Accelerating Image Processing for Object Storage

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We Are Xilinx

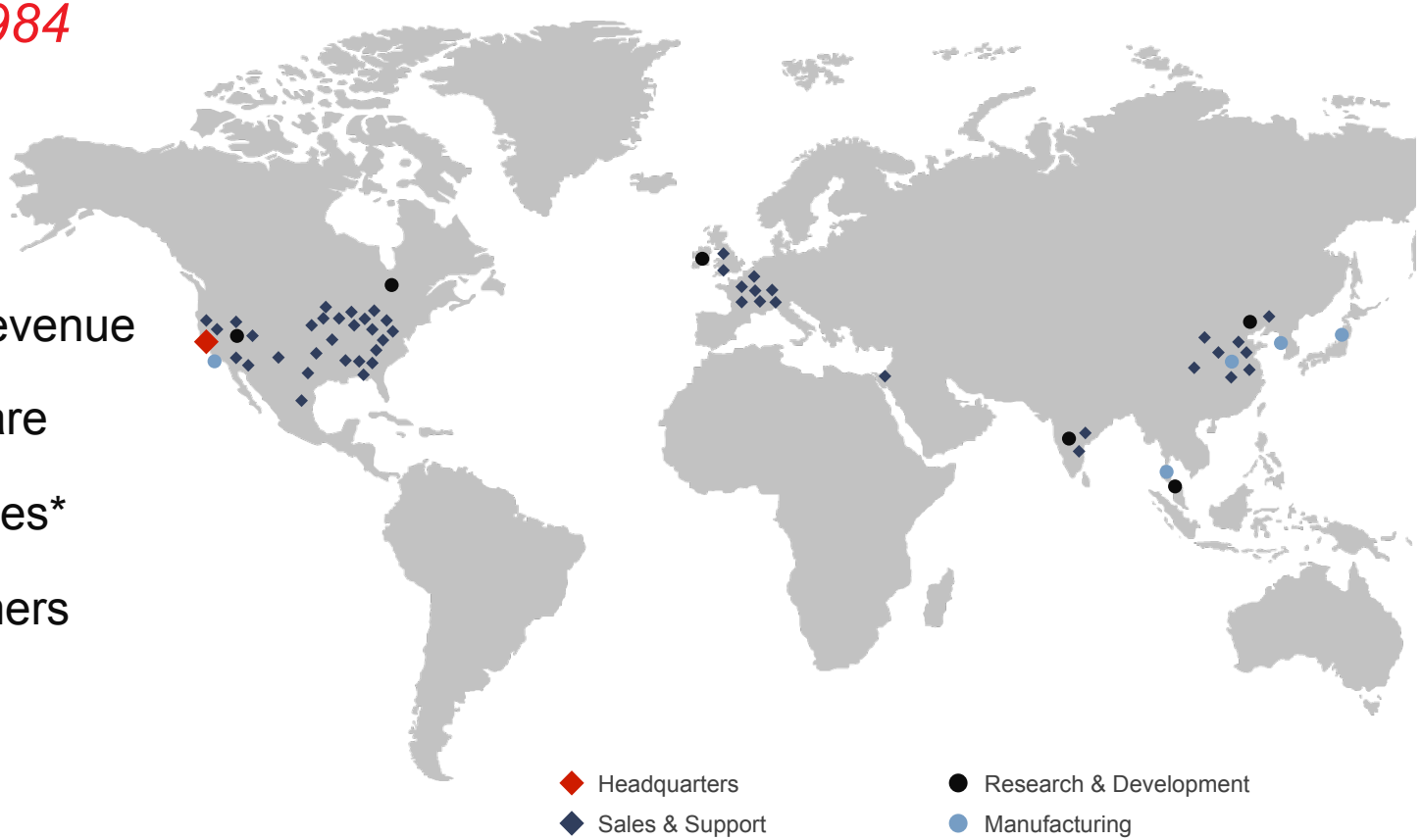
Founded in 1984

$2.54B FY18 Revenue

56% Market Share

4,000+ Employees*

20,000+ Customers



*~3,000 Engineers

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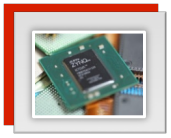
Xilinx Innovation & Industry Firsts

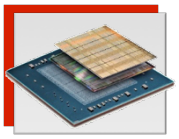
World's First Fabless Semiconductor Company

