XDF XILINX DEVELOPER FORUM

Building and Scaling FPGA Accelerated Applications for Cloud Computing

Presented By

NIMBIX

supercomputing made super human™

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CEO

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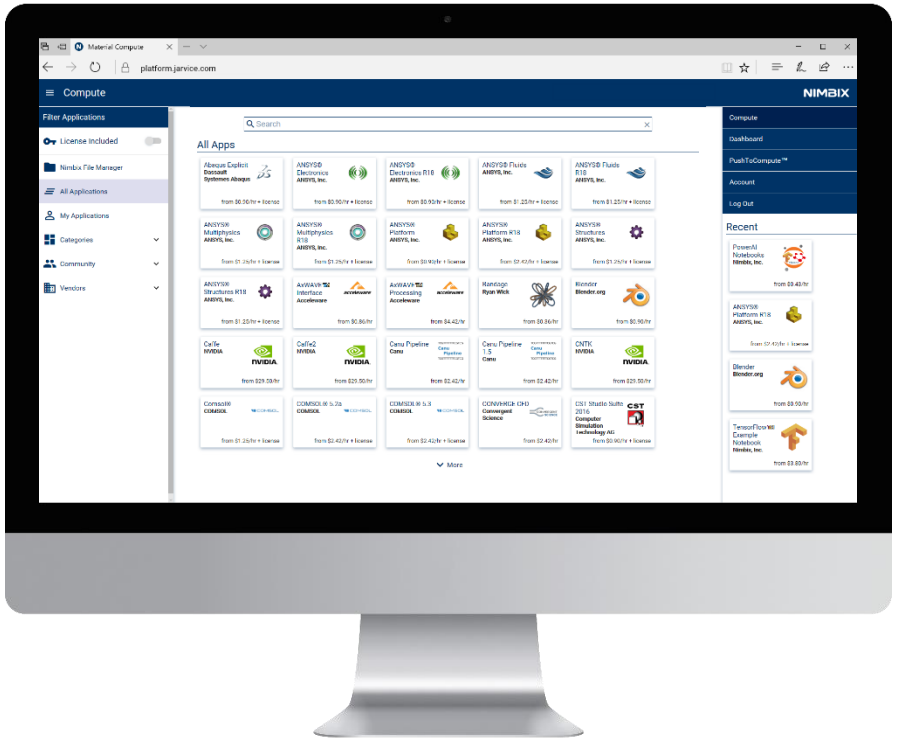
XILINX

History of Nimbix and FPGA Cloud Computing

- **Founded in 2010 as the first public cloud for accelerated HPC and supercomputing featuring FPGAs – Convey HC-1**
- **Industry's first purpose-built, award-winning high performance cloud platform: JARVICE**
- **World's Fastest and Easiest to Use Cloud for HPC, Machine Learning & AI**



Leadership Award
IBM North America
Top Strategic Service Provider
Nimbix, Inc.
2017
IBM

Gartner 2016
Cool Vendor

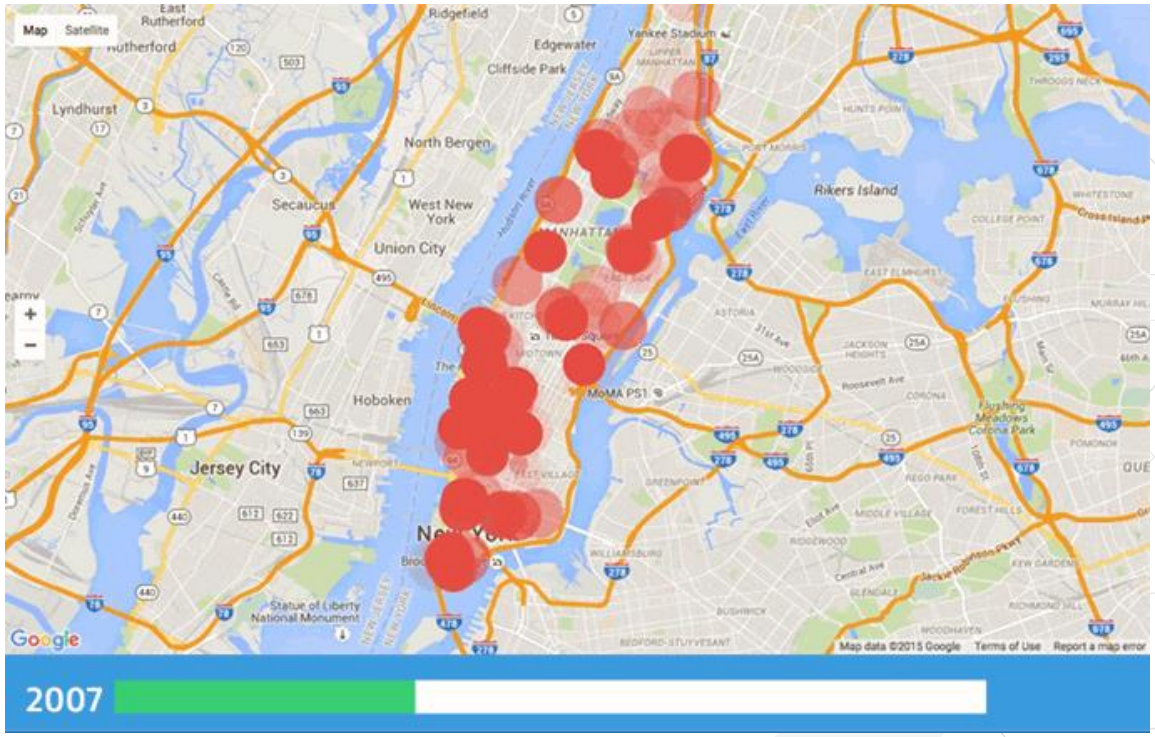
Best Use of HPC in the Cloud
HPC wire
Editors' Choice Awards 2016

