



## expressXG™ Development Framework

*an integrated, easy-to-use approach to FPGA development that is adaptable, re-usable and cost-effective*

### Applications

Ultra-low latency electronic trading  
Quality service  
Network security

### Benefits

Accelerates FPGA application development time-to-market  
Enables seamless migration of applications to new cards and technologies as they become available  
Minimizes the costs associated with product integration  
Simplifies overall logistics of FPGA application development

### Features

Modular, easy-to-use product that integrates all high performance interfaces of the network card into one design  
User designated sandbox region provides easy integration with network card interfaces  
Compatible with standard FPGA development tools from major vendors  
Complete high performance software libraries and drivers for Linux and VxWorks

### One Solution to Unlimited Possibilities

The expressXG Development Framework is an industry-proven, fully integrated product designed to deliver optimum functionality and accelerate application development on a broad range of open standards FPGA cards from New Wave DV. It is available with high performance software libraries and drivers allowing developers to achieve their best results in the least amount of time — right “out-of-the-box”.

New Wave DV pioneered the use of the FPGA development framework to enable programmability over 10 Gigabit Ethernet networks and provide real-time performance for mission critical applications in defense, financial and telecommunications markets. Learn why New Wave DV has been chosen by Fortune 100 customers, and see how one solution can deliver unlimited possibilities.

### Start Your Application with Confidence

Designers of high-performance applications with FPGA technology know best that it is an intensive process that can cost time and money. This is where New Wave DV can help.

With expressXG, customers can have any New Wave DV network card installed and running within a few minutes and be well on their way to developing applications quickly.

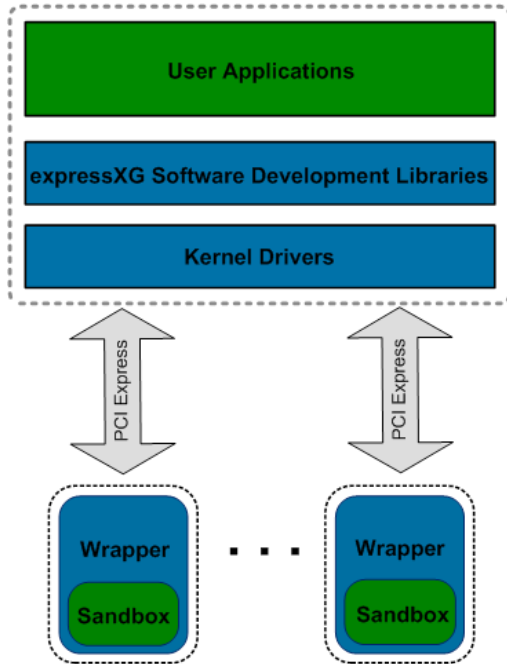
Start developing your application with confidence. Call New Wave DV today to find out the latest release information and feature set.

### More Than a Firmware Development Kit

Elegantly simple and modular, the expressXG Development Framework consists of an interface wrapper and a user sandbox. The wrapper, a hardware abstraction layer, provides a robust user interface to all high-performance interfaces required for an FPGA Ethernet card to fully function. The sandbox region, where designers play, features easy-to-follow examples that will jumpstart user application development and debugging. All features are intended to promote the rapid coding and integration of high-performance applications with FPGA technology.

