

CLIENT GRAPHICS

2nd Gen Intel® Core now with Built In Visuals, Available on Select Models of the 2nd Gen Intel® Core™ Processor Family

Built In Visuals— Built for Mainstream Desktop and Mobile PC Users

Built In Visuals provides superb visual performance for sharper images, richer color, and lifelike video and audio. Watch movies and Internet videos in high definition, play popular game titles, and get full support for Microsoft* Windows* 7. There's no need for an extra add-in graphics card—full graphics and media support is already built-in. Intel Built In Visuals is available on the all-new 2nd Gen Intel® Core™ processor family.

	Processor	2010 Intel® Core™ processor family (Core™ i3/i5/i7)	2 nd gen Intel® Core™ processor family (Core™ i3/i5/i7)
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.	No	Yes ¹
Intel InTru™ 3D Technology	Enjoy the ultimate 3D visual experience-seamlessly- from your PC. Now you can watch your favorite 3D Blu-ray movies using active shutter glasses all delivered in full 1080p resolution on your Stereo 3D over HDMI 1.4.	No	Yes ¹
Intel® Clear Video HD Technology	Visual quality and color fidelity enhancements for spectacular 1080p HD playback and immersive web browsing.	Yes	Yes ¹ (New quality enhancements)
Intel® Wireless Display	Intel® Wireless Display let's you enjoy all of your personal and online content on a big screen with a simple wireless connection.	Yes (Limited to 1080i, unprotected content)	Yes ¹ (Full 1080p protected content support)
Intel® Insider™	Streaming or purchase of 1080p HD premium movies on the PC through participating internet movie sites	No	Yes ¹
Intel® HD Graphics	Intel® HD Graphics is built into the processor and delivers immersive mainstream gaming and 3D experiences.	Yes (Intel® HD Graphics)	Yes (Intel HD Graphics 3000/2000) ¹
Intel® Advanced Vector Extensions (Intel® AVX)	Intel® Advanced Vector Extensions (Intel® AVX) gives more computing power to application developers with a new, 256 bit instruction set extensions to Intel SSE.	No	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 right into the 2nd generation Intel® Core™ processors, delivers breakthrough hardware acceleration that lets you complete in minutes what used to take hours. Create 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.

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H.264 Encode	Accelerates encoding of H.264 based content for a significantly faster conversion time while also enabling the processor to complete other tasks, improving overall PC responsiveness.	No (software only)	Yes
MPEG2 Encode	Accelerates encoding of H.MPEG2 based content enabling the processor to complete other tasks and improving overall PC responsiveness.	No (software only)	Yes
H.264 HW Encode MFT	Accelerates H.264 video encoding of Media Foundation based applications	No (software only)	Yes

Intel® Clear Video HD Technology

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

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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 Playback¹	Playback of Blu-ray stereo 3-D content on the PC.	Yes (Passive polarized only)	Yes (with HDMI 1.4)
Intel® Clear Video HD Technology	Delivers enhanced high-definition video playback, sharper images, and precise color control.	Yes	Yes (New quality enhancements)
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.	No	New

Total Color Control	Enables adjustment of saturation levels per base color for brighter, richer colors	No	New
Auto Contrast Enhancement	Fixes under exposed or overexposed areas of your videos	No	New
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.

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FEATURE	BENEFIT		
New Control Panel	New look and feel, easier to use, with custom resolution settings.	Yes	Yes
TV Setup Utility	Provides step-by-step configuration wizard for seamless TV setup and configuration.	Intel® TV Wizard	Intel® TV Wizard
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			
HDMI* with HDCP	Provides a user-friendly, single-cable connector that enables transmission of superior, uncompressed digital video and audio.	Version 1.3a (Deep Color, premium audio, auto lip-sync)	Version 1.4 (3D, Deep Color, premium audio, auto lip-sync)
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 ²	Yes
LVDS	Low-voltage digital display interface.	Yes ³	Yes ²
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

Intel HD Graphics

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 graphics, you get a cost-effective solution with the performance for more gaming fun.

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FEATURE	BENEFIT		
Unified Shader Architecture	Delivering new levels of 3D technologies to enable more realistic game play and provide greater resolution and color-depth settings to the system's video and graphics subsystem.	3 rd Generation	4 th Generation
Execution Units (EUs)		12 EUs	6/12 EUs
Core Frequency		Up to 900 MHz	Up to 1350 MHz
Video Memory		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*.	10	10.1
OpenGL* Support	Standardized programming interface used by 2-D and 3-D graphics applications.	2.1	3.0
Shader Model Support	Enables complex animations and visual effects in games with realistic shading, lighting, and textures.	4.0	4.1

For more information, visit the Intel Web site at:

www.intel.com/technology/visualtechnology/index.htm

www.intel.com/technology/quicksynch/index.thm

<http://www.intel.com/technology/graphics/intelhd.htm>

<http://www.intel.com/technology/graphics/ctv.htm>

1 Feature not available on Intel® Pentium® and Celeron processors.

2 Mobile only, not supported on desktop products

3 Mobile only, not supported on desktop products except for the Intel® A57 Express Chipset

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