Lancero: Logic & Linux over PCIe

speed up your Linux CPU – Altera FPGA – PCI Express design

Are you considering PCI Express for your next design?

Speed up your design using Lancero:

- as a hardware designer you use the standardized Avalon memory-mapped bus interface.
- software designers simply use open(), read() and write() functions for Linux.

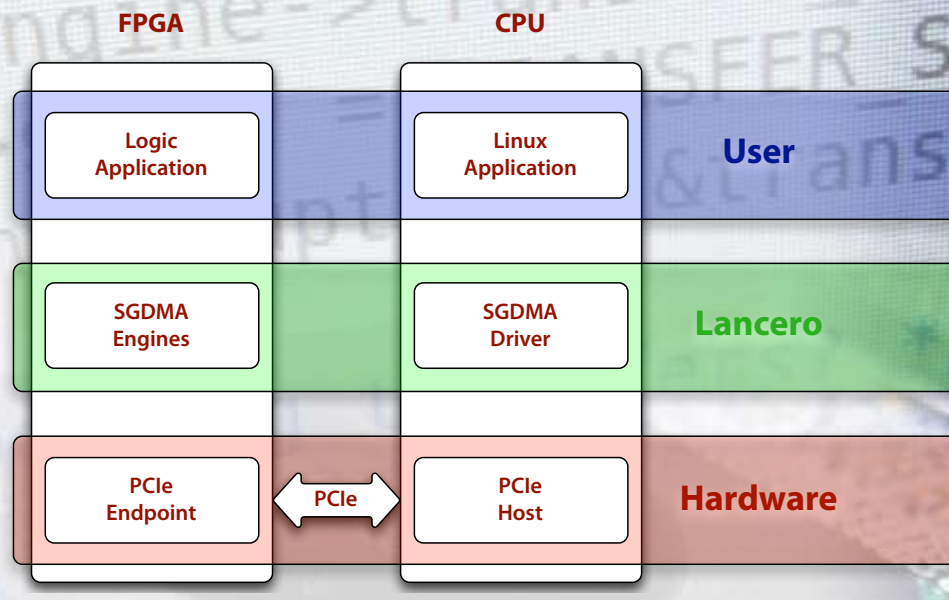
Lancero provides a control bus and data bus with scatter-gather direct memory access engines for high performance data transfers between the FPGA logic and your Linux application.

Features

- High bandwidth, 770 Megabytes/s for PCIe x4 designs and 220 MB/s for PCIe x1.
- Interfaces with your logic using Avalon local bus with burst support.
- Zero-copy SGDMA to and from Linux application buffers, simply allocated with malloc().
- Low latency I/O completion, ideal for hard real-time Linux (linux-rt).
- Multithreaded and asynchronous back-to-back I/O for high-performance applications.

Deliverables

- SystemVerilog RTL sources
- Simulation Models
- Linux driver C sources
- Example application
- Documentation
- Technical support



Supported Devices

- Altera Cyclone IV GX
- Altera Stratix IV GT & GX
- Altera Arria II GX
- Altera Hardcopy IV GX
- PowerPC, ARM, x86

Target Applications

- Medical imaging and print imaging
- High bandwidth data acquisition and logging
- NAS storage systems, solid state and memory storage systems
- Video surveillance, video capture, graphics framebuffer overlays, digital signage

For further details and questions please contact us.

Logic & More B.V.
http://www.logicandmore.com
email: info@logicandmore.com

Logic & More

Sidebranch
http://www.sidebranch.com
email: info@sidebranch.com

Sidebranch

Configurations

Four independent configurations are available:

- Lancero Bridge is a PCI Express bridge for 32-bit access and IRQ, without SGDMA for limited resource systems.
- Lancero Scatter Gather adds high performance SGDMA engines on 64-bit buses besides a 32-bit control bus.
- Lancero Expert additionally allows fine-tuned configuration of Lancero modules in SOPC.
- Lancero HardCopy comes with full RTL source code and offers full design flexibility.

Deliverables

Configuration	Bridge	IRQ	SGDMA Engines	RTL Source	Driver Source	SOPC	Price
Lancero Bridge	yes	yes	no	synthesizable	no (option*)	simple	please contact us for prices
Lancero Scatter Gather	yes	yes	read and write	synthesizable	no (option*)	simple	
Lancero Expert	yes	yes	multiple	synthesizable	yes	modular	
Lancero Hard Copy	yes	yes	yes	yes	yes	modular	
* Linux Driver Source					yes		
Maintenance							

Resources

License	Bridge	IRQ	SG DMA Engines	ALM	M9K Memory Blocks
Lancero Bridge	yes	yes	none	300	2
Lancero Scatter Gather	yes	yes	read and write	2300	20
Lancero Scatter Gather (read only)	yes	yes	read	1600	13
Lancero Scatter Gather (write only)	yes	yes	write	1200	9

Example Application

The block diagram shows an example application using the Lancero. A video frame buffer is allocated in the processor's external memory by the Lancero driver. Video data is copied from the hard disk to the video buffer. The Lancero SGDMA reads the video data line per line from the video buffer and stores it in the local line buffer. The line buffer is displayed on the monitor.