NetApp®

Success Story

Kelley Blue Book Maximizes kbb.com Value with Private Cloud Built by Trace3 and Enabled by FlexPod

Kelley Blue Book
THE TRUSTED RESOURCE

Another NetApp
solution delivered by:

TRACE3

Customer Profile

Headquartered in Irvine, California, Kelley Blue Book is a leading vehicle valuation and information source trusted and relied upon by consumers and the automotive industry. Kelley Blue Book provides new-car prices, used-car values, car reviews, new and used cars for sale, and car dealer locations. The company published the first "Kelley Blue Book Official Guide" in 1926 and in 1995 launched the kbb.com website, which today provides market-reflective values, including the widely recognized "Blue Book® Trade-In, Suggested Retail Values and Fair Purchase Price," which reports what others are paying for new cars this week. Kelley Blue Book Company, Inc., is a wholly owned subsidiary of AutoTrader.com (source: www.kbb.com).

The Challenge
Refresh kbb.com Infrastructure

Few market variables change more quickly than car conditions, prices, and inventories. That's why, says Don Whitlow, manager of Systems Engineering at Kelley Blue Book, keeping kbb.com content up to date and available is fundamental to supporting online car shoppers: "Meeting the information needs of our customers and business partners requires frequent updating of our website. Fortunately, much of our corporate IT environment was already running on a VMware® on NetApp® infrastructure. But customer-facing web services still ran on physical servers with direct-attached storage. That traditional infrastructure served our needs well when the site launched in 1995, but the now-sprawling land-scape of some 50 servers made it difficult to maintain availability, introduce new functionality, and scale to keep pace with the demand for services."

To architect a solution, Kelley Blue Book partnered with Trace3, a systems integrator operating out of the southwestern United States. The team outlined a plan to virtualize the kbb.com infrastructure to enable more frequent updates of values and faster deployment of code changes. The challenge was to build out and deploy the new infrastructure in conjunction with a planned redesign of the kbb.com site. "To support the new features and increased traffic we expected on the enhanced website," continues Whitlow, "we needed higher performance and the ability to rapidly clone virtual environments and automate

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Dave Templeton
Chief Information Officer, Kelley Blue Book Company, Inc.

deployment across two data centers. It was critical to have the virtualized infrastructure in place for the new, more dynamic site—even though it was scheduled to launch in just three months."

The Solution
Build Private Cloud on FlexPod Data Center Solution from Trace3

For the virtual-server environment, Kelley Blue Book evaluated blade systems from multiple vendors. Whitlow explains that the key to the selection of the FlexPod data center solution was a proof of concept conducted by Trace3. To satisfy Kelley Blue Book's demanding business and technology requirements, Trace3 specified a FlexPod unit running the VMware vSphere® platform on Cisco Unified Computing System™ (Cisco UCS®) blade servers leveraging NetApp storage. The FlexPod solution offers four differentiating values pertinent to the Kelley Blue Book IT environment: (1) a high-speed, unified fabric to deliver required speed, flexibility, and simplicity; (2) unified manageability; (3) the memory architecture enhanced by Cisco UCS, which allows configuration of larger memory footprints without performance penalties; and (4) superior production-environment performance of the integrated FlexPod technology stack.

Today Kelley Blue Book utilizes VMware vCenter™ as a central framework for managing FlexPod resources as virtualized data center pools. Both NetApp Virtual Storage Console and Cisco UCS Manager integrate with VMware vCenter

to allow coordinated management across all infrastructure components. NetApp storage integration includes VMware vCenter plug-ins and support for VMware vStorage APIs. Integration simplifies tasks and allows administrators to manage storage directly from a tab within vCenter.

The NetApp Rapid Cloning Utility used in conjunction with FlexPod unified management tools and other extensible open APIs enables automation of provisioning and deployment processes. Trace3 helped Kelley Blue Book develop a customized orchestration tool for fast, automated deployment of virtual machines across both Kelley Blue Book data centers. Timothy Abbott, senior solutions architect at Trace3, comments, "By using NetApp and VMware APIs, we were able to meet both business and technology requirements within the single FlexPod architecture."

