Controlling Datacenter Costs with Virtualization

Intel and VMware Help Companies Meet Dynamic Business Demands While Lowering Total Cost of Ownership

Switch on a server and you’ve just doubled its cost. According to Gartner, between 2007 and 2012, most U.S. enterprise datacenters will spend as much on power and cooling as on the hardware itself. Couple this with increasing infrastructure demands needed to handle the petabytes of data flowing through organizations as well as increasing energy costs, and Gartner also predicts that energy costs for IT could double by 2012.¹

Compounding the problem is the fact that utilization of hardware remains low. According to Gartner, an x86 server uses between 5-10 percent of its capacity in a typical 24-hour period.² But by using virtualization to consolidate servers and workloads, companies can use their spare capacity, increase their utilization, and maximize their return on investment.
Save on CapEx and Lower OpEx

By virtualizing your infrastructure using the Intel® Xeon® processor 5500™ series servers and VMware vSphere™ 4, you can consolidate resources and improve your total cost of ownership by decreasing management costs and increasing asset utilization. You can also improve system availability and help lower the cost and complexity of disaster recovery.

Virtualization allows businesses to run multiple application and OS workloads on the same server. Ten server workloads running on a single physical server is typical, but some companies are consolidating as many as 30 or 40 workloads onto one server. Using VMware vSphere™ to consolidate your datacenter on Intel Xeon processor 5500 series-based servers not only delivers 9x the performance compared to installed single-core servers, but also decreases capital expense per application on the average from $14,000 USD to $6,000 USD, and operating (labor cost) from $8,000 USD to $3,000 USD (over three years).

VMware® virtualization solutions on Intel technology-based hardware simplifies IT administration by reducing the number of servers to manage. Hardware management and provisioning tasks can be managed on-the-fly and from a single location using VMware vCenter™ Server. In addition, tasks that used to be highly manual and time intensive, such as failover provisioning and load balancing, can now be completely automated. This typically has a dramatic effect on OpEx and business operating efficiency. In real-world deployments, VMware customers have reported up to a 50 percent reduction in hardware and operating costs. And when your IT employees don’t have to focus on routine, repetitive tasks, they can help support business goals beyond the IT department, allowing your business to achieve the agility, flexibility, and reliability it needs to compete in a 24/7 global marketplace.

Cost Savings Quantified

Both cost efficiency and power efficiency are helping extend the life of existing datacenters and play a key role in the design of new ones. As part of these efforts, companies are beginning to consolidate and refresh existing infrastructure with servers that deliver more performance and scalability more efficiently.
Intel Xeon processor 5500 series delivers a technological imperative to refresh existing infrastructure or build the core of new datacenters. With the Intel Xeon processor 5500 series and VMware vSphere 4, you can achieve greater performance while using less energy and space, and dramatically reducing operating costs. Servers built on the Intel Xeon processor 5500 series and running VMware vSphere 4 deliver up to 160% better performance6 in a virtualized environment than previous generations, as well as near native performance on enterprise applications such as ERP and BI running in a virtual environment. You also get more than 2x the virtual machine density for greater consolidation levels that help you not only reduce your carbon footprint, but realize CapEx and OpEx savings through improved utilization and decreased hardware requirements.

And refreshing your single-core infrastructure with Intel Xeon processor 7400Δ series-based servers using VMware technology can deliver an estimated $500K savings over four years, an 87% footprint reduction and 88% lower energy consumption, and an 8x performance boost per server.7

Is it Hot in Here?

As you might expect, dramatically reducing server count also has a transformational impact on IT energy consumption, reducing power and cooling costs while providing more computing power in less space. A good thing, because the UpTime Institute concludes that currently one in ten racks is overheating.3

Another problem, however, is that half of all datacenters have insufficient power and cooling for high-density installations,2 according to Gartner. That’s another reason why many organizations are refreshing their technology and then virtualizing it.

Cost-Savings in Action with Solvay Pharmaceuticals

Let’s look at an Intel and VMware customer, Solvay Pharmaceuticals, and the costs savings they achieved with virtualization. One of the Solvay IT team’s most challenging tasks is rapidly deploying the latest applications in order to help the company manage its R&D demand. With most servers supporting only a single application, server sprawl soon became a problem and the company was close to running out of space for new servers in their U.S. datacenter.

The Solvay IT team addressed these challenges by virtualizing and consolidating its datacenter servers. However, many of the servers did not have the CPU capacity to run multiple virtual machines, so the team chose to deploy new, more powerful servers – while also staying within the energy and cooling limitations of their datacenter.

Solvay consolidated 65 physical servers down to 17 servers using VMware virtualization software on Intel® technology-based servers, hosting an average of 12 virtual machines per server. The team also added 102 virtual machines, for a total of 150 virtual machines running on 10 VMware ESX™ Server hosts.

In power and cooling costs alone, Intel® Xeon® processors helped Solvay save an estimated USD 67,000 per year. And because the new systems fit within the existing energy and cooling limitations of the Solvay facility, the company could delay expanding their datacenter, which according to Gartner can cost upwards of $1,000 per square foot8 to expand.

SAP ERP* running in a VMware vSphere 4 on an Intel Xeon processor 5500 series-based server performed up to 2.03x better than running in a native environment on the older Intel® Xeon® processor 5400 series?
The power and cooling cost savings – along with the boost in compute performance – can lower total cost of ownership. For instance, the Intel Xeon processor 5500 series uses up to 50 percent lower server idle power compared to the previous generation and studies show that consolidating on the Intel Xeon processor 7400 series can offer up to 88% reduction in power consumption.

Intel Core microarchitecture has integrated virtualization hardware support with Intel® Virtualization Technology (Intel® VT) and coupled with VMware solutions that are optimized to take advantage of Intel VT features and capabilities, you get an infrastructure that delivers tangible benefits for both your business and IT organization.

Using VMware Distributed Resource Scheduler (DRS) on Intel Xeon processor 5500 series-based servers delivers even greater business benefits. DRS continuously monitors utilization across resource pools and intelligently allocates available resources among virtual machines according to business needs. When a cluster needs fewer resources, it consolidates workloads and puts hosts in standby mode to reduce power consumption. Coupled with the power-efficiency features of the Intel Xeon processor 5500 series, your datacenter can achieve greater performance while using less energy and dramatically reducing operating costs.

To learn how your company can use virtualization to lower costs and improve performance visit www.vmware.com/go/intel.