Why FPGAs in Computing Matter Now

- **Moore's Law horizon is in view**
- **When we are done shrinking transistors where do we innovate?**
  - 1) Invent a new kind of chip technology
  - 2) Iterate, Optimize, Reconfigure
- **Blank slate of logic gates that can be repurposed a workload at a time**
  - Economics resulting from Moore's Law finally enabling FPGAs to exist in the datacenter in high volume
- **Exploding data to process while reducing energy and driving down processing latency**
- **AI an emerging tool to optimize and automate reconfigurability in the near future**

Moore's Law and Manhattan Island

- **Limits and economics drive reconfiguration**
  - Manhattan from 1600-1900: Room to develop
  - Silicon from 1965-2020: Room to shrink transistors
  - Limits: Land mass / Transistor size and power envelope
- **Visualizing Reconfiguration**
- **FPGAs in the datacenter become canvas for accelerated reconfigurable processing power**



Diane Pham, 6SQFT.com

FPGAs in Cloud Computing

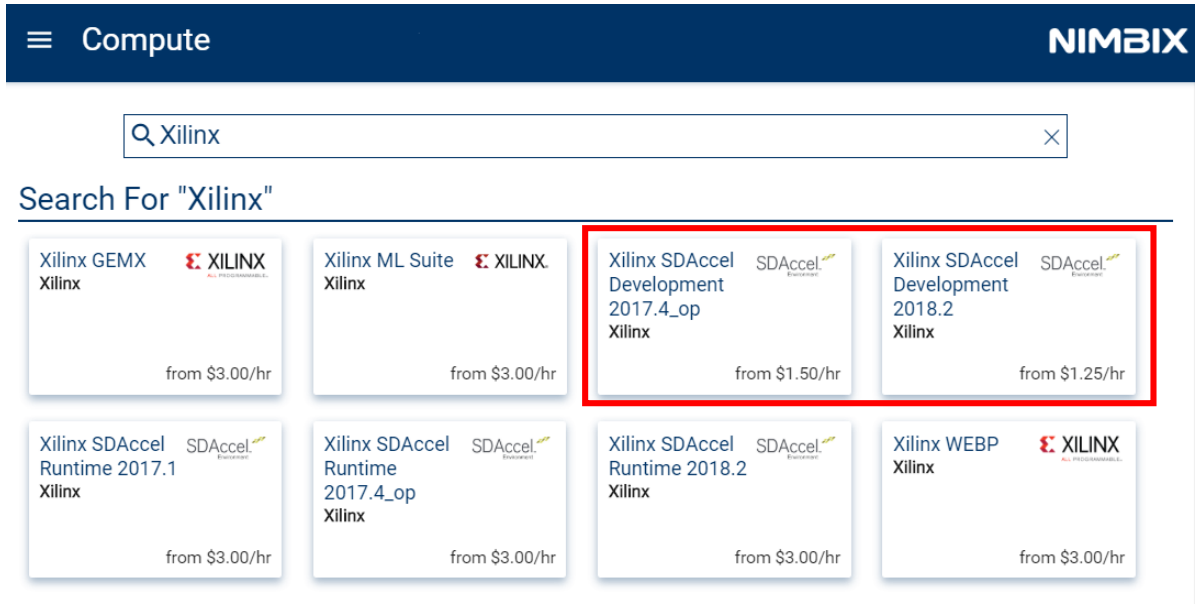
- The new way to extend a “Moore-like” law
- Compute node growth rate * number of transistors @ sub 10nm
- Datacenters become a new substrate

