



PICO

tiny mighty machines



Pico Computing Products

- Small Form Factor FPGA Boards
 - CompactFlash, CardBus and ExpressCard/34
- PCIe FPGA Products
- Xilinx Virtex-4, Virtex-5, and Spartan FPGAs
- Scalable: Up to 77 FPGAs in one 4U SuperCluster.



HPC in a Laptop



E-12 CompactFlash FPGA Card

- Virtex-4 LX25 or FX12
- 128MB SDRAM
- 64MB FLASH
- PCMCIA Interface
- Reconfigurable Bus
- RS-232
- Tri-Mode Ethernet (FX12)
- Embedded Linux (FX12)
- GHS Integrity (FX12)



E-14 CardBus FPGA Card

- Virtex-4 FX20/FX40/FX60
- 256MB DDR2
- 64MB Flash
- CardBus Interface
- Reconfigurable Bus
- 16 GPIO
- Tri-Mode Ethernet
- RS-232
- Embedded Linux
- GHS Integrity



E-15 CardBus FPGA Card

- Virtex-4 FX20/FX40/FX60
- 256MB DDR2, 64MB Flash
- CardBus Interface
- Reconfigurable Bus
- Dual A/D 12bit @ 125MSPS
- Dual D/A 14bit @ 210MSPS
- Tri-Mode Ethernet, RS-232
- Embedded Linux
- GHS Integrity
- MATLAB Support



E-16 ExpressCard/34 FPGA Card

- ExpressCard/34
- Virtex-5 LX50
- 32MB PS RAM
- X1 PCIe Interface
- 18 Single Ended or 9 LVDS Lines
- Matlab/Simulink

