**PROWESS**

# Performance and Cost Benefits of Latest-Generation VMs

Testing shows that Microsoft Azure® confidential virtual machines (VMs) powered by 4th Generation AMD EPYC™ processors deliver significant performance gains over VMs powered by previous-generation processors while maintaining strong security protections.

Enterprises face growing pressure to secure data not just at rest or in transit, but also during active processing. Confidential computing can offer a compelling solution. Research by Prowess Consulting reveals that Microsoft Azure® confidential VMs with AMD Secure Encrypted Virtualization-Secure Nested Paging (SEV-SNP) technology can outperform their predecessors across key workloads without introducing steep performance penalties. For this research, Prowess Consulting tested a range of real-world enterprise workloads, including CPU-intensive tasks and memory bandwidth benchmarks. The results were clear: confidential VMs powered by 4th Gen AMD EPYC processors delivered up to 77% higher memory throughput, up to 34% better Redis® performance, and up to 30% stronger CPU throughput results compared to previous-generation VMs powered by 3rd Gen AMD EPYC processors.

With AMD SEV-SNP protections enabled, performance overhead—measured as the difference in performance between general-purpose VMs powered by 4th Gen AMD EPYC processors and confidential VMs powered by 4th Gen AMD EPYC processors—remained modest in most test cases. At the system level, overhead was just 2% for memory and 8% for CPU; at the application level, it was only 8% for Redis.

In practical terms, these findings mean that IT leaders no longer need to choose between performance and security. Azure confidential VMs powered by 4th Gen AMD EPYC processors offer a balanced, production-ready option for enterprises seeking to modernize their cloud infrastructure while protecting sensitive data.

> Generation-on-generation performance gain of
>
> # 30−77%
>
> for Microsoft Azure® confidential VMs powered by 4th Gen AMD EPYC™ processors with AMD SEV-SNP technology

> Performance overhead of
>
> # 2−8%
>
> for Azure confidential VMs powered by 4th Gen AMD EPYC processors with AMD SEV-SNP technology, compared to VMs powered by previous-generation processors

## Learn More

As our testing shows, Azure confidential VMs powered by 4th Gen AMD EPYC processors can provide high security with predictable performance for regulated industries and performance-critical applications. For complete study details, visit "**Performance Advantages for Confidential Compute Running on Latest-Generation VMs**."