Data Center Momentum

Salil Raje, EVP and GM
Forward-Looking Statements

During the course of this presentation, we may provide projections or other forward-looking statements regarding future events and/or future financial performance. Forward-looking statements and projections can be identified by the use of words such as “expect”, “anticipate”, “believe”, and “estimate” and specifically include, without limitation, information pertaining to Fiscal 2020 performance, longer-term revenue and profitability performance, and future market developments, such as total available or total serviceable markets. Undue reliance should not be placed on such forward-looking statements and projections, which speak only as of the date they are made. We undertake no duty to update such forward-looking statements. Actual events and results may differ materially from those in the forward looking statements and are subject to risks and uncertainties. We refer you to the documents the Company files from time to time with the Securities and Exchange Commission, specifically, the Company’s last filed Form 10-K. These documents identify important risk factors that could cause actual results to differ materially from those contained in our projections and other forward-looking statements.

Use of Non-GAAP Financial Information

This presentation contains both non-GAAP and GAAP numbers. We provide a reconciliation between non-GAAP and GAAP numbers in the appendix to this presentation, as well as on our website at investor.xilinx.com.
Data Center is the Fastest Growing End Market

Includes silicon + board revenue

46% increase

FY18 Revenue: $159M
FY19 Revenue: $232M
Explosion of Unstructured Data

- APPS
- DATABASE
- LIFE SCIENCES
- STORAGE
- NETWORK
- COMPUTE
- MACHINE LEARNING
- VIDEO
- ANALYTICS

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Xilinx Data Center SAM Opportunity

Source: IHS & Xilinx Estimates

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The Clear Leader in FPGA as a Service

October 2019
Live Hyperscale Cloud Data Centers
## Growing Acceleration Ecosystem

<table>
<thead>
<tr>
<th>Category</th>
<th>2018</th>
<th>Today</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published Apps</td>
<td>27</td>
<td>65</td>
<td>&gt;2x</td>
</tr>
<tr>
<td>Accelerator Program</td>
<td>84</td>
<td>555</td>
<td>&gt;6x</td>
</tr>
<tr>
<td>Companies + Academia</td>
<td>716</td>
<td>3089</td>
<td>&gt;4x</td>
</tr>
</tbody>
</table>
Compute Acceleration Performance
Video Transcoding for VP9 Live Stream

30x higher performance
25% cost reduction

Source: Xilinx Analysis
Compute Acceleration Performance
Genomic Data Analytics

Accelerates diagnosis & treatment by 90x

Source: Xilinx Analysis
Compute Acceleration Performance
Real-time ML Inference

100x higher performance
Significant cost reduction

Source: Xilinx Analysis
Network Acceleration: Making SmartNICs Faster and Smarter

SolarFlare SmartNIC Partnership
Processing >100 million packets/sec
Power usage on 1 FPGA < 75 watts

Data Center Customer Benefits
Saving CPU cycles
Increasing network throughput
Accelerates applications such as search engine, malware detection, ad insertion...

FY24 SAM: $1.3B
Xilinx to Acquire Solarflare
Announced on April 24, 2019

Critical NIC IP and software stack enable next generation SmartNICs

World Class Networking Talent
Key Technologies:
Application acceleration
Server security
Network adapters
Storage Acceleration: SmartSSD Partnership

FY24 SAM: $800M

5x Speedup for Data-Intensive Workloads
- Compression
- Encryption
- Database query offloads

Reduces TCO >2x
- Increases performance
- Frees up CPU cycles

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Current Data Center Architecture
Enhanced Data Center Architecture

- **PCIe**
- **CPU**
- **Smart NIC**
- **Compute Accelerator**
- **CPU**
- **Smart NIC**
- **Compute Accelerator**
- **CPU**
- **Smart SSD**
- **CPU**
- **Smart SSD**
- **CPU**