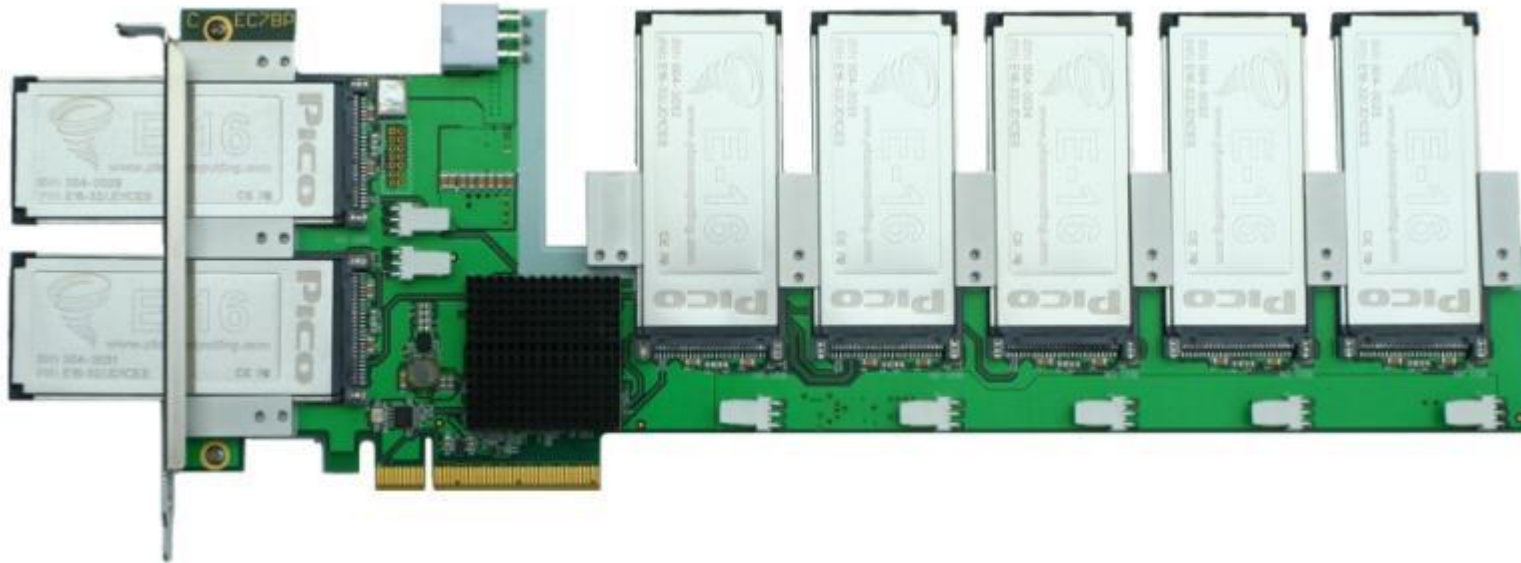


PCIe Products

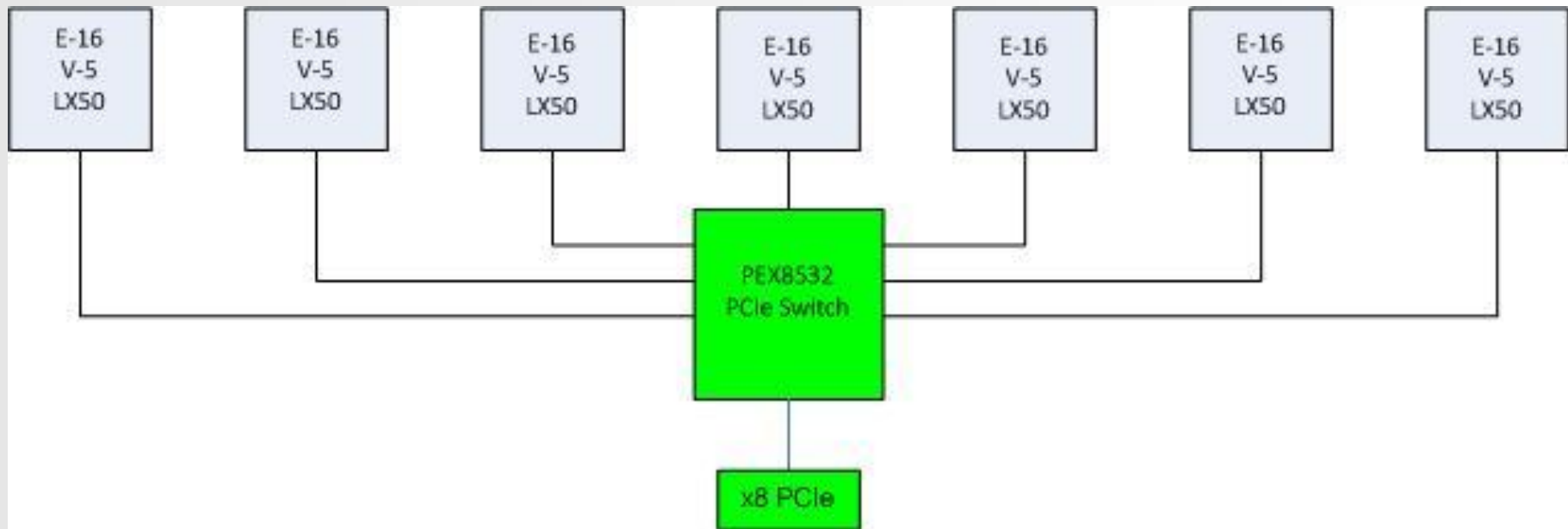


EX-160

- Up to 7 E-16 Cards
- Fits a x8 or x16 PCIe Slot
- Full x1 PCIe Lane to each E-16 Card

