A NEW DAY FOR THE DATACENTER

FORREST NORROD

SVP AND GENERAL MANAGER,
ENTERPRISE, EMBEDDED AND SEMI CUSTOM BUSINESS GROUP
CAUTIONARY STATEMENT

This presentation contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) including, but not limited to: AMD’s strategy, focus, vision, forecast, future plans, growth opportunities, priorities and expectations; the timing, features, functionality, availability, expectations and benefits of AMD future products; AMD’s 2017 commitments including AMD’s ability to launch new products, expand margin, grow revenue and drive profitability; AMD’s planned future investments and focus, including markets, technology and key decisions; TAM, growth opportunities and the timing of those growth opportunities in PCs, immersive platform, and datacenter markets as well as AMD’s ability to grow, increase revenue and gain market share in those markets; AMD’s commitment and long term investment in the datacenter market; AMD’s ability to disrupt and lead in the datacenter market; AMD’s product, technology and financial roadmaps; share and revenue growth opportunities and the timing of those growth opportunities in AMD’s Enterprise, Embedded and Semi-custom and Computing and Graphics businesses; AMD’s ability to achieve SAM expansion and margin expansion in the Computing and Graphics business; Computing and Graphics’ client compute opportunities; AMD’s 2020 growth opportunity; AMD’s ability to expand non-GAAP gross margin in 2018 and 2020; AMD’s 2017 financial priorities and outlook; AMD’s 2017 and long-term financial model including revenue, non-GAAP gross margin, non-GAAP operating expense, non-GAAP net income, capital expenditures and non-GAAP earnings per share; AMD’s ability to deliver long-term shareholder value; AMD’s ability to achieve its long term financial priorities, including revenue growth, gross margin expansion, consistent profitability and a strong balance sheet; AMD’s ability to achieve double digit percentage revenue growth; AMD’s ability to achieve gross margin expansion through higher ASPs and richer product mix; long-term gross margin drivers; ability of AMD’s new products to drive revenue and gross margin expansion; AMD’s long-term capital structure and liquidity; and AMD’s 2018 and long-term financial model regarding growth and profitability, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this presentation are based on current beliefs, assumptions and expectations, speak only as of the date of this presentation and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD’s control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Investors are urged to review in detail the risks and uncertainties in AMD’s Securities and Exchange Commission filings, including but not limited to AMD’s Quarterly Report on Form 10-Q for the quarter ended April 1, 2017.

NON-GAAP FINANCIAL MEASURES

In this presentation, AMD has provided non-GAAP financial measures including non-GAAP gross margin, non-GAAP operating expenses, non-GAAP operating loss, non-GAAP interest expense, non-GAAP net loss, non-GAAP loss per share and Adjusted EBITDA. The non-GAAP financial measures disclosed in this presentation should be viewed in addition to, and not as a substitute for or superior to, AMD’s reported results prepared in accordance with GAAP and should be read only in conjunction with AMD’s Consolidated Financial Statements prepared in accordance with GAAP. These non-GAAP financial measures referenced are reconciled to their most directly comparable GAAP financial measures in the Appendices at the end of this presentation.
EESC
HIGH-PERFORMANCE COMPUTING AND GRAPHICS SOLUTIONS

Enterprise/Server | Embedded | Semi-Custom
EESC FUNDAMENTALS

Strong Foundation for Future Growth
Differentiated Datacenter Products
Expanding Semi-Custom and Embedded Opportunities
SEMI-CUSTOM EXPERTISE
ESTABLISHED GAME CONSOLE LEADERSHIP

"It's not a process of calling up AMD and saying I'll take this part, this part and this part. A lot of really specific custom work went into this."

- Kevin Gammill, Microsoft

"How it works is that we sit down with AMD, who are terribly collaborative. It's a real pleasure to work with them."

