

e4 FPGA Chassis by LDA Technologies

1U PCIe FPGA board enclosure with 48 front panel I/O ports

Massive I/O capability

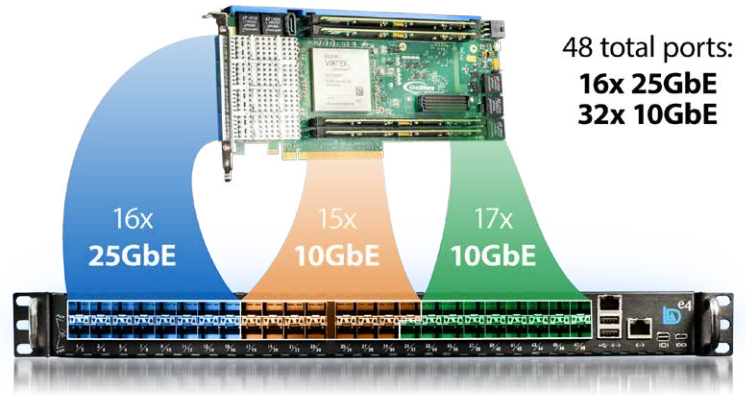
16x 25GbE and 32x 10 GbE I/O ports*

Server features optimized for FPGAs

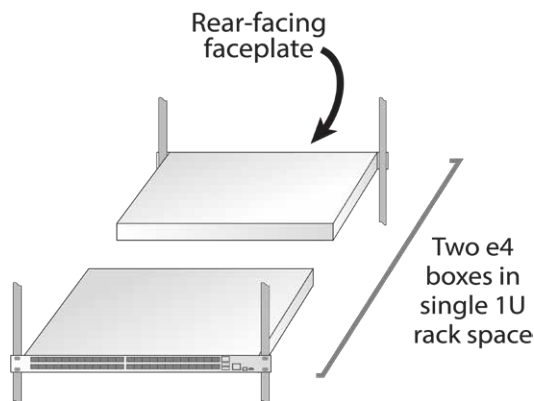
1 sec boot, JTAG over USB*, PCIe discreet on/off

Compact form factor

Two e4 chassis can fit in a standard 1U slot



BittWare FPGA boards have a lot of I/O, but with the many server options available, it can be challenging to find one that allows you to use all of it. The e4 chassis is a unique solution from LDA Technologies that transforms any FPGA-based PCIe card into a high-end networking device. Plug any of BittWare's FPGA-based PCIe boards into the 1U PCIe enclosure, and the system conveniently pulls the I/O from the FPGA card out to 48 high-speed networking ports on the device's front panel. With a depth of just 12", the e4 is incredibly compact; two devices fit back-to-back in a standard 1U slot, effectively doubling the number of FPGAs in the system.



Key Features

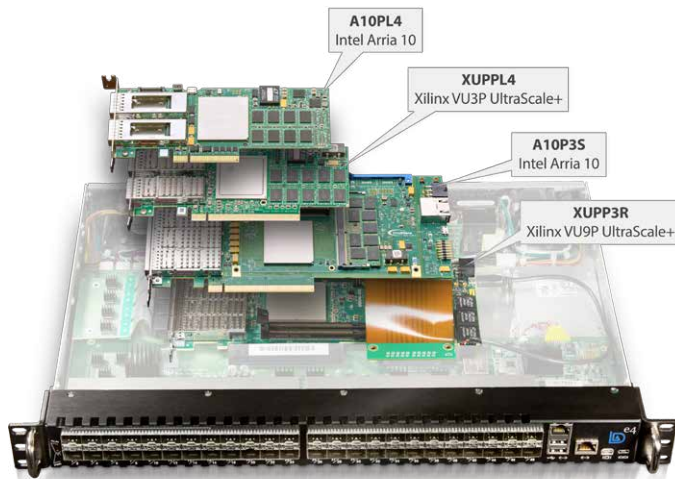
- Supports any of BittWare's Xilinx UltraScale/UltraScale+ or Intel FPGA-based PCIe boards
- 48 front-panel I/O ports
 - Up to 16x 25GbE ports, 32x 10GbE ports
 - Independent cross-point switch fabrics
- BittWare BittWorks II software and BMC for remote programming and board monitoring
- Built-in FPGA tools and operating system for programming on-the-fly
- Advanced redundant power supply
- Precision clock source

Key Applications

Software defined networking
VPN concentrators

Routers & firewalls
Intrusion detectors

* Quantity and speed of I/O ports and JTAG-over-USB support varies based on FPGA board.



Works with any current BittWare PCIe board

System Specs and Features

The e4 system has many advanced features that simplify system management.

Crosspoint switch fabrics

Independent cross point switch fabrics simplify configuration:

- Data can flow from port-to-port without entering the FPGA
- Copy data to the FPGA without interrupting the data flow
- Independent switch fabrics for 25G and 10G

CPU Support

The e4 system is equipped with a range of CPU options:

- Management is built-in as separate device
- COM Express Type 10 or Type 6 built-in; requires no software
- Connected to the board via PCIe lane x1 and USB
- USB access to the BittWare tools for board management

BittWare BittWorks Toolkit and BMC

The e4 system allows easy access to BittWare's software tools and Board Management Controller (BMC):

- Remotely program the FPGA over USB, erase it, and program the flash
- Monitor board power and temperature and re-program the onboard clocks
- Set points to shut the board down when it gets too hot or draws too much power
- Access JTAG over USB (if supported by the board)
- Remote access to all software tools and BMC features

Built-in Tools and Remote Operation

Built-in software tools allow remote operation:

- Vivado tools and Ubuntu 16.4 pre-installed
- Windows supported
- FPGA board is configured on the fly; the system freezes the last known good configuration

Advanced Power Features

Have precise control over your system with advanced power features:

- Turn off PCIe separately—uncoupled from system
- Precision power monitoring of the FPGA board: program thresholds and connect them to system fans
- Load-shared redundant power supplies on the e4 base board

Precision clock source

A 100 MHz on-board clock can be used as PCIe reference clock or as a very high precision internal clock:

- 100 MHz oven-controlled crystal oscillator (OCXO)
- 5 or 10 parts per billion accuracy
- Clock multiplexer
- Timestamping support

Rapid Start-up

Unlike a standard server, the e4 can boot quickly, getting the FPGA image loaded once power is up:

- 1 sec boot time
- Configuration is stored on the base board and does not require COM Express

Short Depth

The e4 is small enough to fit two devices in one rack:

- 1U chassis
- 12" depth

Additional Interfaces

Additional interfaces connect directly to the Linux machine that are ideal for a networking device:

- Micro USB, display board, OOB port, USB, and Ethernet
- Allow access to command line, firmware upgrades, GUI port monitoring



ds-e4-chassis | Rev 2017.09.21 | September 2017

Want to learn more?

Contact BittWare for pricing.
Check out our e4 video at www.bittware.com.



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