



**LEADERSHIP HIGH-PERFORMANCE COMPUTING**



# CAUTIONARY STATEMENT

This presentation contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as AMD's vision, mission and focus; the proposed transaction with Xilinx, Inc. including expectations, benefits and plans of the proposed transaction; total addressable markets; AMD's technology roadmaps; the features, functionality, performance, availability, timing and expected benefits of future AMD products; and AMD's path forward in data center, PCs and gaming, 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 Annual Report on Form 10-K for the year ended December 26, 2020. 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.

**NON-GAAP FINANCIAL MEASURES** In this presentation, in addition to GAAP financial results, AMD has provided non-GAAP financial measures including non-GAAP gross margin, and non-GAAP earnings per share. AMD uses a normalized tax rate in its computation of the non-GAAP income tax provision to provide better consistency across the reporting periods. For fiscal 2020, AMD uses a projected non-GAAP tax rate, which excludes the direct tax impacts of pre-tax non-GAAP adjustments, of approximately 3%, reflecting currently available information. AMD is providing these financial measures because it believes this non-GAAP presentation makes it easier for investors to compare its operating results for current and historical periods and also because AMD believes it assists investors in comparing AMD's performance across reporting periods on a consistent basis by excluding items that it does not believe are indicative of its core operating performance. 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.



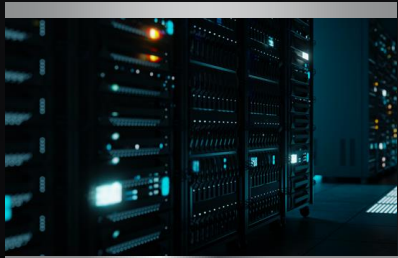
## OUR VISION

High-performance computing is transforming our lives

## OUR MISSION

Build great products that accelerate next generation computing experiences

# HIGH PERFORMANCE COMPUTING



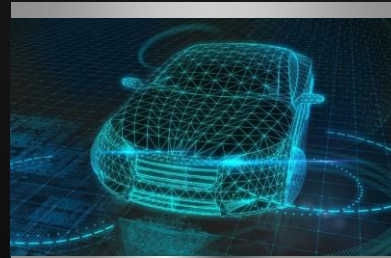
Cloud, Network,  
Hyperscale &  
Supercomputing



5G & Comms  
Infrastructure



AI & Analytics  
Everywhere



Adaptable  
Intelligent Systems



Gaming, Simulation  
and Visualization



Smarter Client  
Devices & Edge

## AT THE CENTER OF TODAY'S WORLD

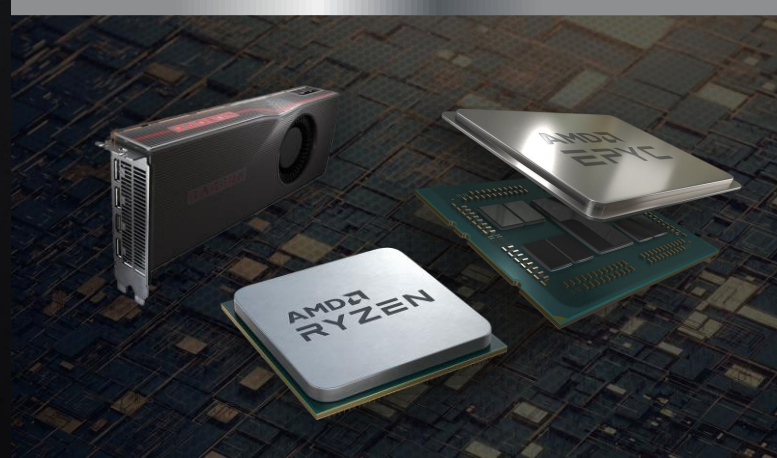


# AMD IS A LEADING TECHNOLOGY COMPANY



## 13,000+ Employees

Working around the world,  
headquartered in  
Santa Clara, California



## Building the Best

Developing high-performance  
compute technologies that move us  
forward



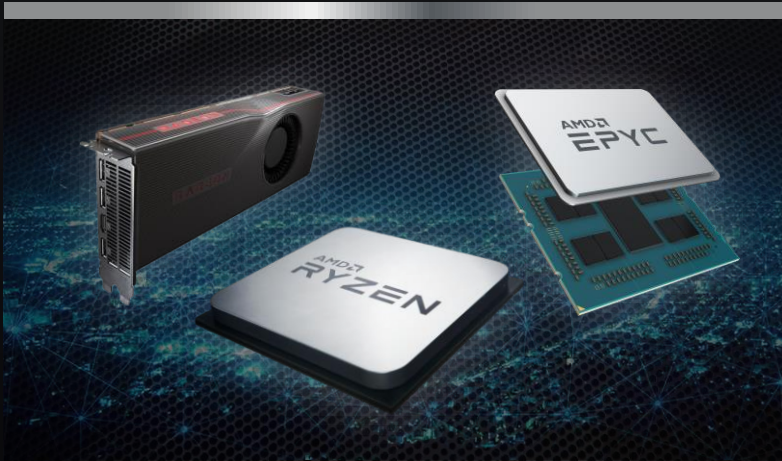
## Transforming the World

Non-stop innovation for the  
world's creators, researchers,  
inventors and explorers

# NASDAQ: AMD



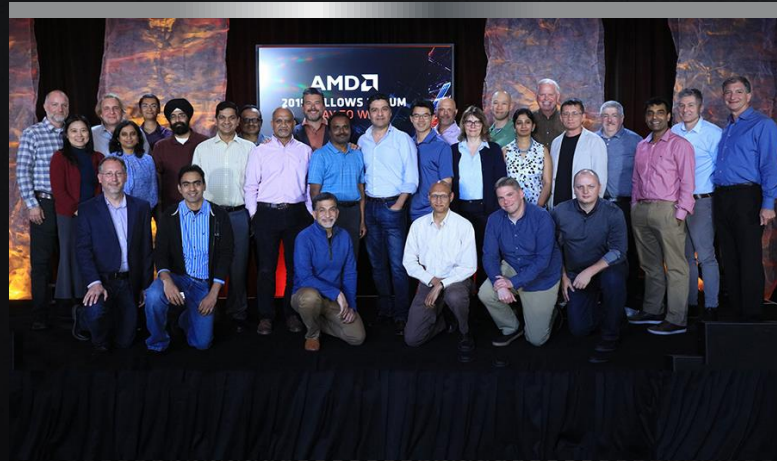
# OUR CULTURE OF INNOVATION



## Innovate

**We build products that transform the world**

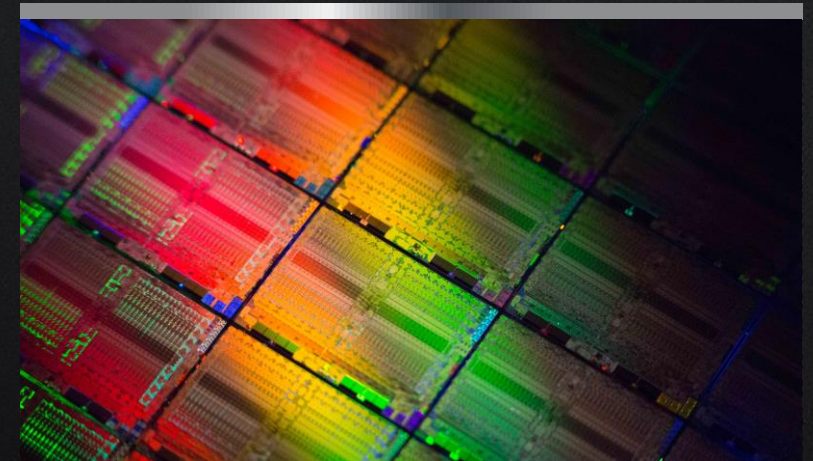
From research, education and healthcare to business and entertainment



## Lead

**Everyone has a voice**

Our leaders drive growth and innovation through a diverse mix of perspectives and backgrounds



## Execute

**We are laser focused on innovation and execution**

We challenge the status quo and we deliver on our commitments



# CORPORATE RESPONSIBILITY AT AMD



## People

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

## Planet







Steadfast commitment to environmental stewardship and contributing to our local communities

## Purpose

Responsibly developing cutting-edge technologies that enable a more just and sustainable world

GREATER TECHNOLOGY FOR THE GREATER GOOD

# MAKING THE WORLD A BETTER PLACE

Fast Company	Fortune	Fortune	Bloomberg	Forbes + Just Capital	Human Rights Campaign
<b>Most Innovative Companies</b>	<b>Companies that Change the World</b>	<b>Most Admired Companies</b>	<b>Gender-Equality Index</b>	<b>America's Most Just Companies</b>	<b>Corporate Equality Index</b>
2021	2020	2020, 2021	2019-2021	2018-2021	2017-2021
					

