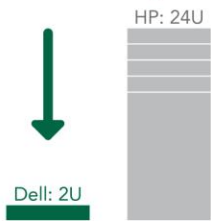# INCREASED DATABASE PERFORMANCE AND REDUCED COSTS WITH DELL POWEREDGE FX2 & VMWARE VIRTUAL SAN

GET MORE WITH LESS USING A DELL™ POWEREDGE™ FX2 SOLUTION

8.3% of the rack space
HP: 24U
Dell: 2U

2.8X the orders per minute
Dell: 530,817
HP: 184,446

9.7% more cost efficient
Dell: $0.31 per order per minute
HP: $0.34 per order per minute

6.5X the performance per watt
Dell: 573 OPM per watt
HP: 88 OPM per watt

Powered by Intel® Xeon® E5-2640 v3 processors

Featuring VMware Virtual SAN™ and Intel SSDs

Dell PowerEdge FC430 server

vs. four legacy HP servers and traditional storage array

Dell PowerEdge FD332 storage node

If the time has come to refresh your aging legacy servers and SAN, moving to a customizable, converged solution to meet your exact needs can give your organization the agility to meet fluctuating demands and help you move with flexibility into the future.

The Dell PowerEdge FX2 converged architecture solution combines compute, networking, and storage into a single chassis, bringing components closer together for improved density and energy efficiency. At Principled Technologies, we set up a Dell PowerEdge FX2 solution featuring

- Two Dell PowerEdge FD332 storages nodes
- Four Dell PowerEdge FC430 servers powered by Intel Xeon E5-2640 v3 processors
- 400GB and 800GB solid-state drives (SSDs) from the Intel SSD DC S3700 and S3500 Series
- An all-flash VMware Virtual SAN 6 architecture

When we compared the Dell PowerEdge FX2 solution to four legacy HP ProLiant DL380 Gen7 servers (released in 2010) and an external traditional storage array, it delivered 2.8 times the database orders per minute (OPM) and used 8.3 percent of the rack space due to its sleek 2U chassis and converged infrastructure approach.

Based on its database performance versus the HP legacy solution, our Dell PowerEdge FX2 solution showed it could deliver a greater value per dollar with a 9.7 percent reduction in cost per OPM and greater energy efficiency by offering 6.5 times the database performance per watt.

UNIFYING RESOURCES TO GET A HOST OF BENEFITS

At first glance, the Dell PowerEdge FX2 doesn't seem like a traditional rack or blade server—how is it different? It takes a converged infrastructure approach to bring datacenter resources into one unified component, which administrators can manage from a single console like a blade, or from the individual nodes like a rack.

In addition, the Dell PowerEdge FX2 features a number of server, networking, and storage components to choose from, so your FX2 solution can be tailor-made for your workload needs. For example, the Dell PowerEdge FX2 converged, 2U rack chassis allows you to incrementally add or swap compact, modular IT building blocks, including servers, storage, and IO, to fit many of your enterprise computing demands. This may be an ideal alternative to overhauling your infrastructure and invaluable for organizations that need agility in the datacenter. The software-defined datacenter approach that the Dell PowerEdge FX2 follows can ensure that you maximize the efficiency of each piece of hardware you run, reducing or eliminating waste while ensuring workloads run comfortably.
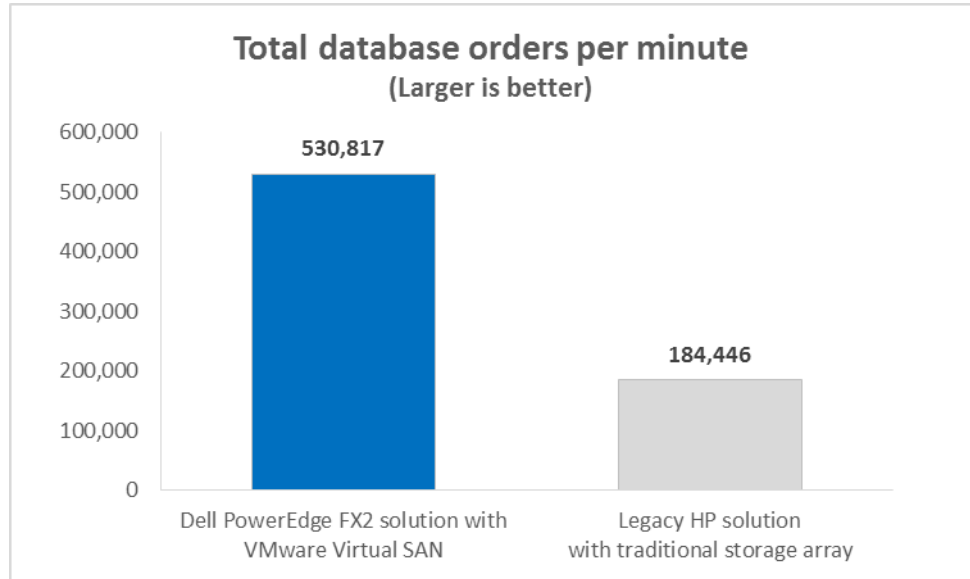
WHAT WE FOUND

