

Scale Out with i3en Instances of VMware Cloud™ on AWS for Oracle® Database, Featuring 2nd Gen Intel® Xeon® Scalable Processors, and Reap up to Twice the Performance

AWS for Oracle Database i3en Instances Feature Intel Cascade Lake Processors

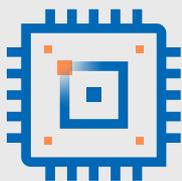


Oracle Database



Achieve Up to Twice the Oracle Database Work

Compared to i3 Instances



Harness the Power of More and Better Cores and Hyperthreading

Compared to i3 Instances

New AWS for Oracle Database i3en Instances, Featuring 2nd Gen Intel Xeon Scalable Processors, Offer More Cores and More Power than i3 Instances

Enterprises who rely on Oracle Database are increasingly shifting many of their mission-critical workloads from on-premises datacenters to cloud-based environments. With AWS and VMware partnering to deliver an integrated cloud offering tailored for vSphere-based workloads, companies can migrate their Oracle Database applications to VMware Cloud on AWS and retain full control of the database and operating system-level access.

Which AWS instances make the best business sense? Compared to older i3 instances, new i3en instances enabled by 2nd Gen Intel Xeon Scalable processors offer more compute cores and more memory, allowing them to host larger and more powerful VMs. Also, hyperthreading is not enabled in AWS i3 instances due to the L1TF vulnerability present in older Intel processors. The new processors that enable the i3en instances don't have this issue, so hyperthreading is enabled.

VMware performed a series of scale-out tests to compare the Oracle Database performance of these two AWS instances, deploying a three-host software-defined data center (SDDC) and using a workload consisting of multiple worker threads targeting VMs simultaneously. With both one and two VMs per host processor, the AWS i3en instances enabled by 2nd Gen Intel Xeon Scalable processors delivered up to twice the performance.

Testing Performance with Two VMs per Host Processor

One phase of scale-out testing used two VMs per host processor. The core count of the host processors determined the size of the VMs. Because the i3en hosts enabled by 2nd Gen Intel Xeon Scalable processors have 24 cores per socket, two 12-vCPU VMs fit in each socket without over-provisioning. With fewer cores per socket, the i3 instances accommodated only 8-vCPU VMs. Testing began with a single VM and increased to two VMs per socket per host, which, in this case, was 12.

Figure 1 on the next page shows how increasing the vCPU count of the VMs to take advantage of the additional cores in the i3en instances led to increasing performance advantages as the number of VMs scaled out. In the last scenario, with 12 Oracle database VMs (four per host), the i3en SDDC achieved more than twice the total operations per minute of the i3 SDDC. We can attribute this improvement to the i3en instance having more and better cores than the i3 instance, and the presence of hyperthreading.



VMware Cloud on AWS Scale-Out Performance on DVD Store 3 with VMs Sized for Two per Host Socket: 8-vCPU Oracle RHEL VMs on i3 vs. 12-vCPU Oracle RHEL VMs on i3en

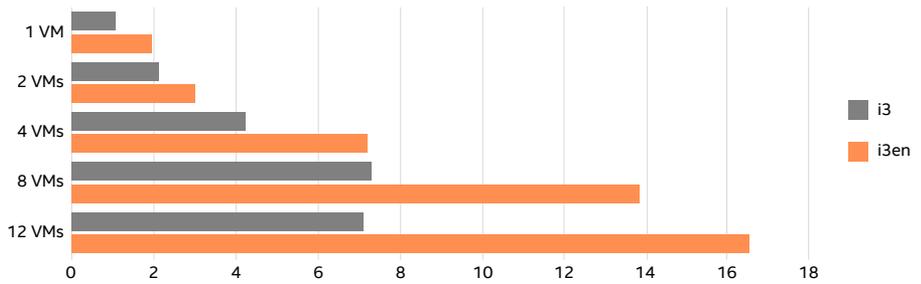


Figure 1. Relative DVD Store 3 scale-out test results comparing total performance (in orders per minute) achieved by three-host software-defined data center using AWS i3 and i3en instances with VMs sized for two per host socket. Higher is better.

Testing Performance with One VM per Host Processor

To examine scaling out with larger Oracle Database VMs on the same i3 and i3en SDDCs, another phase of scale-out testing used a single VM per host processor. The host processor core count again determined VM size. The i3en cluster enabled by 2nd Gen Intel® Xeon® Scalable processors supported 24-vCPU VMs without over-provisioning while the i3 cluster supported only 16-vCPU VMs.

As Figure 2 shows, testing began with a single VM and increased to six VMs (one per socket per host). The results follow the same pattern we saw in the previous test. With six of the larger 24-vCPU VMs running across the three host instances in the i3en SDDC, total performance was again more than twice what the six 16-vCPU VMs on the i3 SDDC could achieve.

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.

VMware Cloud on AWS Scale-Up Performance: i3 vs i3en SQL Server on Windows Running DVD Store 3

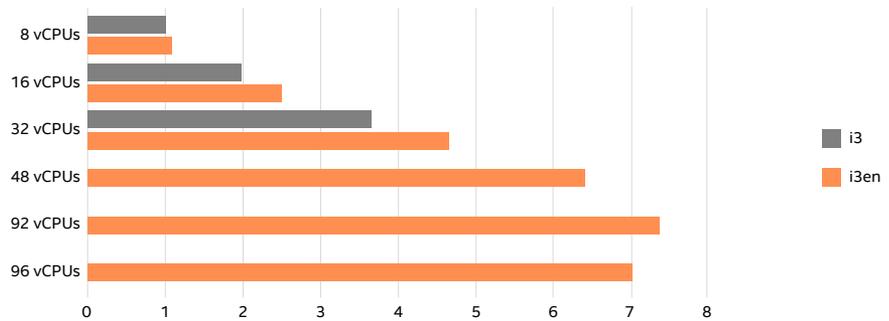


Figure 2. Relative DVD Store 3 scale-out test results comparing total performance (in orders per minute) achieved by three-host software-defined data center using AWS i3 and i3en instance with VMs sized for one per host socket. Higher is better.

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>.



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