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This presentation contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as AMD's vision, mission and focus; AMD's market opportunity and total addressable markets; AMD's technology and architecture roadmaps; the features, functionality, performance, availability, timing and expected benefits of future AMD products and product roadmaps; AMD's path forward in data center, PCs and gaming; AMD's market and financial momentum; and the expected benefits from the acquisition of Xilinx, Inc., 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 most recent reports on Forms 10-K and 10-Q. AMD does not assume, and hereby disclaims, any obligation to update forward-looking statements made in this presentation, except as may be required by law.
High Performance and Adaptive Computing

Cloud, Network, Hyperscale & Supercomputing

5G & Comms Infrastructure

AI & Analytics Everywhere

Adaptive Intelligent Systems

Gaming, Simulation and Visualization

Smarter Client Devices & Edge

At The Center of Today’s Intelligent World
# High-performance and Adaptive Computing Solutions

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>AMD Ryzen</td>
<td>AMD Radeon</td>
<td>VIRTEX, ZYNQ</td>
</tr>
<tr>
<td>AMD EPYC</td>
<td>AMD INSTINCT</td>
<td>XILINX VERSAL, KINTEX</td>
</tr>
</tbody>
</table>
Enormous Opportunity

Long-Term TAMs Present

- **Data Center**: $50B TAM
- **PCs**: $40B TAM
- **Embedded**: $29B TAM
- **Gaming**: $16B TAM

Total: ~$135B TAM
AMD Technologies & Architecture Roadmaps
“ZEN 3” Core Architecture

Leadership Performance for Servers, Laptops and Desktops

19% IPC Increase
The largest generational increase since AMD introduced “Zen” in 2017

New advanced Security features

Leadership performance for Cloud, HPC and Enterprise workloads

Outstanding gaming performance for desktops
“ZEN 4” CORE ARCHITECTURE

2X
1MB Per Core L2 Cache

>15%
Single-Thread Uplift\(^1\)

5GHz+
Max Boost\(^2\)

EXPANDED INSTRUCTIONS
AI Acceleration

Coming Fall 2022

---

1. See endnote: RPL-001, 2. See endnotes: GD-150.
WORLD’S FIRST 5nm PC PROCESSOR CORES

“Zen 4” CPU core chiplets in 5nm

All-new I/O Die in 6nm
- Integrated AMD RDNA™ 2 graphics
- Advanced low-power architecture
- DDR5 and PCIe® 5.0 controllers

Coming Fall 2022
Compute Architecture Roadmap

Sustained High-performance Leadership

Roadmaps subject to change
AMD RDNA™ 2 Graphics Architecture
Driving Gaming Performance Leadership
Available in AMD Radeon™ RX 6000 Series Graphics

Performance
Up to 2X higher performance compared to AMD RDNA™ on select cards

Power
Up to 65% generational performance-per-watt improvement vs. AMD RDNA™

Features
Deliver DX®12 Ultimate experience for every gamer with raytracing, variable rate shading and more
Gaming GPU Architecture Roadmap

Driving Gaming Performance Leadership

- 2019: RDNA
  - Architecture Optimized for Gaming
- 2022: RDNA 2
  - Perf/Watt Improvement, Ray Tracing, Variable Rate Shading & More
- Advanced Node

Roadmaps subject to change. See endnote RX-554
AMD CDNA™ 2 Architecture

Purpose-built to drive discoveries and accelerate compute-intensive HPC and AI workloads

- Built to drive discoveries and accelerate compute-intensive HPC and AI workloads
- Powering solutions from compact single systems to exascale supercomputers
- In-package AMD Infinity Fabric™ technology
- Enhanced Matrix Core technology boosts computational capabilities and throughput
Compute GPU Architecture Roadmap
Compute DNA for The Data Center

2019

7nm
GCN
First 7nm Data Center GPU

7nm
CDNA
2nd Gen AMD Infinity Architecture Optimized for ML/HPC

6nm
CDNA 2
3rd Gen AMD Infinity Architecture Extends to Exascale

2022

Roadmaps subject to change
AMD Infinity Architecture

Scalable Interconnect Technology for AMD CPUs and GPUs

Leveraged across AMD product line from notebook to server

Optimization for multi-processor performance and scalability

Enables revolutionary chiplet design

3rd Gen AMD Infinity Architecture enables unified compute at exascale
AMD Infinity Architecture Roadmap

- **1st Gen**: AMD Infinity Fabric™
  - CPU Connectivity
  - PCIe® 3.0

- **2nd Gen**: AMD Infinity Architecture
  - 4/8-way GPU Connectivity
  - PCIe® 4.0

- **3rd Gen**: AMD Infinity Architecture
  - Up to 8-WAY GPU with Coherent Connectivity

2017 - 2022

Roadmaps subject to change
AMD Leadership Packaging Innovation

2015
2.5D HBM

2017
Multichip Module

2019
Chiplets

2021
3D Chiplets
(Chiplet + Advanced 3D Stacking)

