

Build Your Own Accelerated Applications on Alveo Data Center Accelerator Cards

INTRODUCTION

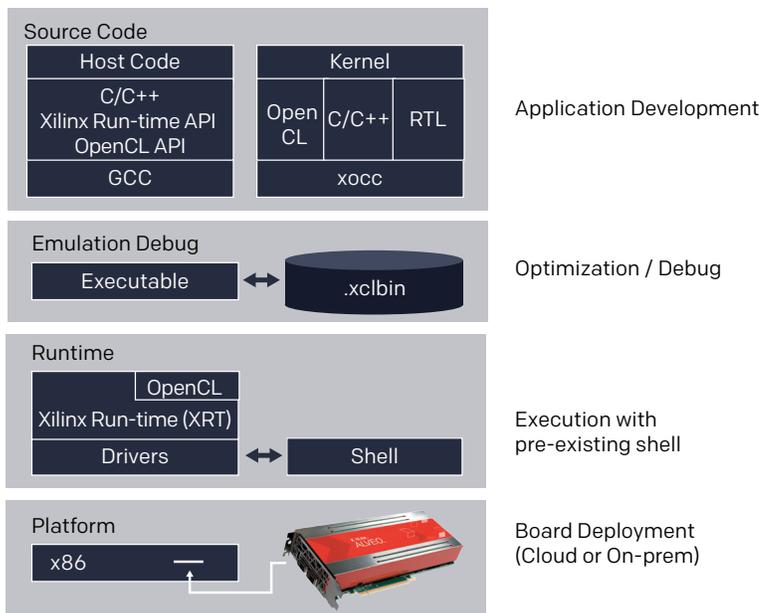
Modern applications must be able to handle rapidly increasing processing requirements for cloud deployment. The challenge to develop and deploy robust Data Center applications cannot solely be supported through classic compute infrastructure. Modern Data Centers are solving the compute deficiency by deploying host-connected hardware accelerators compatible with high-level software frameworks. Xilinx® Alveo™ Data Center accelerator cards offer compelling compute acceleration performance and flexibility for application developers utilizing the SDAccel™ Integrated Development Environment (IDE).

PRODUCT OVERVIEW

The SDAccel tool is the preferred integrated development environment for applications targeted to run on Xilinx Alveo Data Center accelerator cards. The SDAccel IDE provides all the features of a standard software development environment: Optimized compiler for host applications, cross-compiler for the adaptable hardware, a robust debugging environment, and profilers to identify performance bottlenecks and optimize the application.

SOLUTION OVERVIEW

The SDAccel flow follows a standard compilation and linking process for both the software elements and the hardware elements of the project. The host application is built using the standard GCC compiler, and the binary is built using the Xilinx XOCC compiler.



SOLUTION BRIEF



DEVELOPING WITH SDACCEL TOOL

- > Complete IDE for developing, profiling, and debugging accelerated applications
- > Supports RTL, C/C++, and OpenCL languages for accelerator function development
- > Fastest path to high-performance applications on Alveo accelerator cards

HIGHEST REAL-TIME INFERENCE

The host application is developed in C/C++ and uses standard OpenCL API calls to interact with the Alveo accelerator card and the accelerated functions. Xilinx run-time (XRT) API calls can also control low-level hardware functions.

Alveo accelerated card functions, also known as kernels, can be modeled in either RTL, C/C++, or OpenCL. This provides familiar entry points for hardware designers and software engineers alike. The XOCC compiler allows linking multiple kernels together, regardless of source language, to build high-performance applications.

The SDAccel tool generates reports and profiling data during both compilation and execution. Dedicated visualization tools, including the Application Timeline and the Guidance Report, provide valuable insights on performance bottlenecks and actionable feedback on optimization.

The SDAccel tool supports software-like debugging for both the host application and the kernel code. This flow allows the use of breakpoints and the inspection of variables as commonly done during software debugging. Developers can also use the ChipScope hardware debug flow to trace activity.

CONCLUSION

The SDAccel tool is the preferred integrated development environment to develop, profile, optimize, and debug accelerated applications on Alveo accelerator cards.

TAKE THE NEXT STEP

Visit www.xilinx.com/sdaccel to download and learn more about the SDAccel development environment.

Explore Alveo Accelerator Cards at www.xilinx.com/alveo for on-premise Data Center deployment.

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