- Mark Cerny, Sony
HIGH-PERFORMANCE DIFFERENTIATED SOLUTIONS

- High-Performance, Scalable Technologies
  - ZEN
  - RADEON

- Modular SoC and Platform Design Capabilities
  - FABRIC

- Deep Customer Integration and Co-Development
  - Microsoft
  - SONY

SEMI-CUSTOM MODEL
SEMI-CUSTOM & EMBEDDED FOCUS

Gaming
Visual Embedded
Imaging
Infrastructure
Datacenter
#1 PRIORITY
DATACENTER
LEADERSHIP
SERVER MARKET IS STAGNANT

- Performance Limited by Unbalanced Designs
- “Incrementalism”
- Systems Not Evolving with Cloud
PERFORMANCE AND FEATURES FOR
$16B TAM\textsuperscript{1} IN 2020

Server

Storage

Networking

(1) AMD Internal Estimates for Calendar 2020
x86 SERVER MARKET

91% of the Market is Single or Dual Socket

2016 Units

Source: IDC historical data of split of x86 server volumes by socket capability
32 “Zen” Cores
8 Memory Channels
128 Lanes of High-Bandwidth I/O
Dedicated Security Engine
BREAKING CONSTRAINTS OF MOORE’S LAW

- Revolutionary Infinity Fabric
- High-performance, scalable links
- Enables architectural innovations that increase real-world performance
- Improves product yields
- Reduces product costs
EPYC TWO SOCKET PLATFORM

- **64** Cores
- **4TB** Memory
- **128** PCI Express® Lanes

![Diagram showing two processors connected by a fabric with 64 LANES on each side.](image-url)
EPYC TWO SOCKET PLATFORM

45% More Cores than Competitor
122% More Memory Bandwidth than Competitor
60% More I/O than Competitor

FABRIC

16 DIMMS
4 Memory Channels
High Speed I/O
64 LANES

See Endnotes
HIGH-PERFORMANCE VIRTUALIZATION

- Highest-performance dual socket offerings
  - AMD Epyc vs. Intel Xeon® E5 2699A V4
  - VMware hosting Linux® guest VMs
- 8 VMs running compilation of Linux® kernel
  - Compute intensive
  - Performance CPU bound
- Demonstrate compute capability for cloud and enterprise datacenters
<table>
<thead>
<tr>
<th>Component</th>
<th>AMD</th>
<th>INTEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU model</td>
<td>EPYC</td>
<td>E5-2699A V4</td>
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<tr>
<td>Sockets</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total cores</td>
<td>64</td>
<td>44</td>
</tr>
<tr>
<td>Total memory channels</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Total populated memory (16 GB DIMMS)</td>
<td>256</td>
<td>128</td>
</tr>
<tr>
<td>Memory frequency</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Total PCIe® gen3 lanes to CPUs</td>
<td>8x16=128</td>
<td>2x40=80</td>
</tr>
</tbody>
</table>

Intel server is a typical standard, commercially available server from a major OEM.
x86 SERVER MARKET

>50% of the 2P Shipments are 2650 or Below

80% of the Server Market Dual Socket

2016 Units

E5-260X E5-262X E5-263X E5-264X E5-265X E5-266X E5-267X E5-268X E5-269X

2P GCC Estimated SPECint_rate_base2006
# 1S VS. 2S SYSTEM CONFIGURATIONS

<table>
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<tr>
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<th>INTEL</th>
</tr>
</thead>
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<tr>
<td>CPU model</td>
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</tr>
<tr>
<td>Sockets</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Total cores</td>
<td>32</td>
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</tbody>
</table>

Intel server is a typical standard, commercially available server from a major OEM.
MORE CORES
MORE I/O
GREATER DENSITY
LESS SPACE
LOWER POWER
DISRUPTING VOLUME 2S MARKET

- Epyc 1S performance \( \geq 50\% \) Intel 2S offerings
- Significantly lower power consumption
- Greatly reduced operating expense
- Up to 30\% TCO advantage\(^i\)

\(^i\) AMD estimate including SpecInt internal measurements. See Endnotes.
NO COMPROMISE
ONE SOCKET
Customers Can Match Systems to their Workloads Without Compromise