Led Industry in HBM, 2.5D & Chiplet Architecture

Aggressive Roadmap for Chiplet & 3D Integration
### AMD 3D Chiplet Technology

Breakthrough Packaging Technology for High-Performance Computing

<table>
<thead>
<tr>
<th></th>
<th>Interconnect Density</th>
<th>Interconnect Density</th>
<th>Interconnect Energy Efficiency</th>
<th>Enabling 3rd Gen AMD EPYC™ Processors with AMD 3D V-Cache™</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;200X</td>
<td>Compared to On-Package 2D Chiplet</td>
<td>&gt;15X</td>
<td>Compared to Micro Bump 3D</td>
<td>&gt;3X</td>
</tr>
</tbody>
</table>

See endnotes: EPYC-025, EPYC-026
AMD Products
AMD Data Center Focus
Delivering CPU and GPU Differentiation

HPC
Enterprise/IT
Cloud
Machine Intelligence
Virtualization & Cloud Gaming

AMDA
EPYC
AMDA
INSTINCT
XILINX
ALVEO.
XILINX
VERSAL.
AMD EPYC™ Lineup
A New Era in The Data Center

1st Gen
AMD EPYC™ Processors
“Zen” Architecture

2nd Gen
AMD EPYC™ Processors
“Zen 2” Architecture

3rd Gen
AMD EPYC™ Processors
“Zen 3” Architecture
**3rd Gen AMD EPYC™ Processor**

Extending Per Socket and Per Core Performance Leadership

- World’s highest performance server processor*
- Higher performance in HPC, Cloud and Enterprise workloads compared to the competition
- Advanced security features with AMD Infinity Guard
- Built on the powerful and efficient “Zen 3” core

*AMD EPYC 7763. See endnotes MLN-016B, MLN-086B, GD-183
3rd Gen AMD EPYC™
Processor with
AMD 3D V-Cache™
Technology

| The first Data Center x86 CPU with true 3D Die Stacking | Deliver 3X the L3 cache* for breakthrough per-core performance | Same features and capabilities as 3rd Gen AMD EPYC™ processors | Partner solutions expected from Atos, Cisco, Dell Technologies, Gigabyte, HPE, Lenovo, QCT and Supermicro |
---|---|---|---|

* Versus standard 3rd Gen EPYC processors. See endnotes MLNX-012
# Next Generation AMD EPYC™ Processors

## “Genoa”
- Exceptional Per Socket and Per-Core Performance
- Up to 96 “Zen 4” cores in 5 nm
- PCIe® 5.0 | CXL with breakthrough memory expansion
- Enhanced security features
- DDR 5

## “Bergamo”
- High-Performance Processor for Cloud Native Computing
- Up to 128 “Zen 4c” cores in 5 nm
- Full “Zen 4” ISA
- Breakthrough performance and power efficiency
- Same socket and platform as “Genoa”
AMD Data Center CPU Roadmap
Sustained High-performance Leadership

14nm
“ZEN” 1ST GEN

7nm
“ZEN 2” 2ND GEN

7nm
“ZEN 3” 3RD GEN

“Genoa” 5nm

“Bergamo” 5nm

“ZEN 4” 4TH GEN

“ZEN 4c”

2017 2022

Roadmaps subject to change
AMD Data Center GPU Lineup
A New Era in The Data Center

AMD Instinct™ MI200 Accelerator
AMD CDNA™ 2 architecture

AMD Instinct™ MI100 Accelerator
AMD CDNA™ architecture

Customer-Oriented Data Center Solutions
Strategic development with lead customers

ROCM™ Software
Top-to-bottom open ecosystem commitment

World-class GPU Accelerator Technologies
Open Software Ecosystem Platform
AMD Instinct™ MI200 Accelerator

World’s fastest HPC and AI data center Accelerators*

**Leadership HPC**
Up to 4.9X faster than the competition

**Leadership AI**
Up to 1.2X faster than the competition

**Leadership Science**
Fueling exascale discoveries with ROCm™ Open Ecosystem

**Leadership Technology**
AMD CDNA™ 2 architecture and 3rd Gen AMD Infinity Fabric™

*AMD Instinct MI250X. See endnotes MI200-01, MI200-02
AMD Data Center GPU Roadmap

2019

- GCN
- AMD INSTINCT

2022

- 7nm
- AMD CDNA
- AMD INSTINCT
- 6nm
- AMD CDNA 2
- AMD INSTINCT

Roadmaps subject to change.
Xilinx™ Powering Next Gen Data Centers

Real-time computing via ALVEO™

In-storage computing via SmartSSD

Increased bandwidth via SmartNIC

Compute

Storage

Network
Xilinx Real-Time Compute, Storage and Networking Acceleration
Data Center Growth
Delivering Leadership Compute Differentiation

Supercomputing
Leading the Exascale Era
Consistently Winning Top Deployments

Cloud
Expanding Deployments with Leading Providers

Enterprise
Large-scale Enterprise Deployments with Growing Pipeline
Our Path Forward