WHERE THE BEST MINDS DO THEIR BEST WORK



# OUR MARKET OPPORTUNITY



Data Center

**\$35B TAM**



PCs

**\$32B TAM**



Gaming

**\$12B TAM**

**\$79B TAM**



# AMD TECHNOLOGIES & ARCHITECTURE ROADMAPS





# HIGH-PERFORMANCE SOLUTIONS

HIGH-PERFORMANCE  
**COMPUTE**

AMD  
**RYZEN**

AMD  
**EPYC**

AND

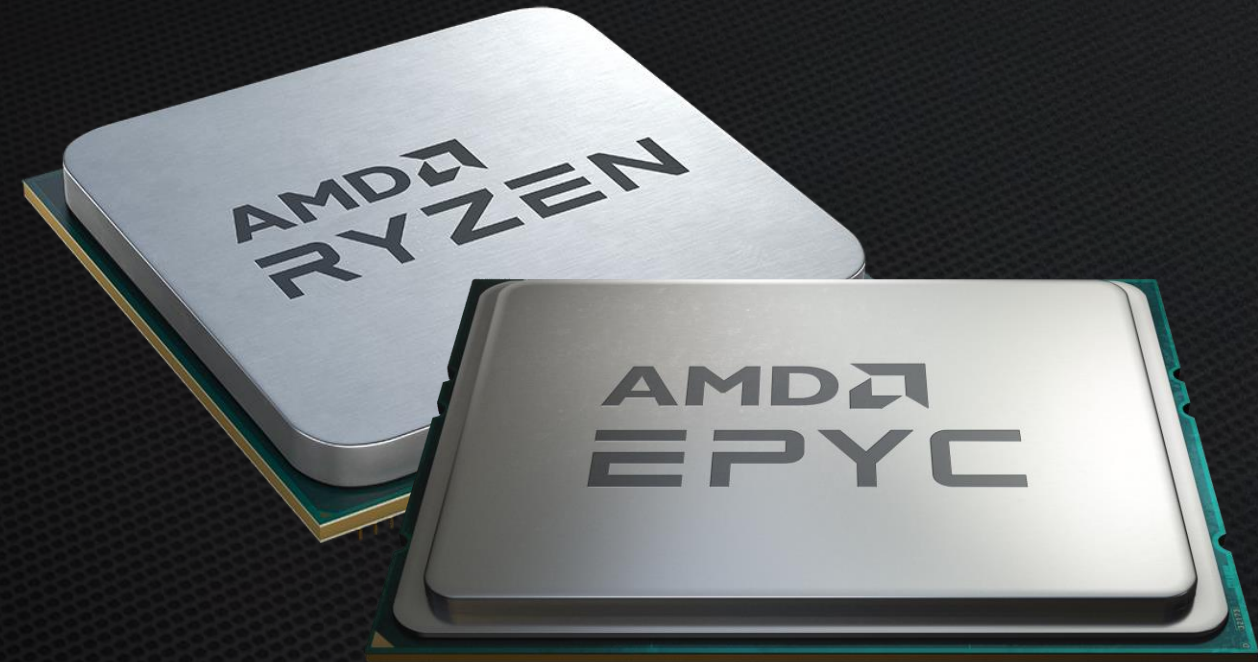
HIGH-PERFORMANCE  
**GRAPHICS**

AMD  
**RADEON**

AMD  
**INSTINCT**

# “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

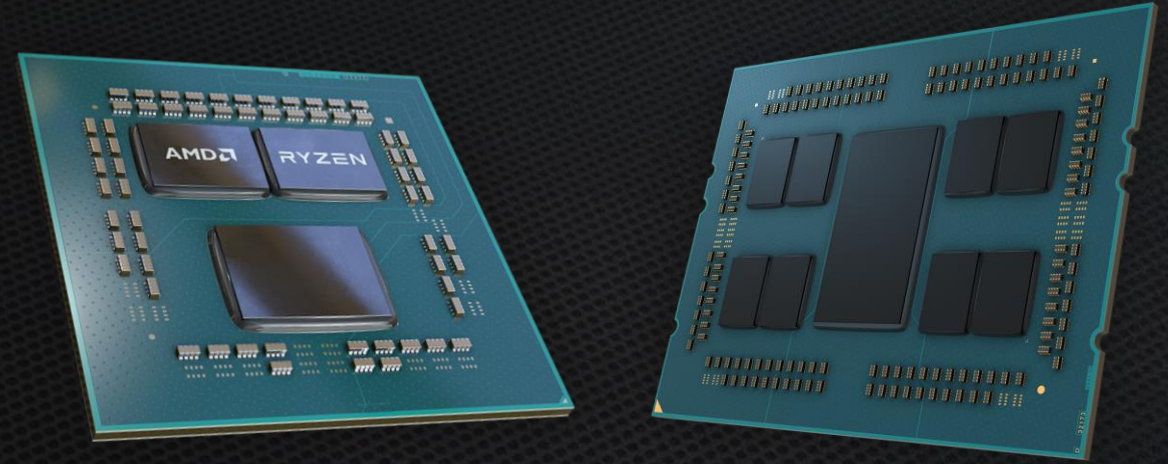
Leadership performance for **Cloud, HPC and Enterprise** workloads

**Highest** gaming performance for desktops



# “ZEN 2” CORE ARCHITECTURE

FASTER, COOLER,  
WITH LOWER POWER CONSUMPTION  
FOR SERVERS, LAPTOPS AND DESKTOPS



World's first  
high-performance x86  
**7nm CPU**

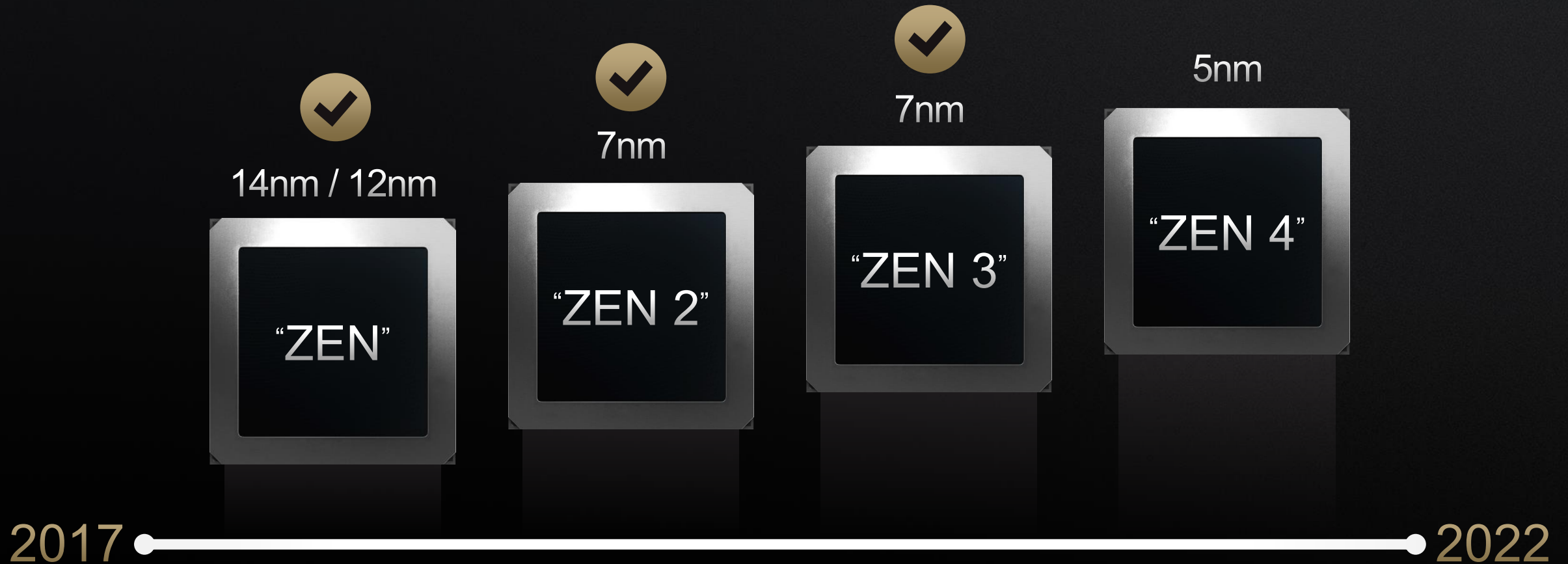
Revolutionary  
**Chiplet Design**  
delivers more cores at  
the same power