Business Benefits
On the Road in No Time Flat

Whitlow reports that the FlexPod solution allowed the Kelley Blue Book architecture and development teams to meet the aggressive launch schedule: "We needed just three hours to set up the FlexPod infrastructure package. When we were ready to move it into production, Trace3 brought up both sites in just two days. In contrast, during the evaluation phase, we spent more than a week setting up an equivalent solution by a competitor. We estimated that implementing the competitor's architecture would have

required at least 80 engineering hours and compression of other project milestones in order to meet our launch deadline. The FlexPod solution could not have been more different in terms of setup time and complexity."

With high-performance Cisco® blade processors, outstanding memory capacity, and NetApp Flash Cache™ intelligent caching, FlexPod also offers performance advantages. "In keynote web utilization testing," details Whitlow, "the FlexPod solution easily handled production data and traffic, while the competitive solution rendered the website unresponsive at just 40% to 50% of projected volumes."

The FlexPod solution also significantly outperforms the original physical-server environment, enabling Kelley Blue Book to support twice as many sessions—up to 400—per virtual machine. The improved performance contributes to enhanced site responsiveness and gives development teams the ability to introduce more features into click streams and to support more content-rich web designs.

Since deploying the FlexPod solution, Kelley Blue Book has experienced no downtime of web-based applications and is achieving its objective of greater than 99.999% availability for customer-facing services.

Zero to 60 in 30 Minutes

Andy Lapin, chief architect at Kelley Blue Book, describes the business benefits of the private cloud: "In the past,
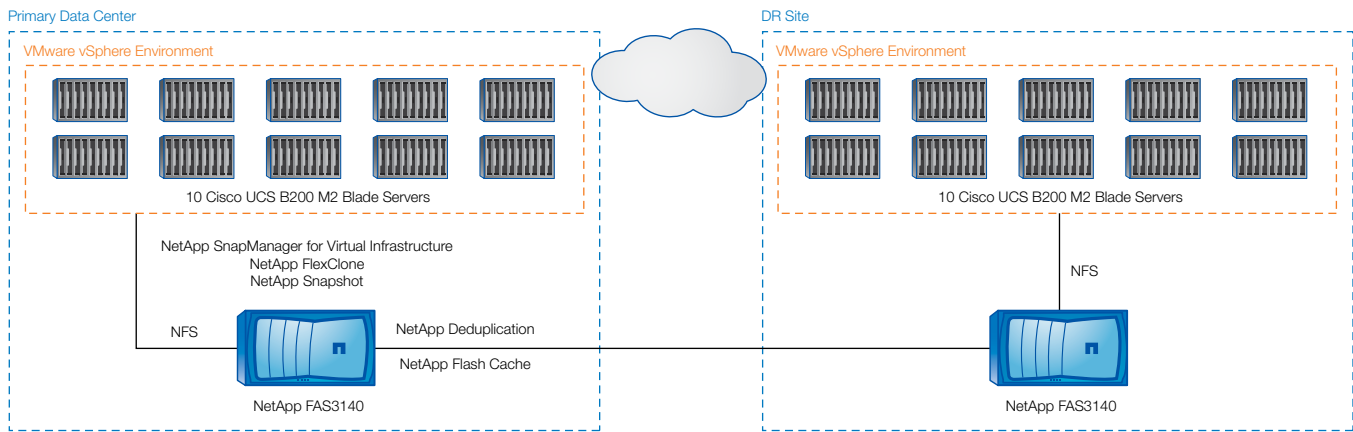
Figure 1) Trace3 deployed two FlexPod solutions—one at Kelley Blue Book's primary data center and a second facility that serves as a disaster recovery site. The private cloud provides resources to the kbb.com website, as well as to supporting processes, including mission-critical Microsoft SQL Server 2008 R2 database environments. The FlexPod solutions include NetApp FAS3140 systems that provide capacity via NFS to VMware vSphere environments running approximately 60 virtual machines across 10 Cisco UCS B200 M2 blade servers.

because we needed at least six hours to deploy code out to our web servers, we were only able to make changes once a day. Today, we use Cisco UCS service profiles, NetApp rapid cloning, and our custom orchestration tool to deploy or update as many as 60 virtual servers in less than 30 minutes. And it's all automated—we've replaced a complicated, mistake-prone 100-step runbook process with push-button code deployments that are bulletproof and complete 92% faster. In the past, our infrastructure limited how often we could deploy new code or update values. Today we deploy as technology needs dictate and to take advantage of opportunities for driving new revenue."

