this innovation. They account for the majority of all servers in today's virtualized data centers and clouds, and they also power many of today's highest-performing workstations. The Intel® Xeon® processor E5 family is at the heart of a flexible and efficient data center that meets diverse needs.

The latest Intel Xeon processor E5-2600 / E5-1600 product families take these advantages to new heights with up to 80 percent higher performance[2] than the prior generation and even better energy efficiency. Importantly, these processors also include advanced technologies to help solve the storage, networking, and security challenges arising in today's increasingly dynamic computing environments.

INTEL® SERVER / WORKSTATION PROCESSORS

Intel Xeon processors are the preferred choice for demanding server and workstation applications. Intel® server processors deliver enhanced, energy-efficient performance for data-intensive business applications and enable users to optimize and scale computing environments that maximize server utilization to workload, while providing headroom for growth. Workstation users can design, model, create, and visualize faster on innovative platforms powered by Intel Xeon processors.

INTEL® XEON® PROCESSOR E5-2600 PRODUCT FAMILY FOR SERVER / WORKSTATION SYSTEMS FEATURING TWO LGA2011 SOCKETS (THERMAL SOLUTION SOLD SEPARATELY)

NEW	PROCESSOR NAME	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[4]	INTEL® TURBO BOOST TECHNOLOGY[5]	POWER	UPC CODE
✓	Intel® Xeon® processor E5-2690	BX80621E52690	2.90 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	135 W	7 35858 24086 4
✓	Intel Xeon processor E5-2687W	BX80621E52687W	3.10 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	150 W	7 35858 22396 6
✓	Intel Xeon processor E5-2680	BX80621E52680	2.70 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	130 W	7 35858 22397 3
✓	Intel Xeon processor E5-2670	BX80621E52670	2.60 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	115 W	7 35858 22398 0
✓	Intel Xeon processor E5-2667	CM8062100854802 (tray only)	2.90 GHz	7.20 GT/s	15 MB	1600 MHz	6 / 12	✓	✓	130 W	
✓	Intel Xeon processor E5-2665	BX80621E52665	2.40 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	155 W	7 35858 22400 0
✓	Intel Xeon processor E5-2660	BX80621E52660	2.20 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	95 W	7 35858 22401 7

INTEL® XEON® PROCESSOR E5-2600 PRODUCT FAMILY FOR SERVER / WORKSTATION SYSTEMS FEATURING TWO LGA2011 SOCKETS (THERMAL SOLUTION SOLD SEPARATELY)

NEW	PROCESSOR NAME	PRODUCT CODE	CLOCK SPEED	INTEL® QPI[3] SPEED	SHARED L3 CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[4]	INTEL® TURBO BOOST TECHNOLOGY[5]	POWER	UPC CODE
✓	Intel® Xeon® processor E5-2658	CM8062101042805 (tray only)	2.10 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	95 W	
✓	Intel Xeon processor E5-2650	BX80621E52650	2 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	95 W	7 35858 22402 4
✓	Intel Xeon processor E5-2650L	CM8062107185309 (tray only)	1.80 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	70 W	
✓	Intel Xeon processor E5-2648L	CM8062100854905 (tray only)	1.80 GHz	8 GT/s	20 MB	1600 MHz	8 / 16	✓	✓	70 W	
✓	Intel Xeon processor E5-2643	CM8062107185605 (tray only)	3.30 GHz	6.40 GT/s	10 MB	1600 MHz	4 / 8	✓	✓	130 W	
✓	Intel Xeon processor E5-2640	BX80621E52640	2.50 GHz	7.20 GT/s	15 MB	1333 MHz	6 / 12	✓	✓	95 W	7 35858 22403 1
✓	Intel Xeon processor E5-2630	BX80621E52630	2.30 GHz	7.20 GT/s	15 MB	1333 MHz	6 / 12	✓	✓	95 W	7 35858 22404 8
✓	Intel Xeon processor E5-2630L	CM8062107185405 (tray only)	2 GHz	7.20 GT/s	15 MB	1333 MHz	6 / 12	✓	✓	65 W	
✓	Intel Xeon processor E5-2620	BX80621E52620	2 GHz	7.20 GT/s	15 MB	1333 MHz	6 / 12	✓	✓	95 W	7 35858 22405 5
✓	Intel Xeon processor E5-2609	BX80621E52609	2.40 GHz	6.40 GT/s	10 MB	1066 MHz	4 / 4			80 W	7 35858 23265 4
✓	Intel Xeon processor E5-2603	BX80621E52603	1.80 GHz	6.40 GT/s	10 MB	1066 MHz	4 / 4			80 W	7 35858 23270 8

