

DATA CENTER FPGA VIRTUALIZATION



THE INVENTION

This technology provides a general abstract interface to any design (not domain specific) to deploy highly specialized application on FPGAs in data centres. This technology also supports dynamic partial reconfiguration of applications that are attached to a data centre.

This technology provides a network controller configured as an interface to an external network and a static logic section coupled to the network controller.

Such virtualization of applications on a secondary reconfigurable device in the data centre can potentially lead to high performance improvements without the need for application specific device.

MARKET NEED

The FPGA market was valued at USD 5.83 Billion in 2017 and is expected to reach USD 9.50 Billion by 2023, at a CAGR of 8.5% between 2017 and 2023.

The FPGA market is driven by factors such as the growth of IoT, growing adoption of FPGAs by various industries, growing demand for advanced driver-assistance systems (ADAS), and reduction in time-to-market¹.

NVIDIA reported GPU sales to datacenters of about \$75 million per quarter².

FPGAs use in data-centers for AI and Machine Learning has risen from nil to about 200,000 units in two years from 2016 to 2018³.

APPLICATIONS

- Cloud based data-centres where certain highly specialized (for example Tensor based calculations) computation is needed to be offloaded to a secondary device
- Deployment of AI & tensor-based processing units

- Streaming applications where a rapid computation is required without on-chip storage.
- High Performance Computing for advanced driver-assistance systems in autonomous vehicles.

MARKET READINESS

A lab prototype was tested on an educational FPGA prototyping board. Experimental results using a streamed application in a cloud-like environment has also been tested.

PATENT PROTECTION

A patent is filed in U.S. with application number 16/259490

LOOKING FOR A DEVELOPMENT PARTNER

KFUPM is looking for industry partner to validate this technology and/or license the intellectual property for commercialization.

ABOUT KFUPM

King Fahd University of Petroleum & Minerals is a leading educational organization for science and technology.

For further information please contact:

Name: Tayyab Mujahid

Email: tayyabm@kfupm.edu.sa

Telephone: +966-13-860-8360

¹ FPGA Market by Technology Global Forecast to 2023 Markets and Markets.

² <https://nvidianews.nvidia.com>

³ Deloitte Global Estimates.