MEET DATABASE PERFORMANCE NEEDS WHILE REDUCING TCO WITH THE DELL POWEREDGE VRTX VS. A LEADING PUBLIC CLOUD SERVICE

Dell™ PowerEdge™ VRTX delivered

63.9%
lower five year TCO

13
month payback

compared to a leading
public cloud service while
running a database workload

Databases power much of the work that goes on in small businesses and remote offices, so performance is crucial in the day-to-day. Increasingly, many businesses are considering running their databases from a cloud WAN service, but this practice can lead to unexpected outages, performance degradation during peak times, and substantial long-term costs. Running your database workloads locally gives you the performance you need while costing far less in the long-term and affords you local control over your databases and hardware.

One such complete local solution, the Dell PowerEdge VRTX, is a tested, shared infrastructure solution that fits server nodes, switches, and shared storage into one convenient box that can fit under a desk. In the Principled Technologies labs, we compared a leading public cloud service and the local Dell PowerEdge VRTX solution and found that the Dell PowerEdge VRTX provided better value while running the same transactional database workload. When comparing the total cost of ownership of running 10 virtualized instances of Microsoft® SQL Server® 2012 on Windows Server® 2012, purchasing and running the Dell PowerEdge VRTX could cost up to 63.9 percent less over five years compared to the leading public cloud service, and could deliver payback in just 13 months.

FOR A QUICK RETURN ON YOUR INVESTMENT, GET YOUR HEAD OUT OF THE CLOUDS

Running databases in the cloud may be cheaper in the short term compared to purchasing new hardware, but a WAN solution will quickly cost your organization more. Further, cloud outages are out of your control. By running database workloads locally in remote offices on the Dell PowerEdge VRTX, you can keep control of your important databases and bypass WAN connections in favor of a LAN.

We used VMware® vSphere® 5 to create 10 virtual machines (VMs) on the Dell PowerEdge VRTX, and ran an instance of SQL Server 2012 in each. We configured an equivalent single instance on the leading public cloud service and compared the cost of running 10 instances of this against the 10 VMs running on the Dell PowerEdge VRTX. For more information on how we conducted our tests, see the full report at http://www.principledtechnologies.com/Dell/VRTX_vs_cloud_0613.pdf.

Achieve the transactional database performance your business needs with VRTX

We tested and found that the Dell PowerEdge VRTX with local databases comfortably supported 10 VMs running transactional database workloads, with each VM configured similarly and achieving the same baseline performance as a typical cloud-hosted database instance.

To test this, we established the baseline performance for each virtual machine instance running a transactional workload as 1,000 orders per minute (OPM). This represented 250 simulated database users generating approximately four orders per minute on each of the VMs. We configured a single instance on a leading public cloud service with SQL Server 2012 and Windows Server 2012, and ran our test workload on it to ensure that it achieved the requisite OPM. We then determined the number of similarly configured VMs the Dell PowerEdge VRTX could support while running the same workload by scaling out the number of VMs up to the greatest number before they no longer achieved the requisite OPM, which we determined to be 10 VMs.

Please note that the Dell PowerEdge VRTX we tested was representative of a typical two-server node configuration. You could expect to achieve even greater virtualization capacity and performance by adding server nodes and more or faster drives to the shared storage.

LOWER TOTAL COST OF OWNERSHIP WITH DELL POWEREDGE VRTX

Whether you run a small business with a single office or have many branch offices scattered across the globe, keeping costs as low as possible is crucial to success. While choosing to host databases in the cloud might seem convenient and cost-effective, we found that purchasing and running the Dell PowerEdge VRTX solution could deliver as much as a 63.9 percent lower five-year total cost of ownership (TCO) than using a leading public cloud service for 10 SQL Server 2012 instances (see Figure 1).
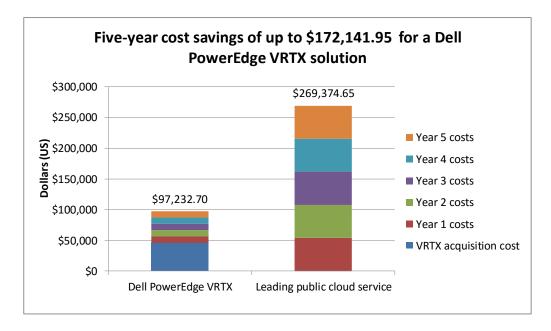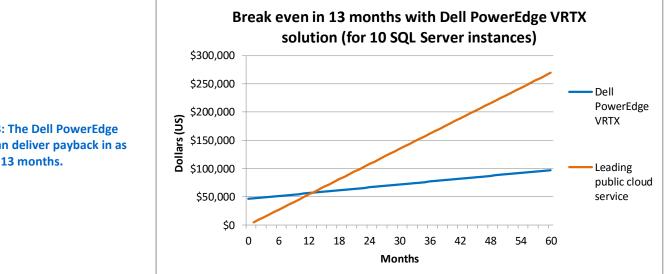
Figure 1: The Dell PowerEdge VRTX delivered a 63.9 percent lower TCO than using a leading public cloud service to host databases.

Five-year cost savings of up to $172,141.95 for a Dell PowerEdge VRTX solution

Although the VRTX has an up-front acquisition cost, its monthly cost is significantly lower than that of the leading public cloud service. After five years, the Dell PowerEdge VRTX solution is $172,141.95 cheaper, saving 63.9 percent (see Figure 2).

