EZdesign and EZdriver

Software Development Kits for the NP Product Family

Mellanox offers a comprehensive Software Development Kit (SDK) consisting of microcode development tools, software tools, sample code, and host Application Programming Interface (API) library to facilitate software development for its network processors (NP).

EZdesign® manages the data plane and allows designers to create, build and debug microcode applications for the Mellanox family of NPs. Designers can quickly develop microcode for the Mellanox NPs, and test the microcode using the provided simulation and debugging tools. In addition, EZdesign provides GUI tools to easily define the various configurations and search structures for the NP.
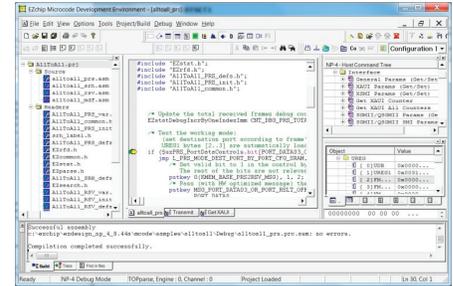
EZdriver® API C library manages the control plane and facilitates the development of host software for systems based on the Mellanox NPs. The EZdriver provides a set of libraries for easy configuration and management of the Mellanox NPs. In addition, EZdriver provides tools and utilities for rapid development of the host application, such as automatic C source code generation from EZdesign configuration files.

EZDESIGN SOFTWARE TOOLSET

EZdesign is a comprehensive data plane set of design and testing software tools for developers, enabling short time to market of new designs based on Mellanox's NPs. EZdesign allows designers to create, build and debug NP applications to meet specific functionality and performance targets. The EZdesign basic tools can be used on both Linux and Windows based platforms, while the GUI is only available on Windows.

EZdesign components include (Figure 2):

- **EZmde (Microcode Development Environment)**: A unified GUI for editing, building and debugging code, including setting breakpoints, single-stepping program execution and access to internal resources. Features include a code editor, view of the NP memory and register contents, and script execution. EZmde is used in development and debugging of code on both the simulator and the actual NP.

- **EZprep and EZasm (Preprocessor and Assembler)**: Generates optimized code for execution on Mellanox's NP. The assembly supports high-level macros.

- **EZsim (Simulator)**: Provides cycle accurate simulation of the Mellanox NP for code functionality testing and performance optimization.

- **EZconfig**: A GUI for configuration of the Mellanox NP and definition of data structures used by the NP for forwarding and policy table lookups (e.g. hash, trees), their keys and associated result information. It also enables configuration of the traffic manager integrated in the NP. This includes configuration of the hierarchical topology and QoS parameters for each level.

[†]For illustration only. Actual products may vary.

- **Applications Library**: Sample code implementing high-level applications for reference when designing new networking platforms and services. Sample code is available for L2 switching, Metro Ethernet, MPLS LER and SER, IPv4/IPv6 routing, Access Control Lists (ACL), IEEE 1588 1-step implementation, fragmentation and defragmentation, multicasting, and L23 QoS.

EZDRIVER API LIBRARY

EZdriver API Library manages the control plane and facilitates the development of the control path software for Mellanox NP based systems. It enables applications that run on the control CPU to communicate with the Mellanox NP in a user friendly way without having to know internal NP HW addresses. EZdriver consists of APIs for chip configuration, microcode loading, creation and maintenance of lookup structures, sending and receiving frames to and from the network processor, configuration of the traffic manager, as well as configuration and access to the statistics block. In addition, it includes a tool for automatic C code generation.

The EZdriver API is a full source code C library that easily can be ported to any OS. It also includes object code libraries that have been verified for Linux and Windows. EZdriver includes several C source code sample applications for both the host and embedded CPU.
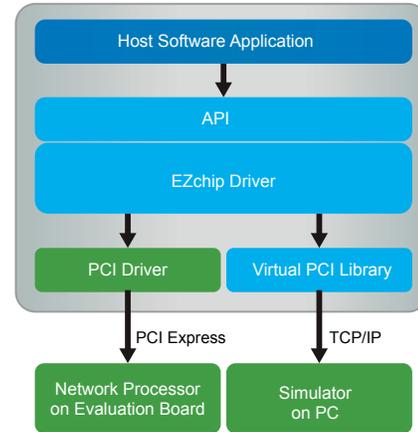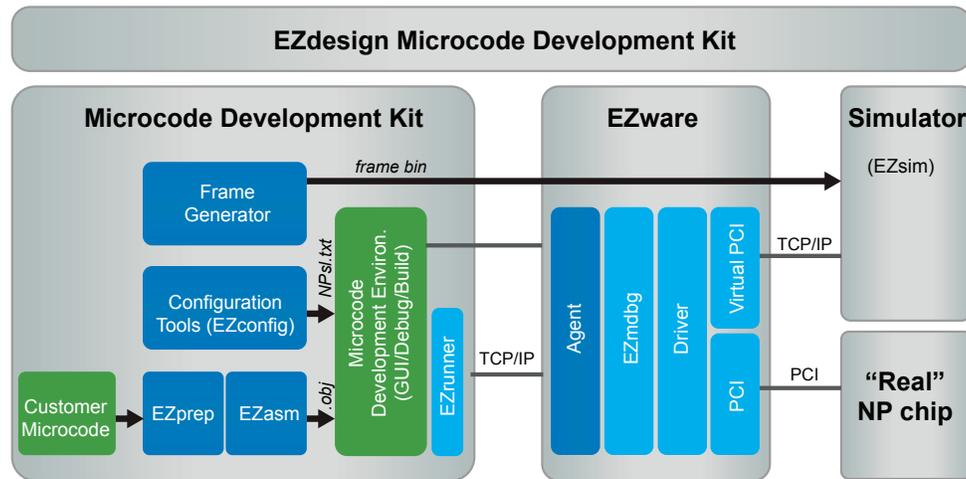

Figure 1. EZdriver API Library

Figure 2. EZdesign Microcode Development Kit

Table 1 - Part Numbers and Descriptions

OPN	Description
20765300	EZdesign data plane software development tools including editor, compiler, debugger, simulator, frame generator, NP configuration generator and applications library. The license key can be used for all EZdesign NP versions.
20765200	EZdriver control plane C source code API library, C source code sample applications, productivity tools including an automatic C code generator. The license key can be used for all EZdriver NP versions.

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