HDXPRT

High-Definition Experience & Performance Ratings Test

HDXPRT 2011 v1.0
WHITE PAPER

Last Revision: May 26, 2011

TABLE OF CONTENTS

1   HDXPRT 2011 OVERVIEW

HDXPRT, the High Definition Experience & Performance Ratings Test, is a benchmarking software tool for assessing the capabilities of PCs at handling real-world media scenarios using common consumer applications. It has been collaboratively developed by the HDXPRT Development Community, administered by Principled Technologies, Inc. The benchmark presents results in a way that is meaningful to and easily understandable by consumers. HDXPRT 2011 uses mainstream, commonly used applications to test the performance of the system.

2   USAGE CATEGORIES MEASURED

HDXPRT 2011 evaluates PC's capabilities for users creating, enjoying, and sharing digital media content.

The two major use case categories measured by HDXPRT 2011 are the following:

- Digital media creation
- HD video playback

These categories are essentially identical to the Create HD Score and Overall Play HD Experience categories HDXPRT 2010 used.

The digital media creation category includes the following three test scenarios:

- Edit and convert HD videos from your camcorder
- Edit photos and video from your digital camera
- Prepare media for your portable devices

Similarly, the HD video playback category includes these three test scenarios:

- Blu-ray™-quality HD video playback
- Online HD video playback
- Advanced video playback usages

Figure 1 shows the results produced by HDXPRT 2011.

Figure 1. HDXPRT result categories

HDXPRT 2011's video playback scores rate the playback experience delivered by the test system while playing HD Videos in H.264 and Flash formats.

HDXPRT's 'Create HD Score' represents the test PC's performance in digital media creation. The 'Create HD Score' is based on the test system's performance in these three subtests – *Edit and convert videos from your camcorder*, *Edit photos and video from digital camera*, and *Prepare media for your portable devices*.

2.1   HDXPRT 2011 test scenarios

This section describes in more detail the HDXPRT 2011 test scenarios for each of the test categories mentioned above.

2.1.1   Edit and convert HD videos from your camcorder

This HDXPRT 2011 test measures the time it takes to convert HD video footage to create videos for sharing on the Internet and archiving on Blu-ray. At the start of the scenario, the user has camcorder storage filled with HD videos of an event or trip and has copied those files to the PC. The test scenario has the following user workflow:

- Using CyberLink Media*Espresso*, the user encodes some of the videos to archive on Blu-ray drive in the original resolution and some of the videos to enjoy on his HD devices such as tablets and HDTV.
- With Adobe® Premiere® Elements, the user creates a short highlights video that can be easily shared with friends and transferred to mobile devices.
- The user launches the CyberLink Media*Espresso* application to transcode that video to different destination formats: YouTube (DivX® is a popular upload and one of the preferred formats), smart phones, and portable game devices such as like PlayStation® Portable (PSP®). Some of these transcodes may also be done concurrently.

2.1.2   Edit photos and video from your digital camera

This HDXPRT 2011 test measures the time it takes to process vacation photos and videos from a 15.1 mega-pixel digital camera with 8GB storage capacity. In this scenario, a family takes their 15.1MP Canon Rebel T1i camera and their Samsung MemoryCAM on a trip. They fill the devices with photos and videos. The scenario implements a workflow with common photo editing usage models as follows:

- Convert a batch of photos from raw to JPEG with appropriate conversion settings.
- Convert the remaining batch of raw photos while processing a video from the MemoryCAM to enjoy on a portable media player.
- Stitch photos together to recreate panoramic vistas from the trip.
- Convert additional videos while creating additional panoramic photos.
- Create multiple slideshows with photos from different groups/days to share with friends. Also, create photo books with the best pictures from the trip.
- Create some HDR photos with photos that were captured at different exposures.
- Create HDR photos while concurrently processing additional video clips in the background.
- Finish by processing the remaining video clips.

2.1.3   Prepare media for your portable devices

This HDXPRT 2011 test measures the time it takes to prepare music and videos for your portable media player. This scenario implements the following user workflow:

- Encode music to MP3 and some favorite music albums to AAC format.
- Encode additional music albums while processing vacation videos to view on your devices.

2.1.4   HD video playback

This HDXPRT 2011 test measures the HD playback experiences the test system delivers. It includes three playback test cases using Windows Media® Player and Adobe Flash® Player.

2.2   HDXPRT 2011 scoring metrics

Figure 2. HDXPRT scores

As a consumer benchmark, HDXPRT's goal is to provide a simple and easy-to-understand measure of the system's performance. We believe that scores should reflect natural user metrics for the media usages. Metrics for the media creation use cases in HDXPRT will be the amount of time the test system needed to complete the entire workload scenario.