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Data Center Platforms

Software Applications

Python/Java/C++ Programmability

Compute Platform
Storage Platform
Network Platform

Software Frameworks

IDE
Libraries, Compilers, Middleware
Firmware

Hardware Devices and Boards

Hardware
Software Stack
Continued Investment in Comprehensive SW Stack

<table>
<thead>
<tr>
<th>Software Applications</th>
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<tbody>
<tr>
<td>Compute Platform</td>
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<tr>
<td>FFMpeg</td>
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<tr>
<td>Storage Platform</td>
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<tr>
<td>NVMe-OF</td>
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<tr>
<td>Network Platform</td>
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<tr>
<td>SDN / NFV</td>
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<tr>
<td>IDE</td>
</tr>
<tr>
<td>ML</td>
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<tr>
<td>Video</td>
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<tr>
<td>Compression</td>
</tr>
<tr>
<td>Key Value</td>
</tr>
<tr>
<td>Encryption</td>
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<tr>
<td>XRT- Open Source Common Runtime Library</td>
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<tr>
<td>Compute Shell Firmware &amp; Runtime</td>
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<tr>
<td>Storage Shell Firmware &amp; Runtime</td>
</tr>
<tr>
<td>Network Shell Firmware &amp; Runtime</td>
</tr>
</tbody>
</table>

Python/Java/C++ Programmability

Software Frameworks
- TensorFlow
- FFmpeg
- NVMe-OF
- ROCE
- SDN / NFV
- Openstack

Libraries, DSA, Middleware Compilers
- ML
- Video
- Compression
- Key Value
- Encryption
- OVS

Firmware
- Compute Shell Firmware & Runtime
- Storage Shell Firmware & Runtime
- Network Shell Firmware & Runtime

Hardware
- Hardware Devices and Boards
Growing ISV Ecosystem

FINANCIAL

VIDEO

LIFE SCIENCES

MACHINE LEARNING

On-premise

FPGA as a Service

*Partial List of Xilinx Applications Ecosystem Partners

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Scaling Alveo Platform Partners

VARs

Customers

Distributors

OEM Partners

Hewlett Packard Enterprise

inspur

COLFAX

emptian

MEADOWGATE TECHNOLOGIES

INDRAMIC

REDAPT

EXXACT

AVNET

XILINX ALVEO
Expanding Xilinx Value with ACAP

- Designed for SW programmability
- Integrates acceleration functions
- Higher performance
- More power efficient
Versal AI Inference Performance

Resnet50 Inference Performance

Sources:
GPU: Nvidia T4 TensorRT 5, Published March 2019
(INT8, Batch=4, 1.5ms Latency)
Alveo Versal Card, Projected (INT8, Batch=8, 1.5ms Latency)

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Versal Whole Application Acceleration

Smart City

4 Channels 1080p
- Camera IO
- Pre-Processing
- CPU

12nm GPU
- Video Decode
- ML

Decode Detect + Classify

117 ms

8x throughput

4x perf/watt

1/6 latency

32 Channels 1080p
- Camera IO
- CPU

Versal ACAP
- Video Decode
- Pre-Processing
- ML

Decode Detect + Classify

20 ms

Note: GPU - Nvidia T4
Source: Xilinx Analysis

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## Today’s Enhanced Data Center Architecture

<table>
<thead>
<tr>
<th>PCIe</th>
<th>CPU</th>
<th>Smart NIC</th>
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<tbody>
<tr>
<td></td>
<td>Compute Accelerator</td>
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<td></td>
<td>CPU</td>
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Vision: ACAP for Distributed Adaptive Computing

ACAP Integrated Accelerator

- ARM CPUs
- FPGA
- AI Engines
- Smart NIC
- PCIe
- CPU
- ACAP
- ACAP
- ACAP
- ACAP
- ACAP
- SmartSSD
- Smart NIC
- Smart NIC

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Harnessing the Power and Flexibility of Multiple Accelerators
Virtualization of Acceleration Resources

Distributed Adaptive Computing

Small Workload

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP
Virtualization of Acceleration Resources

Distributed Adaptive Computing
Virtualization of Acceleration Resources

Large Workload

Distributed Adaptive Computing

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP

ACAP
Value of Distributed Adaptive Computing

- Whole application acceleration across compute, networking and storage
- Virtualization and independent scale-out of resources
- Best compute optimization and utilization within the lowest power envelope
- Significant TCO savings
Building a $1 Billion+ DCG Business by FY23

FPGA advantages for compute, network and storage acceleration

Transformation from FPGAs to acceleration platforms

Longer term vision of distributed adaptive computing with ACAPs