INTEL® XEON® PROCESSOR E5-1600 PRODUCT FAMILY FOR WORKSTATION SYSTEMS FEATURING ONE LGA2011 SOCKET (THERMAL SOLUTION SOLD SEPARATELY)

NEW	PROCESSOR NAME	PRODUCT CODE	CLOCK SPEED	CACHE	MAX. MEMORY SPEED	NO. OF CORES / THREADS	INTEL® HYPER-THREADING TECHNOLOGY[4]	INTEL® TURBO BOOST TECHNOLOGY[5]	POWER	UPC CODE
✓	Intel® Xeon® processor E5-1660	BX80621E51660	3.30 GHz	15 MB	1600 MHz	6 / 12	✓	✓	130 W	7 35858 22440 6
✓	Intel Xeon processor E5-1650	CM8062101102002 (tray only)	3.20 GHz	12 MB	1600 MHz	6 / 12	✓	✓	150 W	
✓	Intel Xeon processor E5-1620	CM8062101038606 (tray only)	3.60 GHz	10 MB	1600 MHz	4 / 8	✓	✓	130 W	

INTEL® THERMAL SOLUTION STS200 SERIES FOR SERVER / WORKSTATION SYSTEMS FEATURING TWO LGA2011 SOCKETS

NEW	PRODUCT NAME	BOXED PRODUCT CODE	DESCRIPTION	TDP SUPPORT	UPC CODE
✓	Intel® Thermal Solution STS200P	BXSTS200P	Passive	Up to 130 W	7 35858 22179 5
✓	Intel Thermal Solution STS200PNRW	BXSTS200PNRW	Passive narrow	Up to 130 W	7 35858 22180 1
✓	Intel Thermal Solution STS200C	BXSTS200C	Combo with removable fan	Up to 150 W	7 35858 22181 8

SERVER HIGHLIGHTS

INTEL® SERVER PLATFORMS

BETTER TOGETHER: RECOMMEND THE BEST INTEL® XEON® PROCESSOR AND INTEL® CHIPSET

SEGMENT	POSITIONING	RECOMMENDED PROCESSOR SERIES[1]	MAX. SOCKETS PER SYSTEM	NO. OF CORES	MAX. FREQ.[6]	POWER	INTEL® QPI (GT/S)[3]	CACHE	RECOMMENDED INTEL® CHIPSET
EXPANDABLE **Leading performance, reliability, and scalability** **Target usage:** Optimized for large enterprises, data centers, and server consolidation **Recommended configuration:** 4+ processors	Best	Intel® Xeon® processor E7 product family	Up to 8	Up to 10	2.66 GHz	95–130 W	Up to 6.40 GT/s	Up to 30 MB L3	Intel® 7500 Chipset
EFFICIENT PERFORMANCE **Energy efficient, cost effective** **Target usage:** Optimized for general purpose servers (e-mail, Web, file, business applications), IT infrastructure virtualization, and cloud computing **Recommended configuration:** 2 processors	Best	Intel® Xeon® processor E5-2600 product family	2	Up to 8	3.30 GHz	60–150 W	Up to 8 GT/s	Up to 20 MB L3 shared	Intel® C600 Chipset
	Good	Intel® Xeon® processor 5600 series	2	Up to 6	3.46 GHz	40–130 W	Up to 6.40 GT/s	Up to 12 MB L3 shared	Intel® 5520 Chipset
ENTRY **Cost optimized** **Target usage:** Small businesses with fewer than 100 employees, basic needs (e-mail, network, file / print) **Recommended configuration:** 1–2 processors	Best	Intel® Xeon® processor 5600 series	2	Up to 6	3.46 GHz	40–130 W	Up to 5.86 GT/s	Up to 12 MB L3 shared	Intel® 5520 Chipset
	Better	Intel® Xeon® processor E3-1200 product family	1	4	3.50 GHz	20–95 W	N/A	Up to 8 MB Intel® Smart Cache	Intel® C202 or Intel® C204 Chipset
	Good	Intel® Xeon® processor 3400 series	1	4	3.06 GHz	30–95 W	N/A	Up to 8 MB Intel® Smart Cache	Intel® 3400 or Intel® 3420 Chipset