World's First FPGA

First integrated processor in an FPGA

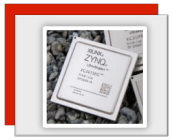


First HW/SW Programmable SoC



World's First 2.5D IC FPGA

First ASIC-Strength Design Suite



First Multi-Processing SoC (MPSoC)

SDx Development Environments

First RFSoC

Acceleration Stacks & Frameworks

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Performance vs. Server CPUs

Real FaaS Use Cases

Machine Learning Inference
Speech Recognition

40X

Genomics
20 min vs. 33 hours for whole genome analysis

100X

Video Streaming
Frame rate for HEVC encoding

10X

Big Data Analytics
40 min vs. 60 hours for logfile query

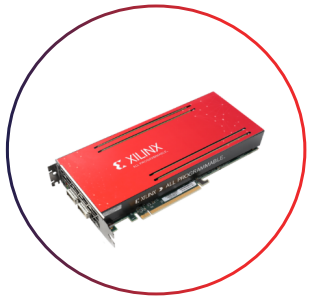
90X

Our Mission: Building the Adaptable Intelligent World

Storage Acceleration supercharges compute

Applications

Genomics | Security | Machine Learning | Video Transcoding | Big Data Analytics | Financial Analytics



Compute Acceleration

- Machine Learning
- Video & Image Processing
- Data Analytics
- Genomics

Inline Storage Acceleration

SDx™
Software-Defined Development Environments

Solution Development

Cloud, Enterprise to Edge-Computing

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CTAccel

- Founded in 2016, in HK and Shenzhen
- Main staffs from CUHK、HKUST、FDU、CAS, etc.
- Focusing on FPGA data center acceleration computing technology
- Core technology has obtained U.S. patents.

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Market Demand and Challenges

More Data

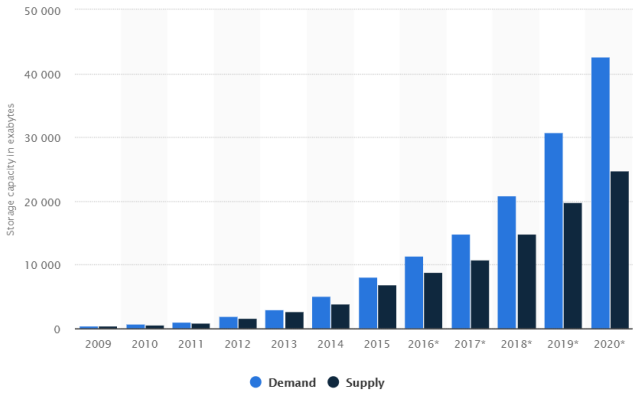
- Modern electronics has higher resolution in capture and display
- Users generate more image and video everyday

Better Quality

- Users crave better viewing experience

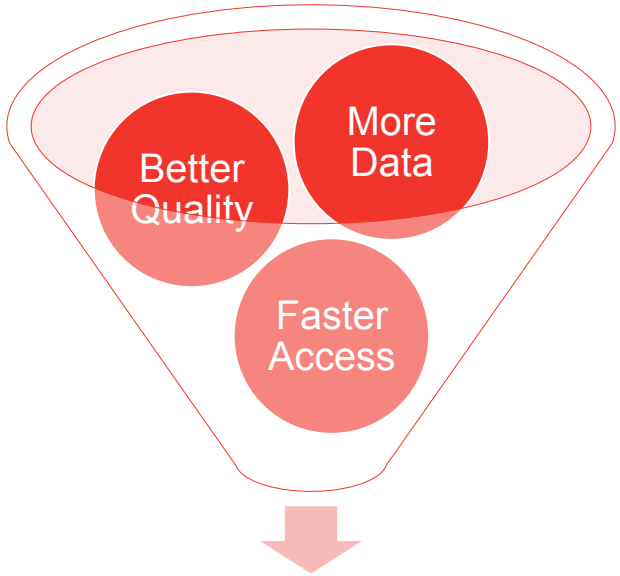
Faster Access

- Customers demand instant access to the resource



Data storage supply and demand worldwide, from 2009 to 2020 (in exabytes)*

*Source: https://www.statista.com/statistics/751749/worldwide-data-storage-capacity-and-demand/



Challenges:

- Huge consumption of computational and storage resource
- Server and storage performance IS NOT KEEPING PACE

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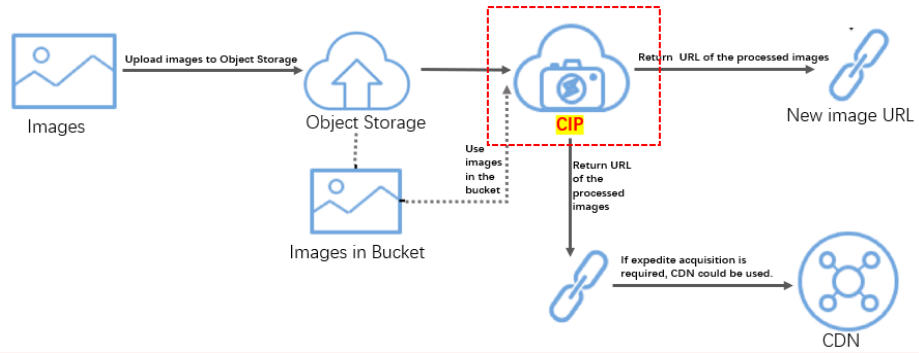
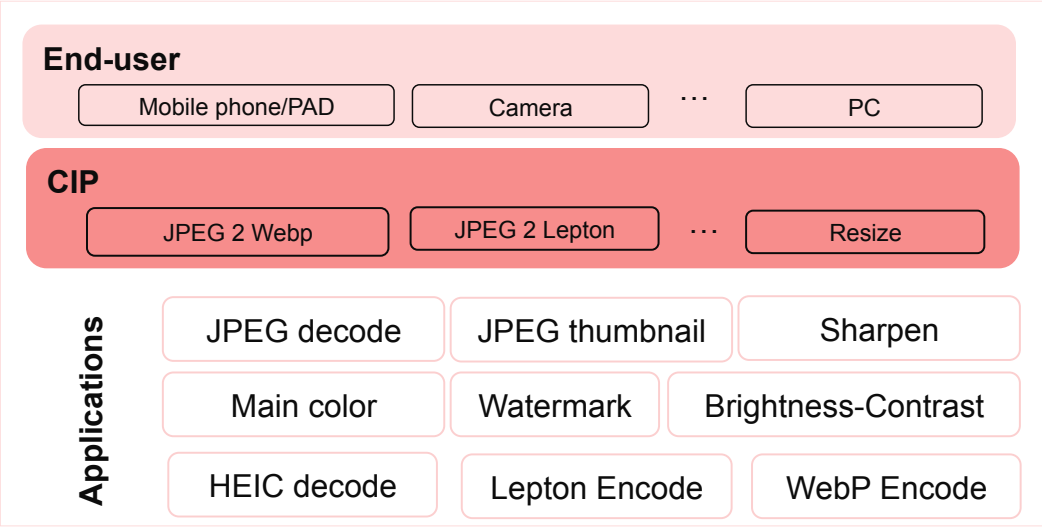
CTAccel solutions to accelerating Image Processing for Object Storage





CTAccel Image Processing (CIP) effectively accelerates:

- Thumbnail Generation/ Transcoding
- Image processing (sharpen/ color filter)

CIP includes the following FPGA-based accelerated functions

- Decoder: JPEG, Lepton, HEIC
- Pixel processing: Resizing/Crop
- Encoder: JPEG, WebP, Lepton

Software compatibility

- OpenCV
- ImageMagicks

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Customer

Famous O2O service provider in China

Scenario

Transcoding from JPEG to WebP

CIP

JPEG decode

Resize

WebP encode

Advantages

High performance

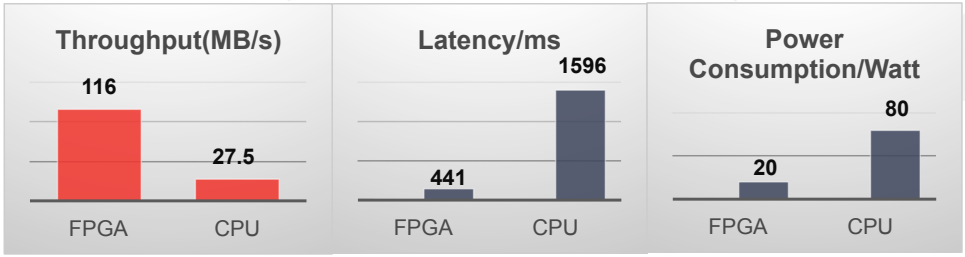
- 1 server with one CIP accelerator has the equivalent computing capability with 3 servers without CIP