Handle more database operations

Your legacy hardware may be a great fit for your current or former workloads, but different workloads tax different datacenter resources, so your legacy hardware might not deliver peak database performance compared to today's high standards. Combining Dell PowerEdge FC430 servers with Intel Xeon processors, Intel SSDs, and VMware Virtual SAN into the Dell PowerEdge FX2 chassis delivered 2.8 times the database orders per minute (OPM) of the legacy HP solution with a traditional storage array (see Figure 1).[1] The FX2 solution delivered over 345,000 more OPM from the same number of servers as the legacy HP solution.

---

[1] This is an abridged report. For more information on our solutions, configurations, the step-by-step testing methods, and detailed results and pricing, see our full report at www.principledtechnologies.com/Dell/PowerEdge_FX2_with_VSAN_6_1015.pdf.

Total database orders per minute
(Larger is better)

Figure 1: The Dell PowerEdge FX2 solution delivered 2.8 times the OPM of the legacy HP solution with a traditional storage array.

Handling more OPM can mean applications and users that rely on your databases aren't held back by resource contention—instead, they're working efficiently and doing more.

If your legacy solution components are at or near end-of-life, tweaking your legacy solution by adding more disk trays or faster drives to your external storage array may not be a sensible option. You may end up swapping one bottleneck for another. For example, your storage performance may improve, but your older servers may be too slow to keep up with your updated storage. The resulting solution might not be as fast or as cost efficient as the converged Dell PowerEdge FX2 solution with VMware Virtual SAN for storage.
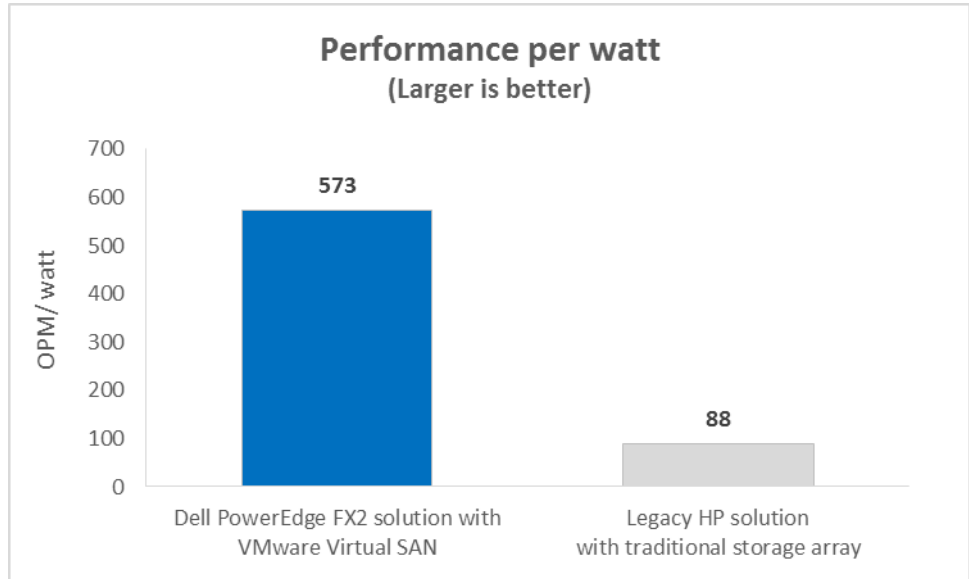
Power efficiency keeps costs down

