Seamless Deployment and Monetization of FPGA Functions in datacenters

Presented By

Stephane Monboisset
VP Marketing & Partnerships
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FPGAs in Data Centers

Key elements to drive large scale adoption

Instantly deployable accelerators

Accelize Delivered Solutions

Enabling the Ecosystem

Accelize Platform offering to its partners
Making FPGAs Mainstream in Data Centers

Pre-built FPGA Accelerator Functions

SW-like Runtime API, Frameworks

Easy to Find, Evaluate, Deploy

With the Right Business Model (Secured)
Make Accelerators Easy to:

Find

New users with low awareness of full FPGAs capabilities

⇒ Central place for all types of accelerators for Cloud and on-premise

Evaluate

FPGA acceleration often seems “too good to be true”

⇒ Evaluate in minutes with no legal hurdle

Deploy

Non disruptive integration, low learning curve

⇒ REST API that abstracts deployment on the Hybrid Multi-Cloud
The Monetization Challenge

IP Providers

Accelerator Providers

Application Developers

SaaS Business Models

<table>
<thead>
<tr>
<th></th>
<th>Node Locked</th>
<th>Floating</th>
<th>Metered (Time, Data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node Locked</td>
<td>✓</td>
<td></td>
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</tr>
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<td>✓</td>
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</tr>
</tbody>
</table>

Propagate the “as-a-Service” Business Model
Accelize **Digital Rights Management Platform**

**Supports any Business Model:**

- **Per Node**
  - Node locked
  - Floating

- **Metered**
  - Data (Bytes, Frames, Inferences, …)
  - Time

**For the FPGA supply chain:**

- Value Added Resellers
- System Integrators
- Accelerator Developers
- IP Providers

**Secured**
Delivered Solutions

Accelerators for the Hybrid Multi-Cloud
<table>
<thead>
<tr>
<th>Feature</th>
<th>Speed</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>GZIP Compression</td>
<td>30x</td>
<td>CAST</td>
</tr>
<tr>
<td>- GZIP Compression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- GUNZIP Decompression</td>
<td>10x</td>
<td></td>
</tr>
<tr>
<td>Ultra Fast Search and Replace</td>
<td>&gt; 1000x</td>
<td>NAGASE</td>
</tr>
<tr>
<td>True Random Number Generator</td>
<td>15x</td>
<td>SECURE-iC</td>
</tr>
<tr>
<td>Only Truly Random</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPEG 2000 to H.264 Transcoder</td>
<td>40x</td>
<td>SILEX, IBEX</td>
</tr>
<tr>
<td>JPEG Encoder</td>
<td>3x</td>
<td>AZE</td>
</tr>
<tr>
<td>Only Truly Random</td>
<td></td>
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</tr>
<tr>
<td>Only Truly Random</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.26x to H.26x Transcoder</td>
<td>TBD</td>
<td>b.com, IBEX</td>
</tr>
<tr>
<td>Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cryptographic Data Deduplication</td>
<td>15 to 150x</td>
<td>Concurrent and more ...</td>
</tr>
<tr>
<td>Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPSEC, MACSEC, Encryption, Hashing, ProRes Transcode, H.265 Encode, Machine Learning, Database</td>
<td></td>
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</tr>
</tbody>
</table>
Remote Execution on FPGA Instance/Server

- User Instance/Server
  - User Application
  - Python API Client
  - FPGA

- FPGA Instance/Server
  - REST API Endpoint
    - CPU
  - FPGA Device

- Pre-built Accelerator
  - Accelerator Executable
  - FPGA Accelerator Image
Remote Execution N-to-M

Local Execution (bin/lib)
Enabling Hybrid Multi-Cloud Operation
Test Accelerator in minutes on AWS F1

1. Open a Free AccelStore Account
2. Install the APYFAL API
3. Run your Accelerator (remotely) with 1 simple command

Free credits = Hours of evaluation.
Seeing it in Action

Hardware-accelerated Libraries for the Hybrid Multi-Cloud
We deliver ready-to-use FPGA-accelerated Libraries (Accelerator Functions) for public cloud, private cloud and on-premises.

Boost Your Workload
Accelerator Functions Provide Dramatic Improvements
Accelize® Business Enablement Platform

Offering to the Ecosystem
You Focus on Your Value-Add:

Producing high value FPGA Functions

We help you with the Deployment …

FPGA Function

Licensing
Metering
Evaluation
 Billing / Invoicing
Marketing
...

In the Hybrid Multi-Cloud
Tailor Your Offering to Data Center Users …

... by Implementing the Right **Business Model**

- **✓ Per Node**
  - Node locked
  - Floating

- **✓ Metered**
  - Data (Bytes, Frames, Inferences, …)
  - Time

... while being **Fully Secured**

- **Non Forgeable**
- **Non Clone-able**
- **Non Replay-able**
- **No SW Hack**
Accelize DRM Platform Components

- **DRM Service**
  - Authenticates users
  - Generates licenses and
  - Logs usage

- **DRM Software**
  - Interfaces between FPGA and DRM Service

- **DRM Hardware**
  - Activates Protected Hardware
  - Monitors Usage

- **End-to-end Security**

- **Patented Technology**
3 Platforms to Choose From:

**DRM Platform**
Enable secured, seamless and flexible Execution and Monetization of FPGA functions across the Hybrid Multi-Cloud

**Business Ops Platform**
End-to-End management of customer Financial & Legal relationship

**eCommerce Platform**
Self-service online store of accelerators for the Hybrid Multi-Cloud
Get Started in No Time

1. Add the DRM modules to your design
2. Deploy your product Anywhere*
3. Instantly Monetize with the right Business Model

We can set up a PoC in just a couple of days