Average  
**15% IPC Uplift**,  
higher in some server  
workloads

Breakthrough  
**2<sup>nd</sup> Gen Infinity  
Architecture**  
interconnect

# COMPUTE ARCHITECTURE ROADMAP

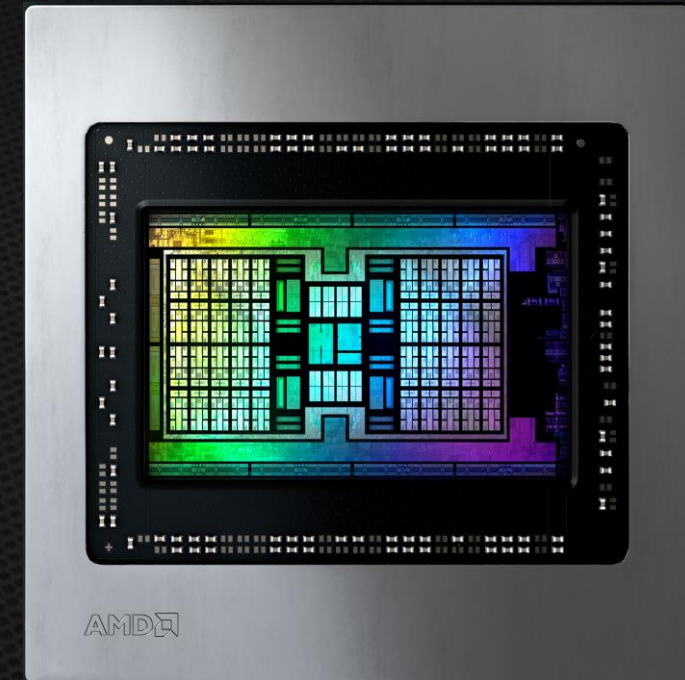
SUSTAINED HIGH-PERFORMANCE LEADERSHIP





# AMD RDNA™ 2 GRAPHICS ARCHITECTURE

DRIVING GAMING PERFORMANCE LEADERSHIP  
AVAILABLE IN AMD RADEON™ RX 6000 SERIES  
DESKTOP GPU<sub>s</sub>



## Performance

2X performance compared to  
AMD Radeon RX 5700 XT

## Power

Up to 65% generational  
performance-per-watt  
improvement

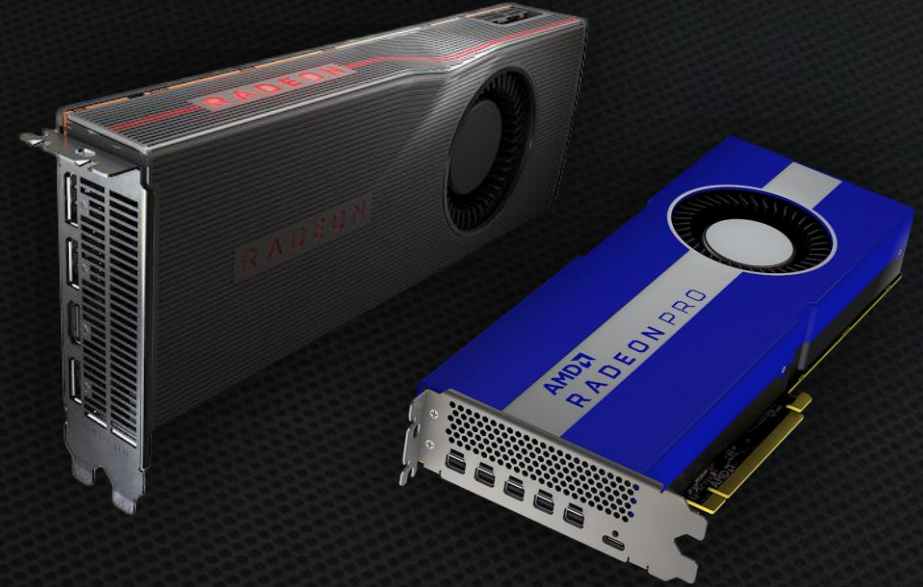
## Features

Deliver DX12 Ultimate experience  
for every gamer with raytracing,  
variable rate shading and more



# AMD RDNA™ GRAPHICS ARCHITECTURE

HIGH-PERFORMANCE DESIGN  
FOR PC, CONSOLE, CLOUD AND MOBILE



## Performance

for diverse gaming and  
workstation workloads

## Efficiency

+50% performance-per-  
watt improvement

## Features

to enhance gaming  
experiences

## Scalability

from mobile to  
cloud



# GAMING GPU ARCHITECTURE ROADMAP

DRIVING GAMING PERFORMANCE LEADERSHIP



7nm

**AMD**  
**RDNA**

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Architecture Optimized  
for Gaming