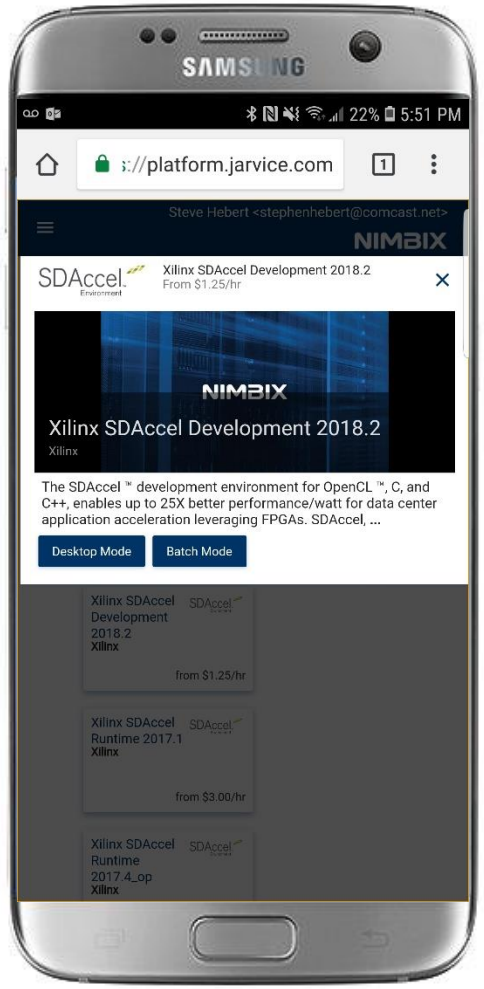
Where do we start with FPGAS in Cloud?

The Nimbix Cloud and JARVICE™

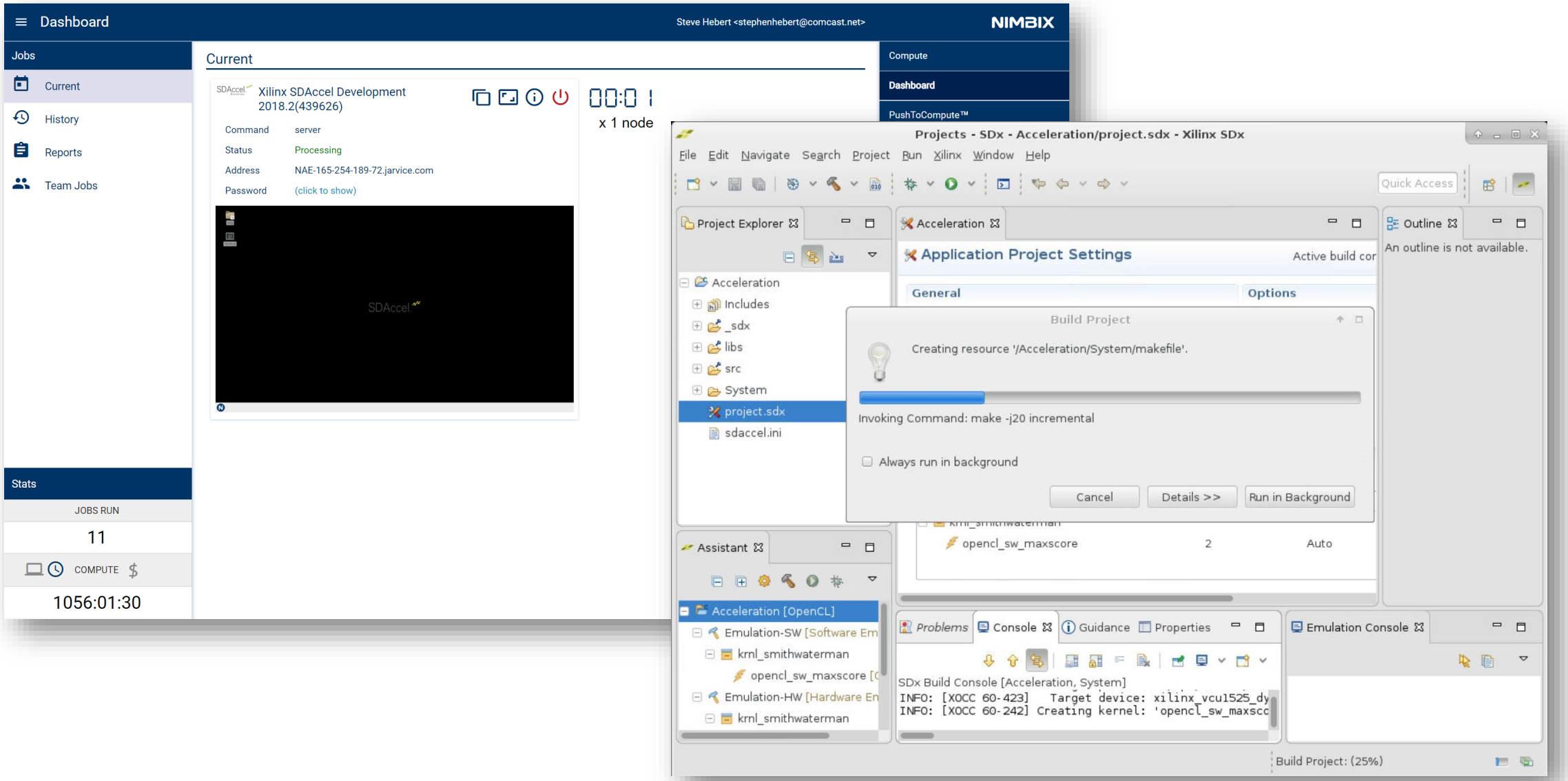
Democratize Access for FPGA App Development