The New Data Center Leader

Leadership Roadmap, Consistent Execution

Leadership Performance

Leadership Architectures for Accelerated Computing
AMD Client Focus
Building The Greatest Processors in The World

Desктопы:
- Игровые
- Корпоративные
- Потребительские
- Высокопроизводительные

Notebooks:
- Игровые
- Корпоративные
- Потребительские
- Chromebook

Workstations:
- Корпоративные
- Потребительские
# AMD Client Lineup

**Performance for Consumer and Commercial PCs**

<table>
<thead>
<tr>
<th>Processor Line</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD Ryzen™ 5000 Series</td>
<td>&quot;Zen 3&quot; architecture</td>
</tr>
<tr>
<td>Desktop Processors</td>
<td></td>
</tr>
<tr>
<td>AMD Ryzen™ 5000 and 6000</td>
<td>&quot;Zen 3&quot; &amp; &quot;Zen 3+&quot; architecture + Built-in Radeon™ graphics</td>
</tr>
<tr>
<td>Series Mobile Processors</td>
<td></td>
</tr>
<tr>
<td>AMD Ryzen Threadripper™ PRO</td>
<td>&quot;Zen 2&quot; architecture</td>
</tr>
<tr>
<td>Desktop Processors</td>
<td></td>
</tr>
<tr>
<td>AMD Ryzen™ 3000 Series</td>
<td>&quot;Zen 2&quot; architecture</td>
</tr>
<tr>
<td>Desktop Processors</td>
<td></td>
</tr>
<tr>
<td>AMD Ryzen™ and Athlon™</td>
<td>&quot;Zen&quot; architecture + Built-in Radeon™ graphics</td>
</tr>
<tr>
<td>Processors for Chromebooks</td>
<td></td>
</tr>
<tr>
<td>AMD Ryzen™ Desktop Processors</td>
<td>&quot;Zen 3&quot; architecture + Built-in Radeon™ graphics</td>
</tr>
<tr>
<td>with Radeon™ Graphics</td>
<td></td>
</tr>
</tbody>
</table>

**Architectures**:
- "Zen 2" architecture
- "Zen 3" architecture
- "Zen" architecture
- "Zen 3+" architecture
- "Zen 3+" architecture + Built-in Radeon™ graphics

**Built-in Radeon™ Graphics**:
- "Zen" architecture + Built-in Radeon™ graphics
- "Zen 3" architecture + Built-in Radeon™ graphics
AMD Ryzen™
6000 Series
Mobile Processors

Bringing new experiences to life - delivering everything you need, and so much more.

- Up to 30% faster ultrathin performance than previous generation
- First AMD mobile processors to feature AMD RDNA™ 2 architecture - based built-in graphics
- The world’s first x86 processor that fully supports Windows 11 security features
- Up to 24 hours of movie playback on a single charge
AMD Ryzen™ PRO
6000 Series
Mobile Processors

Based on the world’s first 6nm process technology for business notebooks

Up to eight high performance “Zen 3+” cores to deliver unmatched productivity
Deliver stunningly long battery life for work away from the plug and on the go
Multi-layered security features help provide protection from silicon to OS
Comprehensive manageability options that scale to any size organization
AMD RYZEN™ 7000 SERIES
WORLD’S MOST ADVANCED GAMING PROCESSORS

“Zen 4”  |  5nm  |  AM5  |  PCIe® 5.0  |  DDR5

Coming Fall 2022
Desktop Client CPU Roadmap

Sustained High-performance Leadership

2017

14nm/12nm

“ZEN”
“ZEN+”

7nm

“ZEN 2”

7nm

“ZEN 3”

5nm

“ZEN 4”

AMD 3D V-Cache™

Roadmaps subject to change
Our Path Forward

Driving Non-stop Innovation for PCs

- Multi-Generational Product Leadership
- Superior User Experience
- High-Performing Notebook Processors
- OEM and Commercial Momentum
AMD Graphics Focus
Expanding The Radeon™ Graphics Universe

- **PCs**
  - Radeon™ RX 6000 series, RX 5000 series, and Radeon™ Pro W5000 series

- **Workstations**
  - Broad line-up powered by the Radeon™ PRO W6000 series, including W6600M and W6000X series GPUs

- **Consoles**
  - Latest consoles powered by “Zen 2” architecture

- **Cloud Gaming**
  - Google Stadia, Microsoft Project xCloud

- **Mobile**
  - Samsung partnership and IP licensing

- **Automotive**
  - Automotive infotainment systems powered by AMD Ryzen™ Embedded and AMD RDNA™ 2

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**AMC CORPORATE PRESENTATION | MAY 2022**
AMD Radeon™ Graphics Lineup
Expanding The Radeon™ Graphics Universe

AMD Radeon™ RX 6000 Series
AMD Radeon™ RX 6000M Series Mobile Graphics
AMD Radeon™ RX 5000 Series
AMD Radeon™ Pro Workstation Graphics