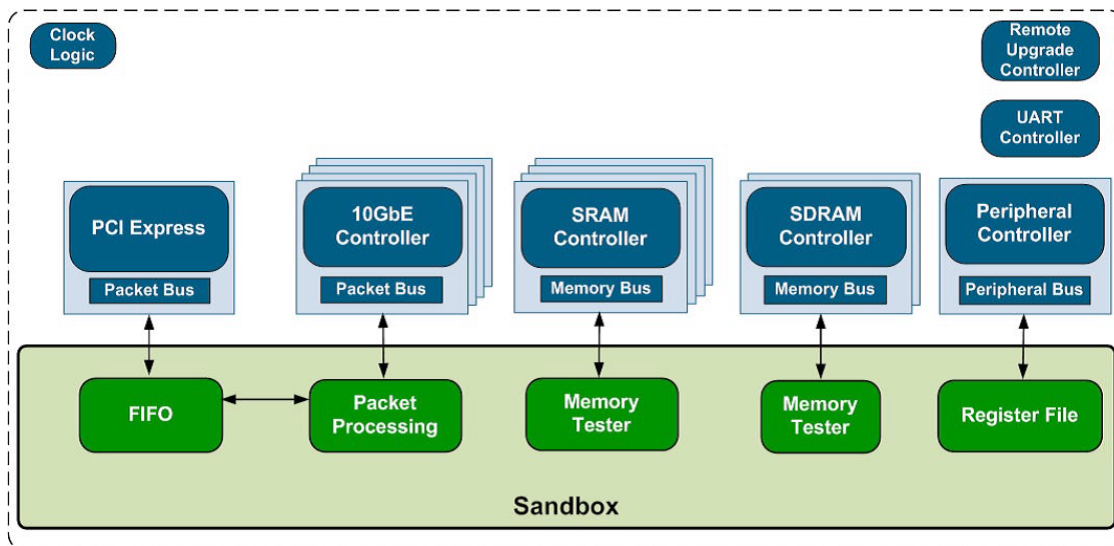
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> Standard software libraries and drivers provide host communication with the FPGA network card and are available for VxWorks or Linux.



> The interface wrapper is delivered as a synthesized netlist, while the sandbox is available for user application development.

- **10 Gigabit Ethernet Controller** — the lowest latency, highest performance Layer 2/3 interface providing communication with standard Ethernet networks. Supports the Precision Time Protocol (PTP) to provide time synchronization with an accuracy of less than 1 μSec.
- **SDRAM and SRAM Controllers** — high-performance memory controllers ensure speed and bandwidth required for real-time applications.
- **PCI Express Gen 3 Controller** — high performance 8-lane host interface with built-in DMA channels optimized for fast data transfers over multiple threads with zero copy capability.
- **Flexible Protocol Processing** — easily integrate specific Layer 7 protocols (e.g. financial market feeds) into the sandbox region to achieve higher performance beyond software capabilities.
- **Peripheral Controller** — a convenient control path providing master/slave access to all memory space within the FPGA from the host, sandbox or RS-232 interface.
- **Built-in Debug Capabilities** — an RS-232 interface and host software utility provide deterministic access to memory space.
- **External FLASH Configurability** — remote or in-system, upgrade controller allows for programming the external flash memory used for FPGA configuration.



> The user sandbox (in green) provides easy access to optimized interfaces and ample debug capabilities.

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## Software Libraries, Drivers and Diagnostics

The expressXG Development Framework includes high performance software libraries and drivers supported for both the Linux and VxWorks operating systems. Included in the package are software APIs, Kernel drivers, libraries, and software examples — everything programmers need to develop applications that communicate seamlessly with the expressXG Development Framework.

Also available is the easy-to-use RS-232 diagnostic utility which was designed exclusively as a way to access the memory space on New Wave DV's FPGA network cards via the RS-232 interface. This provides a flexible alternative to diagnosing system behavior without relying on the host.

## Complete Product Support Program

New Wave DV prides itself on its excellent customer support, a fact that is echoed by our customers. New Wave DV provides industry standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure that the customer experience with our products is a positive one.

## Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with expressXG Development Framework, are intended to offer customers an entirely out-of-the-box experience.

## Technical Specifications

### SUPPORTED FPGA DEVICES

The expressXG Development Framework supports a broad range of high-performance FPGA devices from Altera and Xilinx. Please contact us for more details.

### DESIGN FILE FORMAT

Verilog design top level and examples  
QXP (Altra) and NGC (Xilinx) netlist

### CONSTRAINTS FILE

SDC (Altera) and UCF (Xilinx)

### DESIGN TOOLS

Altera Quartus II, Xilinx ISE, ModelSim

### ORDERING INFORMATION

The expressXG Development Framework requires an New Wave DV FPGA network card. Please contact us for more information on the latest product release.

Ask about our comprehensive support package including full feature set, user guides, examples and technical support.

### FOR MORE INFORMATION:

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