BETTER TOGETHER: RECOMMEND THE BEST INTEL® XEON® PROCESSOR AND INTEL® CHIPSET

SEGMENT	POSITIONING	RECOMMENDED PROCESSOR SERIES[1]	MAX. SOCKETS PER SYSTEM	NO. OF CORES	MAX. FREQ.[6]	POWER	INTEL® QPI (GT/S)[3]	CACHE	RECOMMENDED INTEL® CHIPSET
HPC **Optimized for high-performance analytics** **Target usage:** Bandwidth-intensive applications, high-performance clusters, and complex computation	Best	Intel® Xeon® processor E7 product family	Up to 8	Up to 10	2.66 GHz	95–130 W	Up to 6.40 GT/s	Up to 30 MB L3	Intel® 7500 Chipset
	Better	Intel® Xeon® processor E5-2600 product family	2	Up to 8	3.10 GHz	60–150 W	Up to 8 GT/s	Up to 20 MB L3 shared	Intel® C600 Chipset
	Good	Intel® Xeon® processor 5600 series	2	Up to 6	3.46 GHz	40–130 W	Up to 6.40 GT/s	Up to 12 MB L3 shared	Intel® 5520 Chipset
WORKSTATION **Optimized for complex analysis / visualization** **Target usage:** Graphics rendering, multimedia content development, engineering applications (CAD / CAM), software development	Best	Intel® Xeon® processor E5-2600 product family	2	Up to 8	3.10 GHz	60–150 W	Up to 8 GT/s	Up to 20 MB L3 shared	Intel® C600 Chipset
	Better	Intel® Xeon® processor E5-1600 product family	1	Up to 6	3.30 GHz	130 W	N/A	Up to 15 MB L3 shared	Intel® C600 Chipset
	Good	Intel® Xeon® processor E3-1200 product family with Intel® HD Graphics capabilities (Intel® Xeon® processor E3-1225 / 1235 / 1245 / 1275)	1	4	3.40 GHz	95 W	N/A	Up to 8 MB Intel® Smart Cache	Intel® C206 Chipset

INTEL® SERVER BOARDS

GET POWERFUL. GET FLEXIBLE. GET EFFICIENT.
Designed to optimize the features of the Intel® Xeon® processor E5 product family, Intel is unleashing an entirely new portfolio of boards and systems purpose-built with your needs in mind. Ranging from high-performance to half-width, HPC-focused to specialized workstation, Intel is committed to quality performance and innovative design.

See below for our first release of new Intel® Server and Workstation Boards.

> "THE INTEL® SERVER BOARD S2600JF IS THE BEST HPC SERVER BOARD IN THE INDUSTRY."
>
> JOHN LEE, VICE PRESIDENT, ATS APPRO INTERNATIONAL, INC.