AMD RDNA™ 2 architecture
AMD RDNA™ 2 architecture
AMD RDNA™ architecture
AMD RDNA™ 2 architecture
High-performance Gaming

AMD Radeon™ RX 6000 Series Graphics

AMD RDNA™ 2 architecture enables performance, features and efficiency

Up to 2X higher performance compared to AMD RDNA™ architecture-based graphics in select titles

Up to 65% higher performance-per-watt over AMD RDNA™ architecture-based graphics

Enables DirectX® 12 Ultimate support, raytracing and variable rate shading

See endnotes RX-558, RX-554 and RX-549
AMD Radeon™ RX 6000M Series Graphics
High-performance Gaming for Laptops

- AMD RDNA™ 2 architecture enables performance, features and efficiency
- Desktop-class performance for ultra-high framerate 1440p gaming anywhere
- Up to 1.5X higher performance compared to AMD RDNA™ GPUs
- Brings AMD Infinity Cache™ and DirectX® Raytracing to next-gen laptops

See endnote RX-661
**AMD Radeon™ Pro W6000 Series Graphics**

Exceptional Performance with Reliability, Stability and Software Certifications at its Core

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD RDNA™ 2</td>
<td>offering enhanced performance, efficiency and hardware raytracing</td>
</tr>
<tr>
<td></td>
<td>Up to 179% the performance of previous-generation in professional workloads</td>
</tr>
<tr>
<td></td>
<td>Up to a gigantic 32GB of high-performing GDDR6 ECC memory for larger datasets</td>
</tr>
<tr>
<td></td>
<td>Certified for many leading professional software applications for greater stability</td>
</tr>
</tbody>
</table>

See endnote RPW-363
AMD Gaming GPU Roadmap

- 2019:
  - "NAVI 1X"
  - 7nm

- 2022:
  - "NAVI 2X"
  - Advanced Node

Roadmaps subject to change
Our Path Forward

Pushing The Envelope for Gamers

AMD RDNA™ Scales from PC to Console to Cloud

Top-to-Bottom Leadership Product Stack

Advanced Software
Growing Demand for Adaptive Computing
Xilinx Acquisition Creates Industry’s High-Performance and Adaptive Computing Leader

- Industry-Leading Products
- Diversified and Growing Markets
- Data Center Momentum
- Non-GAAP Margin Expansion
- Non-GAAP EPS and Free Cash Flow Accretive in 1st year
Core Adaptable Hardware Technologies

FPGAs
From high-bandwidth connectivity to massive compute engines

SoCs
Multi-processing subsystem with Arm® cores and integrated FPGA logic

ACAPs
Adaptive Compute Acceleration Platforms for any application, any developer
### Comprehensive Software and Hardware Stack for All Developers

<table>
<thead>
<tr>
<th>Frameworks</th>
<th>Data Scientists and AI Developers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Libraries</td>
<td>Application Developers</td>
</tr>
<tr>
<td>Runtime Library and Compilers</td>
<td>Software Developers</td>
</tr>
<tr>
<td>Integrated Development Environment</td>
<td>Hardware and Software Developers</td>
</tr>
</tbody>
</table>

**Hardware Devices and Accelerator Cards**

![Hardware Devices and Accelerator Cards](image-url)
Xilinx AI Inference Leadership

Whole App Acceleration is optimized hardware acceleration of both AI inference and other performance-critical functions, tightly coupled in a single device.

- High throughput and low latency
- Matches the fast pace of AI innovation
- Accelerates the whole application
- Comprehensive AI software platform
From Devices to Platforms
Platforms Accessible to All Developers

Multiple Design-Entry Points

AI Platforms

AI Developers and Data Scientists

Software Platforms

Application SW Developers

Embedded Platforms

Embedded/SoC Developers

Hardware Platforms

Hardware Developers
Xilinx: A Track Record of Innovation

Hardware Innovations

- World's First FPGA
- First FPGA with Integrated SerDes and Processor
- First High-End High-Capacity FPGA
- First 3D FPGA and Zynq® Dual HW Programmable SoC
- First Zynq® MPSoC & RFSoC
- ALVEO™ Data Center Accelerator Card
- VERSAL® First Adaptive Compute Acceleration Platform
- ALVEO™ SN100 First Composable, Adaptable SmartNIC
- KRIA SOM Adaptive System on Module with First Embedded App Store

Software Innovations

- ISE Design Suite
- VIVADO
- SDx
- HLx Editions
- Next-Gen Development Environment
- Programmability for SW Developers
- C, C++ & System C Enabled
- Unified Software Platform

