

# Performance report: VMware vSphere 8 memory management features outperformed those of Red Hat OpenShift Virtualization

*A new report from Principled Technologies highlights the efficacy of memory overcommitment and memory oversubscription features in VMware vSphere 8 Update 3*

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A new report from third party Principled Technologies (PT) shows that VMware vSphere 8 Update 3 outperformed Red Hat OpenShift Virtualization 4.16.2 in terms of online transaction processing (OLTP) database performance virtual machine (VM) density. These advantages were due in part to the vSphere memory oversubscription and memory overcommitment features, which allow organizations to take advantage of more of their existing infrastructure's resources.

The report demonstrates that a VMware vSphere 8 solution supported up to 62% more SQL Server new orders per minute (NOPM) compared to a Red Hat OpenShift Virtualization solution.

"Additionally," says the report, "the OpenShift solution supported fewer VMs before experiencing significant degradation whereas the vSphere solution ran double the number of VMs over baseline before crossing the performance threshold."



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Compared to Red Hat OpenShift Virtualization 4.16.2, the VMware virtualization platform supported 62% more database transactions and sustained consistent database performance while scaling up VMs due to efficient memory management methods

Peak workloads can strain physical data center resources, potentially causing performance loss without proper configuration. In virtual environments, the memory management strategies of memory oversubscription and memory overcommitment can help maximize the use of physical resources, increase VM density, and meet workload demand. Different virtualization solutions manage memory in various ways, and VMware® vSphere® 8 Update 3 offers a dedicated memory overcommitment feature for helping balance VM performance with density. But how does the memory management of a vSphere solution stack up against its competitors?

We compared the performance and VM density of a VMware vSphere 8 Update 3 solution to that of a Red Hat® OpenShift Virtualization 4.16.2 solution. After measuring online transaction processing (OLTP) performance at a baseline level using memory oversubscription but without using memory overcommitment, we began overcommitting memory on both solutions and increased the VM density until we saw significant (10 percent or more) performance degradation.

At every level of VM density, including the baseline, the vSphere solution supported more database transactions in NOPM than the OpenShift solution. Additionally, the OpenShift solution supported fewer VMs before experiencing significant degradation whereas the vSphere solution ran double the number of VMs over baseline before crossing the performance threshold. By supporting more VMs and better OLTP performance, organizations with a vSphere environment can meet more transactional database demand without adding more servers and licenses.

**Higher VM density with consistent performance**  
Support 1.5x the VMs and maintain consistent performance for longer under load

**Better total OLTP performance**  
Up to 62% more SQL Server new orders per minute (NOPM)

**No configuration**  
vSphere enables memory overcommitment by default

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“Memory oversubscription allows organizations to maximize their existing physical infrastructure by allocating more memory for peak usage than hypervisors typically assign by default,” the report goes on to state. “Because hypervisors handle memory management in different ways, we compared VMware vSphere 8 Update 3 to Red Hat OpenShift Virtualization 4.16.2 to see how each handled the memory management techniques of oversubscription and overcommitment. In our tests, vSphere outperformed OpenShift across the board, delivering 62 percent more NOPM at the maximum supported VM density of each solution. The vSphere solution supported 1.5 times more VMs than the OpenShift solution and doubled the VM count before experiencing significant performance degradation. In addition to the better OLTP performance, we found vSphere easier to configure, requiring no additional tuning for memory overcommitment. Our results indicate that VMware vSphere 8 Update 3 helps boost VM density to meet OLTP demand while maximizing server memory utilization.”

To learn more about the PT results, visit <https://facts.pt/ebLHw9P>.

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