	Dell PowerEdge VRTX	Leading public cloud service
Acquisition cost	$46,090.00	
Year 1 costs	$10,228.54	$53,874.93
Year 2 costs	$10,228.54	$53,874.93
Year 3 costs	$10,228.54	$53,874.93
Year 4 costs	$10,228.54	$53,874.93
Year 5 costs	$10,228.54	$53,874.93
Total	**$97,232.70**	**$269,374.65**

Figure 2: The Dell PowerEdge VRTX costs up to $172,141.95 less than the leading public cloud service after five years.

With the Dell PowerEdge VRTX, we found that you could achieve payback, or a return on your investment (ROI), in as little as 13 months (see Figures 3 and 4).

Break even in 13 months with Dell PowerEdge VRTX solution (for 10 SQL Server instances)

Payback category	Dell PowerEdge VRTX	Leading public cloud service	Difference
One-time initial investment	$46,090.00	$0.00	$46,090.00
Monthly cost	$852.38	$4,489.58	$3,637.20
Payback period	($46,090.00/$3,637.20=**12.67 months**)		

Figure 4: The Dell PowerEdge VRTX can pay back your investment in 12.67 months, so by the 13th month the return of investment is completed.

The Dell PowerEdge VRTX was able to deliver a lower TCO and quicker ROI compared to the leading public cloud service due to lower yearly operating costs.[1]

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[1] For complete details of our TCO analysis, read our full report at http://www.principledtechnologies.com/Dell/VRTX_vs_cloud_0613.pdf

ALL-IN-ONE SHARED INFRASTRUCTURE

The Dell PowerEdge VRTX solution with M-series compute nodes is an all-in-one solution designed to handle the performance needs of your small-to medium-business or remote office. Here, we provide information about each of the components we used as part of this solution.

About the Dell PowerEdge VRTX

Dell PowerEdge VRTX with 12 3.5-inch drives

Dell PowerEdge VRTX with 25 2.5-inch drives

The Dell PowerEdge VRTX is a compact, all-in-one solution in a 5U rack-able tower chassis. Designed to be quiet under normal operating conditions, the Dell PowerEdge VRTX can be stowed under a desk in a small office without disrupting conversations. Its four bays house M520 or M620 compute nodes, providing a space-saving alternative to having four separate tower or rack servers. In addition to space savings, the Dell PowerEdge VRTX provides administrators with a unified interface, the Chassis Management Controller, for performing routine systems management tasks. The Dell PowerEdge VRTX chassis supports up to 48 TB of shared internal storage that is presentable as virtual drives to single or multiple compute nodes, and provides optional pass-through and eight PCIe slots for additional device connectivity. The chassis integrated storage can be configured with 25 bays for 2.5-inch drives or with 12 bays for 3.5-inch drives. The Dell PowerEdge VRTX integrated switch contains multiple external network ports for easy expansion or integration into any computing environment.

For more information about the Dell PowerEdge VRTX, visit www.dell.com/poweredge.

About the Dell PowerEdge M620 server nodes

The Dell PowerEdge M620 server node has features optimized for performance, density, and energy efficiency.

- **Processors.** The Dell PowerEdge M620 is powered by two Intel® Xeon® E5-2600-series processors, which incorporate the very latest in processor technology from Intel. The powerful processors provide the performance you need for your essential mainstream tasks. The Intel Xeon E5-2600-series processor gives you up to eight cores per processor, or up to 16 cores per server.
- **Memory.** The Dell PowerEdge M620 holds up to 768GB DDR3 RAM (up to 1600 MHz) across 24 DIMM slots per compute node.
- **Management.** The Dell PowerEdge M620, like all late-model Dell servers, comes with the Dell Lifecycle Controller. This tool simplifies server management by providing a single interface for management functions and by storing critical system information in the system itself. There are no CDs or USB keys to keep track of for drivers or firmware.

About VMware vSphere 5

vSphere 5 is the latest virtualization operating system from VMware. vSphere 5 virtualizes server, storage, and networking resources, achieving a consolidation ratio greater than 15:1. Features such as automated management and dynamic resource allocation improve efficiency. The services that vSphere 5 provides fall into two categories: infrastructure services and application services. The former handle the virtualization of resources and their allocation to application when most needed, while the latter provide service-level controls to applications running on vSphere 5.

To learn more about VMware vSphere 5, visit http://www.vmware.com/products/vsphere/overview.html.

WHAT WE TESTED

To create our real-world ecommerce workload, we used the DVD Store Version 2.1 (DS2) benchmarking tool. DS2 models an online DVD store, where customers log in, search for movies, and make purchases. DS2 reports these actions in orders per minute (OPM) that the system could handle, to show what kind of performance you could expect for your customers. The DS2 workload also performs other actions, such as adding new customers, to exercise the wide range of database functions you would need to run your ecommerce environment. For more information about the DS2 tool, see http://www.delltechcenter.com/page/DVD+Store.

IN CONCLUSION

Cloud WAN services can seem convenient for small businesses and remote offices, but they remove local control and can be more expensive over time. In our tests, the all-in-one Dell PowerEdge VRTX provided the necessary transactional database performance while saving up to 63.9 percent in costs over five years. When you're looking for a reliable solution to run workloads in remote offices, the Dell PowerEdge VRTX has the potential to cost less than running databases from the cloud.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies, Inc.
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We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.