CLIENT GRAPHICS

ENHANCED BUILT-IN VISUALS on 3rd GENERATION INTEL® CORE™ PROCESSOR FAMILY[1,2]

Intel® Built-In Visuals—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 3rd generation Intel® Core™ processor family.

	Processor	3rd generation Intel® Core™ processor family	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 2D videos into 3D at blazing speed and enjoy premium HD video conferencing at high quality	Yes (Faster[3], new support for stereoscopic 3D videos and smooth HD video conferencing)	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 like pictures, video, audio and premium online content like 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 full 1080p stereoscopic content)[6]	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. Faster and smoother experience	Yes (Intel® HD Graphics 3000/2000)1

		and more games)	
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 3rd and 2nd 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)	2nd generation Intel® Core™ processor family (Intel® Core™ i7, Intel® Core™ i5, and Intel® Core™ i3)
FEATURE	**BENEFIT**		
AVC/H.264 Encode	Saves valuable time when creating and editing Blu-ray* discs, and other videos in h.264 format.	Yes	Yes
MPEG2 Encode	Saves valuable time when creating and editing DVDs, and other videos in MPEG2 format.	Yes (Partial)	Yes (Partial)
MVC HW Encode	Saves valuable time when creating and editing stereoscopic 3D videos	Yes (partial)	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 3rd and 2nd generation Intel® Core™ processors lets you view images as they were meant to be seen.

	Processor	3rd generation Intel® Core™ processor family	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 (with HDMI* 1.4)
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	New
Total Color Control	Enables adjustment of saturation levels per base color for brighter, richer colors.	Yes	New
Auto Contrast Enhancement	Fixes underexposed or overexposed areas of your videos.	Yes	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.

	Processor	3rd generation Intel® Core™ processor family	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.	Version 1.4	Version 1.4 (3-D, 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	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.

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FEATURE	BENEFIT		
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*.	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/technology/quicksynch/index.thm
www.intel.com/technology/graphics/intelhd.htm
www.intel.com/technology/graphics/ctv.htm

[1] Built-in Visuals available on select SKUs only
[2] 3rd generation Intel® Core™ processor family products will be launched in first and/or second quarter of 2012
[3] Faster on select SKUS
[5] For desktops, only supported with the Intel® A57 Express Chipset
[6] New features available after launch