TCO reduction

- Reduce TCO by 50% at least

improve customer experience

- Reduce latency by 64%
- Deterministic timing: the same low latency at full-load and no-load



5x Increase concurrency

4x Reduce latency

4x Save Energy

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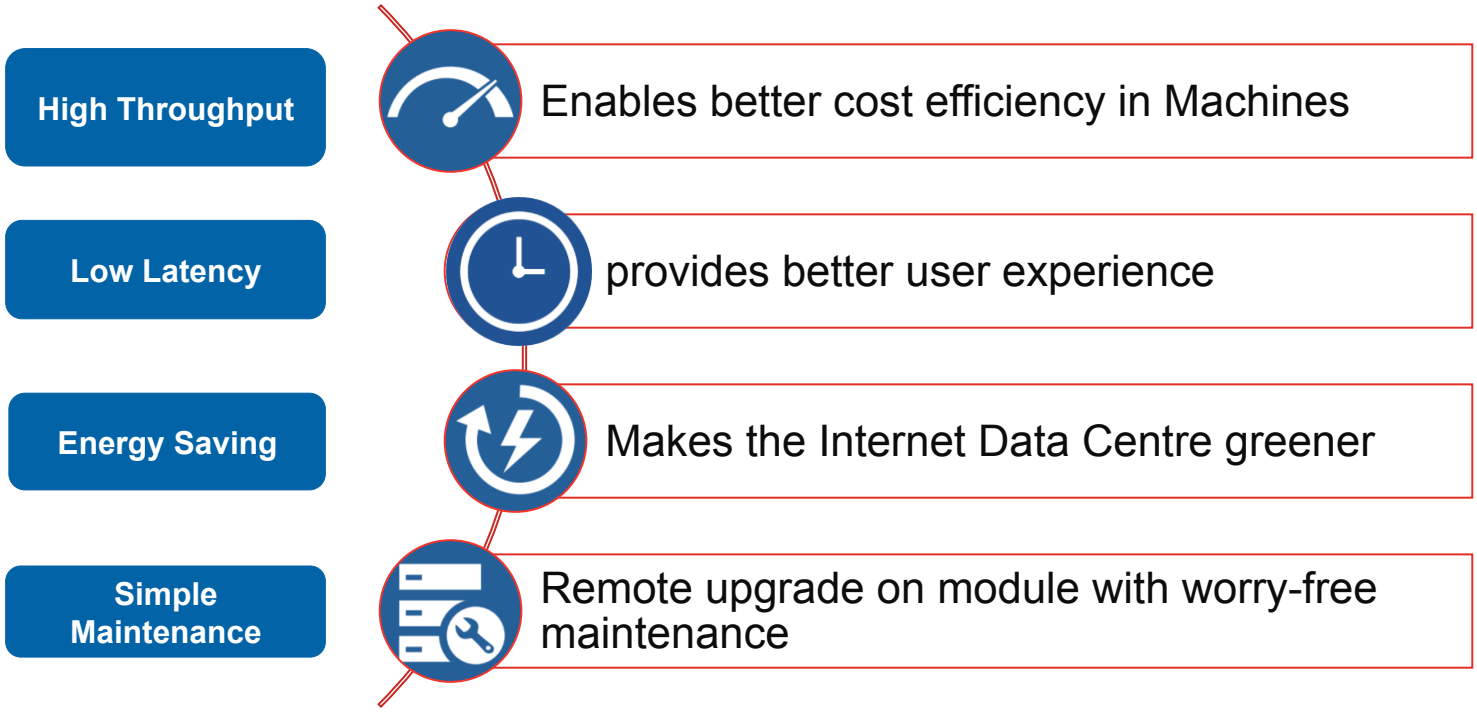
Take-Aways


High Throughput
Enables better cost efficiency in Machines
Low Latency
provides better user experience
Energy Saving
Makes the Internet Data Centre greener
Simple Maintenance
Remote upgrade on module with worry-free maintenance

Adaptable.
Intelligent.

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