## AMD’s Strong Product Portfolio

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Center</strong></td>
<td>AMD EPYC and AMD Radeon Instinct leading the Exascale Era</td>
<td>AMD EPYC</td>
</tr>
<tr>
<td><strong>Gaming</strong></td>
<td>Top-to-bottom graphics cards and game consoles based on RDNA Architecture</td>
<td>AMD EPYC</td>
</tr>
<tr>
<td><strong>Comms</strong></td>
<td>FPGAs and Adaptive SoCs for system optimization with scalable processor integration</td>
<td>AMD EPYC</td>
</tr>
<tr>
<td><strong>Embedded</strong></td>
<td>FPGAs and Adaptive SoCs for system optimization with scalable processor integration</td>
<td>AMD EPYC</td>
</tr>
</tbody>
</table>

**PCs**
Leadership Desktop, Ultrathin and Gaming Notebook Processors

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AMD CORPORATE PRESENTATION | MAY 2022
AMD Commitment to ESG
Purpose Driven High-performance Computing

Environmental
Steadfast commitment to environmental stewardship and contributing to our local communities

Social
Creating a culture that drives innovation by fostering diversity, inclusion and belonging

Governance
Delivering industry leading products with integrity, innovation and quality in order to help solve global challenges

2020-21 Corporate Responsibility Report Now Available
### Building The Best

| Best product portfolio in AMD history | Multi-year leadership technology roadmaps | Expanding customer and partner ecosystem | Accelerating market share growth | Best-in-class growth technology franchise |

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**High Performance and Adaptive Computing Leader**
Endnotes

Footnotes GD-122, R5K-003, R5K-002, MLN-003, MLN-071K, MLN-049A, RZ3-34, RX-558, RX-554

GD-122: The information contained herein is for informational purposes only and is subject to change without notice. Timelines, roadmaps, and/or product release dates shown in these slides are plans only and subject to change. “Zen,” “Zen 2,” “Zen 3,” “Zen 4,” “RDNA,” “RDNA 2,” “Vega,” “Polaris,” “GCN,” “Naples,” “Rome,” “Milan” and “Genoa” are codenames for AMD architectures and are not product names.

R5K-003: Testing by AMD performance labs as of 09/01/2020. IPC evaluated with a selection of 25 workloads running at a locked 4GHz frequency on 8-core “Zen 2” Ryzen 7 3800XT and “Zen 3” Ryzen 7 5800X desktop processors configured with Windows® 10, NVIDIA GeForce RTX 2080 Ti (451.77), Samsung 860 Pro SSD, and 2x8GB DDR4-3600. Results may vary. R5K-003

R5K-002: Testing by AMD performance labs as of 9/2/2020 based on the average FPS of 40 PC games at 1920x1080 with the High image quality preset using an AMD Ryzen™ 9 5900X processor vs. Core i9-10900K. Results may vary. R5K-002

MLN-003: Based on AMD internal testing as of 02/1/2021, average performance improvement at ISO-frequency on an AMD EPYC™ 72F3 (8C/8T, 3.7GHz) compared to an AMD EPYC™ 7F32 (8C/8T, 3.7GHz), per-core, single thread, using a select set of workloads including SPECrate®2017_int_base, SPECrate®2017_fp_base, and representative server workloads. SPEC® and SPECint are registered trademarks of Standard Performance Evaluation Corporation. Learn more at spec.org.

MLN-071K: Based on SPECrate®2017_int_base on 02/20/2021, a server powered by two 64c AMD EPYC 7763 CPUs has a score of 839 which is higher than any currently posted SPEC 2P server score. Per socket score would be 839/2=419.5 which is higher than any 1P server score. This is a compliant result run on an ASUS RS720A-E11 (KMPP-D32); with Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R); OS: SUSE Linux Enterprise Server 15 SP2 (x86_64) Kernel 5.3.18-22-default; Compiler: C/C++/Fortran: Version 3.0.0 of AOCC. SPEC®, SPECCint® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

MLN-049A: ANSYS® LS-DYNA® version 2021.1 comparison based on AMD internal testing as of 02/05/2021 measuring the time to run 3cars, test case simulation (converted to jobs/day - higher is better) Configurations using a server with 2x AMD EPYC 75F3 versus a server with 2x Intel Xeon Gold 6258R utilizing 384 GB (12x 32 GB DDR4-3200). The 3cars test case gain individually was 126% [-2.26x the] per node or ~98% per core jobs/day performance. Results may vary.

RZ3-34: ~15% IPC uplift: AMD “Zen 2” CPU-based system scored an estimated 15% higher than previous generation AMD “Zen” based system using estimated SPECCint®_base2006 results. SPEC and SPECCint are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org.