7nm

**AMD**  
**RDNA 2**

---

Perf/Watt Improvement  
Ray Tracing, Variable  
Rate Shading & More

In Design  
Advanced Node

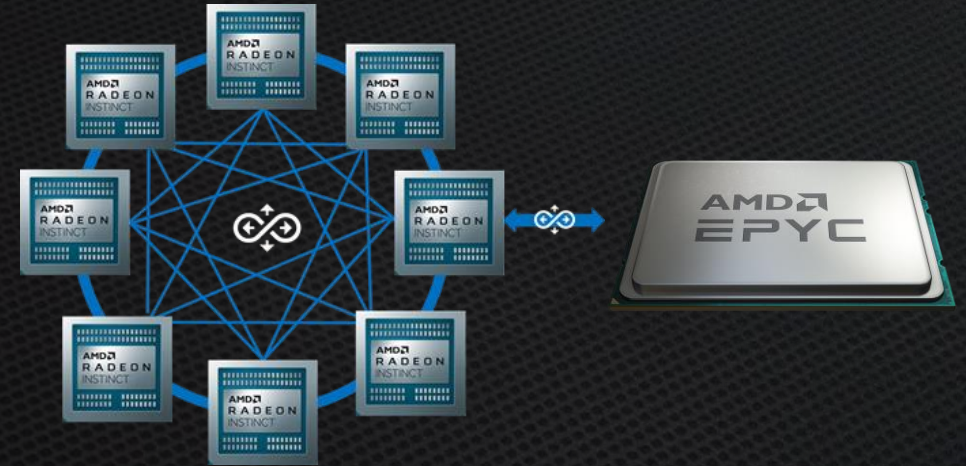
**AMD**  
**RDNA 3**

2019

2022

# AMD CDNA ARCHITECTURE

GPU COMPUTE DNA  
FOR THE DATA CENTER



## Performance

Accelerate ML/HPC with  
Compute/Tensor OPS

## Efficiency

Designed for improved  
Perf-per-Watt

## Features

Enhance Enterprise  
RAS, Security and  
Virtualization

## Scalability

Scale Performance with  
AMD Infinity Architecture



# COMPUTE GPU ARCHITECTURE ROADMAP

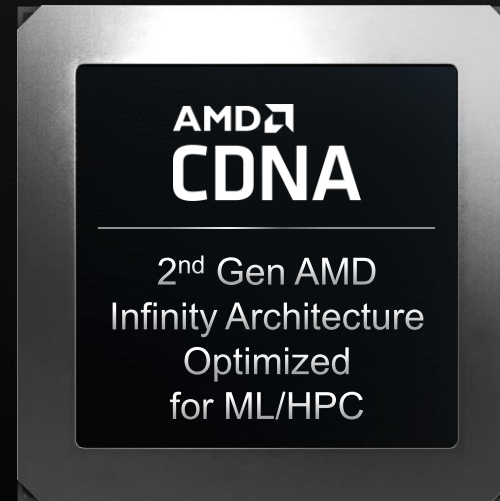
COMPUTE DNA FOR THE DATA CENTER



7nm



7nm



Advanced Node

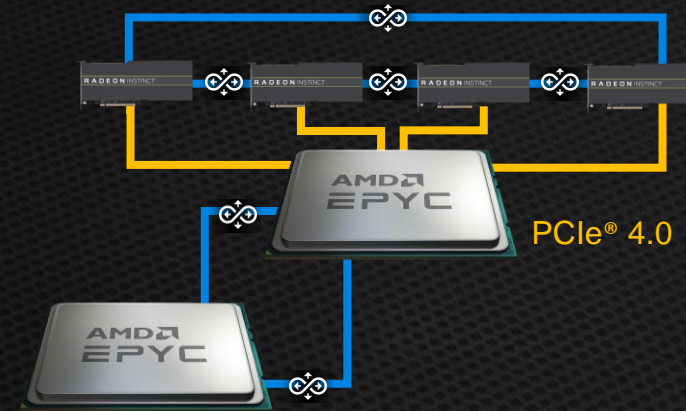


2019

2022

# AMD INFINITY ARCHITECTURE

SCALABLE INTERCONNECT TECHNOLOGY  
FOR AMD CPUs AND GPUs



4/8-WAY GPU  
CONNECTIVITY

2<sup>nd</sup> Gen  
AMD Infinity  
Architecture

Leveraged across  
AMD product line from  
notebook to server

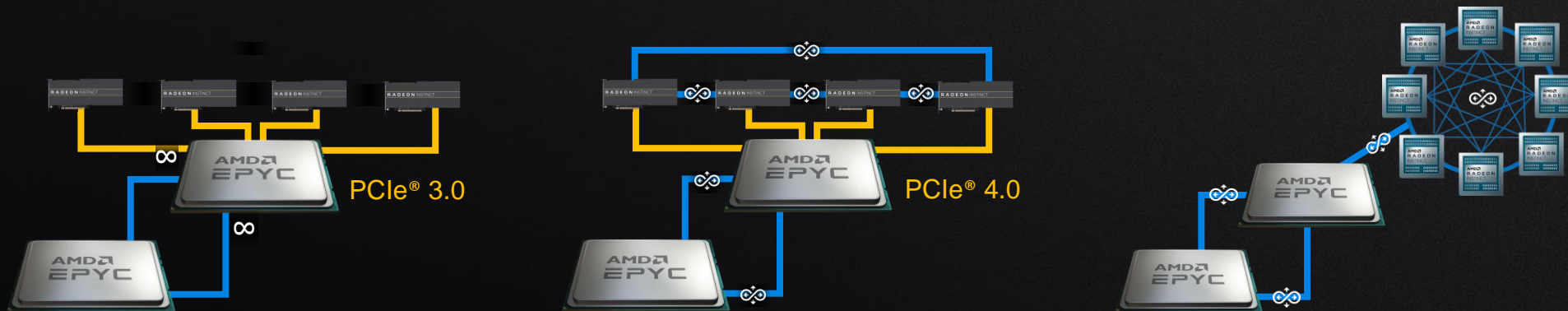
Optimization for  
multi-processor  
performance and  
scalability

Enables  
revolutionary chiplet  
design

Delivers efficiency,  
performance,  
throughput and  
security features



# AMD INFINITY ARCHITECTURE ROADMAP



**CPU  
CONNECTIVITY**

**4/8-WAY GPU  
CONNECTIVITY**

**UP TO 8-WAY GPU WITH  
COHERENT CONNECTIVITY**

1st Gen  
**AMD Infinity Fabric™**

2nd Gen  
**AMD Infinity Architecture**

3rd Gen  
**AMD Infinity Architecture**

2017

2022



# AMD PRODUCTS





# AMD DATA CENTER FOCUS

DELIVERING CPU AND GPU DIFFERENTIATION



**HPC**



**Enterprise/IT**



**Cloud**



**Machine  
Intelligence**



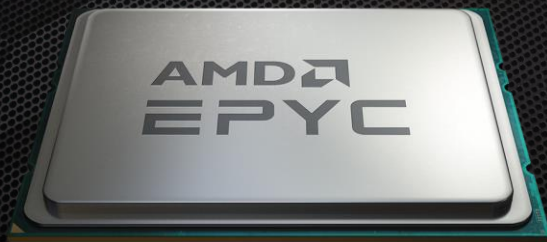
**Virtualization &  
Cloud Gaming**

**AMD  
EPYC**

**AMD  
INSTINCT**

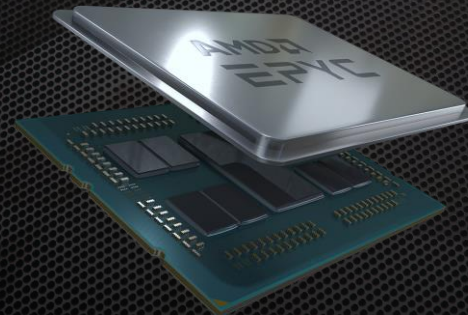
# AMD EPYC™ LINEUP

A NEW ERA IN THE DATA CENTER



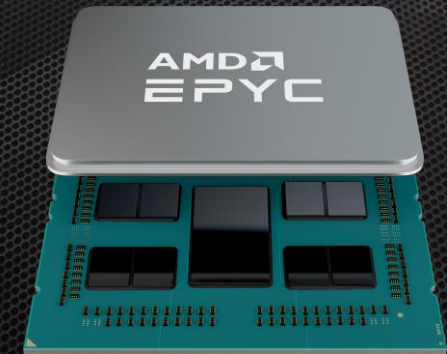
## 1<sup>st</sup> Gen AMD EPYC™ Processors

“Zen” Architecture



## 2<sup>nd</sup> Gen AMD EPYC™ Processors

“Zen 2” Architecture



## 3<sup>rd</sup> Gen AMD EPYC™ Processors

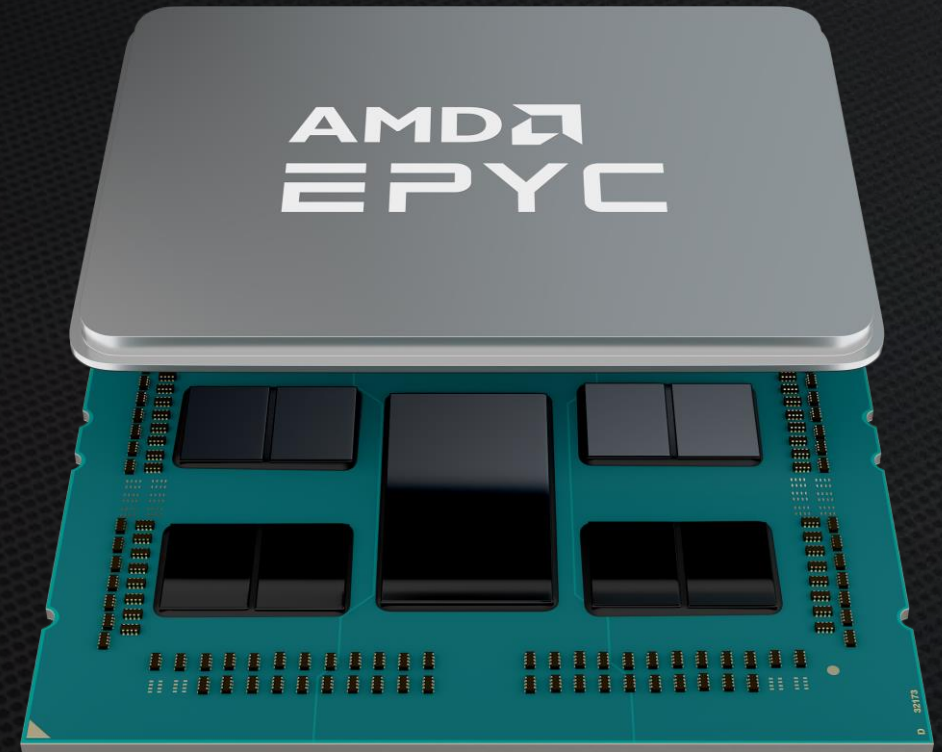
“Zen 3” Architecture



LAUNCHED MARCH 2021

# 3<sup>RD</sup> GEN AMD EPYC™ PROCESSOR

EXTENDING PER SOCKET AND  
PER CORE PERFORMANCE LEADERSHIP



World's highest  
performance server  
processor\*

Up to 2x better  
performance in HPC,  
Cloud and Enterprise  
workloads compared to  
the competition

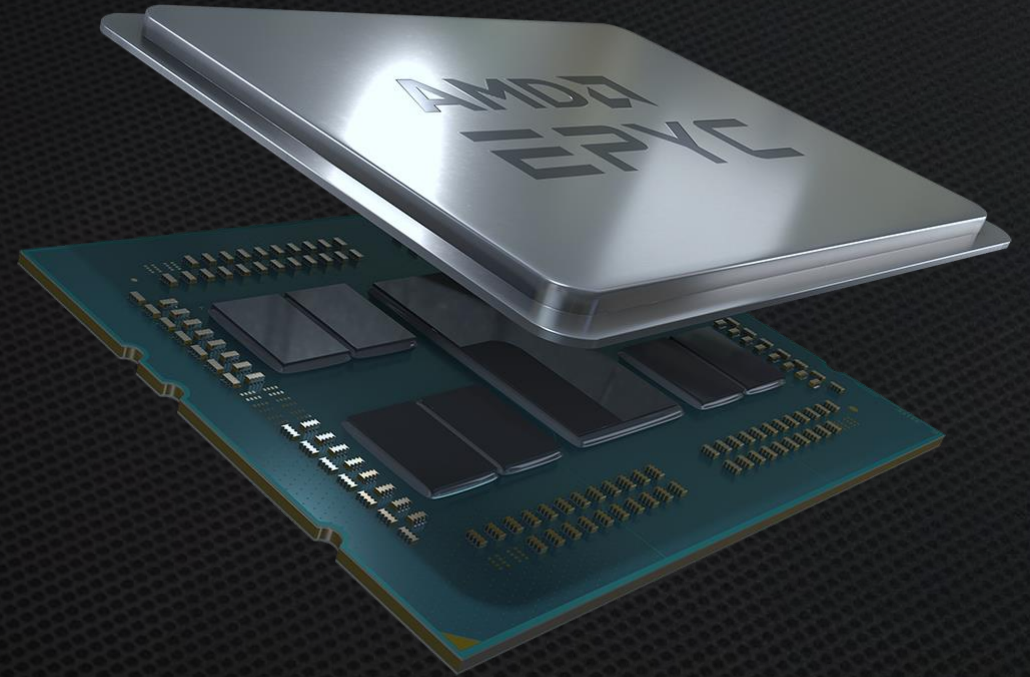
Advanced security  
features with AMD  
Infinity Guard