- **Access tools in a browser from anywhere on any device**
- **Access to FPGA Hardware from anywhere on any device**

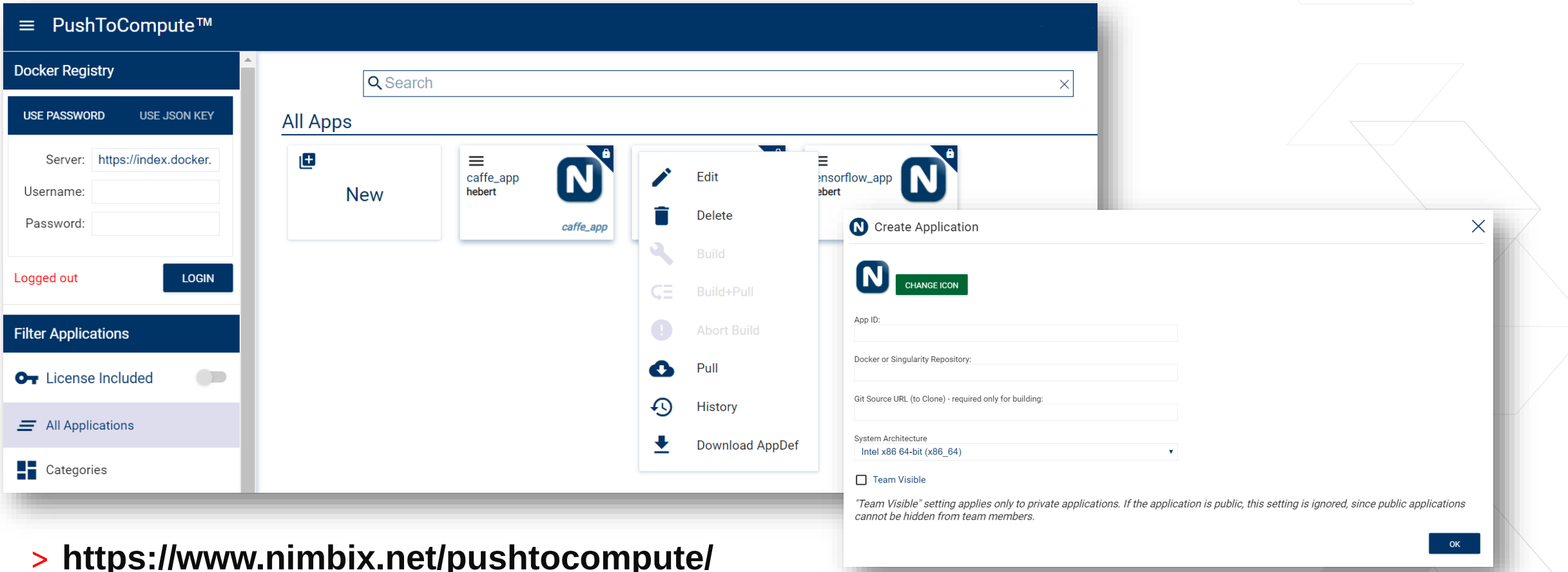




Build and compile your designs in the Nimbix Cloud



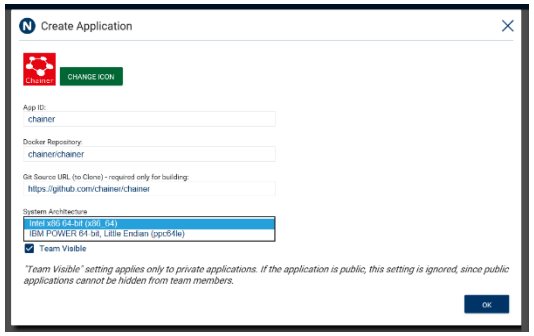
Deploy FPGA Applications on a Scalable Platform



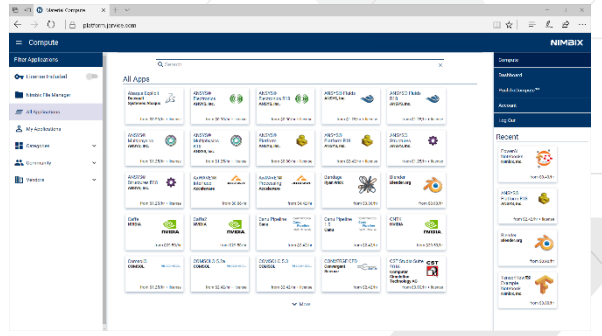
- **https://www.nimbix.net/pushtocompute/**
- **https://www.nimbix.net/pushtocompute-work-flow-deployment-guide/**