RX-558: Testing done by AMD performance labs October 20 2020 on RX 6900 XT and RX 5700 XT (20.45-201013n driver), AMD Ryzen 9 5900X

RX-554: Testing done by AMD performance labs 10/21/20, using Assassins Creed Odyssey (DX11, Ultra), Battlefield V (DX12, Ultra), Borderlands 3 (DX12, Ultra), Control (DX12, High), Death Stranding (DX12 Ultra), Division 2 (DX12, Ultra), F1 2020 (DX12, Ultra), Far Cry 5 (DX11, Ultra), Gears of War 5 (DX12, Ultra), Hitman 2 (DX12, Ultra), Horizon Zero Dawn (DX12, Ultra), Metro Exodus (DX12, Ultra), Resident Evil 3 (DX12, Ultra), Shadow of the Tomb Raider (DX12, Highest), Strange Brigade (DX12, Ultra), Total War Three Kingdoms (DX11, Ultra), Witcher 3 (DX11, Ultra no HairWorks) at 4K. System comprised of an RX 6900 XT with AMD Radeon Graphics driver 27.20.12031.1000 and an RX 5700 XT with AMD Radeon Graphics driver 26.20.13001.9005. Performance may vary. RX-554
Endnotes

Footnotes MLN-016B, MLN-086B, GD-183, ROM-169, ROM-557, MI200-01


GD-183: AMD Infinity Guard features vary by EPYC™ Processor generations. Infinity Guard security features must be enabled by server OEMs and/or Cloud Service Providers to operate. Check with your OEM or provider to confirm support of these features. Learn more about Infinity Guard at https://www.amd.com/en/technologies/infinity-guard. GD-183

ROM-169: For a complete list of world records see http://amd.com/worldrecords.

ROM-557: Estimates based on AMD Server Virtualization TCO (total cost of ownership) Estimator tool v5.5, comparing the AMD EPYC™ and Intel® Xeon® server solutions required to deliver 320 total virtual machines (VM), requiring 1 core and 8GB of memory per VM, with a minimum total solution memory requirement of 2.56 TB of memory. The analysis includes both hardware and virtualization software components. For 320 VMs and 1 core per VM, the Intel® Gold 6250 processor requires 20 - 2P servers. The AMD EPYC_7702P solution requires 5 - 1P servers. Virtualization software pricing as of October 2019. Third party names are for informational purposes only and may be trademarks of their respective owners. This scenario contains many assumptions and estimates and, while based on AMD internal research and best approximations, should be considered an example for information purposes only, and not used as a basis for decision making over actual testing. All pricing is in USD. ROM-557

MI200-01 World’s fastest data center GPU is the AMD Instinct™ MI250X. Calculations conducted by AMD Performance Labs as of Sep 15, 2021, for the AMD Instinct™ MI250X (128GB HBM2e OAM module) accelerator at 1,700 MHz peak boost engine clock resulted in 95.7 TFLOPS peak theoretical double precision (FP64 Matrix), 47.9 TFLOPS peak theoretical double precision (FP64), 95.7 TFLOPS peak theoretical single precision matrix (FP32 Matrix), 47.9 TFLOPS peak theoretical single precision (FP32), 383.0 TFLOPS peak theoretical half precision (FP16), and 383.0 TFLOPS peak theoretical BFloat16 format precision (BF16) floating-point performance. Calculations conducted by AMD Performance Labs as of Sep 18, 2020 for the AMD Instinct™ MI100 (32GB HBM2 PCIe® card) accelerator at 1,502 MHz peak boost engine clock resulted in 11.54 TFLOPS peak theoretical double precision (FP64), 46.1 TFLOPS peak theoretical single precision matrix (FP32), 23.1 TFLOPS peak theoretical single precision (FP32), 184.6 TFLOPS peak theoretical half precision (FP16) floating-point performance. Published results on the NVidia Ampere A100 (80GB) GPU accelerator, boost engine clock of 1410 MHz, resulted in 19.5 TFLOPS peak theoretical double precision tensor cores (FP64 Tensor Core), 9.7 TFLOPS peak double precision (FP64), 19.5 TFLOPS peak single precision (FP32), 78 TFLOPS peak half precision (FP16), 312 TFLOPS peak half precision (FP16 Tensor Flow), 39 TFLOPS peak BFloat16 (BF16), 312 TFLOPS peak BFloat16 format precision (BF16 Tensor Flow), theoretical floating-point performance. The TF32 data format is not IEEE compliant and not included in this comparison. https://www.nvidia.com/content/dam/en-ww/Solutions/Data-Center/nvidia-ampere-architecture-whitepaper.pdf, page 15, Table 1.
MI100 (32GB HBM2 PCIe® card) accelerator at 1,502 MHz peak boost engine clock resulted in the Ryzen benchmark, measuring multithreaded performance of a Ryzen 7 PRO 5850U processor engineering sample vs Core i7 MI250X. Calculations conducted by AMD Performance Labs as of Sep 18, 2020 for the AMD Instinct™ MI101 (32GB HBM2 PCIe® card) accelerator at 1,502 MHz peak boost engine clock resulted in 11.54 TFLOPS peak theoretical double precision (FP64), 46.1 TFLOPS peak theoretical single precision matrix (FP32), 23.1 TFLOPS peak theoretical single precision (FP32), 184.6 TFLOPS peak theoretical half precision (FP16) floating-point performance. Published results on the NVIDIA Ampere A100 (80GB) GPU accelerator, boost engine clock of 1410 MHz, resulted in 19.5 TFLOPS peak single precision tensor cores (FP64 Tensor Core), 9.7 TFLOPS peak double precision (FP64), 19.5 TFLOPS peak single precision (FP32), 78 TFLOPS peak half precision (FP16), 312 TFLOPS peak half precision (FP16 Tensor Flow), 39 TFLOPS peak Bfloat16 format precision (BF16 Tensor Flow), theoretical floating-point performance. The TF32 data format is not IEEE compliant and not included in this comparison.

