



## Virtual Machine Software versus Partitioned Operating Systems

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Two approaches to virtual processing commonly used in the system software industry are virtual machine software and partitioned operating systems. Although they seem similar, there are different ramifications to their use.

### WHAT IS VIRTUAL MACHINE SOFTWARE ?

Virtual machine software, such as that offered by IBM, Microsoft, VMware, and Virtual Iron Software, allows a developer to encapsulate an entire stack of software, from the operating system all the way up to the application, in a container. If the target system has sufficient processing power, memory and storage, virtual machine software makes it possible for more than one of these capsules to run at the same time.

Each of these capsules, or virtual machines, is isolated from all of the others insuring a strong security environment. Each virtual machine has its own operating system, networking software, data management software, application framework software and application software. Each of these virtual machines is managed separately unless some very sophisticated virtual management software is deployed. If any of these capsules or virtual machines has a problem and halts, the rest of the work being done by the physical machine continues.

One of the most important benefits of this approach is that workloads running on many different operating systems or different versions of the same operating system can be consolidated onto a single physical machine without interfering with one another.

### WHAT IS A PARTITIONED OPERATING SYSTEM ?

A partitioned operating system allows more than one data management software, application framework software and application software to be hosted on the same physical system. Unix offered by HP, IBM and Sun as well as most Linux distributions can be partitioned. Unlike virtual machine software that allows each capsule or virtual machine to run its own operating system, each operating system partition is being supported by a single operating system. If a partition has a problem and halts, it can be restarted without affecting other partitions running on the same operating system. If, on the other hand, the underlying operating system stops, everything comes down with it.

The key benefits of this approach are performance and efficiency. Since the system isn't shuffling operating systems around, this approach requires less physical memory or storage. Shifting from one partition to another is faster than shifting from one virtual machine to another. Partitions are much smaller than virtual machines and so a particular system can support many more partitions can virtual machines.

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## WHICH APPROACH IS BEST FOR MY ORGANIZATION?

Each of these tools should be in the developer's tool kit. It is possible that the use of virtual machine software will require that sufficient processing power, memory and storage be allocated for a number of operating systems to run. In exchange for this investment, the developer may run different operating systems for each task. So, a Linux virtual machine may be run to support Apache, Tomcat, and J2EE applications. Windows may be run in a different virtual machine allowing the developer to use SQLserver.

A partitioned operating system may require less memory, less processor power and less storage to do something similar. Each of the partitions, however, must run under the same, single operating system. So, Linux-based Apache, Tomcat, J2EE and some data management system can all be run in different partitions on the same Linux-based physical system. SQLserver from Microsoft, however, can not be the data management solution. It only runs on Windows.