JARVICE with PushToCompute: Container PaaS to Distribute & Scale FPGA Applications Globally

Formats **Registries** **Platforms** **Runtimes**

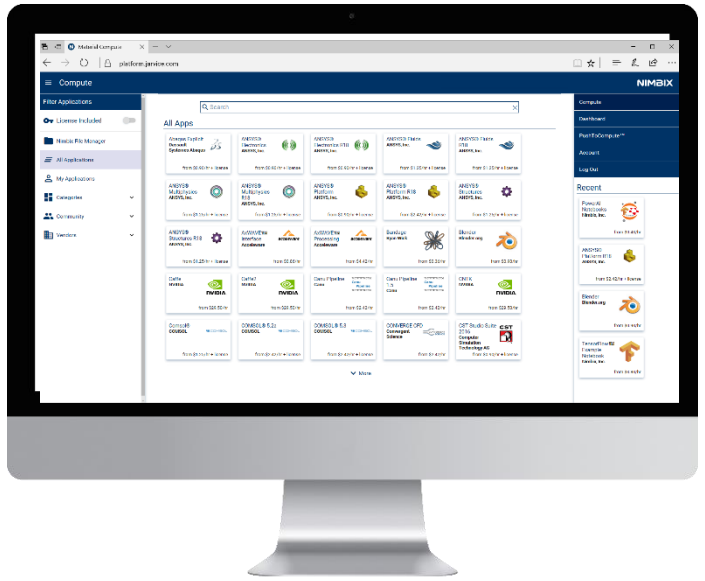


JARVICE

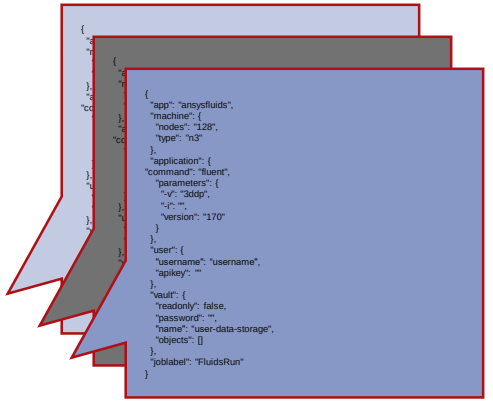


Monetize and Run Your FPGA Accelerated Apps

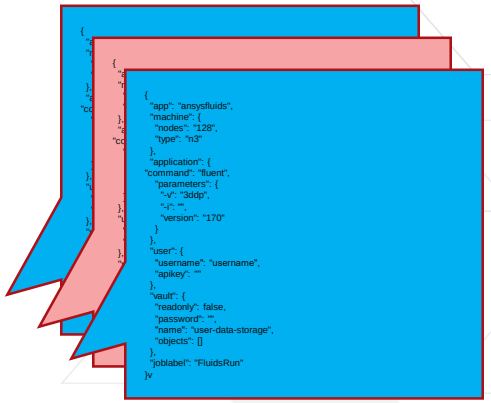
- **Add FPGA runtimes to private team or the public Nimbix Cloud Application Marketplace**
- **Leverage JARVICE API to launch apps and FPGA workloads or integrate into your own web service**