https://www.nvidia.com/content/dam/en-zz/Solutions/Data-Center/nvidia-ampere-architecture-whitestar.pdf, page 15, Table 1. MI200-01

M1100-03: Calculations conducted by AMD Performance Labs as of Sep 18, 2020 for the AMD Instinct™ MI100 (32GB HBM2 PCIe® card) accelerator at 1,502 MHz peak boost engine clock resulted in 11.54 TFLOPS peak double precision (FP64), 46.1 TFLOPS peak single precision matrix (FP32), 23.1 TFLOPS peak single precision (FP32), 184.6 TFLOPS peak half precision (FP16) theoretical, floating-point performance. Published results on the NVIDIA Ampere A100 (40GB) GPU accelerator resulted in 9.7 TFLOPS peak double precision (FP64), 19.5 TFLOPS peak single precision (FP32), 78 TFLOPS peak half precision (FP16) theoretical, floating-point performance. Server manufacturers may vary configuration offerings yielding different results. MI100-03

CZM-1: ‘Best Mobile Processors’ is defined as having the highest multi-thread processing performance in each of four (4) classes of Ryzen 5000 series processors. Testing by AMD engineering using the Cinebench R20 nT benchmark, measuring multithreaded performance of a Ryzen 9 5900HX processor engineering sample vs Core i9-10980HK, Ryzen 7 5800U processor engineering sample vs Core i7-1185G7 processor, the Ryzen 5 5600U processor engineering sample vs Core i5-1135G7 processor, and a Ryzen 3 5400U processor engineering sample vs Core i3-1115G4 processor. Performance may vary. CZM-1

CZM-34: Performance projection by AMD engineering staff based on calculated total system power with an AMD Ryzen 7 5800U vs Ryzen 7 4800U system engaged in continuous sleep, idle, video playback, and MobileMark 2018 on an AMD Reference Platform configured with a 53WhR battery. CZM-34

CZP-17: ‘Best Mobile Processors for business’ is defined as having the highest multi-thread processing performance in each of three (3) classes of Ryzen PRO 5000 series processors. Testing by AMD engineering using the Cinebench R20 nT benchmark, measuring multithreaded performance of a Ryzen 7 PRO 5850U processor engineering sample vs Core i7-1185G7 processor, the Ryzen 5 PRO 5650U processor engineering sample vs Core i5-1135G7 processor, and a Ryzen 3 PRO 5450U processor engineering sample vs Core i3-1115G4 processor. Performance may vary. CZP-17

R5K-007: Testing by AMD Performance Labs as of 09/01/2020 using Cinebench R20 nT versus system wall power during full load CPU test using a Core i9-10900K, Ryzen 9 3900XT, Ryzen 9 5900X, Ryzen 9 3950X, and a Ryzen 9 5950X configured with: 2x8GB DDR4-3600, GeForce RTX 2080 Ti, Samsung 860 Pro SSD, Noctua NH-D15s cooler, and an open-air test bench with no additional power draw sources. Results may vary. R5K-007

R5K-009: Testing by AMD performance labs as of 09/01/2020 measuring gaming performance of a Ryzen 9 5900X desktop processor vs. a Ryzen 9 3900XT in 11 popular titles at 1920x1080, the High image quality preset, and the newest graphics API available for each title (e.g. DirectX® 12 or Vulkan™ or DirectX® 11). Results may vary. R5K-009

R5K-003: Testing by AMD performance labs as of 09/01/2020. IPC evaluated with a selection of 25 workloads running at a locked 4GHz frequency on 8-core “Zen 2” Ryzen 7 3800XT and Zen 3” Ryzen 7 5800X desktop processors configured with Windows® 10, NVIDIA GeForce RTX 2080 Ti (451.77), Samsung 860 Pro SSD, and 2x8GB DDR4-3600. Results may vary. R5K-003

CZM-119: The Ryzen 5000 series processors are the highest-rated current generation processors averaged across major e-tailer sites worldwide from November 2020 - September 2021. CZM-119
Endnotes