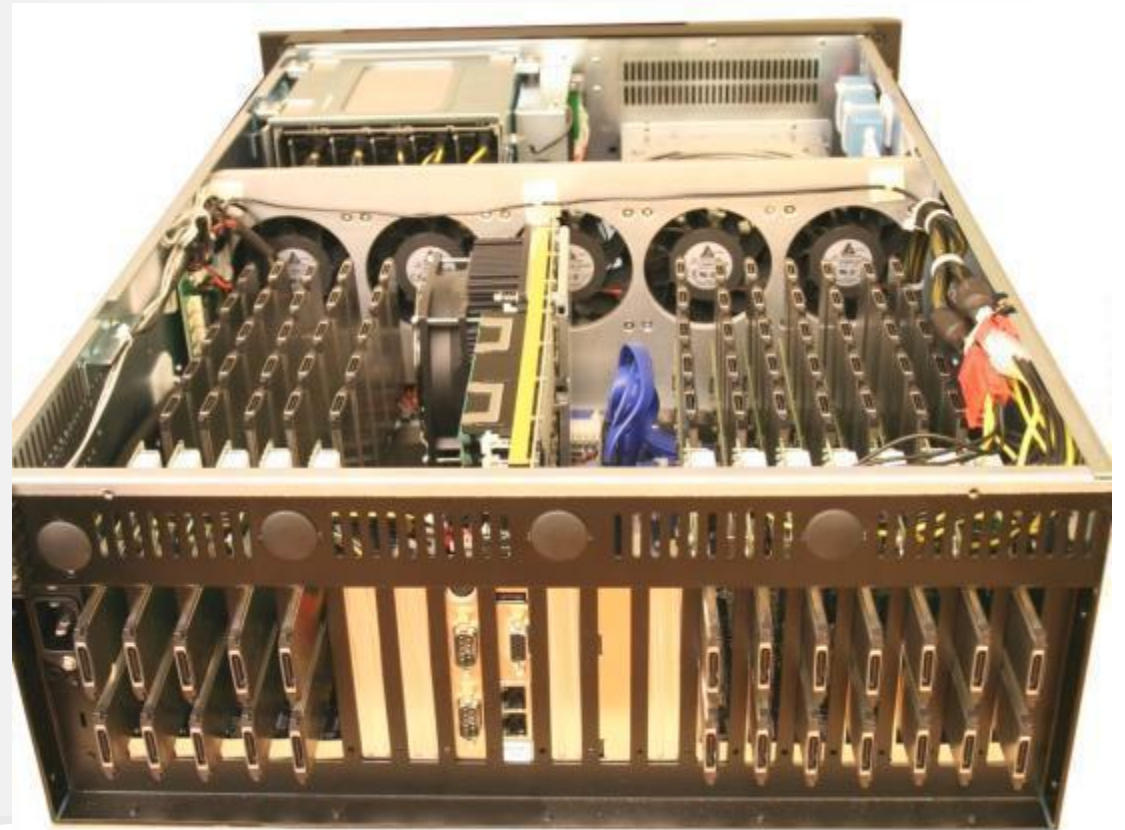


EX-160



SC3 E-16 SuperCluster

- Up to 77 E-16 LX50 Cards
(77 Virtex-5 LX50 FPGAs)
- 3.8 Million Logic Cells
- Intel Xeon Host CPU
- PCIe Backplane
- COTS Components
- 700 Watts



SuperCluster Performance Matrix

Key Recovery	Standard Core2Duo PC	EX-300	SC3 with 7 E-16	SC3 with 77 E-16
FileVault (1 Million)	41 Minutes 400/sec	11 Seconds 96,000/sec	24 Seconds 42,000/sec	2 Seconds 462,000/sec
WPA (1 Million Word List)	3 Hours 90/sec	53 Seconds 19,200/sec	2 Minutes 8,400/sec	11 Seconds 92,400/sec
WEP (40 bit key)	42 days 300,000/sec	63 Minutes 288,000,000/sec	2.5 Hours 126,000,000/sec	13 Minutes 1,386,000,000/sec
WinZip	41 Minutes 400/sec	11 Seconds 96,000/sec	24 Seconds 42,000/sec	2 Seconds 462,000/sec
Blue Tooth Pin (10 Digit Pin)	2.4 Days 48,000/sec	53 Seconds 160,000,000/sec	2 Minutes 70,000,000/sec	13 Seconds 770,000,000/sec

