

A blue rectangular graphic with a grid of small white plus signs. The text "CPU" is centered in a light blue font, and "NEOVERSE N1" is centered below it in a large, bold, black font.

CPU NEOVERSE N1

Accelerating the Scalable Cloud-to-Edge Infrastructure Transformation

The Neoverse N1 CPU is optimized for a wide range of cloud native server workloads executing at a world-class compute efficiency. This enables an infrastructure transformation where processing is pushed to the edge where data is generated, thereby providing more scalability than moving all data to centralized datacenters.

[Read Overview](#)

Features and Benefits

Revolutionary Compute Performance

Delivering market-leading server performance at the half the power, the N1 CPU ushers in a revolutionary era of compute efficiency or performance/watt. Whether it is running general server workloads on power-constrained edge platforms, or scaling datacenter servers to very large core counts, massive TCO and scalability improvements can be achieved.

Infrastructure-Specific Features

Supporting the Armv8.2-A specification, the Neoverse N1 platform delivers a host of architectural and implementation features targeted at the infrastructure market. These features include server-class RAS, efficient virtualization, CPU power management, cache stashing, statistical code profiling, and I-cache coherency support.

Extreme Scalability and Diversity

Offering at least 30% compute efficiency gain over previous generation Arm infrastructure CPUs, the N1 platform scales from sub-35W systems to large hyperscale cloud servers. Heterogeneous integrations with the E1 CPU, while maintaining Arm software interoperability, further empowers an ecosystem that thrives on delivering diverse and differentiated solutions.

Arm and AWS Redefine Cloud Price Performance Value

Based on Arm Neoverse N1, AWS Graviton2 processor instances deliver up to 40% better price performance over comparable x86-based instances.

[Learn More](#)

Investing in a Complete Infrastructure Platform

Arm's Big Opportunity to Expand into Datacenter Infrastructure

The first extensive CPU core roadmap from Arm, Neoverse is aimed specifically at infrastructure, as distinct from consumer IP lines. It comes in the wake of significant signs of traction for the firm in the systems and cloud infrastructure space.

[Download Report](#)

Talk with an Expert

Reach out to our experts for answers and resources on how to leverage the N1 Platform to create highly differentiated revolutionary system solutions.

[Contact Us](#)

Related Products and Services

Explore More Options and Features

Neoverse E1

Empowering the Infrastructure to Meet Next Generation
Throughput Demands.

[Learn More](#) >

Neoverse N1 Hyperscale Reference Design

64x-128x Neoverse N1 CPUs - highest performance server and
cloud applications.

[Learn More](#) >

Neoverse N1 Edge Reference Design

8x Neoverse N1 CPUs - compute intensive edge cloud, network,
storage, and security workloads.

[Learn More](#) >

CMN-600

Designed for intelligent connected systems across a wide range

of applications including networking infrastructure, storage,
server, HPC, automotive, and industrial solutions.

[Learn More](#) >

Architecture and Technologies

A Foundation of Silicon Success

Arm-based chips, device architectures, and technologies orchestrate the performance of everything that makes modern life possible – from smartphones to agricultural sensors and from medical instruments to servers.

Armv8-A Architecture

The latest-generation Arm architecture targets the Applications (“A”) profile and introduces changes for the design of significantly higher performance processor implementations, including a large physical address, 64-bit virtual addressing, a new exception model, and efficient cache management.

[Learn More](#) >

Arm Neon Technology

Neon technology is an advanced SIMD architecture extension for the Arm Cortex-A series and Cortex-R52 processors. The architecture extension improves the multimedia user experience across many applications.

[Learn More](#) >

Infrastructure Resources

Everything you need to know to make the right decision for your project. Includes technical documentation, industry insights, and where to go for expert advice.

- [Neoverse Reference Designs](#)
- [Arm Infrastructure Developer Community](#)

Products
[Arm ServerReady](#)

IoT Solutions

Processors

- [Arm Neoverse N1 platform: Accelerating the transformation to a scalable cloud to edge](#)

AI Platform

Infrastructure

Graphics and Multimedia

- [Arm Neoverse E1 Platform: Empowering the infrastructure to meet next generation](#)

Development Tools

throughput demands

Custom SoCs

- [Software Ecosystem Momentum Accelerates for Arm Neoverse in Infrastructure](#)
- [Our Next Step in Preparing the Cloud for 1T Intelligent Devices](#)

Technologies

Whitepapers:

DynamIQ

big.LITTLE

[Data Will Swamp the Internet, Unless We Think Differently](#)

Arm NN

- [How to Manage One Trillion Devices on the Edge](#)

CMSIS

- [Empowering the Network Edge with Cisco and Arm](#)

Neon

- [Improve Performance and ROI with an Arm-Based uCPE Platform](#)

TrustZone

Partner Ecosystem

Arm Approved Program

Artificial Intelligence

Automotive

HPC

Infrastructure

Mbed Partners

Support

Design Reviews

Developer Forums

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