"Another benefit," observes John Parker, senior software architect at Kelley Blue Book, "comes from being able to treat virtual machines as disposable entities. In the past, we were reluctant to install nonproduction software—like diagnostic tools—on production servers. Today, we create a golden master, use NetApp Snapshot™ technology to create a backup, then clone that golden master as many times as needed. If a clone is corrupted, we can instantly reclone a new virtual machine; if we lose a golden master, we simply restore the Snapshot copy. We have unprecedented flexibility to utilize fail-fast and agile development methodologies that rely on iterative and incremental dev/test processes."

Whitlow adds, "In the physical environment, introducing any change was time

consuming. The FlexPod technology stack makes everything faster—changes to code, changes to memory, provisioning storage, scaling processors, and so on. As a result, we can performance-tune environments as much as 90% faster than we could in the traditional infrastructure."

Fuel Efficiency

For a company that has built its reputation on quantifying value, solution efficiency is on par with functionality. Whitlow describes some of the important efficiencies the private cloud on FlexPod delivers:

- Storage capacity savings. NetApp deduplication technology allows Kelley Blue Book to utilize up to 92% less storage for virtual machine volumes.
- More than $72K savings in connectivity costs. "Had we built our virtual infrastructure on traditional 2U boxes, we'd have needed additional 10GbE ports for an initial outlay of at least $72,000 more."
- Data center space and power savings. "A competing solution would have required roughly double the number of blades to handle kbb.com's baseline traffic. And compared to our traditional infrastructure, the FlexPod package delivers twice the performance in the same footprint. We're buying less capacity and fewer blades and using less power. Power in a data center is expensive, saving significant budget dollars for investing in technology that delivers direct returns to the business."

- Administrative savings. "The unified fabric lets us integrate more functionality within a single chassis—it's more flexible, easier to set up, and much easier to manage. Having a validated solution and cooperating vendors also streamlines support and integration of new functionality."

The Best Buying Guide—and a Whole Lot More

Lapin underscores the importance of partnering with an experienced IT systems integrator: "Trace3 brought valuable expertise and resources to the process, from early product evaluations to solution design and implementation. Trace3 leads with their engineers—and they have excellent engineers. The partnership gave us confidence that we could make a rapid and successful transition to this entirely new infrastructure."

"We value Trace3," states Dave Templeton, Kelley Blue Book chief information officer. "This FlexPod implementation lets us move from a standard virtualization play into a true private cloud infrastructure that enables faster allocation of resources to our development teams and, in turn, faster rollout of customer-facing services."

"We've also found that the private cloud on FlexPod facilitates cross-team efforts," notes Lapin. "The highly flexible infrastructure lets engineers more easily experiment and test out new ideas. Throughout the process, we've deepened the synergy among our own infrastructure and software development teams. Due to the success of this

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initiative, the kbb.com project team was awarded a Kelley Blue Book Core Value Award, a corporate program that recognizes outstanding examples of teamwork, innovation, and other contributions.

"With this deployment, we've achieved all of our project objectives and are helping Kelley Blue Book derive maximum value from the kbb.com website. We're able to more quickly deploy new services for dealers and manufacturers, and, instead of being restricted to making weekly site updates, we can update values as frequently as needed to ensure that buyers and sellers have 24/7 access to the latest information. Such agility and flexibility contribute directly to our competitive advantage in the market."

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SOLUTION COMPONENTS

FlexPod Components
NetApp FAS3140 systems

Cisco Unified Computing System (UCS) B200 M2 blade servers with 5108 blade server chassis and 6120 fabric interconnects

Cisco Nexus 5000 series switches with 1000V Virtual Network Switch

Virtualization Components
VMware vSphere, vCenter, and vStorage APIs

NetApp Software
NetApp Flash Cache modules

NetApp deduplication technology

NetApp OnCommand® software, including SnapManager® for Virtual Infrastructure with NetApp FlexClone® software and Virtual Storage Console

Third-Party Products
Microsoft Windows Server 2008

Microsoft SQL Server 2008 R2

Microsoft .NET Framework

Protocols
NFS

CIFS

Partner
Trace3
www.trace3.com

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