RX-549 - Testing done by AMD performance labs 10/16/20, using Assassin’s Creed Odyssey (DX11, Ultra), Battlefield V (DX12, Ultra), Borderlands 3 (DX12, Ultra), Control (DX12, High), Death Stranding (DX12 Ultra), Division 2 (DX12, Ultra), Far Cry 5 (DX11, Ultra), Gears of War 5 (DX12, Ultra), Hitman 2 (DX12, Ultra), Horizon Zero Dawn (DX12, Ultra), Metro Exodus (DX12, Ultra), Resident Evil 3 (DX12, Ultra), Shadow of the Tomb Raider (DX12, Highest), Strange Brigade (DX12, Ultra), Total War Three Kingdoms (DX11, Ultra), Witcher 3 (DX11, Ultra) no HairWorks) at 4K. System comprised of a Radeon RX 6800 XT with AMD Radeon Graphics driver 27.20.12031.1000 and an Radeon RX 5700 XT with AMD Radeon Graphics driver 26.20.13001.9005. Performance may vary. RX-549

RX-661: Testing done by AMD performance labs April 9 2021, on 25 games at 1440p using the flagship AMD RDNA 2 mobile part versus the flagship AMD RDNA mobile part. Performance may vary. RX-661 RX-661: Testing done by AMD performance labs April 9 2021, on 25 games at 1440p using the flagship AMD RDNA 2 mobile part versus the flagship AMD RDNA mobile part. Performance may vary. RX-661.

RX-325: Testing done by AMD performance labs 6/1/19, using the Division 2 @ 25x14 Ultra settings. Performance may vary based on use of latest drivers.


RPW-363: on average, the AMD Radeon™ PRO W6800 pre-production sample (RDNA™ 2 Architecture) requires ~56% of time vs. the AMD Radeon PRO W5700 (RDNA™ Architecture) vs. the AMD Radeon PRO WX 9100 (GCN Architecture) to complete the set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO W6800 pre-production sample (RDNA™ 2 Architecture) is ~1.79x as fast as (179% as fast as, 79% faster than) the AMD Radeon PRO W5700 (RDNA™ Architecture) in a set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO W6800 pre-production sample (RDNA™ 2 Architecture) requires ~52% of time vs. the AMD Radeon PRO WX 9100 (GCN Architecture) to complete the set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO W6800 pre-production sample (RDNA™ 2 Architecture) is ~1.94x as fast as (194% as fast as, 94% faster than) the AMD Radeon PRO WX 9100 (GCN Architecture) in a set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO W6800 pre-production sample (RDNA™ 2 Architecture) requires 90% of time vs. the AMD Radeon PRO WX 9100 (GCN Architecture) to complete the set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3.

RX-363: on average, the AMD Radeon™ PRO WX 9100 (GCN Architecture) is ~1.79x as fast as (179% as fast as, 79% faster than) the AMD Radeon PRO W5700 (RDNA™ Architecture) to complete the set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO WX 9100 (GCN Architecture) in a set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO WX 9100 (GCN Architecture) in a set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3 on average, the AMD Radeon™ PRO WX 9100 (GCN Architecture) requires 90% of time vs. the AMD Radeon PRO WX 9100 (GCN Architecture) to complete the set of rendering tasks in Lumion v.11, Topaz Video Enhance AI 2.0.0, Dassault Systèmes SOLIDWORKS® Visualize 2021 SP3.

RX-4600 (19 661, RX-363, GD-176, RMB-24, RMB-13

GD-176: Video codec acceleration (including at least the HEVC (H.265), H.264, VP9, and AV1 codecs) is subject to and not operable without inclusion/installation of compatible media players. GD-176

RMB-24: As of January 2022, only AMD Ryzen™ 6000 Series processors include the Microsoft Pluton security processor, while AMD Ryzen™ 5000 Series processors and Intel’s latest 11th and 12th Gen processors do not. RMB-24

Endnotes

Footnotes RMB-15; EPYC-025; EPYC-026; MLNX-012

RMB-15: Based on testing by AMD as of 12/14/2021. Battery life evaluated with hours of continuous 1080p local video playback using the h.264 video codec. Video codec acceleration (including at least the HEVC (H.265), H.264, VP9, and AV1 codecs) is subject to and not operable without inclusion/installation of compatible media players. System configuration: AMD reference motherboard(s), Ryzen™ 7 5800U @ 15W and 2x8GB LPDDR4, Ryzen™ 7 6800U @ 28W and 2x8GB LPDDR5, 1080p eDP PSR display with Varibright at 150 nits, Samsung 980 Pro 1TB SSD, WLAN enabled and disconnected, Windows 11 22000.282, BIOS 103BRC1 (5800U) and 090RC6INT (6800U). Video file: 1920x1080, 23.976 FPS, h.264. – RMB-15
EPYC-025: 64-core 3rd Gen EPYC 7xx3 CPUs compared to a maximum 40-core 3rd Gen Intel Xeon Platinum 8380.
EPYC-026: Based on calculated areal density and based on bump pitch between AMD hybrid bond AMD 3D V-Cache stacked technology compared to AMD 2D chiplet technology and Intel 3D stacked micro-bump
MLNX-012: EPYC™ 7003 Processors with 3D V-Cache have 768MB of L3 Cache, while EPYC 7003 processors without 3D V-Cache have 256MB.
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