Datacenters often face power constraints as they grow. This is what makes energy-efficient converged solutions so appealing: they save ongoing costs. The legacy HP solution used older power-hungry servers with a separate traditional storage array, so it used more power than the compact Dell PowerEdge FX2 solution did. We found that the Dell PowerEdge FX2 solution used 55.9 percent less power and was able to deliver 6.5 times the performance per watt (see Figure 2).

More power efficiency yields lower energy costs. The Dell PowerEdge FX2 solution could deliver a savings of more than $7,000 over three years in power and cooling costs compared to the legacy HP solution.[2]

---

[2] See our full report for details (www.principledtechnologies.com/Dell/PowerEdge_FX2_with_VSAN_6_1015.pdf).
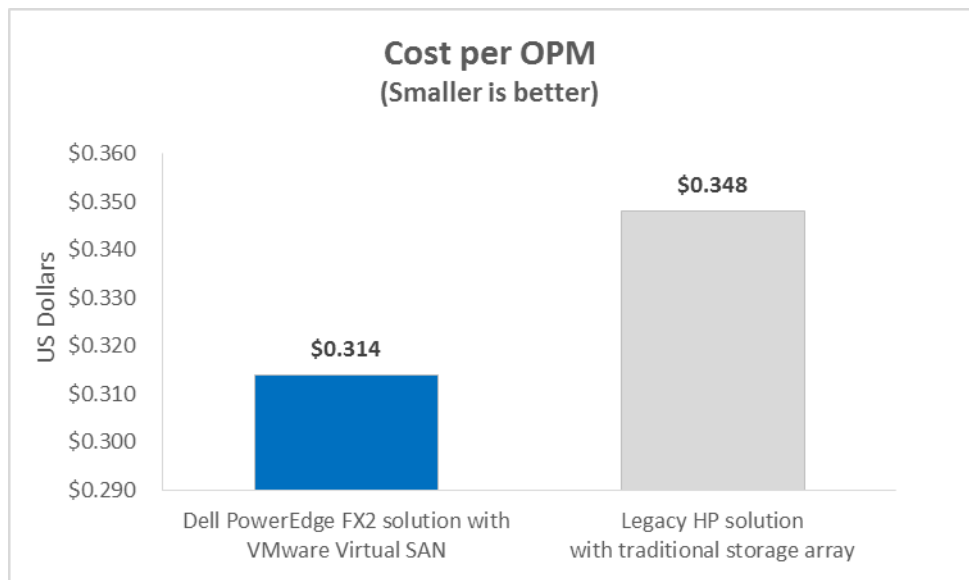
Figure 2: The Dell PowerEdge FX2 solution delivered 6.5 times the performance per watt of the legacy HP solution.

Get more for your dollar

What good is better performance if you can't afford it? Based on our findings, the Dell PowerEdge FX2 solution cost only $.314 per OPM compared to $.348 per OPM for the legacy HP solution (see Figure 3).[3] Improved performance can help alleviate the costs of refreshing legacy systems.

