Scale Up with i3en Instances of VMware Cloud™ on AWS for Oracle® Database, Featuring 2nd Gen Intel® Xeon® Scalable Processors, and Double Your Performance with Larger Instances

AWS for Oracle Database i3en Instances Feature Intel Cascade Lake Processors

New AWS i3en Instance Types, Featuring 2nd Gen Intel Xeon Scalable Processors, Offer More Cores and More Power than i3 Instance Types

Many companies are heavily invested in VMware technologies, including VMware Cloud on AWS to host private clouds in their datacenters. However, the public cloud is continuing to grow and become an increasingly popular choice when customers face the need to expand resources. With VMware Cloud on AWS, customers get a joint-engineered solution that makes it easy for VMware customers to expand into AWS.

For mission-critical Oracle Database workloads, customers must carefully choose which instances will best serve their needs. Enabled by 2nd Gen Intel Xeon Scalable processors, new i3en instances come in larger sizes with more cores than older i3 instances. Due to the L1TF vulnerability present in older Intel processors, the i3 instances were unable to offer hyperthreading, which limited the core count. With newer processors that do not have this vulnerability, customers will get the full range of their CPU with the new i3en instances. While the older instances limit customers to only 32 vCPUs, the new i3en instances come in sizes up to 96 vCPUs.

In addition to the new 2nd Gen Intel Xeon Scalable processors, these new i3en. metal instances feature greater storage capacity at lower cost and more memory than the i3.metal instances. To demonstrate the performance gains customers could see with these improved i3en instances, VMware created two software-defined data center (SDDC) clusters, one with three i3en instances, and one with three i3 instances. Using a single Oracle database VM deployed on the instances, VMware performed a scale-up test to show how each VM performed at various vCPU sizes. With an equal number of vCPUs (8 on each), the i3en database VM achieved 18% better database performance. When testing scaled to 92 vCPUs on the i3en instances and the maximum 32 vCPUs on the i3 instance, the i3en database VM achieved double the database performance. This means that even if you don't need the increased core count of the new i3en.metal instances, your Oracle database workloads could benefit from them.

Scaling Performance with an Equal Number of vCPUs

One phase of the scale-up testing compared the performance the i3en and i3 instances delivered with a VM of equal size. Using the DVD Store 3 benchmark, VMware targeted each Oracle database with multiple worker threads representing customers purchasing DVDs. Using the benchmark's orders per minute output,

Oracle Database

Achieve Up to Twice the Oracle Database Work with Larger Instances

Compared to i3 Instances

Gain 18% More Database Orders per Minute on the Same Size Instances

Compared to i3 Instances

Harness the Power of More and Better Cores

Compared to i3 Instances

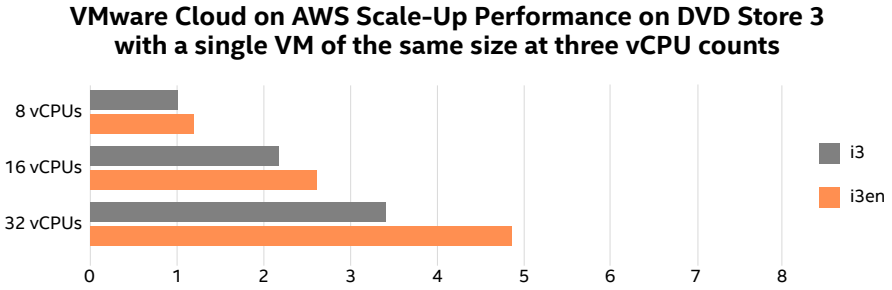

Figure 1. Relative DVD Store 3 scale-up test results comparing total performance (in orders per minute) achieved by three-host software-defined data center using AWS i3 and i3en instances with a single VM at three vCPU counts. Higher is better.

VMware showed that at 8, 16, and 32 vCPUs, the i3en instances featuring new 2nd Gen Intel® Xeon® Scalable processors outperformed the i3 instances. With 8 CPUs, the smallest size the test included, the i3en instances produced 18% greater performance than the i3 instances.

Scaling Performance to Maximum vCPUs

Another phase of the scale-up testing compared the performance the i3en and i3 instances delivered with increasingly larger VMs. Due to the hyperthreading issue we mentioned previously, each i3 instance is limited to just 32 cores. With more cores and the ability to enable hyperthreading, each i3en instance has up to 96 cores. As VMware scaled the i3en instance up to the maximum 96 vCPUs, performance increased until it peaked at 92 vCPUs. Compared to the largest VM on the i3 instance, the 32-vCPU VM, the 92-vCPU VM on the i3en instance achieved twice the performance.

Regardless of the size of your Oracle Database implementations, select AWS i3en instances featuring 2nd Gen Intel Xeon Scalable processors to get more from your VMware Cloud on AWS investment.

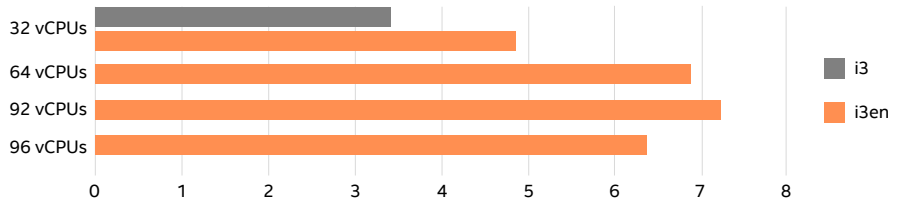

Figure 2. Relative DVD Store 3 scale-up test results comparing total performance (in orders per minute) achieved by three-host software-defined data center using AWS i3 and i3en instances with VMs at increasing vCPU counts. Higher is better.

Learn More

To begin your Oracle Database deployments on AWS for Oracle Database i3en instances with 2nd Gen Intel Xeon Scalable processors, visit intel.com/aws.

For more test details, visit https://www.vmware.com/techpapers/2020/oracle-vmc-aws-i3en-perf.html.