PGI High Performance Computing Compilers Coming To IBM POWER Systems

Optimizing Compilers Enable Developers to Easily Develop and Migrate Linux x86 Applications to GPU-Accelerated POWER Systems

SANTA CLARA, CA - NVIDIA (NASDAQ: NVDA) today announced that it is developing an enhanced version of the widely used PGI® optimizing compilers which will allow developers to quickly develop new applications or run Linux x86-based GPU-accelerated applications on IBM POWER CPU systems with minimal effort.

The PGI optimizing Fortran, C and C++ compilers for POWER will provide a user interface, language features, parallel programming features and optimization capabilities that are identical to those available on PGI Linux x86 compilers.

The new compilers also will support high performance computing (HPC) systems based on the IBM POWER architecture, including the recently announced NVIDIA GPU-accelerated IBM POWER8 systems, and additional systems under development by members of the OpenPOWER Foundation.

"Our goal is to let HPC developers recompile and run their applications on all major CPU and GPU-accelerated platforms with uniformly high performance using a common source code base," said Douglas Miles, director of PGI Compilers & Tools at NVIDIA. "We expect most GPU-accelerated x86 applications currently built with PGI compilers will port to GPU-accelerated POWER systems with a simple re-compile."

The POWER8 CPU is a massively multi-threaded processor, featuring 12 cores each capable of handling eight hardware threads simultaneously. Originally positioned for big data and cloud server applications, the POWER8 architecture is generating strong demand from HPC customers given its many performance-oriented features, such as a high-bandwidth CAPI port (Coherent Accelerator Processor Interface) and future support for the NVLink™ high-speed GPU interconnect.

"Porting and optimizing production HPC applications from one platform to another can be one of the most significant costs in the adoption of breakthrough hardware technologies," said Buddy Bland, project director of the Oak Ridge Leadership Computing Facility at Oak Ridge National Laboratory. "The PGI compiler has been our primary compiler on Jaguar and Titan since 2005. Having the PGI compiler suite available in the POWER environment will provide continuity and facilitate code portability of existing CPU-only and GPU-enabled Titan applications to our next major system."

"IBM's Linux and x86 HPC customers have long had the luxury of leveraging the best capabilities and features from multiple HPC compiler solutions," said Dave Turek, vice president, Technical Computing, OpenPOWER at IBM. "With the availability of PGI compilers alongside the widely used IBM XL optimizing compilers for POWER8, our customers will now have this same flexibility and advantage on current and next-generation IBM POWER System platforms as well."

Key features of the PGI compilers and tools for IBM POWER-based systems will include:

- OpenACC® directives for accelerators - Comprehensive support for OpenACC features in the PGI Accelerator native Fortran 2003, C11 and C++11 compilers on the latest generation of GPU accelerators from NVIDIA®, including support for unified memory.
- PGI CUDA Fortran extensions - Feature parity with CUDA® Fortran on Linux/x86 platforms, offering the flexibility and power of the NVIDIA CUDA programming model in a native Fortran compiler for GPU-accelerated POWER systems.
- Faster OpenMP performance - PGI compilers deliver an average of 75 percent faster performance on the latest SPEC OMP2012 benchmark suite, compared to GCC 4.8 using the latest AVX-enabled multi-core x64 processors from Intel and AMD.
- PGI optimization features - Fortran 2003, C11 and C++11 compilers with the full range of PGI multi-core optimizations including comprehensive loop optimizations, memory hierarchy optimizations, SIMD vectorization, function inlining, inter-procedural analysis and optimization, profile feedback and more.

For a complete list of the features and capabilities of PGI compilers and tools, visit www.pgroup.com/support/new_rel.htm.

Availability and Free Trial
NVIDIA will announce the availability of POWER support in the PGI compilers at a future date. PGI 2014 with x86 support is available today directly from NVIDIA and authorized resellers. New users can register for a free 30-day trial of PGI 2014 at www.pgroup.com.

About PGI Software
An NVIDIA Corporation brand, PGI software includes high-performance parallel Fortran, C and C++ compilers and tools for workstations, servers and clusters based on x64 processors from Intel and AMD, and HPC accelerators from NVIDIA and AMD. More information is available at www.pgroup.com, sales@pgroup.com or by calling (503) 682-2806.

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