Built on the powerful  
and efficient "Zen 3"  
core



# 2<sup>ND</sup> GEN AMD EPYC™ PROCESSOR

HIGH-PERFORMANCE COMPUTING  
FOR THE MODERN DATA CENTER



Breakthrough chiplet architecture based on the “Zen 2” core

Disruptive TCO driven by leadership performance

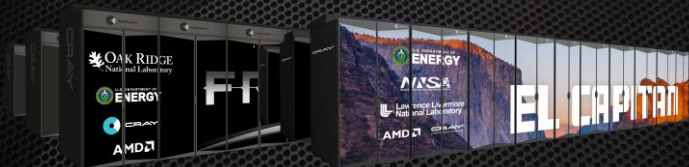
Advanced security features with AMD Infinity Guard

Up to 128 PCIe® 4.0 Lanes



# DATA CENTER GROWTH

DELIVERING LEADERSHIP COMPUTE DIFFERENTIATION



LUMI

PAWSEY  
supercomputing centre

HLRIS  
High-Performance Computing Center | Stuttgart

JÜLICH  
Forschungszentrum

## Supercomputing

Leading the Exascale Era  
Consistently Winning Top  
Deployments

aws Alibaba Cloud Microsoft Azure

Google Cloud IBM Cloud ORACLE CLOUD

Tencent Cloud



## Cloud

Expanding Deployments with  
Leading Providers

Atos ASRock ASUS CISCO

DELL Technologies FOXCONN GIGABYTE™

H3C Hewlett Packard Enterprise Inventec Lenovo

MITAC MSI GCT SUPERMICRO

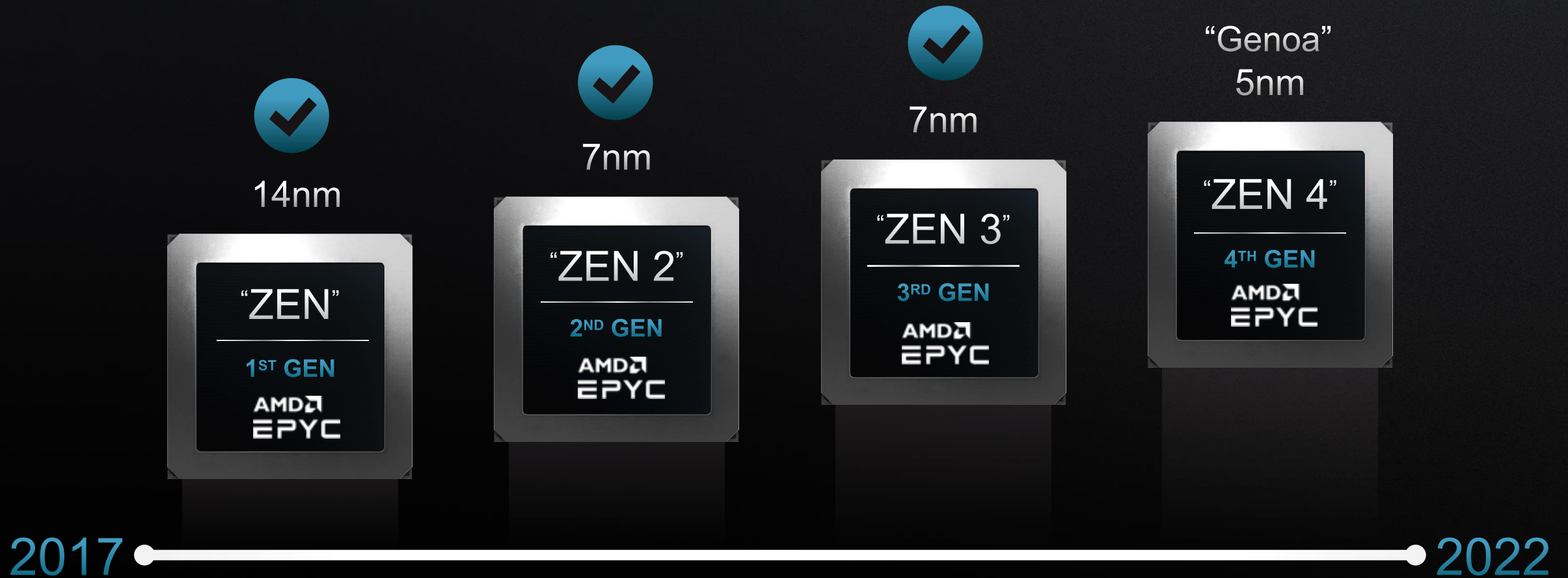
TYAN wiwynn WISTRON

## Enterprise

Large-scale Enterprise Deployments  
with Growing Pipeline

# AMD DATA CENTER CPU ROADMAP

SUSTAINED HIGH-PERFORMANCE LEADERSHIP





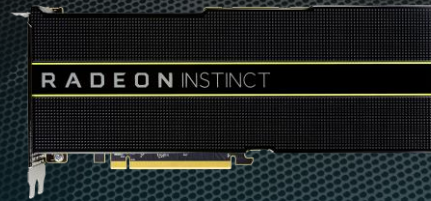
# AMD DATA CENTER GPU LINEUP

A NEW ERA IN THE DATA CENTER



## AMD Instinct™ MI100 Accelerator

AMD CDNA architecture



## Radeon™ Instinct MI50 Accelerator

2<sup>nd</sup> generation “Vega” architecture



## Customer-Oriented Data Center Solutions

Strategic development with lead customers

AMD  
**ROCm**

## ROCm™ Software

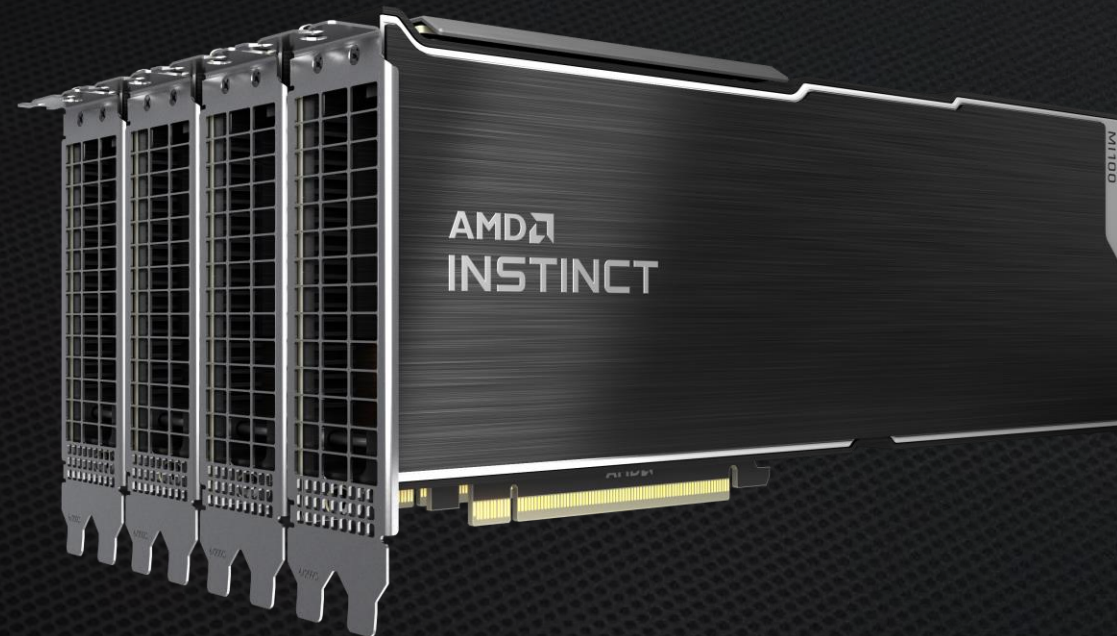
Top-to-bottom open ecosystem commitment

**WORLD-CLASS GPU ACCELERATOR TECHNOLOGIES**  
**OPEN SOFTWARE ECOSYSTEM PLATFORM**



# AMD INSTINCT™ MI100 ACCELERATOR

WORLD'S FASTEST HPC  
ACCELERATOR FOR SCIENTIFIC  
RESEARCH



Revolutionizing HPC  
and AI with industry-  
leading compute  
performance

All-new AMD CDNA  
architecture

2<sup>nd</sup> Gen AMD Infinity  
Fabric™ technology

Supported by  
accelerated compute  
platforms from Dell,  
GIGABYTE, HPE and  
Supermicro



# AMD DATA CENTER GPU ROADMAP



7nm

**GCN**

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First 7nm  
Data Center GPU



7nm

**AMD**  
**CDNA**

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2<sup>nd</sup> Gen AMD Infinity  
Architecture  
Optimized for  
ML/HPC

