

## e4 FPGA Chassis by LDA Technologies

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

### Massive I/O capability

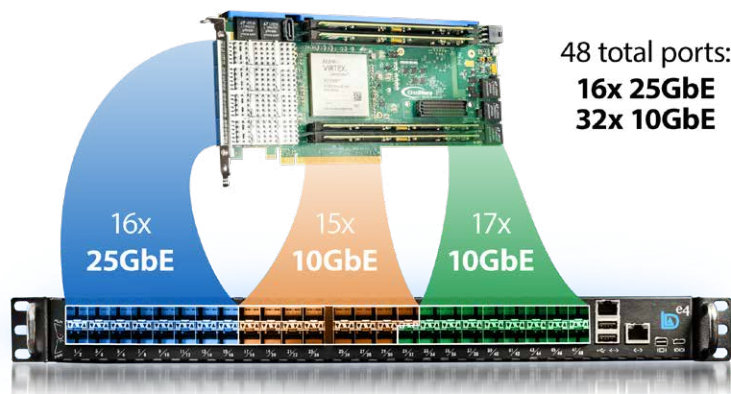
16x 25GbE and 32x 10 GbE I/O ports\*

### Server features optimized for FPGAs

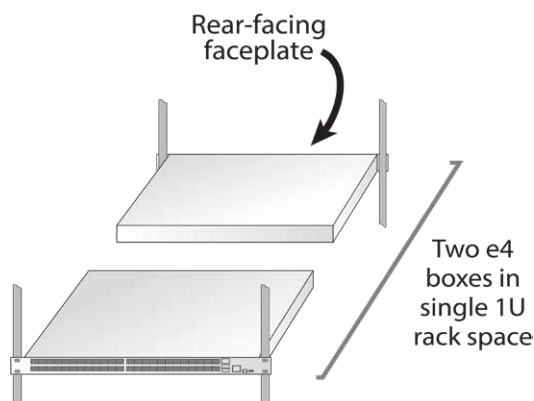
1 sec boot, JTAG over USB\*, PCIe discreet on/off

### 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

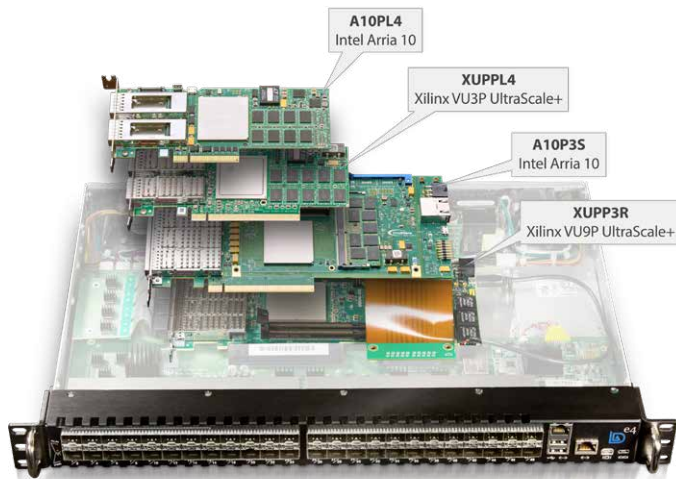
- Supports any of BittWare's Xilinx UltraScale/UltraScale+ or Intel FPGA-based PCIe boards
- 48 front-panel I/O ports
  - Up to 16x 25GbE ports, 32x 10GbE ports
  - Independent cross-point switch fabrics
- BittWare BittWorks II software and BMC for remote programming and board monitoring
- Built-in FPGA 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 2018.11.13 | November 2018

## Want to learn more?

Contact Sky Blue or Zerif for pricing.  
Check out our e4 video



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