Product Name	Intel® Server Board S2600JF	Intel® Server Board S2600WP	Intel® Server Board S2600GL / GZ
Description	As "the best HPC Server Board in the industry,"[7] the Intel® Server Board S2600JF provides maximum memory bandwidth and integrated QDR / FDR InfiniBand* in a half-width form factor with support for up to 3 PCI Express* 3.0 x16 slots.	The ideal solution for high-performance computing, the Intel® Server Board S2600WP delivers a larger memory footprint and support for up to 4 PCI Express* 3.0 x16 slots in a half-width form factor. Integrated QDR / FDR InfiniBand* is available.	The Intel® Server Board S2600GL / GZ, Intel's technology showcase board, features maximum memory capacity, rack-optimized performance, and extensive I/O flexibility, making it ideal for high-performance and cloud computing.
Target Market	HPC	HPC	Data center / cloud
Form Factor	Custom (6.42" x 17.7")	Custom (6.8" x 18.9")	Custom (16.5" x 16.5")
Memory	8 LR / U / RDIMMs 8 channels	16 LR / U / RDIMMs 8 channels	16 or 24 DIMMs 8 channels
Module Upgrade	I/O,[8] RMM4	I/O,[8] RMM4	I/O, SAS, RMM4
Available Systems and Chassis	Intel® Server Systems H2216JFJR, H2216JFKR, H2216JFQJR, H2216JFQKR, H2216JFFJR, H2216JFFKR, H2312JFJR, H2312JFKR, H2312JFQJR, H2312JFQKR, H2312JFFJR, H2312JFFKR	Intel® Server Systems H2216WPJR, H2216WPKR, H2216WPQJR, H2216WPQKR, H2216WPFJR, H2216WPFKR, H2312WPJR, H2312WPKR, H2312WPQJR, H2312WPQKR, H2312WPFJR, H2312WPFKR	Intel® Server Systems R1304GZ4GC, R1208GZ4GC, R1208GZ4GCSAS, R2208GZ4GC, R2216GZ4GC, R2224GZ4GCSAS, R2308GZ4GC, R2312GZ4GCSAS, R2208GZ4GC10G, R2216GZ4GCLX, R2208GZ4IS, R1208GL4DS, R2312GL4GS, R2208GL4GS, R2308GL4GS, R2216GZ4GCIOC, R2308GZ4GCIOC, R1208GZ4GCIOC

Product Name	Intel® Server Board S2600IP	Intel® Server Board S2600CP	Intel® Server Board S2600CO
Description	With support for up to 8 single-width cards or 4 x16 double-width cards, the Intel® Server Board S2600IP provides enterprise customers with maximum I/O flexibility, storage flexibility, and is available in both rack and pedestal options.	Small to medium-sized businesses can benefit from the Intel® Server Board S2600CP's storage capacity, main-stream performance, and I/O flexibility.	As an ideal server solution for embedded storage systems and small to medium-sized businesses, the Intel® Server Board S2600CO has a standard form factor, rich I/O with flexible configurations, and a minimum 5-year life cycle.
Target Market	Enterprise / storage	Small to medium businesses	Embedded / storage / small to medium businesses
Form Factor	Custom (14.2" x 15")	SSI EEB (12" x 13")	SSI EEB (12" x 13")
Memory	16 DIMMs 8 channels	16 LRDIMMs 8 channels	16 LRDIMMs 8 channels
Module Upgrade	I/O, SAS, RMM4	SAS, RMM4	SAS, RMM4
Available Systems and Chassis	Intel® Server Systems R2224IP4LHPC, R2308IP4LHPC, R2216IP4LHPC, R2208IP4LHPC, P4308IP4LHJC, R2312IP4LHPC, P4216IP4LHJC, P4308IP4LHGC, P4208IP4LHGC, P4308IP4LHJCL[9]	Intel® Server Chassis P4216XXMHJC, P4216XXMHGC, P4208XXMHGC, P4216XXMHGR, P4208XXMHGR, P4208XXMHDR, P4216XXMHEN, P4208XXMHEN, P4308XXMHJC, P4308XXMHGC, P4308XXMHGR, P4308XXMHGN, P4308XXMFGR, P4308XXMFGN, P4308XXMHDR, P4308XXMHDN, P4308XXMFDR, P4308XXMFDN, P4308XXMHEN, P4304XXMHEN, P4308XXMFEN Intel® Server Systems P4308CP4MHEN, P4308CP4MHGC, P4208CP4MHGC	Intel® Server Chassis P4216XXMHJC, P4216XXMHGC, P4208XXMHGC, P4216XXMHGR, P4208XXMHGR, P4208XXMHDR, P4216XXMHEN, P4208XXMHEN, P4308XXMHJC, P4308XXMHGC, P4308XXMHGR, P4308XXMHGN, P4308XXMFGR, P4308XXMFGN, P4308XXMHDR, P4308XXMHDN, P4308XXMFDR, P4308XXMFDN, P4308XXMHEN, P4304XXMHEN, P4308XXMFEN

New Intel® Server Systems based on the Intel® Xeon® processor E5 family-based platforms include pre-installed thermal solutions, air ducts, and firmware that are designed to work together for optimal thermal / acoustic performance.