Advanced Node

**AMD**  
**CDNA 2**

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3<sup>rd</sup> Gen AMD Infinity  
Architecture  
Extends to Exascale

2019

2022

## OUR PATH FORWARD

# THE NEW DATA CENTER LEADER

Leadership Roadmap,  
Consistent Execution

Leadership  
Performance

Leadership Architecture for  
Accelerated Computing



# AMD CLIENT FOCUS

BUILDING THE BEST PROCESSORS IN THE WORLD



## Desktops

Gaming  
Commercial  
Consumer  
High-end



## Notebooks

Gaming  
Commercial  
Consumer  
Chromebook

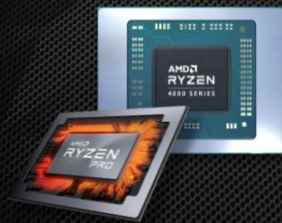


## Workstations

Commercial  
Consumer

# AMD CLIENT LINEUP

PERFORMANCE FOR CONSUMER AND COMMERCIAL PCs



AMD Ryzen™ 5000 Series Desktop Processors

AMD Ryzen™ 5000 Series Mobile Processors

AMD Ryzen Threadripper™ and Threadripper PRO Desktop Processors

AMD Ryzen 3000 Series Desktop Processors

AMD Ryzen and Athlon Processors for Chromebooks

AMD Ryzen™ Desktop Processors with Radeon™ Graphics

“Zen 3” Architecture

“Zen 3” Architecture + Built-in Radeon™ Graphics

“Zen 2” Architecture

“Zen 2” Architecture

“Zen” Architecture + Built-in Radeon™ Graphics

“Zen 2” Architecture + Built-in Radeon™ Graphics

AMD RYZEN

AMD RYZEN  
THREADRIPPER

AMD RYZEN  
PRO

AMD THREADRIPPER  
PRO

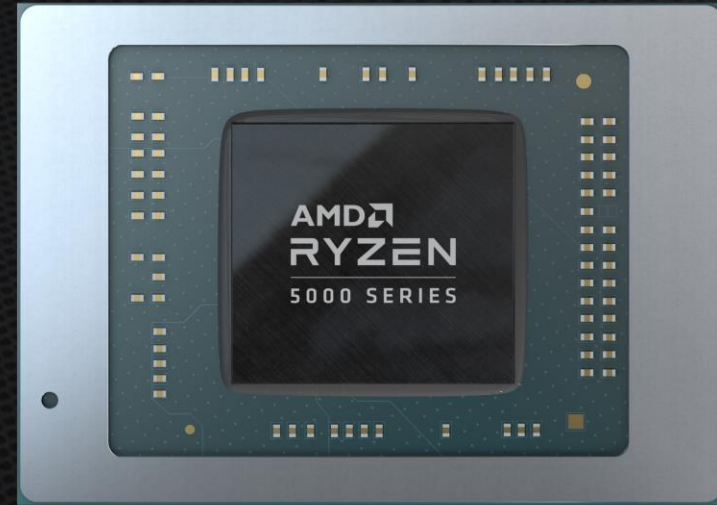
AMD ATHLON



ANNOUNCED JANUARY 2021

# AMD RYZEN™ 5000 SERIES MOBILE PROCESSORS

THE WORLD'S BEST LAPTOP  
PROCESSORS



Unprecedented performance and battery life with “Zen 3” core architecture

Ryzen 5000 U-Series processors optimized for thin and light notebooks

Ryzen 5000 H-Series processors optimized for gamers and creators

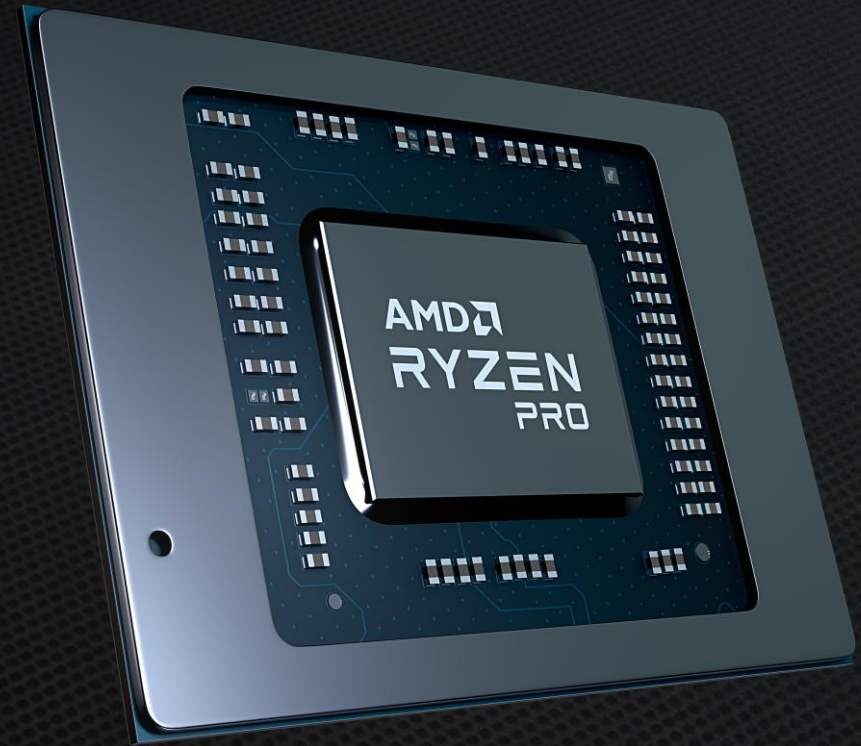
150+ commercial and consumer notebooks expected in 2021



ANNOUNCED MARCH 2021

# AMD RYZEN™ PRO 5000 SERIES MOBILE PROCESSORS

LEADERSHIP PERFORMANCE AND  
ENTERPRISE-CLASS SECURITY FEATURES  
FOR THE MODERN WORKFORCE



World's best mobile  
processors for  
business

Multi-layered security  
features help provide  
protection at every  
level, from silicon to OS

Number of AMD-  
powered enterprise  
notebooks expected to  
triple in 2021

Available from top PC  
vendors including HP  
and Lenovo starting  
Q2 2021



# AMD RYZEN™ 5000 SERIES DESKTOP PROCESSORS

THE WORLD'S FASTEST GAMING  
PROCESSORS



Across the board  
performance  
leadership for gamers  
and content creators

7nm "Zen 3" core  
architecture delivers  
19% IPC uplift

Up to 26% gaming  
performance  
generational uplift

Leadership power  
efficiency with up to  
2.8X performance-per-  
watt versus competition