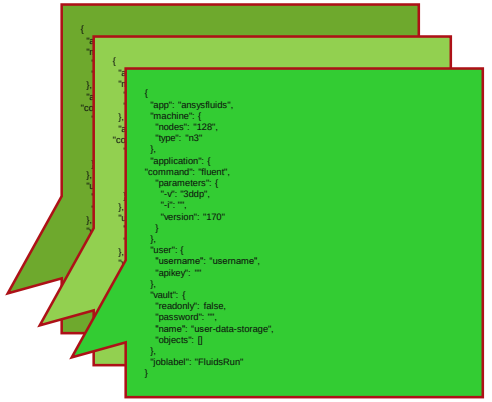
Deep Learning



NGS Sequencing



Simulations



Get Started with FPGA Cloud Computing Trial on Nimbix Cloud

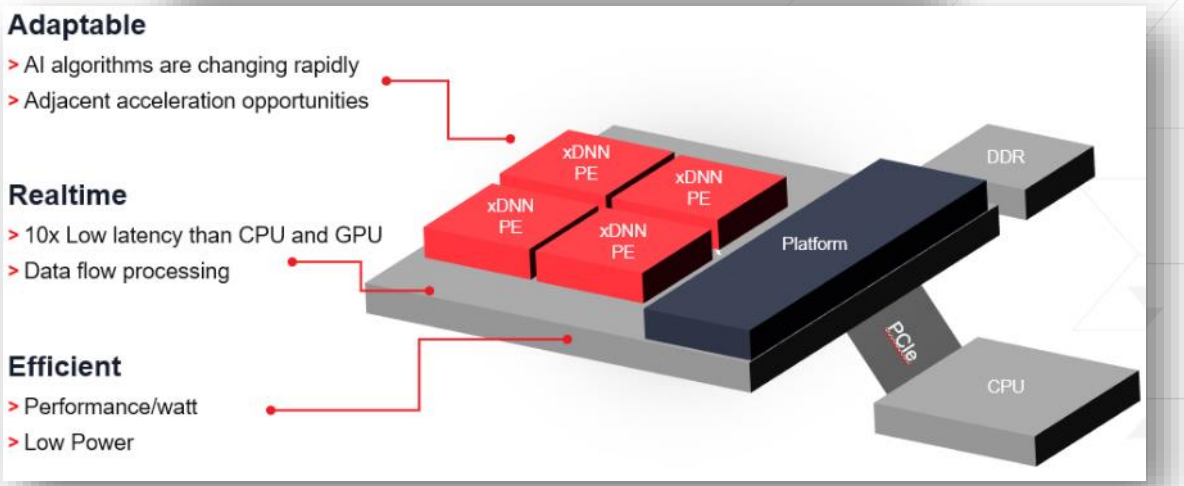
- **100 Hours of free compute time!**
- **Use for developing an application using SDAccel or trying out accelerated run-time applications from ISV Partners**

Industry-Leading Cloud FPGA Infrastructure

- **Introducing all new Nimbix FPGA-accelerated compute nodes featuring Xilinx Alveo:**
  - NX5u
    Dual Intel Xeon CPU, 128GB Host Memory and Xilinx Alveo U200 FPGA Accelerator
  - NX6u
    Dual Intel Xeon CPU, 128GB Host Memory and Xilinx Alveo U250 FPGA Accelerator

Xilinx ML Suite on the Nimbix Cloud

- Turnkey deployment of Xilinx optimized machine learning tools running on all new FPGA accelerators
- Click-to-launch interactive Jupyter Notebook
- Ready to run examples with support for major frameworks including: Caffe, TensorFlow, Keras, MXNet and Darknet



Summary

FPGAs in the Datacenter

> Hyperscale Reconfigurable Acceleration and Next Generation FPGA App Development Begins

FPGA App Development Has Never Been Easier

> Click and profile code in SDAccel in a browser in seconds

FPGA App Deployments Scale Globally

> The Nimbix Cloud and JARVICE provide a platform to deliver accelerated applications and workflows, anywhere

Adaptable.
Intelligent.

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