New Intel® Server Chassis based on the Intel Xeon processor E5 family-based platforms purchased without a pre-installed Intel® Server Board will require the separate purchase of a thermal solution kit and air duct specific to the Intel Server Board selected. See the Accessories and Spares section of the specific Intel Server Board configuration guide for recommended part numbers.
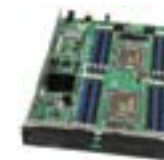
Other boxed Intel® Thermal Solutions are mechanically compatible with the processor socket but are not thermally validated in Intel Server Chassis.

When using a non-Intel 3rd party chassis be sure to follow the vendor's processor thermal solution installation and orientation instructions.

AVAILABLE Q3 2012

Photo not available

AVAILABLE Q3 2012

Product Name	Intel® Workstation Board W2600CR	Intel® Server Board S1600JP	Intel® Compute Module MFS2600KI
Description	The Intel® Workstation Board W2600CR is an expert workstation that supports a maximum TDP processor, 16 DDR3 / DDR3L DIMM slots, dual 1GbE LOM support, and high-end PCI Express* graphics cards.	A performance single-socket, half-width board, rich in I/O (40 Gen3 lanes) for a streamlined 1U rack mount server presentation.	Bringing the power of the new Intel® Xeon® processor E5-2600 to the Intel® Modular Server with Intel® TXT Technology, integrated BMC with remote management option, and support for an eUSB SSD flash device.
Target Market	Data-intensive applications	Embedded / storage / small to medium businesses	Remote branch office
Form Factor	Custom (14.2" x 15")	Custom (6.8" x 13.8")	Custom board and enclosure
Memory	16 LRDIMMs 8 channels	8 DIMMs 4 channels	16 U/R DIMMs 8 channels
Module Upgrade	I/O, SAS, RMM4	I/O, SAS, RMM4	SAS, 10GbE Mezzanine card
Available Systems and Chassis	Intel® Workstation Systems P4304CR2LFJN, P4304CR2LFGN, P4304CR2LFJNL[9]	Intel® Server Systems R1304JPXXX, R1208JPXXX	Intel® Modular Server Chassis MFSYS25V2

For more information, visit www.intel.com/xeon and www.intel.com/go/serverboards

[1] 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_number for details.

[2] Source: Performance comparison using SPECfp*_rate_base2006 benchmark. Baseline score of 267 on prior generation 2S Intel® Xeon® processor X5690 (3.46 GHz, 6-core, 12 MB L3, 6.40 GT/s, 130 W)-based platform is based on best published score to www.spec.org as of 6 September 2011. For more details, see: http://www.spec.org/cpu2006/results/res2011q1/cpu2006-20110131-14172.html. New score of 486 on 2S Intel® Xeon® processor E5-2690 (2.90 GHz, 8-core, 20 MB L3, 8 GT/s, 135 W)-based platform is based on Intel internal measured estimates as of 6 September 2011 using an Intel® Rose City platform with two Intel Xeon processor E5-2690, Intel® Turbo Boost enabled, EIST enabled, Intel® Hyper-Threading enabled, 64 GB memory (8 x 8 GB DDR3 1600), Red Hat* Enterprise Linux* Server 6.1 beta for x86_6, Intel® Compiler 12.1.

[3] Intel® QPI–Intel® QuickPath Interconnect; GT/s–Gigatransfers per second.

[4] Intel® 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 www.intel.com/info/hyperthreading.

[5] Intel® Turbo Boost Technology requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See www.intel.com/technology/turboboost for more information.

[6] Processor frequency as shown represents maximum frequency specification for the respective processor number family.

[7] As said by John Lee, Vice President, ATS Appro International, Inc.

[8] On interposer (need accessory kit AXXRMM4IOM or AXXRMM4IOMW).

[9] SKU does not support I/O Mezzanine.

All products and dates specified are preliminary based on current expectations and are subject to change without notice. Availability in different channels may vary.

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