EDUCATION SERVICES
Xilinx Global Services

Designing for Performance

Learn How to Create Excellent Designs

Designing with FPGAs is both much easier and far more difficult than ever before – it's easier because today's tools are faster, more capable, and more comprehensive; it's more difficult because the devices themselves are larger and more complicated, with many advanced features. How do you keep up to date on the latest design techniques and make your designs as fast and as efficient as possible? How do you increase your productivity and use the development tools to their best advantage?

Designing for Performance is one in a series of classes that make it easy for you to create fast, efficient designs, with the least effort. There is no faster or easier way for you to become an expert in FPGA design, and create designs that achieve maximum performance.

Become an Expert in FPGA Design

Attending the *Designing for Performance* class will help you create more efficient designs. You may be able to fit your design in a smaller FPGA, or lower speed grade, hence reduce your system cost. In addition, you'll be able to create your design faster. By mastering the tools and the design methodologies you will shorten your development time, hence lower development costs.

After completing this training, you will know how to:

- Write HDL code to efficiently target Virtex™-II resources.
- Create customized cores using the CORE Generator™ software.
- Estimate power consumption using the XPower utility editor.
- Analyze design performance using timing reports to achieve timing closure.
- Make path-specific timing constraints using the Xilinx Constraints Editor.
- Improve design performance and manage software runtime by using timing-driven Map, PAR Extra Effort, and MPPR/re-entrant routing techniques.
- Improve your design performance through pipelining.
- Build synchronization circuits to pass signals between clock domains.

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Course Level

Intermediate

Course Duration – 2 days

Audience: FPGA designers with a basic knowledge of HDL and some experience with the Xilinx ISE software tools.

Price – $1000 USD or 10 Xilinx Training Credits

Prerequisites

- Basic HDL knowledge (VHDL or Verilog).
- Our Fundamentals course or equivalent knowledge of Virtex -II architecture.
- Some experience with the software tool flow, and global timing constraints.

Xilinx Software Tools:

Xilinx ISE 5.1i, Synplify Pro 7.1, Leonardo Spectrum 2002b

Course Outline

In this 2-day course, you will gain valuable hands-on experience while learning effective techniques for improving your design's performance.

Course – Day 1

- Introduction and Review of Fundamentals
- Advanced Virtex-II Architecture
- FPGA Design Techniques
- HDL Coding Style
- **Lab 1** – Coding Style
- Synthesis Techniques
- **Lab 2** – Synthesis Techniques
- CORE Generator System
- **Lab 3** – CORE Generator System

Course – Day 2

- XPower
- **Lab 4** – Review of Global Timing Constraints
- Achieving Timing Closure
- Timing Groups and OFFSET Constraints
- Path-Specific Timing Constraints
- **Lab 5** –Achieving Timing Closure
- Advanced Implementation Options

Lab Descriptions

- **Coding Style –** Review your code and analyze its behavior. Develop better code for improving performance and increasing reliability.
- **Synthesis Techniques –** Experiment with different synthesis options and view the results. Six versions of this lab are available: VHDL language, Verilog language, Synplicity Synplify Pro, Mentor Leonardo Spectrum, or Xilinx XST synthesis tools.
- **CORE Generator System –** Create a core, instantiate the core into VHDL or Verilog source code, and run behavioral simulation.
- **Review of Global Timing Constraints –** Use the Constraints Editor to enter global timing constraints.
- **Achieving Timing Closure –** Review timing reports and enter path-specific timing constraints to meet performance goals.

Get the Advantage Today

Xilinx delivers public and private courses in locations throughout the world. Please contact us for more information. You must have your tuition payment information available when you enroll. We accept credit cards (Visa, Master Card, or American Express) as well as purchase orders and training credits.

In North America

Contact the registrar at 877-XLX-CLAS (877-959-2527), or visit our website at http://support.xilinx.com/support/training/training.htm

In Europe

See the European training schedule at: http://support.xilinx.com/support/training/europe-home-page.htm, email: eurotraining@xilinx.com, or call: +44-870-7350-548

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