# AMD CLIENT CPU ROADMAP

SUSTAINED HIGH-PERFORMANCE LEADERSHIP



2017

2021



## OUR PATH FORWARD

# DRIVING NON-STOP INNOVATION FOR PCs

Multi-Generational  
Product Leadership

Superior User  
Experience

High-Performing  
Notebook  
Processors

Commercial  
Momentum

# AMD GRAPHICS FOCUS

EXPANDING THE RADEON™ UNIVERSE



## PCs

Radeon™ RX 6000 series, RX 5000 series, and Radeon™ Pro W5000 series



## Apple Mac

Broad line-up, including Radeon™ Pro 5000 and 5000M series and W5700X GPUs



## Consoles

Latest consoles powered by “Zen 2” and AMD RDNA™ 2



## Cloud

Google Stadia, Microsoft Project xCloud, Microsoft Azure



## Mobile

Samsung partnership and IP licensing



## HPC

EI Capitan and Frontier supercomputers





# AMD RADEON™ LINEUP

EXPANDING THE RADEON UNIVERSE



AMD Radeon™ RX 6000 Series

AMD Radeon™ RX 5000 Series

AMD Radeon™ RX 500 Series

AMD Radeon™ VII

AMD Radeon™ Pro Workstation Graphics

Radeon™ Instinct MI100

AMD RDNA™ 2 Architecture

AMD RDNA™ Architecture

“Polaris” GCN Architecture

“Vega” GCN Architecture

RDNA™ Architecture  
“Vega” Architecture

AMD CDNA Architecture

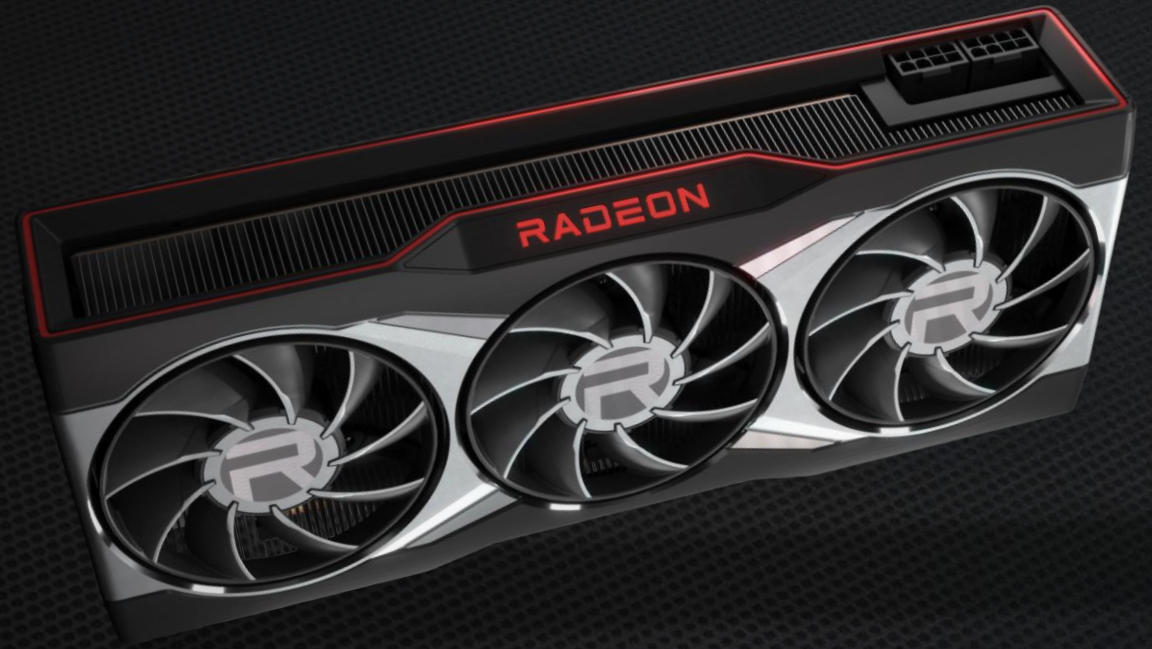
AMD  
RADEON

AMD  
RADEON  
PRO



# AMD RADEON™ RX 6000 SERIES

HIGH-PERFORMANCE GAMING



AMD RDNA™ 2 architecture enables performance, features and efficiency

Up to 2X higher performance compared to AMD RDNA GPUs

Up to 54% higher performance-per-watt over AMD RDNA GPUs

Enables DirectX 12 Ultimate support, raytracing and variable rate shading



# AMD RADEON™ RX 5000 SERIES

HIGH-PERFORMANCE GAMING



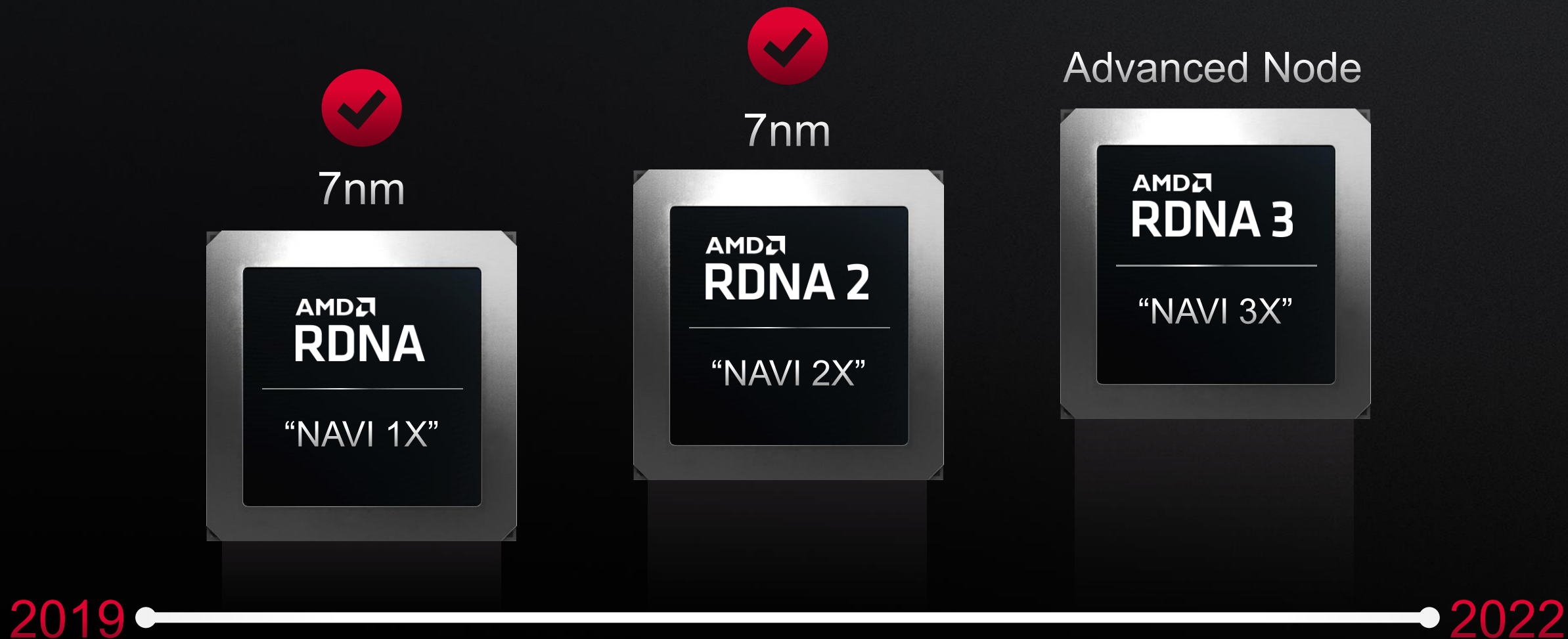
High-fidelity  
gaming experiences  
for desktops and  
notebooks

AMD RDNA™  
architecture for superior  
performance and  
power efficiency

Industry-leading  
7nm process  
technology

Game-changing  
Radeon™  
Software features

# AMD GAMING GPU ROADMAP





## 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



# AMD MARKET & FINANCIAL MOMENTUM



# EXPANDING OUR CUSTOMER BASE

ACROSS PCs, GAMING AND THE DATA CENTER

Google

amazon

aws

Microsoft

Microsoft Azure

Tencent Cloud

BAIDU

ORACLE  
CLOUD

CRAY

vmware

Dropbox

HETZNER  
ONLINE

SUPERMICR

packet

CISCO

DELL

hp

Hewlett Packard  
Enterprise

acer

ASUS

Lenovo

BEST  
BUY

newegg

SAMSUNG

OVH

Quanta Computer

CORSAIR

ASRock

GIGABYTE

asmedia

msi

SAPPHIRE

Inventec

PHISON  
Knows What You Need

MICRO CENTER

XFX

TUL

BIOSTAR

SEAGATE

威健  
WEIKENG

wlstron

INRAM  
MICRO

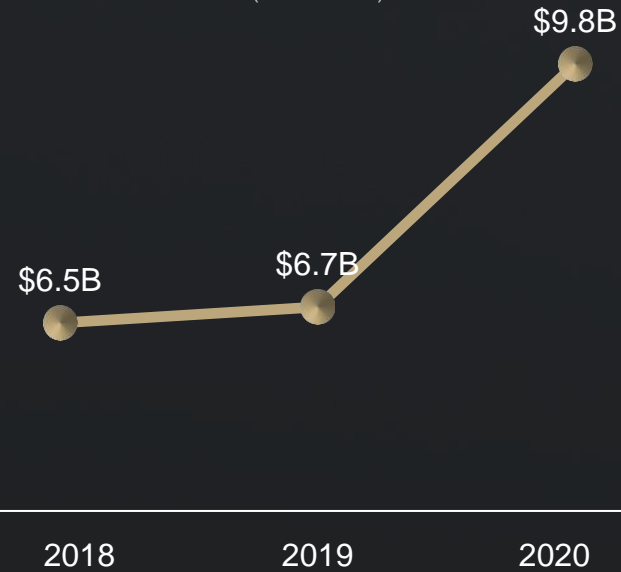
TechData

D&H

# FINANCIAL MOMENTUM AND GROWTH

## REVENUE

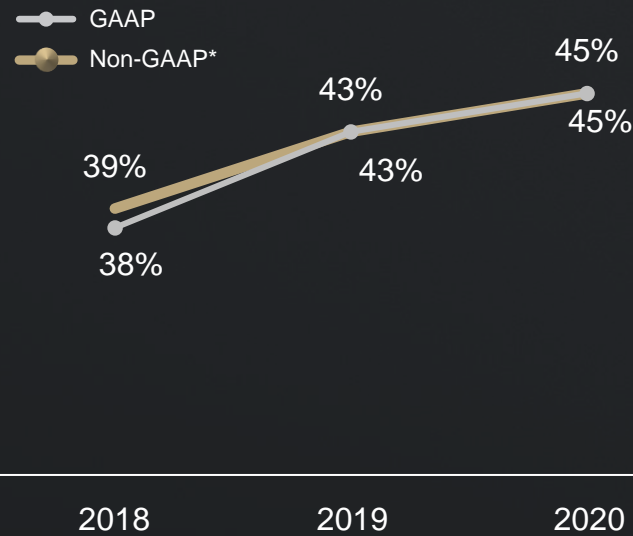
(\$ Billions)