2.2.1   Digital Media Creation Scores

The HDXPRT 2011 'Create HD Score' represents the system's overall media creation performance. It provides a quick relative comparison of multiple systems. It draws on the scores of three media creation test categories, and is calculated by taking a geometric mean of ratios between test system scores and scores of a calibration system in the three create use cases. We give the configuration of the HDXPRT 2011 calibration system further below.

2.2.2 Video Playback Scores

Video playback use cases are qualitative in nature and are evaluated using experience metrics. HDXPRT 2011 measures the level of experience delivered to the user in the HD video playback tests, using cutting-edge video analysis techniques based on perceptual models to predict the HD video playback experience as well for evaluating video playback. These techniques are based on industry-standard video quality assessment methodologies such as mean opinion scores (MOS) that incorporate opinions of real people.

The HDXPRT 2011 'Overall Play HD Experience Score' uses a star rating scale to represent the MOS and the quality of experience. The score, shown in number of stars, is an average of the experiences the test system delivers in the three HD playback test cases. The five-star rating system indicates the quality of experience the test PC delivers: excellent (five stars), good (four stars), fair (three stars), poor (two stars), or very poor (one star). This score measures only the playback smoothness of high-definition progressive videos. HDXPRT 2011 does not evaluate the frame quality or video post-processing capabilities of the test PC. It also does not measure audio when playing most film (progressive) content on PCs as the frame quality is typically not affected.

2.2.3 Calibration machine configuration

The following is the detailed configuration of the calibration machine for HDXPRT 2011.

Component	Specification
CPU	Intel® Pentium® Processor E6800 (2M Cache, 3.33 GHz, 1066 FSB)
Operating system	Windows® 7 Ultimate Service Pack 1 (64-bit)
Motherboard	
Manufacturer	Intel
Model	DG45ID
BIOS version	IDG4510H.86A.0135.2011.0225.1100
Memory	
Manufacturer	Corsair
Channels	Dual
Type	DDR2
Size	2 x 2 GB
Speed	800 MHz
Latency	5-5-5-18
Graphics	
Manufacturer	Intel
Model	Intel G45
Driver	8.15.10.2281
Hard drive	
Manufacturer	Seagate
Model	ST3320620AS
Size	320 GB

Component	Specification
RPM	7200 RPM
Cache	8 MB
Power supply	
Manufacturer	Antec®
Model	TruePower 650
Power	650 W
Other system settings	
Display resolution	1,920 x 1,080, 60 Hz
System restore	Off
Windows Update	Off
Screen saver	Off
Power Management	Off

Figure 3. HDXPRT 2011 calibration machine configuration.

3   APPLICATIONS USED IN HDXPRT 2011

HDXPRT 2011 bases workloads on usages performed with common consumer applications. The applications below are required to run an HDXPRT 2011 test.

Application	Comments
Adobe Flash Player 10.2	Cross-platform browser-based application for content viewing
Apple® iTunes® 10.1	Industry-standard for digital jukebox software
Adobe Photoshop® Elements 9	Leading consumer photo-editing software
Adobe Premiere Elements 9	Leading consumer video-editing software
CyberLink Media*Espresso* 6.5	Media*Espresso* supports a wider range of media formats including smart phones and media players.
DivX Plus for Windows	Popular software for creating a common video format
HDRsoft Photomatix Pro 4.0	High-quality two-stage high dynamic range imaging (HDR) processing software
Unified Color™ HDR Expose™ 1.1.0	Photostudio, used in HDXPRT 2010, will be discontinued and replaced with Expose.
Windows 7 Drag and Drop transcode	Standard Windows 7 feature
Windows Media Player 12	Industry-standard audio and video player for Windows platforms

Figure 4. Application components in HDXPRT 2011.

Please refer to the HDXPRT 2011 User Manual for further details.

4   MINIMUM SYSTEM REQUIREMENTS

- Intel dual-core 2.0GHz processor or equivalent
- 2 GB dual-channel DDR2 SDRAM at 533MHz
- 40 GB of free disk space
- Video display settings 1,024 x 768, 24-bit color
- DVD ROM to install HDXPRT
- Microsoft® Windows® 7 32-bit or 64-bit editions (Language: US English)

5   CONTACT INFORMATION

If you would like additional information or would like to provide us with feedback, please write to us to the following email address: HDXPRTsupport@hdxprt.com.

For up-to-date information on HDXPRT, patches, and workarounds, please refer to the following URL: www.hdxprt.com.