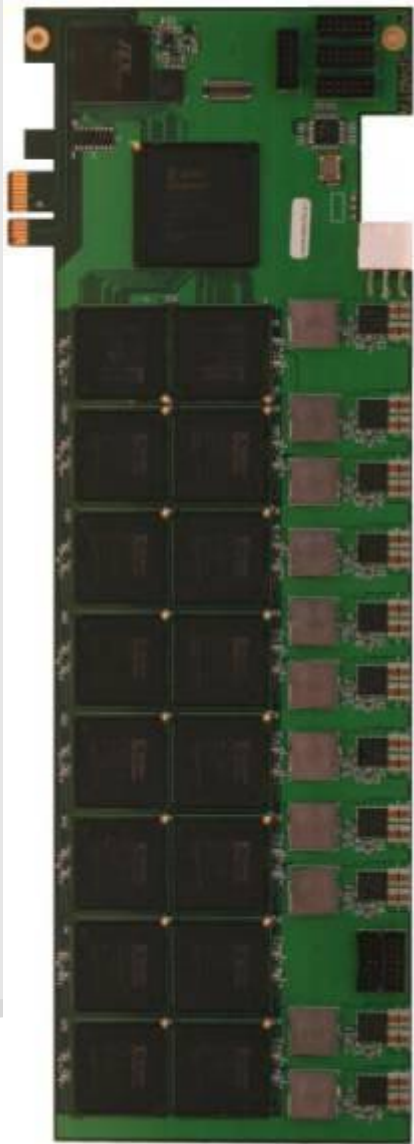


SuperCluster Performance Matrix

Algorithm	Speed Up Versus Intel Core2Duo Processor			
	EX-300	1 E-16LX50	SC3 7 E-16LX50	SC3 with 77 E-16LX50
WPA (Brute Force)	80X	5X	35X	385X
2D Gaussian Convulation	550X	50X	350X	3850X
Mersanne Twister	450X	30X	210X	2310X