LEADERSHIP
TWO SOCKET
High-Performance, Balanced Architecture

I/O Expansion | Memory Bandwidth | Memory Capacity | More Cores | More Memory Bandwidth | More I/O
THE STATUS QUO

- 4S+
- 2S
- 1S

x86 SERVER MARKET
DISRUPTING THE STATUS QUO

4S+
2S
1S

x86 SERVER MARKET

4S+
2S
1S
ENTRY 1S
DISRUPTING THE STATUS QUO

EVERY EPYC™ PROCESSOR IS UNRESTRAINED

- All I/O
- All reliability features
- All memory channels
- High-speed memory
- Complete security stack
- Integrated chipset
A SIMPLIFIED MACHINE INTELLIGENCE ARCHITECTURE

Flexible Configurations | Open Ecosystem | Optimized Platforms | Lower TCO
MARKET MOMENTUM

30+
1S/2S Servers Expected in 2017

5000+
EPYC™ CPUs Seeded with OEMs, End Customers, and Partners

Programs Underway with Multiple Hyperscale Providers

June Launch
AMD LONG TERM DATACENTER COMMITMENT

- **2017**
  - **“Zen”**
  - 14nm

- **2020**
  - **“Milan”**
    - “Zen 3”
    - 7nm+

- **“Rome”**
  - “Zen 2”
  - 7nm

Continuous Innovation | Performance Leadership
DATA CENTER LEADERSHIP

Returning Innovation to Datacenter Market
Clear Choice for Key Workloads
Widespread Ecosystem Support
AMD is Back, Investing for the Long Term
Slide 15/22/24:

- 122% greater memory bandwidth – Epyc Max memory bandwidth of 170.7GB/s. Intel Xeon E5-2699A v4 max memory bandwidth of 76.8GB/s (Source: https://ark.intel.com/products/96899/Intel-Xeon-Processor-E5-2699A-v4-55M-Cache-2.40-GHz)

Demo 1: Demonstration conducted by AMD Engineering using a 2P AMD reference system with 32-core Epyc™ processor engineering samples, and an Intel-based 2P OEM production platform, each running the same gcc compile of a bare-bones linux kernel, utilizing a d3 Sunburst Partition visualization (http://d3js.org). AMD 2P test platform used 256GB DDR4-2400; Intel Xeon E5-2699A v4 2P test platform used 128GB DDR4-2400. Both platforms ran the same version of VMware vSphere with Ubuntu 17.04 guests, with 8 VMs per server.


Demo 2: Demonstration conducted by AMD Engineering using an AMD reference system with a 32-core Epyc™ processor pre-production prototype, and an Intel-based OEM production platform, each running the same gcc compile of a bare-bones Linux kernel, utilizing a d3 Sunburst Partition visualization (http://d3js.org). AMD 1P test platform used 128GB DDR4-2400; Intel Xeon E5-2650 v4 2P test platform used 128GB DDR4-2400. Both platforms ran the same version of VMware vSphere with Ubuntu 17.04 guests, with 8 VMs per server.

Slide 23: Boards used include Intel HPE DL-380 Gen 9 and Epyc-based re-production Gigabite 1S server

Slide 23: 32-core Epyc TDP is 180 watts, compared to 2 x Intel 12-core E-2650 v4 TDP at 105 watts each; AMD internal estimate as of May 2017 based on the expected cost for 28 1-socket 32-core Epyc based servers compared to 21 2-socket Intel 12-core (24 total cores) E-2650 v4 based servers, assuming a 3-year useful life, 100% utilization, and electricity cost of $0.16/Kw hr. Assumes SPECint® score estimates of 697 for Epyc processor and 293 for a single E2650v4 processor scaled at 1.95x for 2 sockets. Additional information about SpecCPU®2006 can be found at www.spec.org. Estimate is based on AMD internal lab measurements/modelling and may vary.
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