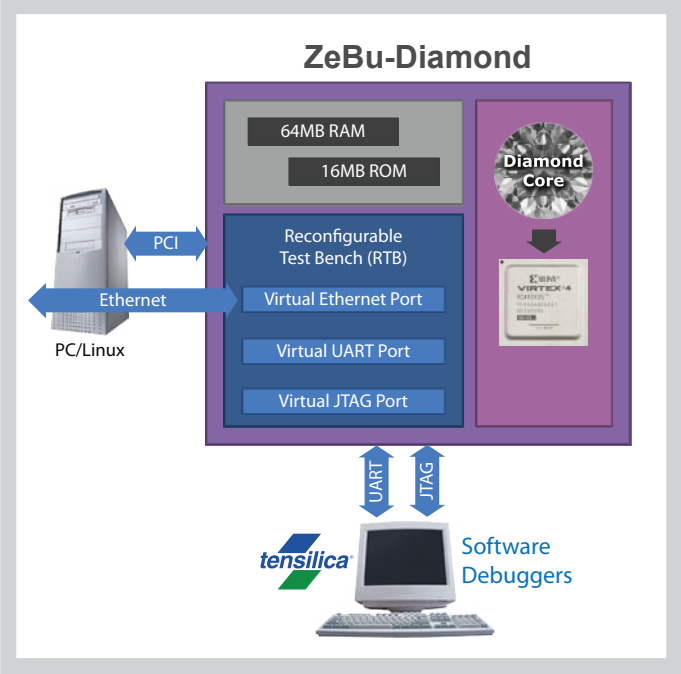
ZeBu
Diamond Emulation Kit

tensilica DIAMOND STANDARD PROCESSORS

Overview

The ZeBu-Diamond Emulation Kit is a comprehensive development platform for emulating Tensilica Diamond Standard cores and initiate software development and debug early in the SOC design cycle.

The Tensilica's Diamond Cores encompass a family of optimized controllers, CPUs and DSPs based on a common Xtensa Instruction Set Architecture (ISA), a 5-stage pipeline, high performance, low power 32-bit architecture.



ZeBu-Diamond uses the latest and fastest Xilinx Virtex-4 FPGA. Unlike traditional FPGA prototypes that operate as stand-alone boards, the ZeBu-Diamond platform is fully controllable from a PC offering flexibility and ease of use. You can download programs and data into the on-board memory, as well as read the memory contents into the PC during execution.

The ZeBu-Diamond Kit comes pre-loaded with your choice of pre-compiled and pre-verified Diamond cores.

Faster than ISS

ZeBu-Diamond executes at one or more orders of magnitude faster than an ISS, clicking at several tens of MHz.

SW Application Save & Restore

Once a software application has been loaded into memory through your software debugger via JTAG, it can be saved from memory to disk and restored from disk to memory in very few seconds, saving significant time compared to a JTAG loading.

The program and data memory can also be saved to disk to analyze the results of a program.

Synchronized Hardware and Software Debuggers

The Tensilica software debugger connects to the Diamond code via a virtual (cableless) JTAG connection, so you can single-step the processor clock without losing control of the software debugger. Of course you can always single-step your program from the software debugger.

More Productive than FPGA Prototype Boards

Unlike standard FPGA prototype boards, ZeBu-Diamond loads a design bitstream into its FPGA's in a few seconds instead of minutes, so software developers can quickly switch between design revisions without any down time. Furthermore, ZeBu loads designs through direct memory access, further accelerating the overall verification flow compared to other platforms.

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Supported Operating Systems

ROM images for MontaVista Linux and Accelerated Technology Nucleus RTOS are available for ZeBu-Diamond.

Pioneering Technology

ZeBu-Diamond leverages 10 years of state-of-the-art emulation and prototyping technology devised by EVE for the ZeBu hardware-assisted verification platforms.

The ZeBu family combines the fast setup-time and interactive hardware debugging of the best-in-class emulation systems with the speed of execution and low cost of the custom-made prototyping boards.

Expansion

The standard ZeBu-Diamond Emulation Kit is designed to emulate and prototype single Diamond cores. It can be extended to emulate SOCs with multiple cores (MP) or cores with additional RTL logic with complexity of up to 50M ASIC gates.

Remote Connectivity

ZeBu-Diamond includes two separate Ethernet ports. One connects to your LAN and is used to control ZeBu Diamond remotely. You can use telnet to remotely interact with text-based applications. The standard Tensilica software debugger (Xplorer) also connects directly over your LAN without using any JTAG cable. The second physical Ethernet connection interacts with network applications running on the Diamond core.

Supported Cores

ZeBu-Diamond supports all Diamond cores. The pre-compiled and pre-verified bitstreams for each Diamond core are available from EVE.

Features	Metrics
Supported Diamond Core	108 Mini 212GP 232L 570T 330HiFi 545CK
RAM	64MB
ROM	16MB
Emulation Speed	30MHz-60MHz
Virtual Ports	Ethernet UART JTAG
Operating System Support	Nucleus-Plus MontaVista Linux
Debugger Support	Xtensa Xplorer GNU debugger

ZeBu-Diamond Kit Contents

- **ZeBu-Diamond Hardware Emulation Platform**
  - Virtex 4 LX100 FPGA board
  - 3.0GHz host Pentium class PC w/ 1GB SRAM
  - One ethernet port for remote control
  - One ethernet port for applications running on the Diamond core
- **Pre-installed Software**
  - Device driver for JTAG connection to Tensilica Xplorer debugger
  - Device driver for UART connection (telnet application)
  - Device driver for Ethernet connection
  - Run-time GUI to choose processor configuration and save & restore memory
- **User Guide**

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