Figure 3: Our Dell PowerEdge FX2 solution was 9.7 percent more cost efficient than our legacy HP solution.
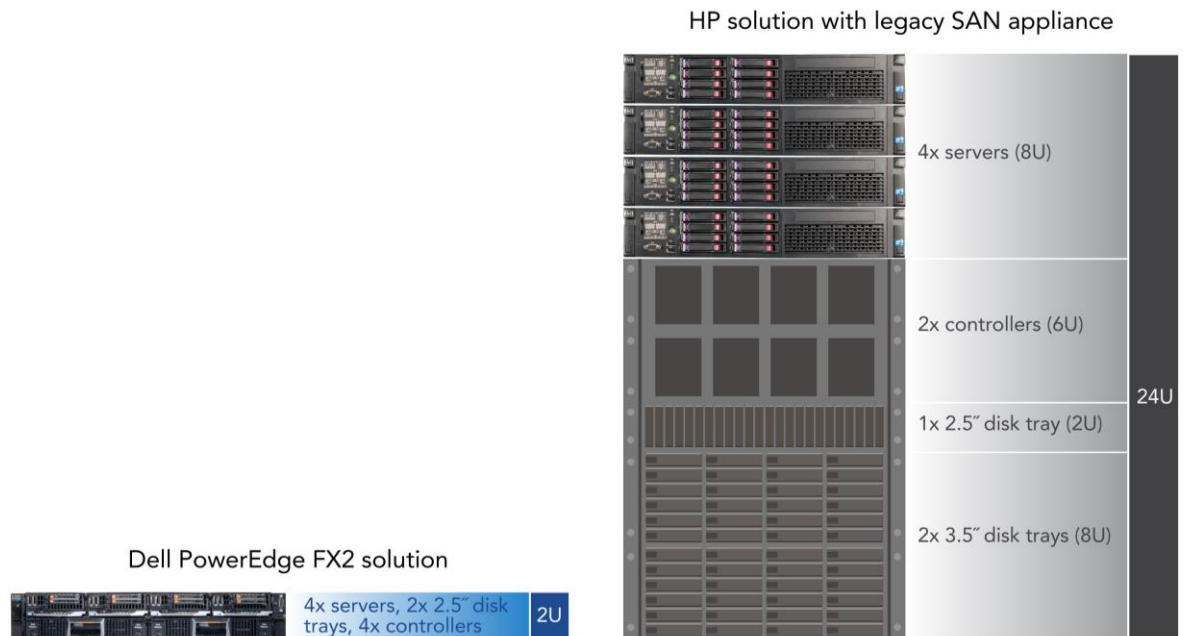
---

[3] For pricing details, see our full report at http://www.principledtechnologies.com/Dell/PowerEdge_FX2_with_VSAN_6_1015.pdf.

All-in-one 2U chassis saves on space

Cutting costs can sometimes be as simple as cutting down the size of your infrastructure. Converged solutions can pack more performance into less space—they're designed to use fewer ports and less physical space than traditional architectures, thereby reducing potential future costs as your business grows. As Figure 4 shows, the Dell PowerEdge FX2 solution takes up only 2U—8.3 percent of the rack space that the legacy HP solution occupied (see Figure 4).

Figure 4: The Dell PowerEdge FX2 solution occupied 22 fewer U than the legacy HP solution.

HP solution with legacy SAN appliance

4x servers (8U)

2x controllers (6U)

24U

1x 2.5˝ disk tray (2U)

2x 3.5˝ disk trays (8U)

Dell PowerEdge FX2 solution

4x servers, 2x 2.5˝ disk trays, 4x controllers — 2U

CONCLUSION

Holding onto legacy servers and storage can limit database performance and infrastructure agility along with wasting space and power. The Dell PowerEdge FX2 with VMware Virtual SAN can provide more value for your business, while setting up your datacenter to adapt to changing workloads as business needs fluctuate. In our tests, the PowerEdge FX2 solution outperformed four legacy HP servers and a traditional storage array. It offered 2.8 times the database OPM of the legacy solution while saving over half a rack of datacenter space. It also improved energy efficiency by delivering 6.5 times the performance per watt. Finally, the PowerEdge FX2 solution was more cost efficient, offering a cost per OPM that was 9.7 percent less than the legacy HP solution. The Dell PowerEdge FX2 solution is designed to provide a converged, flexible, and cost-efficient database modernization platform.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies®

Principled Technologies, Inc.
1007 Slater Road, Suite 300
Durham, NC, 27703
www.principledtechnologies.com

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.