OpenNet

by kms

Product brief

Patent pending

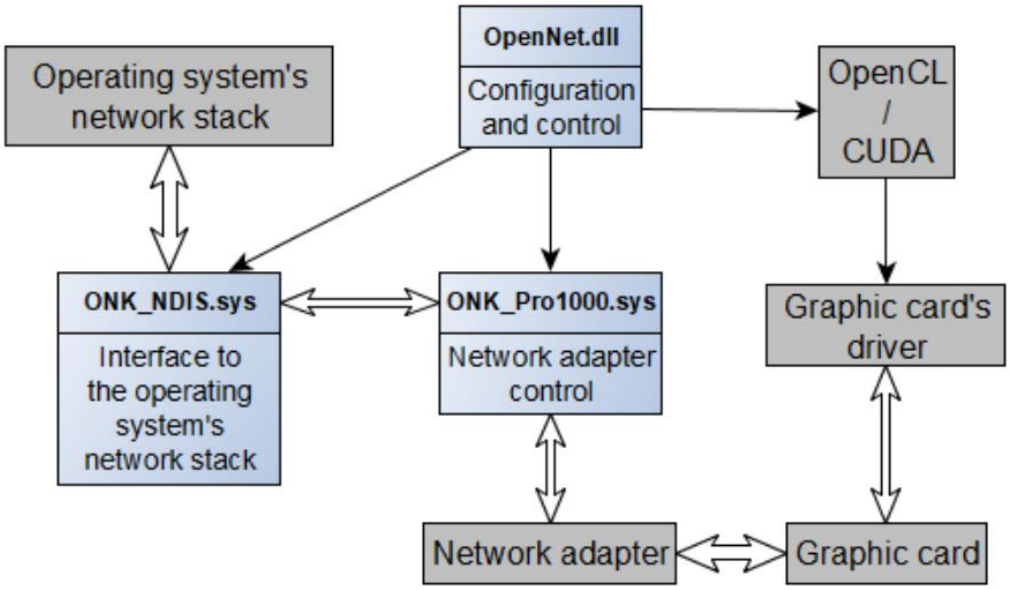
The **OpenNet** product allows you to directly connect one or more network cards to a graphics processor to efficiently process the received network packets using all the flexibility of the **CUDA**® or **OpenCL**™ languages.

The data passes directly from the network card to the fast memory of the graphics card without going through the main memory of the computer and especially without having the main processor involved.

The graphics processor then processes the large number of packets received in parallel, modifies them if necessary and redirects them, or not, to a network card of the **OpenNet** system or to the network stack of the operating system.

Software architecture

The following diagram shows the three main components of **OpenNet**. The OpenNet.dll library allows the user to configure and control network cards and graphics cards bundled into an **OpenNet** system.



A special driver controls the network adapters. The operating system doesn't recognize this driver as a network card driver.

A specially designed device driver makes the interface between the **OpenNet** system and the operating system's network stack.

A system can hold up to 31 network cards and multiple graphics cards. A single graphics card can process data from one or more network cards.

Performance

A modest system with an **Intel® Ethernet Converged Network Adapter X520-DA2** (82599) and only one **Radeon™ Pro WX 5100** graphics card can handle, at this time, more than 1.1 GB of data and more than 1.6 million packets per second. It also allows processing and retransmit using the same card, or another one, more than 800,000 packets per second.

Applications

- Fully analyze network packets
  - Detect threats or intrusions
  - Search for data in the contents of packets
- Select packets to submit to an analysis or treatment
- Modify packets
  - Encryption / Decryption
  - Address Translation
  - ...
- Test OpenCL™ processing code to be used on an FPGA
- Offload tasks normally performed by the main processor
  - Encryption / Decryption
  - Compression / Decompression
  - Receive or transmit TCP
  - Receive or transmit images or video
  - ...
- Connect the network directly with artificial intelligence algorithms running on graphics processors
- ...

Technical information

Operating systems	**Ubuntu 18.04** 64 bits		**Windows® 10** 64 bit
Languages	**CUDA®**		**OpenCL™**
Supported graphic cards	**NVIDIA® Quadro™** or **Tesla™** supporting the **GPUDirect™** technologies		**Radeon™ Pro WX 5100**, **WX 7100, WX 8200**, **WX 9100** Other cards supporting **DirectGMA**
Supported network adapters	1 Gb	**Intel® PRO/1000 EB Dual Port Server Adapter** (82576)	
	10 Gb	**Intel® Ethernet Converged Network Adapter X520-DA2** (82599)	

Other network card supported on demand.

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