Accelerating Revenue Growth

## GROSS MARGIN

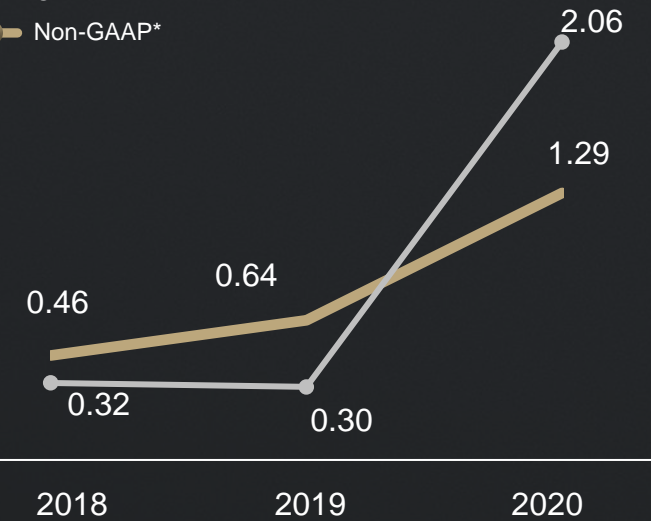
(%)



Expanding Gross Margin

## EPS

GAAP  
Non-GAAP\*



Growing Profitability

## EARNINGS POWER OF AMD FINANCIAL MODEL





# Creating the Industry's **High Performance** Computing Leader

Comprehensive  
Processor Portfolio

Diversified &  
Growing Markets

Data Center  
Momentum

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# ENDNOTES + APPENDICES

# ENDNOTES

## Footnotes GD-122, GD-142, RZ3-34, R5K-003, MLN-071K, MLN-049A, MLN-074K, MLN-016

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.

GD-142: AMD APUs and GPUs based on the Graphics Core Next and RDNA architectures contain GPU Cores comprised of compute units, which are defined as 64 shaders (or stream processors) working together.

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 SPECint®\_base2006 results. SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org).

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. RX-325

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

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®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://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.

MLN-074K: Based on SPECrate@2017\_fp\_base on 02/20/2021, a server powered by two 64c AMD EPYC 7763 CPUs has a score of 636 a compliant result run on an ThinkSystem SR665; with Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R); OS: Red Hat Enterprise Linux release 8.3 (Ootpa); Compiler: C/C++/Fortran: Version 3.0.0 of AOCC. Versus the current highest score Intel Cascade Lake Refresh server with a score of 309 with a 2P Intel Gold 6258R based server, <https://spec.org/cpu2017/results/res2020q3/cpu2017-20200915-23979.pdf>. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.

MLN-016: Results as of 01/28/2021 using SPECrate@2017\_int\_base. The AMD EPYC 7763 a measured estimated score of 798 is higher than the current highest 2P server with an AMD EPYC 7H12 and a score of 717, <https://spec.org/cpu2017/results/res2020q2/cpu2017-20200525-22554.pdf>. OEM published score(s) for 3rd Gen EPYC may vary. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.



# ENDNOTES

## Footnotes GD-183, RX-325, RX-362, RX-558, RX-537, RX-549, RX-554, ROM-169

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

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.

RX-362: Testing done by AMD performance labs on June 4, 2019. Systems were tested with: Intel(R) Core(TM) i7-5930K CPU @ 3.50GHz (6 core) with 16GB DDR4 @ 2133 MHz using an Asus X99-E Motherboard running Windows 10 Enterprise 64-bit (Ver. 1809, build 17763.053). Using the following graphics cards: Navi 10 (Driver 19.30\_1905161434 (CL# 1784070)) with 40 compute units, versus a Vega 64 (Driver 19.4.1) with 40 compute units enabled. Breakdown based on AMD internal data June 4, 2019. Performance may vary. RX-362

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 (3.70GHz) CPU, 16GB DDR4-3200MHz, Engineering AM4 motherboard, Win10 Pro 64. The following games were tested at 4k at max settings: Battlefield V DX11, Doom Eternal Vulkan, Forza DX12, Resident Evil 3 DX11, Shadow of the Tomb Raider DX12. Performance may vary. RX-558

RX-537: Idle power analysis measured by AMD performance labs 10/16/2020 on a system configured with a Radeon RX 6800 XT with driver 27.20.14502.62, Radeon RX 5700 XT with driver 27.20.216.331, AMD Ryzen 5 3600X, 16GB DDR4-3200MHz, ASUS Prime X570 Pro, on Win10 Pro x64 19041.508. Performance may vary. RX-537

RX-549: Testing done by AMD performance labs 10/16/20, 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 6800 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-549

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

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

# ENDNOTES

## Footnotes ROM-557, MI100-03, CZM-1, CZM-34, CZP-17, R5K-002, R5K-007

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

MI100-03: 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) peak 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-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

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



# ENDNOTES

## Footnotes R5K-009, RX-558, RX-549, RX-326, GD-127, GD-147, GD-151

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

RX-558: Testing done by AMD performance labs October 20 2020 on a Radeon RX 6900 XT and Radeon RX 5700 XT (20.45-201013n driver), AMD Ryzen 9 5900X (3.70GHz) CPU, 16GB DDR4-3200MHz, Engineering AM4 motherboard, Win10 Pro 64. The Following games were tested at 4k at max settings: Battlefield V DX11, Doom Eternal Vulkan, Forza DX12, Resident Evil 3 DX11, Shadow of the Tomb Raider DX12. Performance may vary. RX-558

RX-549 - Testing done by AMD performance labs 10/16/20, 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 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-326: Testing done by AMD performance labs 5/23/19, using the World War Z @ 25x14 Ultra settings. Performance may vary based on use of latest drivers. RX-326

GD-127: Radeon FreeSync technology requires a monitor and AMD Radeon™ graphics, both with FreeSync support. See [www.amd.com/freesync](http://www.amd.com/freesync) for complete details. Confirm capability with your system manufacturer before purchase. GD-127

GD-147: Game clock is the expected GPU clock when running typical gaming applications, set to typical TGP (Total Graphics Power). Actual individual game clock results may vary. GD-147

GD-151: Boost Clock Frequency is the maximum frequency achievable on the GPU running a bursty workload. Boost clock achievability, frequency, and sustainability will vary based on several factors, including but not limited to: thermal conditions and variation in applications and workloads. GD-151

# APPENDICES

## Reconciliation of GAAP to Non-GAAP Gross Profit and Gross Margin

(Millions)	2018	2019	2020
GAAP gross profit	\$ 2,447	\$ 2,868	\$ 4,347
GAAP gross margin %	38%	43%	45%
Impairment of technology licenses	45	—	—
Stock-based compensation	4	6	6
Non-GAAP gross profit	\$ 2,496	\$ 2,874	\$ 4,353
Non-GAAP gross margin %	39%	43%	45%



# APPENDICES

## Reconciliation of GAAP to Non-GAAP Net Income / Earnings Per Share

(Millions, except per share data)	2018		2019		2020	
GAAP net income / earnings per share	\$ 337	\$ 0.32	\$ 341	\$ 0.30	\$ 2,490	\$ 2.06
Loss on debt redemption/conversion	12	0.01	176	0.15	54	0.04
Non-cash interest expense related to convertible debt	24	0.02	22	0.02	6	—
Stock-based compensation	137	0.11	197	0.16	274	0.22
Impairment of technology licenses	45	0.04	—	—	—	—
Equity loss (income) in investee	2	—	—	—	(5)	—
Loss contingency on legal matter	—	—	12	0.01	—	—
Acquisition-related costs	—	—	—	—	14	0.01
Release of valuation allowance on deferred tax assets	—	—	—	—	(1,301)	(1.07)
Income tax provision	—	—	8	—	43	0.03
Withholding tax refund including interest	(43)	(0.04)	—	—	—	—
Non-GAAP net income / earnings per share	\$ 514	\$ 0.46	\$ 756	\$ 0.64	\$ 1,575	\$ 1.29

Shares used and net income adjustment in earnings per share calculation				
Shares used in per share calculation (GAAP)		1,064	1,120	1,207
Interest expense add-back to GAAP net income	\$	—	\$	1
Shares used in per share calculation (Non-GAAP)		1,165	1,209	1,228
Interest expense add-back to Non-GAAP net income	\$	18	\$	4

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The image features the AMD logo in a bold, white, 3D-style font, centered against a dark, futuristic background. The background is filled with a complex network of glowing red and orange lines, resembling a data network or fiber optic connections. Numerous small, semi-transparent numbers are scattered throughout the scene, some appearing to be part of the network's data flow. The overall aesthetic is high-tech and digital, with a strong emphasis on red and orange tones. The logo itself is the central focus, standing out prominently against the intricate, glowing background.

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