



Success Brief  
Intel® Parallel Studio XE  
Digital Photography



“The new interface is a joy to use. Intel® VTune™ Amplifier XE gives us precise, down-to-the-metal performance data that’s invaluable for pinpointing hotspots and evaluating the effect of optimizations.”

Daniel Schwarz  
Performance Engineer  
Nik Software

## Nik Software Increases Rendering Speed of HDR by 1.3x

By optimizing its software for Advanced Vector Extensions (AVX), Nik Software used Intel® Parallel Studio XE to identify hotspots 10x faster, and enable end users to render high dynamic range (HDR) imagery 1.3x faster.

Company	Nik Software is a recognized leader in digital photographic software and produces award-winning technology and software products for digital photography professionals.
Mission	The Nik Software development team wanted to provide results of the highest possible quality while still focusing on reducing the amount of time users would wait for HDR image processing.
Product	HDR Efex Pro* allows professional and advanced amateur photographers to create high-quality HDR images, ranging from the realistic to the artistic.
Challenge	HDR imaging represents a unique challenge in post-capture image processing, as it utilizes multiple images to create the end results. Users are more accustomed to working with single files, so the increased processing time needed for multiple files can be a barrier for some photographers.
Results	<ul style="list-style-type: none"> <li>• Nik Software improved HDR Efex Pro rendering performance by 1.3x.</li> <li>• Hotspots were identified 10x faster during development using Intel® VTune™ Amplifier XE.</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• HDR Efex Pro users can now render faster, meeting customer performance expectations.</li> <li>• Nik Software developer productivity increased due to improved hotspot identification.</li> </ul>

### How Nik Software used parallelism to improve software performance

Nik Software products offer easy-to-use solutions for photographers of all skill levels and address a wide range of issues including noise reduction, precise selective editing, HDR imaging, black and white conversions, color correction, and image sharpening.

One of the company’s products, HDR Efex Pro empowers professional and advanced amateur photographers to create high-quality HDR images ranging from the realistic to the artistic. HDR Efex Pro has a complete, all-in-one workflow that both simplifies and redefines HDR with precise, selective fine-tuning using U Point\* technology, advanced alignment and ghost reduction, and new, best-in-class tone-mapping adjustments.

Previous to the release of HDR Efex Pro, users had limited options for creating HDR images, ranging from tools that were difficult to learn and use, to tools that had a limited range of possibilities. HDR Efex Pro was designed to provide a different approach to HDR processing, focusing on an easy-to-learn and easy-to-use interface, precise and powerful selections done on 32-bit per channel images, and new and proprietary tone-mapping algorithms.



For more complete information about compiler optimizations, see our [optimization notice](#).

Intel® Parallel Studio XE is a comprehensive tool suite that provides C/C++ developers with an innovative threading assistant, compiler and libraries, memory threading error checker, and threading performance profiler.

Boasting an array of innovative features and capabilities, Intel Parallel Studio equips developers to enhance productivity and enable reliable applications that leverage legacy serial code, take advantage of multicore, and scale for manycore.

From one-person startups to enterprises with thousands of developers working on a single application, Intel Parallel Studio XE makes it simple for developers to achieve a quick start, a fast finish, and the best results for code quality, reliability, and performance for serial and parallel applications.

Intel Parallel Studio XE provides powerful tools that can be used independently or together to meet the needs of workflows and development teams, advancing all phases of the development lifecycle:

### Design—Innovative Threading Assistant

#### Intel® Parallel Advisor

Simplify threading and transform code by identifying those areas in C/C++ applications that can benefit most from threading.

### Build and Debug—Compiler and Libraries

#### Intel® Composer XE and Intel C++ Composer XE

Develop effective applications with easier and faster multithreading of serial and parallel applications, and parallel models that meet your needs.

### Tune—Threading and Performance Profiler

#### Intel® VTune™ Amplifier XE

Speed and simplify finding multicore [performance bottlenecks](#), and remove the guesswork for faster, improved decision making.

### Verify—Memory and Threading Error Checker

#### Intel® Inspector XE

Ensure application reliability—regardless of your parallelism programming model—with root-cause analysis of crash-causing bugs.

To enjoy a free 30-day evaluation of Intel® Parallel Studio XE, download it here: [www.intel.com/software/products/eval](http://www.intel.com/software/products/eval).

## How Intel® Software Development Products enabled the solution

Using Intel® Composer XE, Nik Software had access to AVX support before the corresponding hardware was available on the market. This meant that early in their development process they could efficiently prototype and develop implementations with intrinsics. The software, optimized for Windows\* and Mac\*, and Intel or AMD\* processors that support AVX, was developed in C/C++.



HDR Efex Pro\* interface

In particular, the code compatibility with MSVC++ and GCC 4 was a significant help, as almost no code had to be changed to be compiled by Intel® Compiler products. “We were involved in Parallel Studio XE from the beta on. With hands-on training and direct support from Intel engineers, we quickly learned to use the tools to their optimum potential,” said Daniel Schwarz, performance engineer, Nik Software.

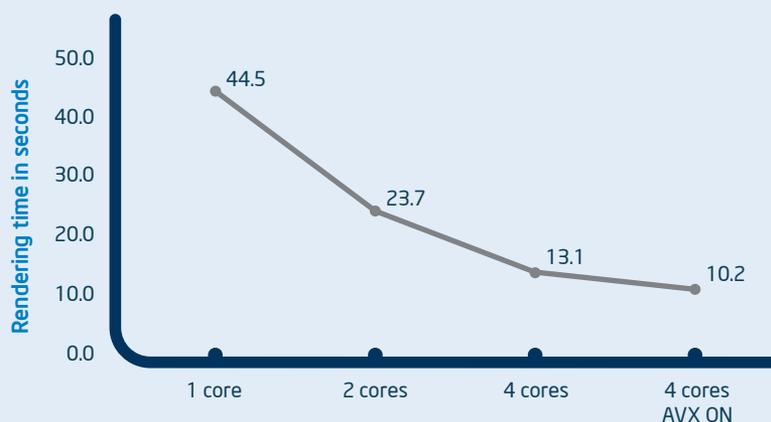
Schwarz said his company also found Intel Parallel Studio XE extremely helpful in identifying hotspots in the code. “The new interface is a joy to use,” he said. “Intel VTune Amplifier XE gives us precise, down-to-the-metal performance data that’s invaluable for pinpointing hotspots and evaluating the effect of optimizations.”

This resulted in significantly improved development time, as well as significantly improved end-user performance, so that digital photographers can get the quality and the performance they expect when rendering HDR imagery.

## Benefits

- 1.3x faster rendering of HDR Efex Pro by using AVX
- 10x faster hotspot identification
- Improved developer productivity
- Improved customer satisfaction

Rendering a 24 MP Image in HDR Efex Pro\* 1.2



## Optimization Notice

Intel's compilers may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include SSE2, SSE3, and SSSE3 instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimization on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors. Certain optimizations not specific to Intel microarchitecture are reserved for Intel microprocessors. Please refer to the applicable product User and Reference Guides for more information regarding the specific instruction sets covered by this notice.

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