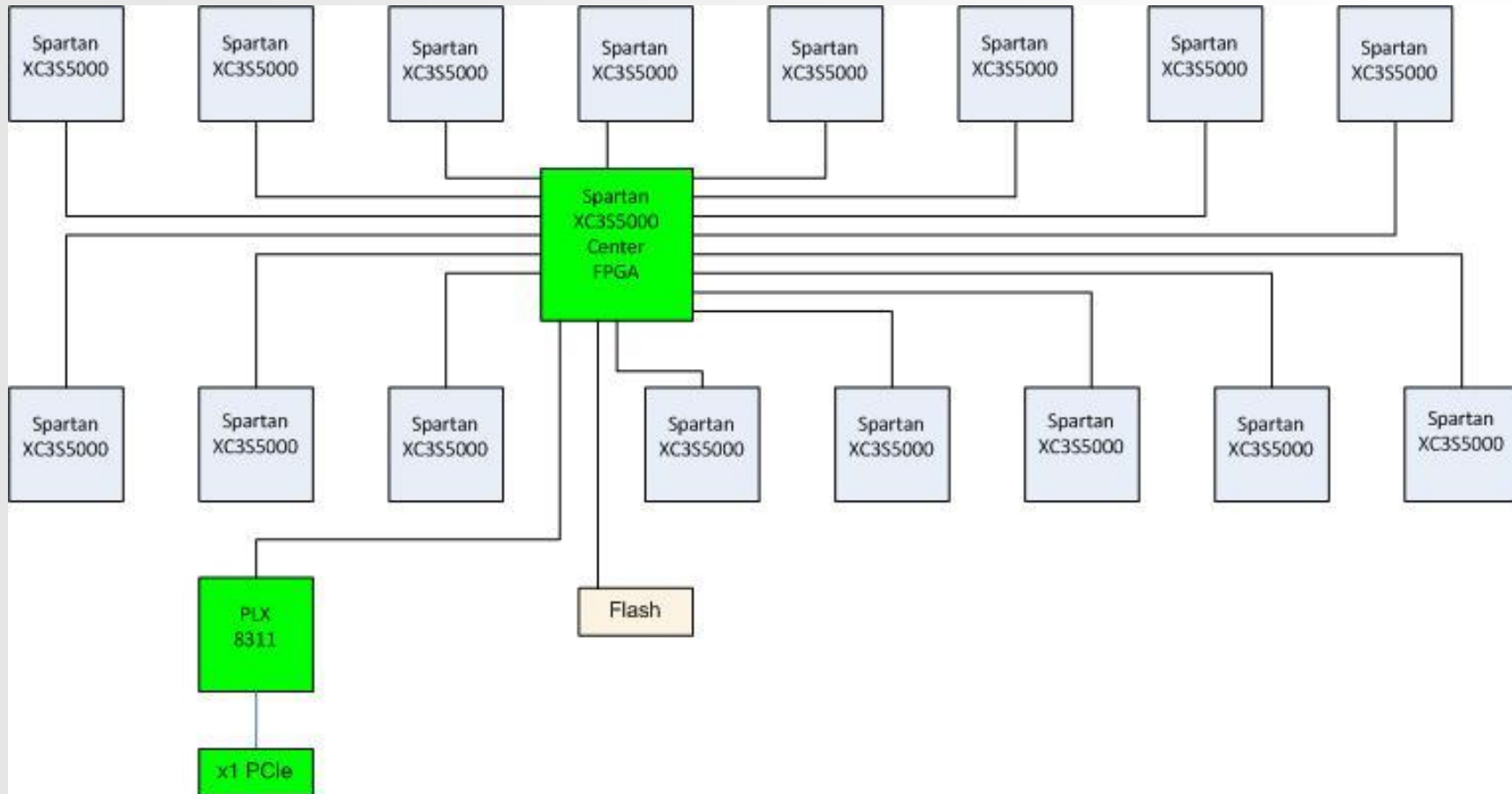
EX-300



- Full Length Full Height PCIe Board
- 16 Spartan XC3S5000 FPGAs (Approximately 1.2 Million Logic Cells) available
- Center FPGA manages communication from Host to 16 Spartan XC3S5000s
- 32bit Bus to each XC3S5000 FPGA from Center FPGA
- FPGAs Loaded directly from Host
- x1 PCIe to Host
 - PLX 8311 Manages PCIe Interface
- One Standard PCIe 2x4 connector
- Power Consumption:
- Windows XP/Vista & Linux Compatible



EX-300 Block Diagram



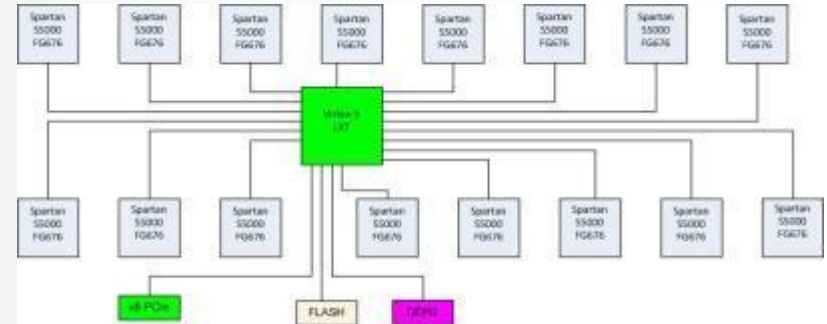
Spartan-3	System Gates	Logic Cells	18x18 Multipliers	Block RAM	Distributed RAM Bits	DCMs
XC3S5000	5 Million	74,880	104	1,872K	520K	4
Total Resources	80 Million	1.19 Million	1,664	29952K	1,560K	64



HPC Product Road Map

“SPARTA II”

- PCIe x8 Spartan Board
- Sixteen (16) Spartan S5000
- Total of 1.19 Million logic cells
- Estimated Release Date: **December 2008**



“Dual V5”

- PCIe x16 Virtex-5
- Two Virtex-5 SX240T
- DDR2
- Estimated Release Date: **January 2009**

